

# Module Catalog

*M.Sc. Molecular Biotechnology*  
TUM School of Life Sciences  
Technische Universität München

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## Module Catalog: General Information and Notes to the Reader

### **What is the module catalog?**

One of the central components of the Bologna Process consists in the modularization of university curricula, that is, the transition of universities away from earlier seminar/lecture systems to a modular system in which thematically-related courses are bundled together into blocks, or modules.

This module catalog contains descriptions of all modules offered in the course of study.

Serving the goal of transparency in higher education, it provides students, potential students and other internal and external parties with information on the content of individual modules, the goals of academic qualification targeted in each module, as well as their qualitative and quantitative requirements.

### **Notes to the reader:**

#### **Updated Information**

An updated module catalog reflecting the current status of module contents and requirements is published every semester. The date on which the module catalog was generated in TUMonline is printed in the footer.

#### **Non-binding Information**

Module descriptions serve to increase transparency and improve student orientation with respect to course offerings. They are not legally-binding. Individual modifications of described contents may occur in praxis.

Legally-binding information on all questions concerning the study program and examinations can be found in the subject-specific academic and examination regulations (FPSO) of individual programs, as well as in the general academic and examination regulations of TUM (APSO).

#### **Elective modules**

Please note that generally not all elective modules offered within the study program are listed in the module catalog.

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<b>[SZ0458] English - Literature, Technology and Society C1  </b> Englisch - Literature, Technology and Society C1	839 - 840
<b>[SZ0460] English - English for Automotive Engineers C1  </b> Englisch - English for Automotive Engineers C1	841 - 842
<b>[SZ0471] English - Intensive Thesis Writers' Workshop C2  </b> Englisch - Intensive Thesis Writers' Workshop C2	843 - 844
<b>[SZ0479] English - Introduction to Critical Thinking and Science Writing B2  </b> Englisch - Introduction to Critical Thinking and Science Writing B2	845 - 846
<b>[SZ0480] English - Controversial Topics in Science and Technology C1  </b> Englisch - Controversial Topics in Science and Technology C1	847 - 848
<b>[SZ0488] English - Gateway to English Master's C1  </b> Englisch - Gateway to English Master's C1	849 - 850
<b>[SZ0489] English - English Pronunciation C1  </b> Englisch - English Pronunciation C1	851 - 852
<b>[SZ0495] English - English Conversation Partners Program B1-C1+  </b> Englisch - English Conversation Partners Program B1-C1+	853 - 854
<b>[SZ0497] English - Creative Writing C1: Introduction to Narrative Strategies and Literary Forms  </b> Englisch - Creative Writing C1: Introduction to Narrative Strategies and Literary Forms	855 - 856

<b>[SZ0498] English - Creative Writing C1: The Art of Craft - Toward Publication: Critical Revision Techniques</b>   Englisch - Creative Writing C1: The Art of Craft - Toward Publication: Critical Revision Techniques	857 - 858
<b>[SZ0499] English - Basic English for Technical Purposes B2</b>   Englisch - Basic English for Technical Purposes B2	859 - 860
<b>[SZ0003-05] French</b>   Französisch	861
<b>[SZ0501] French A1.1</b>   Französisch A1.1	861 - 863
<b>[SZ0502] French A1.2</b>   Französisch A1.2	864 - 865
<b>[SZ0503] French A2.1</b>   Französisch A2.1	866 - 868
<b>[SZ0504] French A2.2</b>   Französisch A2.2	869 - 870
<b>[SZ0505] French B1.1</b>   Französisch B1.1	871 - 872
<b>[SZ05061] French B1.2</b>   Französisch B1.2	873 - 874
<b>[SZ0507] French B2 - French for the profession</b>   Französisch B2 - Le français pour la profession	875 - 876
<b>[SZ0511] French B2/C1 - France currently</b>   Französisch B2/C1 - La France actuelle	877 - 878
<b>[SZ0512] French B1/B2 - Conversation Course: French Society</b>   Französisch B1/B2 - Cours de conversation: La société française	879 - 880
<b>[SZ0514] French B2 - Communication Course</b>   Französisch B2 - Cours de conversation	881 - 883
<b>[SZ0515] French C1 - Upper Conversation Course</b>   Französisch C1 - Cours de conversation supérieure	884 - 886
<b>[SZ0517] French B2 - Preparation Course for University Exchange</b>   Französisch B2 - Cours de préparation à un échange universitaire	887 - 888
<b>[SZ0518] French B2 Technical French</b>   Französisch B2 Technisches Französisch	889 - 891
<b>[SZ0522] French A1.1 + A1.2</b>   Französisch A1.1 + A1.2	892 - 893
<b>[SZ0523] French C1 - French in Business</b>   Französisch C1 - Le français des affaires	894 - 896
<b>[SZ0526] French B1.1 + B1.2</b>   Französisch B1.1 + B1.2	897 - 898
<b>[SZ0527] French A2.1 + A2.2</b>   Französisch A2.1 + A2.2	899 - 900
<b>[SZ0528] French C1 - oral and written expression</b>   Französisch C1 - s'exprimer à l'écrit comme à l'oral	901 - 902
<b>[SZ0003-06] Italian</b>   Italienisch	903
<b>[SZ0601] Italian A1.1 + A1.2 - Intensive</b>   Italienisch A1.1 + A1.2 - Intensiv	903 - 904
<b>[SZ0602] Italian A1.1</b>   Italienisch A1.1	905 - 906
<b>[SZ0604] Italian C1 - Italian Communication: Language and Conversation</b>   Italienisch C1 - Comunicare in italiano: lingua e conversazione	907 - 909
<b>[SZ0605] Italian A1.2</b>   Italienisch A1.2	910 - 911

<b>[SZ0606] Italian A2.1</b>   Italienisch A2.1	912 - 913
<b>[SZ0607] Italian A2.1 + A2.2 - Intensive</b>   Italienisch A2.1 + A2.2 - Intensiv	914 - 915
<b>[SZ0608] Italian A2.2</b>   Italienisch A2.2	916 - 917
<b>[SZ06081] Italian A2.2/B1.1 for Medicines</b>   Italienisch für Medizinstudierende A2.2/B1.1	918 - 919
<b>[SZ0609] Italian B1.1</b>   Italienisch B1.1	920 - 921
<b>[SZ06091] Italian B1.2</b>   Italienisch B1.2	922 - 923
<b>[SZ0616] Italian B2/ C1 - Communication in Italy: language and conversation</b>   Italienisch B2/ C1 - Comunicare in italiano: lingua e conversazione	924 - 925
<b>[SZ0618] Italian B2.1</b>   Italienisch B2.1	926 - 927
<b>[SZ0619] Italian B1/B2 - Modern Italian Society</b>   Italienisch B1/B2 - La società italiana oggi	928 - 929
<b>[SZ0620] Italian B2.2</b>   Italienisch B2.2	930 - 931
<b>[SZ0623] Italian A1.2 + A2.1 - Intensive</b>   Italienisch A1.2 + A2.1 - Intensiv	932 - 933
<b>[SZ0624] Italian A2.2 + B1.1 - Intensive</b>   Italienisch A2.2 + B1.1 - Intensiv	934 - 935
<b>[SZ0630] Italian B1/B2 Conversation</b>   Italienisch B1/B2 - Corso di conversazione	936 - 937
<b>[SZ0631] Italian B1.1 + B1.2 - intensive</b>   Italienisch B1.1 + B1.2 - intensiv	938 - 939
<b>[SZ0632] Italian B1/B2 – Grammar Compact</b>   Italienisch B1/B2 – Grammatica compatta	940 - 941
<b>[SZ0633] Italian B2.1 + B2.2 - intensive</b>   Italienisch B2.1 + B2.2 - Intensiv	942 - 943
<b>[SZ0635] Italian C1.1</b>   Italienisch C1.1	944 - 945
<b>[SZ0003-07] Japanese</b>   Japanisch	946
<b>[SZ0705] Japanese A1.1</b>   Japanisch A1.1	946 - 947
<b>[SZ07052] Japanese A1.1 + A1.2</b>   Japanisch A1.1 + A1.2	948 - 949
<b>[SZ0706] Japanese A1.2</b>   Japanisch A1.2	950 - 951
<b>[SZ0707] Japanese A1.3</b>   Japanisch A1.3	952 - 953
<b>[SZ0709] Japanese A1.4</b>   Japanisch A1.4	954 - 955
<b>[SZ0711] Japanese A2 Communication Course</b>   Japanisch A2 Kommunikation	956 - 957
<b>[SZ0716] Japanese A2.3 + A2.4</b>   Japanisch A2.3 + A2.4	958 - 959
<b>[SZ0717] Japanese B1 Communication</b>   Japanisch B1 Kommunikation	960 - 961
<b>[SZ0718] Japanese A1.3 + A1.4</b>   Japanisch A1.3 + A1.4	962 - 963
<b>[SZ0719] Japanese A2.1 + A2.2</b>   Japanisch A2.1 + A2.2	964 - 965
<b>[SZ0720] Japanese B1.1</b>   Japanisch B1.1	966 - 967



<b>[SZ0722] Japanese B2 Communication   Japanisch B2</b> Kommunikation	968 - 969
<b>[SZ0003-08] Portuguese   Portugiesisch</b>	970
<b>[SZ0801] Portuguese A1   Portugiesisch A1</b>	970 - 972
<b>[SZ0806] Portuguese A2.1   Portugiesisch A2.1</b>	973 - 975
<b>[SZ0807] Portuguese A2.2   Portugiesisch A2.2</b>	976 - 978
<b>[SZ0808] Portuguese B1.2   Portugiesisch B1.2</b>	979 - 981
<b>[SZ0809] Portuguese B1.1   Portugiesisch B1.1</b>	982 - 984
<b>[SZ0815] Portuguese - Portuguese for Spanish speakers A1 + A2  </b> Portugiesisch - Português para hispanofalantes A1 + A2	985 - 987
<b>[SZ0816] Portuguese B2.1   Portugiesisch B2.1</b>	988 - 990
<b>[SZ0817] Portuguese B2.2   Portugiesisch B2.2</b>	991 - 993
<b>[SZ0818] Portuguese - Portuguese for Spanish Speakers A1  </b> Portugiesisch - Português para hispanofalantes A1	994 - 996
<b>[SZ0819] Portuguese - Portuguese for Spanish Speakers A2  </b> Portugiesisch - Português para hispanofalantes A2	997 - 999
<b>[SZ0820] Portuguese C1 - Communication Course   Portugiesisch</b> C1 - comunicação oral e escrita	1000 - 1001
<b>[SZ0003-09] Russian   Russisch</b>	1002
<b>[SZ0901] Russian A1.1   Russisch A1.1</b>	1002 - 1003
<b>[SZ0902] Russian A1.2   Russisch A1.2</b>	1004 - 1005
<b>[SZ0903] Russian A2.1   Russisch A2.1</b>	1006 - 1007
<b>[SZ0904] Russian A2.2   Russisch A2.2</b>	1008 - 1009
<b>[SZ0905] Russian B1.1   Russisch B1.1</b>	1010 - 1011
<b>[SZ0906] Russian B1.2   Russisch B1.2</b>	1012 - 1013
<b>[SZ0907] Russian B2.1   Russisch B2.1</b>	1014 - 1015
<b>[SZ0908] Russian - Introduction to Russian in Science B1  </b> Russisch - Einführung in die Wissenschaftssprache ab B1	1016 - 1018
<b>[SZ0909] Russian as language of origin from B1   Russisch als</b> Herkunftssprache ab B1	1019 - 1021
<b>[SZ0910] Russian - Communication Course B1/B2   Russisch -</b> Kommunikationskurs B1/B2	1022 - 1023
<b>[SZ0911] Russian B1/B2 - Grammar   Russisch B1/B2 -</b> Systematische Grammatik	1024 - 1025
<b>[SZ0003-10] Swedish   Schwedisch</b>	1026
<b>[SZ1001] Swedish A1   Schwedisch A1</b>	1026 - 1027
<b>[SZ1002] Swedish A2   Schwedisch A2</b>	1028 - 1029
<b>[SZ1014] Swedish C1.1   Schwedisch C1.1</b>	1030 - 1031
<b>[SZ1016] Swedish B1.1   Schwedisch B1.1</b>	1032 - 1033
<b>[SZ0003-11] Intercultural Communication   Interkulturelle</b> Kommunikation	1034

<b>[SZ1102] EuroTeQ Intercultural Workshop – Intercultural competencies for working in multicultural teams   EuroTeQ Intercultural Workshop – Intercultural competencies for working in multicultural teams</b>	1034 - 1035
<b>[SZ0003-12] Spanish   Spanisch</b>	1036
<b>[SZ1201] Spanish A1   Spanisch A1</b>	1036 - 1037
<b>[SZ1202] Spanish A2.1   Spanisch A2.1</b>	1038 - 1040
<b>[SZ1203] Spanish A2.2   Spanisch A2.2</b>	1041 - 1043
<b>[SZ12031] Spanish A2.1 + A2.2   Spanisch A2.1 + A2.2</b>	1044 - 1045
<b>[SZ1207] Spanish A1 + A2.1   Spanisch A1 + A2.1</b>	1046 - 1048
<b>[SZ1208] Spanish A1 - AVE (online)   Spanisch A1 - AVE (online)</b>	1049 - 1050
<b>[SZ1209] Spanish C1 - current issues in Spain and Latin America   Spanisch C1 - La actualidad en España y América Latina</b>	1051 - 1053
<b>[SZ1212] Spanish C1 - Spain and Latin America - Yesterday and Today   Spanisch C1 - España y América Latina ayer y hoy</b>	1054 - 1055
<b>[SZ1216] Spanish B1.2   Spanisch B1.2</b>	1056 - 1057
<b>[SZ1217] Spanish B2.2   Spanisch B2.2</b>	1058 - 1060
<b>[SZ1218] Spanish B1.1   Spanisch B1.1</b>	1061 - 1062
<b>[SZ1219] Spanish B2.1   Spanisch B2.1</b>	1063 - 1064
<b>[SZ1225] Spanish B1.1 + B1.2   Spanisch B1.1 + B1.2</b>	1065 - 1066
<b>[SZ1227] Spanish C1.1   Spanisch C1.1</b>	1067 - 1068
<b>[SZ1228] Spanish B2 - Spanish in Science and Technology   Spanisch B2 - Español para la Ciencia und Tecnología</b>	1069 - 1070
<b>[SZ1229] Spanish B1 - Grammar Training   Spanisch B1 – Grammatik Training-Curso práctico de gramática</b>	1071 - 1072
<b>[SZ1230] Spanish A2 - Grammar Training   Spanisch A2 - Grammatik Training-Curso práctico de gramática</b>	1073 - 1074
<b>[SZ1231] Spanish A2 plus - Writing and Grammar Skills   Spanisch A2 plus - Sicherheit in Wortschatz und Grammatik</b>	1075 - 1076
<b>[SZ1232] Spanish B2 plus - Preparation for C1   Spanisch B2 plus - Vorbereitung auf C1</b>	1077 - 1078
<b>[SZ1234] Spanish C1.1   Spanisch C1.1 - Más allá de los límites</b>	1079 - 1080
<b>[SZ1235] Spanish C1.2   Spanisch C1.2</b>	1081 - 1082
<b>[SZ0003-13] Hebrew   Hebräisch</b>	1083
<b>[SZ1304] Hebrew A1.1   Hebräisch A1.1</b>	1083 - 1084
<b>[SZ1305] Hebrew A1.2   Hebräisch A1.2</b>	1085 - 1086
<b>[SZ1306] Hebrew A2.1   Hebräisch A2.1</b>	1087 - 1088
<b>[SZ0003-14] Turkish   Türkisch</b>	1089
<b>[SZ1402] Turkish A2.1   Türkisch A2.1</b>	1089 - 1090
<b>[SZ1403] Turkish A2.2   Türkisch A2.2</b>	1091 - 1092
<b>[SZ1404] Turkish A1.1   Türkisch A1.1</b>	1093 - 1094
<b>[SZ1405] Turkish A1.2   Türkisch A1.2</b>	1095 - 1096

<b>[SZ1408] Turkish - Communication A2</b>   Türkisch - Kommunikation A2	1097 - 1098
<b>[SZ0003-15] Danish</b>   Dänisch	1099
<b>[SZ1501] Danish A1</b>   Dänisch A1	1099 - 1100
<b>[SZ1502] Danish A2</b>   Dänisch A2	1101 - 1102
<b>[SZ1503] Danish B1</b>   Dänisch B1	1103 - 1104
<b>[SZ0003-16] Dutch</b>   Niederländisch	1105
<b>[SZ1601] Dutch A1</b>   Niederländisch A1	1105 - 1106
<b>[SZ1602] Dutch A2</b>   Niederländisch A2	1107 - 1108
<b>[SZ1606] Dutch B1</b>   Niederländisch B1	1109 - 1110
<b>[SZ0003-17] Norwegian</b>   Norwegisch	1111
<b>[SZ1701] Norwegian A1</b>   Norwegisch A1	1111 - 1112
<b>[SZ1702] Norwegian A2</b>   Norwegisch A2	1113 - 1114
<b>[SZ1703] Norwegian B1</b>   Norwegisch B1	1115 - 1116
<b>[SZ1704] Norwegian B2</b>   Norwegisch B2	1117 - 1118
<b>[SZ0003-18] Korean</b>   Koreanisch	1119
<b>[SZ1804] Korean A2.1</b>   Koreanisch A2.1	1119 - 1120
<b>[SZ1805] Korean A2.2</b>   Koreanisch A2.2	1121 - 1122
<b>[SZ1807] Korean B1.2</b>   Koreanisch B1.2	1123 - 1124
<b>[SZ1808] Korean A1.1</b>   Koreanisch A1.1	1125 - 1126
<b>[SZ1809] Korean A1.2</b>   Koreanisch A1.2	1127 - 1128
<b>[SZ1810] Korean B1.1</b>   Koreanisch B1.1	1129 - 1130
<b>[SZ1812] Korean B1.1 plus B1.2 - Preparation for TOPIK</b>   Koreanisch B1.1 plus B1.2 - Vorbereitung auf die Sprachprüfung TOPIK	1131 - 1132
<b>[SZ1813] Korean B1.1 + B1.2 - Grammar</b>   Koreanisch B1.1 + B1.2 - Grammatik	1133 - 1134
<b>[SZ0003-20] Catalan</b>   Katalanisch	1135
<b>[SZ2001] Catalan A1</b>   Katalanisch A1	1135 - 1136
<b>Master's Thesis</b>   Master's Thesis	1137
<b>[WZ2590] Master's Thesis</b>   Master's Thesis	1137 - 1138

**Elective Modules | Wahlmodule****Fundamental Modules | Kernbereich****Biomolecules | Biomoleküle****Module Description****WZ1335: Chemical Biology | Chemical Biology**

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

The acquisition of competence will be evaluated in a final written exam (90 min). The performance in the final exam will be the only basis of the grade. The written test will include extracts (figures and texts) of a scientific article published in the same year that has not been the object of a case study during the lecture. The concepts and technologies used in the article are direct applications or extensions of those learnt in the lecture.

In this test, students demonstrate that they can extract the significance of a modern chemical biology experiment reported in the specialized scientific literature. They need to be able to critically comment on the purpose of an experiment, to put it in the context of the approaches learnt during the lectures and to propose additional experiments based on the examples detailed during the lecture.

In addition, there is the option of taking a voluntary mid-term assignment as course work in accordance with APSO §6, 5. For this, a presentation (10 min) is to be prepared. The presentation will cover a selected chemical biology article and will not be graded itself. Passing the course performance will improve the module grade by 0.3 if, based on the overall impression, this better characterizes the student's performance level and the deviation has no influence on passing the examination. No retake date will be offered for the mid-term performance. In case of a repetition of the module examination, a mid-term performance already achieved will be taken into account.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:**

keine Angaben

**Content:**

Every chapter of the lecture will present the theoretical concept of the considered scientific approach, which will be illustrated by recent examples of applications found in the specialized literature. Students will be invited to deepen their understanding of the relevance of the approach for particular biological questions by reading at home the full articles where the examples stem from.

The content of the lecture will be divided in the 5 following parts:

- 1) Introduction to chemical biology a) Definitions and scope b) Introduction to biorthogonal chemistry and bottom-up proteomics
- 2) Biomolecule bulk labelling in situ a) Metabolic insertion b) Moiety specific labelling c) Cross-linking
- 3) Biomolecule precise labelling in situ a) Genetic code expansion b) Ligand-directed chemistry c) Proximity photo- labelling d) Chemical knock-down (PROTACs)
- 4) Native target deconvolution a) Target deconvolution techniques b) Proteomics-aided drug discovery
- 5) Spatial and temporal control of molecule activity a) Synthetic chemistry in situ b) Photopharmacology

**Intended Learning Outcomes:**

After the successful completion of the module, students understand the most important concepts of the chemical biology field (such as chemical tools for labelling, ligation, enrichment). Equipped with this knowledge they are able to critically read the chemical biology scientific literature and to choose the chemical biology approach relevant to the biological question they want to ask.

**Teaching and Learning Methods:**

Lecture

**Media:**

Powerpoint

**Reading List:**

No textbook covers the wide-spread content of the lecture. Students will be directed towards reviews to be found in the scientific literature for each chapter during the lecture.

**Responsible for Module:**

Wilhelm, Stephanie, Dr. rer.nat. [stephanie.wilhelm@tum.de](mailto:stephanie.wilhelm@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chemical Biology (Vorlesung, 3 SWS)

Küster B [L], Wilhelm S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2439: Proteomics: Analytical Basics and Biomedical Applications | Proteomics: Analytische Grundlagen und Biomedizinische Anwendungen

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination for the module will take the form of a written exam (90 min) for the lecture and an oral exam (15 min) for the exercise.

In the written exam it is tested whether the students have mastered the theoretical basics of proteomics and are able to develop answers to biological questions on the basis of the method spectrum of proteomics and to evaluate the results against the experimental background.

The presentation is developed individually on the basis of three tasks. Within the framework of the presentation, students should show that they are able to present essential aspects of their newly acquired skills and strategies in a structured and reflective manner. They must briefly explain the application of the necessary methods and discuss them in the context of the problem. In addition to the content, formal aspects of the presentation are also included in the assessment.

The written exam and the presentation are weighted in a ratio of 3 (written exam) to 2 (presentation). The module is passed if the weighted average is better than 4.09.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The module is designed for students in the MSc.

#### Content:

In this lecture, students will be introduced to the methodology of proteomics research and examples will be given from the fields of basic research, medical research, and drug discovery.

The lecture covers the theory and application of protein separation techniques such as 1D/2D gel electrophoresis, different types of protein and peptide chromatography, multidimensional separations, stable isotope labeling, and different forms of mass spectrometry. Furthermore, it will be discussed how these different methods can be combined in a meaningful way, depending on the application or scientific question.

In the exercise, participants will learn mass spectrometry-based methods and evaluation procedures that enable both protein identification and quantification. In each exercise section, participants will work with data from a case study aimed at identifying specific protein interaction partners of clinical kinase inhibitors. Using these case studies, participants will become familiar with the three steps required for each proteomic experiment: i) sample preparation, ii) mass spectrometric measurement, iii) (statistical) data analysis.

The content of the module will be continuously updated according to the latest developments in the field of proteomics.

### **Intended Learning Outcomes:**

After attending the module course, students will know the methodological fundamentals of proteomics (e.g. sample preparation, protein and peptide fractionation, mass spectrometry, protein identification and quantification, data analysis) and will understand the theoretical background and the application area of the respective methods. They are able to work predominantly independently with proteomics methods (e.g. various chromatographic methods, mass spectrometric methods, quantification strategies, data quality testing and evaluation) and to develop answers to biological or medical questions (e.g. analysis of post-translational modifications, identification of biomarkers, analysis of protein-protein and protein-drug interactions) in order to elucidate, for example, the mechanism of action of therapeutics in the human proteome. Students can design experiments for the quantitative and qualitative detection of the proteome and evaluate the results against the experimental background. They can summarize, present and explain scientific questions in a precise manner.

After participating in the exercise, students will be able to:

- apply proteomic software tools.
- interpret mass spectrometric peptide spectra using the software tools.
- use the information obtained through the application of the software tools to identify and quantify one or more protein.
- Critically evaluate the data obtained through the software tools.
- understand the application of the software tools in different research areas.

### **Teaching and Learning Methods:**

Teaching technique: Lecture and practical training Learning activities: In the lecture, students work out proteomic analytical problems and develop suitable solutions for them using the proteomic tools presented in the lecture.

In the exercise, the participants perform data analyses themselves using the software tools provided. There will be intensive interaction between teachers and course participants.

**Media:**

Blackboard work, PowerPoint, Script for the lecture, exercise sheets for the exercise

**Reading List:**

Script for the lecture

**Responsible for Module:**

Küster, Bernhard, Prof. Dr. kuster@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Intensivkurs Proteomics (Übung, 3 SWS)

Küster B [L], Haljiti G, Küster B, Ludwig C, Schneider A, The M

Proteomics - Analytische Grundlagen und biomedizinische Anwendungen (Vorlesung, 2 SWS)

Küster B [L], Küster B (Kramer K)

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2580: Protein Engineering | Protein-Engineering

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Eine Klausur (90 min) bildet den Abschluss des Moduls und dient der Überprüfung der erlernten Kompetenzen. Die Lernenden zeigen in einer Klausur, dass sie die erarbeiteten Informationen beschreiben, interpretieren und auf ähnliche Sachverhalte übertragen sowie die unterschiedlichen Informationen zu einem neuartigen Ganzen verknüpfen können. So weisen die Studierenden beispielsweise nach, dass sie die grundlegenden Ansätze des Protein-Engineerings für die Entwicklung von biomedizinischen Wirkstoffen verstanden haben sowie gentechnische Methoden zur Entwicklung von Proteintherapeutika beschreiben und erläutern können. Darüber hinaus müssen Zusammenhänge zwischen Proteinstrukturen und daraus resultierenden anwendungstechnischen Möglichkeiten beurteilt und Strategien zur Optimierung von rekombinanten Proteinen für biotechnologische oder biomedizinische Anwendungen entwickelt werden.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzungen für die erfolgreiche Teilnahme sind theoretische und praktische Kenntnisse von Grundlagen der Proteinbiochemie.

#### Content:

In diesem Modul werden die wissenschaftlichen Methoden und Arbeitstechniken des Protein-Engineerings auf theoretischer Grundlage diskutiert. Schwerpunkte sind die gentechnische Produktion von Proteinen in Bakterien (cytoplasmatisch und periplasmatisch), Verfahren zur ortsgerechten Mutagenese, Herstellung von Genbibliotheken, Selektions- und Screening-Methoden sowie Verfahren zur Bestimmung der Affinität zwischen Proteinen (z.B. Antikörpern, Rezeptoren) und ihren Liganden oder Wechselwirkungspartnern sowie ggf. der enzymatischen Aktivität. Des Weiteren wird im Modul das Potential gentechnisch hergestellter Proteine als neue

Generation von biologischen Arzneimitteln erläutert. Die pharmakologischen Eigenschaften (Affinität zu medizinisch relevanten Zielstrukturen, Effektorfunktionen, Plasma-Halbwertszeit) können durch Protein-Engineering wie auch mit proteinchemischen Methoden gezielt manipuliert werden. Anhand aktueller Fallbeispiele (Insulin, Wachstumsfaktor, humanisierte Antikörper usw.) wird die Entwicklung und Optimierung innovativer Biopharmazeutika mittels Protein-Engineering dargestellt.

### **Intended Learning Outcomes:**

Nach der erfolgreichen Teilnahme an dem Modul sind die Studierenden in der Lage:

- den theoretischen Hintergrund des Protein-Engineerings zur Entwicklung von Proteinen als biomedizinische Laborreagenzien sowie als therapeutische Wirkstoffe wiederzugeben
- die Entwicklung moderner Proteintherapeutika auf molekularer Basis mittels gentechnischer Methoden nachzuvollziehen
- die Zusammenhänge zwischen Primärstruktur, Faltung und biochemischer Funktion von Proteinen aus anwendungsbezogener Perspektive zu verstehen
- die Bedeutung biophysikalischer Wechselwirkungen des biochemisch/pharmakologisch aktiven Proteins mit dem entsprechenden Liganden/Substrat zu beurteilen
- Strategien zur Optimierung von rekombinanten Proteinen für praktische Anwendungen in Biotechnologie oder Biomedizin zu entwickeln
- das ökonomische Potential von durch Protein-Engineering optimierten Biopharmazeutika zu beurteilen

### **Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Vorlesung/Präsentation; Lernaktivität: Literaturstudium;  
Lehrmethode: Vortrag Die regelmäßige aktive Teilnahme an der Lehrveranstaltung wird empfohlen.

### **Media:**

Die Vorlesungen erfolgt mit graphischen Präsentationen (Projektor und PowerPoint). Die Folien werden den Studierenden in elektronischer Form zugänglich gemacht.

### **Reading List:**

Wink, "Molekulare Biotechnologie: Konzepte, Methoden und Anwendungen", Wiley-VCH 2011.

Lottspeich et al., "Bioanalytik", Spektrum 2012.

Williamson & Williamson, "How Proteins Work", Garland 2011.

Walsh, "Biopharmaceuticals: Biochemistry and Biotechnology", John Wiley & Sons 2003.

### **Responsible for Module:**

Skerra, Arne, Prof. Dr. rer. nat. habil. skerra@tum.de

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Cells | Zellen

### Module Description

## WZ2582: In vitro Models in Cell Biology | In vitro-Modelle der Zellbiologie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

Die Studierenden zeigen anhand der benoteten Klausur (60 min), ob sie in der Lage sind verschiedene Methoden zur Untersuchung zellulärer Signalübertragung zu erläutern und bezüglich ihrer Einsatzbereiche gegeneinander abzugrenzen. Darüber hinaus müssen sie zur Lösung zellbiologischer Fragestellungen geeignete Methoden auswählen, die Auswahl begründen und die daraus resultierende wissenschaftliche Aussagekraft bewerten. Die Klausurnote bildet die Gesamtnote des Moduls.

Die Vorlesung wird ergänzt durch Arbeitskreise (4-6 Personen), in denen einzelne Themen bzw. Fragestellung der Vorlesung intensiver bearbeitet werden. Die Studierenden diskutieren die Resultate ihrer Arbeitskreise in Kurzpräsentationen (10 min pro Gruppe). Diese Präsentationen werden nicht benotet (Studienleistung).

### Repeat Examination:

Next semester

### (Recommended) Prerequisites:

Zur erfolgreichen Teilnahme am Modul wird das Basiswissen Zellbiologie aus dem BSc-Studium Molekulare Biotechnologie vorausgesetzt. Für das Modul wesentliche Grundlagen werden im einführenden Abschnitt "Signaltransduktion" nochmals aufgegriffen und vertieft.

### Content:

In der Vorlesung werden methodische Ansätze zur Aufklärung zellulärer Signaltransduktion vorgestellt und an ausgewählten Beispielen erläutert. Im Anschluss an ein einführendes Repetitorium auf BSc-Niveau zum Thema Signaltransduktion werden im Schwerpunkt experimentelle Strategien/Techniken zur Aufklärung zellulärer Signalwege nicht nur vorgestellt

(z.B. Charakterisierung und Nachweis molekularer Interaktion in vitro, PTM-Assays, Genexpressionsanalyse etc.), sondern anschließend auch deren Potential und Limitierungen an ausgewählten Fallbeispielen diskutiert. Dito, wird mit dem zweiten Schwerpunktthema „Zellkulturen“ verfahren. Insbesondere werden hier Aspekte der Zellkultur hervorgehoben, die Einfluss auf Resultate/Schlussfolgerungen der zellbiologischen Experimente zeitigen können (Themen: Zelllinien, Seneszenz, Immortalisierung, Kultursysteme, Einzelzellanalyse etc.). Darüber hinaus haben die Studierenden die Möglichkeit das Repertoire der Vorlesung durch selbst gewählte Themen zu erweitern. Diese Themen werden in Arbeitskreisen von 4-5 anhand aktueller Literatur aufbereitet und in Form einer 10-minütigen Präsentation mit anschließender Diskussion präsentiert.

#### **Intended Learning Outcomes:**

Nach Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage, aus dem Methodenspektrum zur Erforschung der zellulären Signaltransduktion geeignete Strategien auszuwählen, zu kombinieren und gezielt einzusetzen.

Sie können die Auswirkung technischer Manipulationen/Applikationen auf zelluläre Reaktionen, insbesondere auf Signalwege einschätzen und diesen Aspekt bei der Konzeption von Experimenten sowie der Interpretation der Resultate entsprechend berücksichtigen.

#### **Teaching and Learning Methods:**

Lernaktivitäten: Interaktiver Austausch und Anregung zur Diskussion in der Vorlesung, Studium von Vorlesungsskript, -mitschrift und Literatur; Zu selbst gewählten Themen und Fragestellungen arbeiten die Studierenden in kleinen Gruppen und stellen ihre gemeinsamen Ergebnisse als Kurz-Präsentation vor.

#### **Media:**

Präsentationen mittels PowerPoint (Downloadmöglichkeit für Vorlesungsmaterial); Tafelarbeit

#### **Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt. Das Präsentationsmaterial wird durch spezifische Literaturhinweise für die einzelnen Themen ergänzt.

#### **Responsible for Module:**

Küster, Bernhard; Prof. Dr.

#### **Courses (Type of course, Weekly hours per semester), Instructor:**

In vitro-Modelle der Zellbiologie (Vorlesung, 3 SWS)

Kramer K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2372: Pathogenic Microorganisms | Mikroorganismen als Krankheitserreger

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination takes the form of a 90-minute written Klausur. In this, it should be demonstrated that the aspects mentioned above can be reproduced and applied to concrete questions. Students should be able to briefly summarise questions of understanding on the topics covered in the lecture in their own words. The examination questions cover the entire module material.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Lecture and practical course General Microbiology

#### Content:

Contents: Introduction to the biology of human pathogenic bacteria:

##### Part 1:

- Overview of humans and microbes;
- Relationship between commensals and pathogens;
- Koch's postulates;
- Overview of bacterial pathogenicity and virulence; host defence systems (especially different levels of the innate immune system); pathogen defence systems (immune evasion, adhesion to the host cell, invasion and intracellular growth, bacterial toxins);

##### Part 2:

- Diagnostics and epidemiology: taxonomy of pathogenic bacteria; species terms; identification (physiological, biochemical, biophysical and genetic methods);
- Diagnostic procedures (enrichments, rapid procedures, automated procedures);

- Clinical case studies;
- Infectious disease epidemiology (significance of infections in Germany, collection of epidemiological data, methods for tracing contamination routes);

Content: Biology of human pathogenic parasites:

- Introduction to human parasitology
- Transmission, diagnostics and host interaction: Malaria, Giardia, Toxoplasma gondii
- Neglected tropical diseases: Chagas disease, Echinococcosis, African trypanosomiasis, Leishmaniasis, Lymphatic filariasis, Onchocerciasis, Schistosomiasis, soil-transmitted helminthiasis.
- Control measures and programs, epidemiology, immune escape mechanisms

### **Intended Learning Outcomes:**

After participating in the module courses, students will be able to,

- identify the characteristics of pathogenic bacteria.
- understand and describe the interaction of bacterial pathogens with human hosts.
- to name the importance of pathogens in food biotechnology and the diagnostic procedures in medical and food microbiology laboratories.
- to know the infection epidemiological situation in Germany.
- to name exposure risks for human-relevant parasitic infections, their development cycles and the corresponding clinical pictures.

### **Teaching and Learning Methods:**

Lecture (independent revision based on slides, notes, literature).

### **Media:**

In the lectures, work is done with PowerPoint, slides and blackboard notes.

### **Reading List:**

Madigan TM, Martinko JM, Parker J (2020) Brock Mikrobiologie, Pearson München. Sehr gutes Lehrbuch zur allgemeinen Mikrobiologie mit einzelnen Kapiteln zur medizinischen Mikrobiologie. (auch ältere Auflagen).

Hof H, Dörries R (2019) Medizinische Mikrobiologie. 7. Auflage.

Blech J (2000) Leben auf dem Menschen: Die Geschichte unserer Besiedler.

Lucius, Loos-Frank, Lane: Biologie von Parasiten, 3. Auflage

### **Responsible for Module:**

Prof. Romana Gerner romana.gerner@tum.de

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Einführung in die Biologie und Diagnostik humanpathogener Bakterien (Vorlesung, 2 SWS)

Ebner F, Gerner R

Biologie humanpathogener Parasiten (Vorlesung, 1 SWS)

Ebner F, Gerner R

Biologie humanpathogener Parasiten (Vorlesung, 1 SWS)

Ebner F, Gerner R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2496: Molecular and Medical Virology | Molekulare und Medizinische Virologie

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulprüfung besteht aus einer Klausur (90min, benotet) in der die Studierenden grundlegende und vertiefte Kenntnisse der Virologie abrufen und anwenden sollen. Die Prüfungsleistung wird am Ende des 2. Vorlesungssemesters (SS) erbracht. Die Wiederholungsklausur findet in der vorlesungsfreien Zeit zu Beginn des darauf folgenden WS Semesters statt.

In der Prüfung soll nachgewiesen werden, dass Grundlagen der Virologie inkl. molekularer und medizinisch relevanter Aspekte verstanden und wichtige funktionelle Zusammenhänge der Virus-Wirt-Interaktion analysiert werden können.

Das Beantworten der Fragen erfordert teils eigene Formulierungen und teils Ankreuzen von vorgegebenen Mehrfachantworten. Es sind keine Hilfsmittel erlaubt.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Kenntnisse der Molekularbiologie und Grundkenntnisse in Zellbiologie und Immunologie

#### Content:

Allgemeine Themen der molekularen Virologie (z.B. Viruseintritt in Wirtszellen, Replikationsstrategien von RNA und DNA Viren, Expressionskontrolle, Virusassembly), Virusfamilien (z.B. Toga-, Flavi, Herpes-, Myxo, Hepatitis-, Retroviren); medizinische Aspekte der Virologie (z.B. angeborene und adaptive Immunreaktionen gegen Viren, Immunevasion, Impfungen, Emerging viruses, onkogene Transformation, virale Vektoren)



**Intended Learning Outcomes:**

Nach dem Besuch des Moduls versteht der Studierende die grundlegenden Prinzipien der Virologie, kennt die Merkmale bedeutender Virusfamilien und die wichtigsten Mechanismen der Virus-Wirt-Beziehung

**Teaching and Learning Methods:**

Vorlesungen mit Unterstützung durch PowerPoint Präsentationen, die Folien werden zum Download bereitgestellt

**Media:**

**Reading List:**

Flint et al., Principles of Virology I and II, ASM Washington  
Modrow et al., Molekulare Virologie, Spektrum Verlag 2010

**Responsible for Module:**

Protzer, Ulrike; Prof. Dr.med.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare und medizinische Virologie (Teil 1 und 2) (Vorlesung, 2 SWS)  
Protzer U [L], Protzer U, Bauer T, Deng L, Ebert G, Kosinska A, Möhl-Meinke B, Pichlmair A, Vincendeau M, Wettengel J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Organisms | Organismen

### Module Description

## WZ2589: Animal Biotechnology | Biotechnologie der Tiere 1+2

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

In a graded written exam (90 min), the students show whether they are able to describe and compare methods for the generation of genetically modified cells and animals in a differentiated manner. They demonstrate that they can use this knowledge in a targeted manner to address scientific questions and to apply the knowledge they have acquired in an exemplary manner. The written exam tests whether the students know what types of stem cells are isolated for, know their possible applications in research and biomedicine, and know what the challenges are in cell, tissue and organ transplantation. Students demonstrate that they can independently develop approaches to address theoretical problems in regenerative medicine.

### Repeat Examination:

Next semester

### (Recommended) Prerequisites:

The module is suitable for Master students. Basic knowledge in molecular biological methods would be helpful.

### Content:

The lecture will first teach different methods for generating genetically modified mammalian cells and mammals. These include microinjection, the use of viral vectors, transposons, RNAi, nucleases, nuclear transfer, genome editing (Crispr/Cas9), precise genetic manipulation by homologous recombination, and derivation of pluripotent stem cells in the different animal species and in humans. For each method, the advantages and disadvantages will be discussed and examples of applications will be presented (for example: generation of pharmaceutical proteins, generation of animal models for human diseases).

In the second part of the lecture, different approaches in regenerative medicine are taught, including xenotransplantation, allo- and autologous transplantation, and stem cell therapy with adult and pluripotent stem cells. Knowledge is acquired in the differentiation, de-differentiation and trans-differentiation of cells. The advantages and disadvantages of different therapeutic strategies are discussed and current examples of medical applications are given. Where relevant, ethical and social aspects will be addressed.

**Intended Learning Outcomes:**

After participating in the module courses, students will have the basic theoretical understanding and expertise in genetic engineering methods to generate transgenic animals for biomedical applications and have basic knowledge in regenerative medicine. They are able to:

" understand genetic engineering issues and working techniques and develop technical questions on their own. " to what extent xeno-transplantation is a realistic option for cell, tissue or organ transplantation and what genetic modification is required in animals for this purpose.

" how pluripotent stem cells can be specifically differentiated and which cells can be used for autologous or allogeneic transplantation and what the limitations are.

" they are able to apply the acquired knowledge to in-depth questions.

"They are able to identify the best possible techniques for specific questions and possibly implement them experimentally.

**Teaching and Learning Methods:**

Type of event/teaching technique: Lecture

Learning activities: Study of lecture notes, lecture transcript

**Media:**

Script (download option for lecture material)

**Reading List:**

Transgenic Animal Technology: A Laboratory Handbook by Carl A. Pinkert

Principles of Cloning by Jose Cibelli et al.

Molekulare Biotechnologie by Bernard Glick & Jack Pasternak

Gene Targeting: A Practical Approach by Alexandra L. Joyner

Tier-Biotechnologie von Hermann Geldermann

**Responsible for Module:**

Flisikowski, Krzysztof; Dr habil. krzysztof.flisikowski@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Biotechnologie der Tiere 1 Vorlesung (Vorlesung, 2 SWS)

Fischer K, Flisikowska T, Flisikowski K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0626: Genetics and Genomics | Genetics and Genomics

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the written examination (60 min, Klausur) students demonstrate by answering questions under time pressure and without helping material their theoretical understanding of components, processes, mechanisms and methods to study crop and livestock genetics and genomics.

In the seminar presentation of 30-45 min (depending on the article) students show their ability to present a scientific research article in a concise way to a peer group. The presentation will be evaluated based on scientific correctness, precise summary and discussion of strengths, weaknesses and the methodology of the research, clearly designed slides and interesting as well as clear presentation style.

The goals of the module have been reached and the module has been passed when the total grade of written exam and presentation (3:2) is better than 4.1.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Fundamental knowledge in genetics and molecular biology is highly recommended. The participants should have passed one or more bachelor level lectures in genetics, genomics, systems biology or developmental genetics.

#### Content:

The module is organized into topical sections, moving from classical genetics to modern genomics.

##### 1) Classical Genetics:

- a) Cell cycle, mitosis, meiosis
- b) Mendel laws, genetic linkage
- c) DNA as basis of inheritance

- d) Transcription, translation
- e) Transcription factor- and chromatin-based gene regulation
- f) Mutations, regulatory variation, phenotypic variation, genotype-phenotype map

2) Genomics:

- a) Genome sequencing
- b) Genome assembly, Genome annotation
- c) DNA-seq, WGBS, ATAC-seq, RNA-seq, HIC, ChIP-seq, single cell sequencing
- d) Decomposing the genotype-phenotype map (QTL mapping, GWAS, systems genetics)
- e) Population/Quantitative genomics
- f) Evolutionary genomics

**Intended Learning Outcomes:**

At the end of the module the students can:

- 1) identify the key research questions and goals in the field of genetics and genomics
- 2) name the major molecular and technological tools used in genetics and genomics
- 3) explain how these tools are currently applied to crop (plant) and livestock (animal) research
- 4) critically analyze published results in these area of crop and livestock genetics and genomics
- 5) present the content of published results to their peers

**Teaching and Learning Methods:**

Teaching method:

The module is organized into topical sections, moving from classical genetics to modern genomics. Each section consists of lectures (2 SWS), providing the necessary conceptual/theoretical background. The content of each section is reinforced by seminars (2 SWS), in which students analyze, present and discuss selected research papers on current research covering these topics. The research papers are chosen to illustrate how the concepts and tools discussed in the lectures are applied to solve concrete research questions in crop (plant) and livestock (animal) research. Where necessary the lectures and seminars will emphasize key differences in the genetics and genomics of plants and animals.

Lectures:

The lectures will provide the conceptual/theoretical background of Genetics and Genomics. Focus will be on displaying and extracting the key research questions and tools used in these fields.

Seminars:

In the seminars, the students will analyze published articles in the field of plant and livestock Genetics and Genomics, with a particular focus on key crop (e.g. maize, rice, tomato) and livestock (e.g. cow, pig, chicken) species. The students will be able to assess how the basic research questions and tools introduced in the lectures are applied to specific breeding goals in the agricultural sector.

Learning Activity:

Study and critically analyze scientific articles in crop and livestock Genetics and Genomics

Summarize and present the content of scientific articles to a peer group  
Discuss the content of scientific articles with a peer group

**Media:**

Presentations with PowerPoint, videos, black board

**Reading List:**

**LECTURE:**

Anthony Griffith et al, Introduction to genetic analysis, 2015 11th edition (or newer)

James Watson et al, Molecular Biology of the Gene, 2014 7th edition (or newer)

Hartl and Clark, Principles of Population Genetics 4th Edition (2007);

Charlesworth and Charlesworth, Elements of Evolutionary Genetics (2010).

Original articles used to increase the content of the lecture will be cited on the PowerPoint slides.

**SEMINAR:**

Original articles will be distributed to the individual speakers in the first seminar session.

**Responsible for Module:**

Johannes, Frank; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Genetics and Genomics (Seminar, 2 SWS)

Johannes F [L], Johannes F, Kamal N, Tellier A

Genetics and Genomics (Vorlesung, 2 SWS)

Johannes F [L], Johannes F, Kamal N, Tellier A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2581: Plant Biotechnology | Pflanzenbiotechnologie

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the written, supervised examination (Klausur, 90min), by answering questions under time pressure and without helping material, students demonstrate that they have obtained knowledge in the areas of plant biotechnology, plant molecular biology and plant biochemistry.

The examination assesses the theoretical background and applied knowledge obtained on up-to-date aspects of current research.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

A basic knowledge in genetics, genomics, plant development, biochemistry and/or botany is highly recommended

#### Content:

The module consists of a lecture and a seminar part.

In the lecture, state-of-the-art methods in plant biotechnology and plant molecular biology are introduced, and advantages and disadvantages are discussed. Current challenges are highlighted.

Topics of the lecture include:

- Genetically modified plants: status, regulations, cultivation, concepts;
- Generation of genetically modified plants: methods, vector systems;
- Concepts for yield improvement;
- Concepts for quality improvement;
- New potentials derived from basic research;
- Model system Arabidopsis: development of new techniques;
- Metabolic engineering.

In the seminar part different speakers from the TUM, which are active in research in plant biotechnology or plant molecular biology, introduce cutting-edge research projects that take place

on campus. The seminar part is conceived to highlight the exciting research that currently takes place and advertise opportunities for master thesis projects.

**Intended Learning Outcomes:**

The students have a profound knowledge in plant biotechnology, plant biochemistry and plant molecular biology. They are aware of new technological approaches and methodology applied in the fields, including plant transformation, construct and vector design, reporter systems and essential DNA, RNA and protein techniques. They are able to comment critically and reflect on technologies and aims of plant biotechnology. They have insight into latest research developments in the respective areas, in particular also in research projects that currently take place at the TUM

**Teaching and Learning Methods:**

Lecture: PowerPoint presentations, short movies and use of the black board. Questions to the audience will actively encourage discussion and enable students to ask questions more freely. Seminar: Power point presentations and use of the black board. The seminar talks are followed by discussions to actively invite students to ask questions. Review papers will be provided as background reading.

**Media:**

Lecture: PowerPoint, black board, discussion.

Seminars: PowerPoint, black board, discussion.

PDFs of the lectures will be made available to the students. Review publications will be made available for background reading on the seminar contents.

**Reading List:**

Biochemistry and Molecular Biology of Plants. Buchanan, Grissem and Jones, John Wiley & Sons, 2015

**Responsible for Module:**

Poppenberger-Sieberer, Brigitte; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



**Medicine | Medizin****Module Description****ME2648: Molecular Oncology | Molekulare Onkologie**

Version of module description: Gültig ab winterterm 2016/17

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In the exam (90 min, free questions, grading according to 1.0; 1.3; 1.7...) the students show that they are able to structure their knowledge of the cell and molecular biological mechanisms of cancer development and metastasis and to present the essential aspects.

No aids may be used in the examination. The questions test the competence in reproduction (central questions of the module such as molecular signaling pathways, recognition and retrieval of intra- and intercellular communication pathways), association (linking transfer (problem-oriented application of learned regulatory mechanisms or research approaches to new related or other research areas) and application of the acquired molecular biological knowledge to unknown problems. The exam can be repeated at the end of the following semester if the student fails, with the opportunity to repeat the lecture.

In addition, the module must include a scientific paper. This paper is about the in-depth, independent, elaboration of the theoretically developed topics. The topic of the term paper will only be assigned after passing the exam and the term paper must be handed in at a fixed date. In contrast to the exam, which only examines theoretical knowledge, the term paper requires the free choice of an original publication from current research on each of the 10 topics of the lecture (see below). Students must be able to work autonomously in order to promote their studies; this includes, for example, the ability to classify, discuss and evaluate current research results. In particular, the students must carry out detailed literature research. Students are also required to take responsibility for their own time management and planning. Correctness, originality and formal execution are evaluated in their entirety as a course achievement. The module is passed if the exam is passed and the study performance has been successfully completed.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:**

Basic knowledge of biochemistry, molecular biology and genetics are the basis for understanding the lectures. Attending other modules is not required.

**Content:**

1.) Characteristics of tumor progression (problems of modern tumor research, definitions, significance of the tumor microenvironment, Hallmarks of Cancer, properties of transformed cells in experiment); 2) causes of tumor development (stem cells and tumor formation, wnt/ hedgehog self-renewal, mutations, repair, cellular response to mutagens); 3) oncogenes (experiments of Rous, Rubin, Temin, Weinberg, definitions, functional classes of oncogenes and examples); 4.) tumor suppressor genes (definitions, Knudson two hit hypothesis, PTEN, cell cycle control points, pRB, p53, MDM2, apoptosis); 5.) epigenetics (definitions, histone modifications, DNA methylation, pRb, CpG Islands, examples, experiments of Mary Hendrix); 6.) Cell environment (components of a tumor, tumor stroma as therapeutic target, extracellular matrix: components and meaning, cell/ECM interactions, cell-cell contacts); 7th) Mechanisms of the metastasis cascade (steps of the cascade, angiogenesis, angiogenic switch, invasion, wound healing and cancer, tumor-associated macrophages, epithelial-mesenchymal transition, seed and soil hypothesis, role of proteases, metastatic niche; marker genes; metastasis models in the mouse); 8th) proteases/ proteolytic network (physiological and pathophysiological functions of proteases and protease inhibitors, regulation of proteases, splitting mechanisms, the proteolytic balance, protease families, proteases as prognostic markers, development of synthetic protease inhibitors, clinical trials, optimization of synthetic protease inhibitors, the cancer degradome); 9th) specific methodology of molecular oncology (in vivo models, biochemical/molecular detection methods of proteases and protease inhibitors, zymography, knock-out systems, siRNA, shRNAi, viral vector systems, in vitro migration and invasion models); 10th) Deepening of the above-mentioned areas (discussion of current publications from relevant journals, development of a deeper understanding of the learned mechanisms).

**Intended Learning Outcomes:**

The students know and understand molecular mechanisms of tumor progression, i.e. from tumor development to metastasis. They are able to understand the complex intracellular and extracellular control loops in their importance for the interactions between tumor and healthy tissue. With the knowledge acquired in this module, the students bring with them the theoretical prerequisites necessary for starting a project activity in research (e.g. master's or doctoral thesis). They are able to link original publications with the skills acquired in the module on molecular oncology and thus test their knowledge in an application-oriented way.

In addition, they can analyze and discuss original publications from current research and weigh up their scientific significance. They can also plan extensive literature searches and carry them out successfully and independently within a tight time frame.

**Teaching and Learning Methods:**

The module consists of a lecture and a term paper; in the lecture, the theoretical foundations of molecular oncology are developed with the help of blackboard pictures, in dialogue with the students. A relatively economical use of PowerPoint slides is used to illustrate difficult issues.

Students deepen their knowledge through intensive study of lecture material, especially their own notes and selected literature, as well as through self-study and presentation of questions and answers on the topics. The lecture can be attended in the WS or SS.

By means of experimental examples from the history of science as well as current publications, the students recognize the process of gaining knowledge in this field. Through numerous references in the lecture, the students learn a critical position on how to deal with research results and their translation (e.g. into the clinic).

In the following, the students deepen their newly acquired knowledge by means of the term paper. In private study they look for suitable literature and analyze it in detail. They have to evaluate the plausibility of the chosen experimental approaches, as well as the quality of the presented data and the way of evaluation and presentation. In contrast to classical learning, students have to consider the decisive questions and not just learn solutions by heart.

**Media:**

Development of the topics on the basis of blackboard pictures with the help of PowerPoint presentations. Lecture slides are made available as pdf before each lecture via the eLearning platform "moodle".

**Reading List:**

There is no textbook available that covers all contents of this module. In addition to other literature it is recommended:

Cell and Molecular Biology. G. Karp. Wiley Verlag, 4th edition, ISBN: 0-471-65665-8.

The Biology of Cancer. R. A. Vineyard. Garland Science, 2nd edition, ISBN: 978-0-8153-4220-5.

**Responsible for Module:**

Krüger, Achim; apl. Prof. Dr.: [achim.krueger@tum.de](mailto:achim.krueger@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare Onkologie I (Vorlesung, 2 SWS)

Krüger A [L], Krüger A

Molekulare Onkologie I Hausarbeit (Seminar, 2 SWS)

Krüger A [L], Krüger A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ3230: Mitochondrial Biology | Mitochondrial Biology

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students will demonstrate their acquired knowledge on mitochondrial biology during a graded, oral examination of 20 minutes. The ability of the student will be examined (1) to describe the underlying concepts of mitochondrial functional units as covered by the course, (2) to apply this knowledge in a novel context, e.g. to explain a primary dataset or the consequences of a disease mutation and (3) to integrate knowledge into recent scientific advance as covered by the seminar.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Basics in Nutrition and Food, Energy Balance Regulation

#### Content:

The course covers the entire spectrum of mitochondrial involvement in cellular homeostasis and metabolism. This includes oxidative phosphorylation, membrane potential, thermogenesis, anaplerotic reactions, apoptosis, calcium homeostasis, reactive oxygen species, mtDNA mutations in the phylogeny of human origin, evolution and the endosymbiotic theory, fusion and fission, protein import, solute transport, and mito-ER association.

#### Intended Learning Outcomes:

The students will have broadened their understanding of mitochondria from mere ATP producers to their complex role as integrative hubs in multiple metabolic and signaling pathways. They will be familiar with the state of the art and thus be able to participate in ongoing research projects studying mitochondrial function with little further training on scientific background or typically employed technology. Due to the integrative nature of mitochondrial function

within a plethora of other pathways, students will have acquired the ability to place seemingly self-contained knowledge fields into a greater cellular context. Students will be able to understand and integrate recent and future literature into this complete framework of mitochondrial function.

**Teaching and Learning Methods:**

Basic knowledge will be provided in the form of lectures (2 SWS). The corresponding seminar (2 SWS) will allow students to both practice their presentation skills of original literature and convey highlights of current research in the above fields.

**Media:**

presentation slides, whiteboard

**Reading List:**

'Bioenergetics 4' by David Nicholls, ISBN: 9780123884251

'Mitochondria' by Immo Scheffler, ISBN: 0471194220

**Responsible for Module:**

Fromme, Tobias; PD Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ3207: Nutrition and Microbe-Host Interactions | Nutrition and Microbe-Host Interactions

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination requirements of the module "Nutrition and Mirobe-host Interactions" consist of a written examination on any content of the module (Klausur 90 min, open questions and up to 70% multiple choice questions) either with pen and paper or in electronic format. The exam will usually be taken in presence. If required by the pandemic situation, this can be supplemented by a simultaneous electronic written distance examination. The written exam will assess whether the student has attained an advanced level of knowledge about the diversity and functions of the mammalian gut microbial ecosystem and the role of dietary and microbial triggers in regulation of host health. No supporting material is allowed.

In addition, there is the option of taking a voluntary mid-term assignment as course work in accordance with APSO §6, 5. For this, a report (PowerPoint presentation of data analysis, 4-6 pages) must be submitted. The module grade can be improved by 0.3 by passing the course work if this better characterises the student's performance level on the basis of the overall impression and the deviation has no influence on passing the examination. No repeat date is offered for the mid-term performance. When retaking a failed module examination at the next possible examination date, successfully passed mid-term assignments will be considered. The mid-term assignment will assess the ability of the students to apply microbial profiling data analysis to describe and interpret bacterial community profiles on the provided datasets.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in physiology, microbiology, bio functionality and immunology.

**Content:**

This lecture and seminar series teaches deep insight into the diversity and functions of the mammalian gut microbial ecosystem (intestinal microbiota) in close interaction with the host and with dietary factors. Particular attention will be drawn to the development of the microbiota throughout life as well as underlying cross-talk mechanisms with the mucosal immune system with a particular focus on chronic inflammatory disorders, enteric infections and metabolic disorders.

**Intended Learning Outcomes:**

After successful participation in the module, students comprehend the diversity and functions of the mammalian gut microbial ecosystem and are able to estimate the role of dietary and microbial triggers in regulation of host health. Students will gain a deeper understanding of microbe-host interactions, as well as the link between the microbiome and disease. Using this knowledge, students will be able to critically assess recent studies and findings. The students will be able to carry out and interpret a range of analyses on 16S rRNA gene sequencing data for microbial profiling.

**Teaching and Learning Methods:**

Lectures will be held to teach the students the content of the module in a classroom environment. On top of this, students are expected to deepen their understanding of the content by studying independently. The seminar will consist of hands-on analysis workshops as well as independent analysis by the students, to allow for the practical implementation of theoretical knowledge that has been taught during the module.

**Media:**

**Reading List:**

Microbial Inhabitants of Humans: Their Ecology and Role in Health and Disease. Cambridge University Press, 2005, ISBN: 0 521 84158 5

**Responsible for Module:**

Haller, Dirk; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Microbe-host interaction and nutrition in health and disease (seminar) (Seminar, 2 SWS)  
Haller D [L], Coleman O, Haller D, Metwaly A, Ren S, Riva A, Schmöller I

Microbe-host interaction and nutrition in health and disease (lecture) (Vorlesung, 2 SWS)  
Haller D [L], Haller D, Schmöller I

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**Engineering / Industrial Application | Technik / Industrielle Anwendung****Module Description****LS20040: Biopharmaceutical process technology | Biopharmazeutische Verfahrenstechnik**

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In the 90-minute written module exam (Klausur), students must answer 20-30 questions related to the learning outcomes. A non-programmable calculator as aid is allowed. The exam uses assignment tasks, short free-text tasks, multiple choice questions, and sketches to explain. For example, students must solve short calculation problems. Furthermore, students have to suggest suitable biopharmaceutical drugs for therapeutic case studies. In other questions they have to check the suitability of a process for an exemplary target.

Students will explain the fundamentals of different separation steps and principles of operation of different apparatus. In addition, they have to answer questions related to the applicability of different unit operations by solving short calculation exercises. They have to suggest operating conditions or modify operation conditions to improve the process performances.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:**

Knowledge in chemistry, physical chemistry, and physics.

Furthermore, prior knowledge of biochemistry, bioprocess technology and molecular biotechnology technology is required. Recommended but not strictly required is knowledge in bio process engineering.

**Content:**

This module consists of two lectures, covering different parts of biopharmaceutical technology: In the lecture "Vertiefende Kapitel der Bioprozesstechnik" the production of common biotechnologically produced drugs, e.g. hormones, vaccines, gene therapeutics, antibodies and



advanced therapy medicinal products are introduced. The special precautions to be taken in biotechnological production in the pharmaceutical environment will be discussed. Case studies will be used to address specific production systems (e.g., batch, continuous, personalized, and industrial).

The lecture "Trennverfahren für biogene Substanzen" covers the engineering aspects of the separation of biomolecules in pharmaceutical, biotechnology, and chemical industries.

In biotechnology, the recovery and purification of biogenic substances from complex mixtures such as bacterial suspensions is a cost-intensive and complex process. This lecture provides insights into the fundamentals and principles of operation of the unit operations used downstream processing of biomolecules. Specific examples are used to discuss the chemical-physical characteristics of biomolecules and to describe conflicting goals in the purification of biogenic substances. In particular, the following topics are covered:

- Cell disruption
- Sedimentation and Centrifugation
- Filtration
- Liquid-liquid extraction
- Chromatography
- Precipitation
- Bioseparation process development and examples of downstream processes

#### **Intended Learning Outcomes:**

After attending this module course, students will be able,

- to understand the special requirements of biotechnological production of medicinal products and to plan the production process accordingly,
- to understand production of the different classes of biotechnological drugs and therapies: upstream, downstream, logistics, fill & finish, and analytics,
- to choose industrial scale reactors and operating modes for the production of different types of biomolecules,
- to explain the sequence of process steps for the isolation and separation of biogenic substances,
- to evaluate the applicability of different unit operations (e.g. filtration, centrifugation, extraction, precipitation, chromatography) in different steps of the separation process,
- to select equipment for different separation steps,
- to know the advantages of advanced integrated process concepts and single-use equipment,
- to explain the production of advanced therapy medicinal products (ATMPs).

#### **Teaching and Learning Methods:**

In the lecture "Vertiefende Kapitel der Bioprozesstechnik", representatives from industry and various TUM chairs present biotechnological, pharmaceutical production using case studies.

In the weekly lecture "Trennverfahren für biogene Substanzen", both PowerPoint and blackboard presentations and short films are used in the lecture. Independent study of the relevant literature is also recommended.

**Media:**

In the lectures Powerpoint and blackboard are used. Short films demonstrating process concepts and equipment will be presented.

**Reading List:**

Melin (2007): Membranverfahren; Stahl (2004): Industrie-Zentrifugen; Harrison (2002) Bioseparations Science and Engineering; Carta (2010): Protein Chromatography: Process Development and Scale-Up  
Sahm, H., G. Antranikian, K.-P. Stahmann, und R. Takors, (Hrsg.) 2012. Industrielle Mikrobiologie Springer-Spektrum

**Responsible for Module:**

Minceva, Mirjana, Prof. Dr.-Ing. habil. mirjana.minceva@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Vertiefende Kapitel der Bioprozesstechnik (Vorlesung, 2 SWS)

Sönnichsen C [L], Sönnichsen C, Svilenov H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MW1145: Bioseparation Engineering 1 | Bioproduktaufarbeitung 1 [BSE1]

#### *Bioseparation Engineering 1*

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Die Prüfungsleistung wird in Form einer Klausur erbracht. Die angestrebten Lernergebnisse werden durch Verständnisfragen zu ausgewählten Inhalten des Moduls überprüft. Durch umfangreiche Rechenaufgaben wird außerdem überprüft, ob die Theorie zu verfahrenstechnischen Schritten auf praktische Beispiele aus der Bioproduktverarbeitung, auf adsorptive Prozesse und Extraktionsverfahren angewendet werden kann. Es ist eine schriftliche Klausur mit einer Prüfungsdauer von 90 Minuten vorgesehen. Zugelassenes Hilfsmittel: Taschenrechner.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Voraussetzungen für die erfolgreiche Teilnahme sind Kenntnisse der Grundlagen der (Bio-)verfahrenstechnik

#### **Content:**

.

#### **Intended Learning Outcomes:**

Nach der Teilnahme an diesem Modul sind die Studierenden in der Lage, chromatographische und extraktive Prozesse der Bioproduktaufarbeitung mittels klassischer und moderner Methoden zu analysieren und zu bewerten. Zusätzlich sind sie in der Lage diese mit weiteren Verfahrensschritten wie Zellaufschluss, Zentrifugation oder wässriger Extraktion zu kombinieren und als kompletten Prozess zu analysieren.

**Teaching and Learning Methods:**

Die Inhalte dieses Moduls werden in Form eines Inverted/Flipped Classroom-Konzept vermittelt. Mittels kurzer Lehrfilme (Screencasts) werden Inhalte ab einer Woche vor der entsprechenden Übung vermittelt, wobei die Studierenden über ein Web-based Training das erlernte Wissen parallel überprüfen können (2 SWS). In den Live-Übungen (1 SWS), die auch via ZOOM übertragen werden, werden wesentliche Inhalte wiederholt und vertieft. Die Studierenden erhalten hierzu vorab ebenfalls Übungsaufgaben, die in Gruppen bearbeitet und anschließend vorgerechnet sowie diskutiert werden. Dies ermöglicht den Studierenden eine Selbstkontrolle der eigenständigen Analyse und Bewertung verfahrenstechnischer Schritte (z. B. Zellaufschluss, Zentrifugation, Chromatographie und wässriger Extraktion) bei der Bioproduktaufarbeitung u.a. mit mechanistischen Modellierungswerkzeugen.

**Media:**

Die in der Vorlesung verwendeten Folien werden den Studierenden in geeigneter Form rechtzeitig zugänglich gemacht. Übungsaufgaben werden regelmäßig verteilt und in der Regel werden die Musterlösungen eine Woche später ausgegeben und mit den Studierenden diskutiert.

**Reading List:**

Ladisch, Michael R.: Bioseparations Engineering, 2001, ISBN-13: 978-0-471-24476-John Wiley & Sons

Harrison, Todd, Rudge and Petrides: Bioseparations Science and Engineering, ISBN 978-0-195-12340

**Responsible for Module:**

Berensmeier, Sonja; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Bioproduktaufarbeitung I (Übung) (Übung, 1 SWS)

Berensmeier S

Bioproduktaufarbeitung I (Vorlesung) (MW 1145) (Vorlesung, 2 SWS)

Berensmeier S [L], Berensmeier S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MW1386: Industrial Bioprocesses | Industrielle Bioprozesse

Version of module description: Gültig ab summerterm 2016

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die angestrebten Lernergebnisse werden in Form einer 90-minütigen Klausur durch Verständnisfragen und Rechenaufgaben zu aktuellen industriellen Produktionsverfahren der Biotechnologie überprüft (zugelassenes Hilfsmittel: Taschenrechner). Eine schriftliche Prüfung ist notwendig um die große Anzahl an Studierenden unter gleichen Rahmenbedingungen prüfen zu können. Kreditpunkte werden für das erfolgreiche Ablegen der Modulprüfung vergeben.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzungen für die erfolgreiche Teilnahme sind Vorkenntnisse in der Bioverfahrenstechnik.

#### Content:

Aktuelle industrielle Produktionsverfahren werden detailliert vorgestellt und diskutiert. Die Grundlagen zu den vorgestellten Produktionsverfahren werden dabei jeweils prozessbezogen vermittelt. Schwerpunkte sind: Verfahren zur biotechnologischen Herstellung von Grundchemikalien, zur Herstellung von Enzymen, zur Herstellung von Feinchemikalien und zur Herstellung von Biopharmazeutika. Darüber hinaus werden allgemeine Prinzipien der Bioprozessentwicklung und allgemeine Prinzipien zur Bewertung von industriellen Bioprozessen vermittelt (Ökoeffizienzanalyse).

#### Intended Learning Outcomes:

Nach der Teilnahme an diesem Modul sind die Studierenden in der Lage, Bioprozesse und biotechnologische Produktionsverfahren in der industriellen Anwendung zu verstehen und im Hinblick auf Möglichkeiten und Grenzen zu bewerten. Hierfür lernen sie die notwendigen theoretischen Kenntnisse insbesondere zur Reaktionskinetik für die mathematische Basisauslegung von industriellen Bioprozessen.

**Teaching and Learning Methods:**

Die Inhalte des Moduls werden in der Vorlesung mit Hilfe von Powerpoint-Präsentationen theoretisch vermittelt. Wesentliche Inhalte werden wiederholt aufgegriffen und in den (zeitlich daran anschließenden) Übungen vertieft. Die Beiträge industrieller Dozenten werden im Anschluss an den Vortrag jeweils intensiv diskutiert. Dies ermöglicht den Studierenden ein vertieftes Verständnis für industrielle Produktionsverfahren der Biotechnologie zu entwickeln. Studienbegleitend wird eine Exkursion zu einer biotechnologischen Produktionsanlage angeboten (hierzu ist nach Ankündigung eine gesonderte Anmeldung erforderlich).

**Media:**

Die in der Vorlesung verwendeten Folien werden den Studierenden in geeigneter Form rechtzeitig zugänglich gemacht. Übungsaufgaben werden regelmäßig verteilt und in der Regel werden die Musterlösungen eine Woche später ausgegeben und mit den Studierenden diskutiert.

**Reading List:**

Viele Aspekte der Vorlesung:

Sahm, Antranikian, Stahmann, Takors: "Industrielle Mikrobiologie", Springer-Verlag, 2013.

Chmiel, Takors, Weuster-Botz: „Bioprosesstechnik“, 4. Auflage, Springer Verlag 2018.

**Responsible for Module:**

Weuster-Botz, Dirk; Prof. Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Specialised Modules and Interdisciplinary Qualification | Vertiefungsbereich und Überfachliche Qualifikation

### Specialised Modules | Vertiefungsbereich

#### Biomolecules Advanced Area | Vertiefungsbereich Biomoleküle

#### Practice Oriented Modules | Praxisorientierte Module

### Module Description

## WZ1176: Practical Course Chemistry of Biogenic Resources | Forschungspraktikum Chemie Biogener Rohstoffe [PC CBR]

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 225

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students write an internship report (graded) in which they present their experimental work including the theoretical background and they evaluate it scientifically. The report should contain between 15 and 25 pages. In addition, the supervisors may request an oral presentation (ungraded) about the practical work.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

At least basic lectures and internships in the field of chemistry and / or life sciences

#### Content:

Research internship on current research topics of the Chair of Chemistry of Biogenic Resources. Preferably experimental work in the laboratory, but desk studies are also possible. Typical topics are the conversion of biogenic raw materials through chemical, enzymatic or fermentative processes.

**Intended Learning Outcomes:**

Students acquire in-depth knowledge of special topics in the chemistry of biogenic raw materials and associated chemical and biotechnological working methods. After completing the internship, they have at least acquired the basic skills to evaluate results scientifically. In addition to methodological skills, independent and autonomous planning and action are encouraged.

**Teaching and Learning Methods:**

Laboratory experiments under guidance, partly independently planned; independent search and evaluation of technical literature

**Media:**

Laboratory, laboratory equipment, technical literature

**Reading List:**

Relevant specialist literature will be announced to the students on the basis of the individual topic at the beginning of the internship

**Responsible for Module:**

Doris Schieder [doris.schieder@tum.de](mailto:doris.schieder@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Chemie Biogener Rohstoffe (Praktikum, 15 SWS)

Sieber V [L], Abbas Nia A, Al-Shameri A, Arana Pena S, Dsouza Z, Fornoni E, Friedrichs J, Fuchs A, Giustino A, Grundheber J, Hofer N, Hörnschemeyer K, Hupfeld E, Kampl L, Köllen T, Liu Y, Malubhoy Z, Marosevic M, Matena F, Mayer M, Ostertag T, Raga Carbajal E, Rau M, Romeis D, Rühmann B, Scheerer J, Schieder D, Schulz M, Sieber V, Siebert D, Steiger M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2172: Functional Proteomics | Forschungspraktikum Funktionelle Proteomanalyse

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung wird anhand der Laborleistung erbracht.

Die Durchführung der laborpraktischen Experimentalarbeit fließt mit einem Anteil von 60% in die Benotung ein. Die Studierenden zeigen zudem anhand eines zusammenfassenden Protokolls und 1-2 Präsentationen (20 min), dass sie in der Lage sind, die wesentlichen Aspekte der Versuche strukturiert und reflektiert darzustellen. Die Bewertung der Präsentation und des Berichts fließen mit 15% und 25% in die Benotung der Laborleistung ein.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

BSc Abschluss ist erforderlich.

Besuch der VS Proteomics - analytische Grundlagen und biomedizinische Anwendungen wird empfohlen.

#### Content:

Forschungspraktikum mit wechselnden, aktuellen Themen aus dem Bereich des LS fuer Proteomik und Bioanalytik. Typische Bereiche umfassen:

- a) Proteinkartierung von Zelllinien und Geweben
- b) Protein-Wirkstoff-Interaktionen
- c) Analyse post-translationaler Modifikationen

#### Methodisch:

Zellkulturtechnologie, proteinbiochemische Methoden, Massenspektrometrie, Bioinformatik mit wechselnden, aktuellen Themen aus dem Bereich des LS fuer Proteomik und Bioanalytik.

**Intended Learning Outcomes:**

Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, experimentelle Lösungen für definierte, biologische und technische Fragestellungen aus dem Bereich von a) Proteinkartierung von Zelllinien und Geweben, b) Protein-Wirkstoff-Interaktionen oder c) Analyse post-translationaler Modifikationen zu schaffen. Die Studierenden erlangen hierbei ein vertieftes Verständnis, wie Ergebnisse vor dem experimentellen Hintergrund zu werten sind.

**Teaching and Learning Methods:**

Lehrtechnik: Praktikum; Lernaktivitäten: Bearbeiten von proteomischen Fragestellungen und deren Lösungsfindung; Üben von labortechnischen Fertigkeiten; Konstruktives diskutieren und kritisieren eigener Experimente; Lehrmethode: Fragend-entwickelnde Methode

**Media:**

Experimentelle Protokolle

**Reading List:**

Einführende Literatur wird zum jeweiligen Praktikumsthema als Ausgangspunkt für eigene Recherchen der aktuellsten Literatur zur Verfügung gestellt.

**Responsible for Module:**

Küster, Bernhard, Prof. Dr. kuster@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Funktionelle Proteomanalyse (Praktikum, 10 SWS)

Küster B [L], Abele M, Aydin E ( Tsiklauri G ), Brajkovic S, Eckert S, Eiseler K, Haljiti G, Kabella N, Küster B, Ludwig C, Resch M, Schneider A, The M, Tsiklauri G, Wilhelm S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2230: Advanced Laboratory Course "Protein Technology" | Forschungspraktikum Protein Engineering

Version of module description: Gültig ab winterterm 2009/10

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 260	<b>Self-study Hours:</b> 110	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

keine

#### Content:

Praktische Einführung in das Protein-Engineering unter Anleitung durch Mitarbeit an einem aktuellen Forschungsprojekt in einem Labor am Lehrstuhl für Biologische Chemie.

#### Intended Learning Outcomes:

Nach der Teilnahme an diesem Forschungspraktikum ist der Studierende in der Lage, Methoden und Konzepte des Protein-Engineerings anhand eines aktuellen Forschungsprojekts zu verstehen und anzuwenden.

#### Teaching and Learning Methods:

Labor

#### Media:

#### Reading List:

**Responsible for Module:**

Skerra, Arne; Prof. Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Protein-Engineering (Forschungspraktikum, 20 SWS)

Skerra A [L], Skerra A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2252: Practical Course in Peptidchemistry and -biochemistry | Forschungspraktikum Peptidchemie und -biochemie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 270

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination performance corresponds to the laboratory performance. This consists of the following three partial examinations:

- 1) Evaluation of the written report of the results (report - with 15% of the overall mark), which is summarized by the student at the end of the internship. With this, the students prove that they are able to record, evaluate, analyse and interpret the results correctly and to put them into a professional context.
- 2) Evaluation of a lecture (30 min - 15% of the total grade) which the student gives in front of the working group at the end of the internship. The student shows that he/she is able to prepare and convey the content of the research internship in a comprehensible way and that he/she is also able to answer questions in a qualified manner.
- 3) Evaluation of the work performance in the laboratory (70% of the total grade). The evaluation of practical performance is based on the student's theoretical and practical skills. The students demonstrate that they are able to set up, carry out and evaluate experiments in the field of peptide chemistry/biochemistry. They also demonstrate that they can understand and implement the theoretical background and its link to the experiments. Furthermore, the students present and discuss about the results of their work and relevant current literature in the two seminars; this achievement is accordingly included in the above mentioned evaluation.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of organic chemistry and biochemistry required; participation in MSc lecture "Chemical Peptide and Protein Synthesis" and MSc seminar "Principles of peptide/protein synthesis and peptides in biomedicine and protein misfolding diseases" recommended.

**Content:**

6-week research internship in a current research project of the group in the field of peptide synthesis and structure-activity relationships of biologically active peptides. The students work experimentally under supervision in the research group. The work includes peptide synthesis, peptide purification and the biochemical/biophysical characterization of synthetic peptides and their structure-activity relationships using modern methods of chemistry/biochemistry/biophysics such as solid-phase peptide synthesis, HPLC, MALDI-MS, UV/circular dichroism/fluorescence spectroscopy.

**Intended Learning Outcomes:**

After participation in this module, students will have a basic understanding of methods of peptide synthesis and structure-activity relationship studies of peptides. They have learned and practiced working with methods of peptide synthesis, peptide purification and their biochemical-biophysical characterization (e.g. with respect to sequence/purity, conformation, interactions, function) and are able to correctly record, evaluate, interpret, critically question, discuss and present the results of their research work.

**Teaching and Learning Methods:**

Instructional talks, demonstrations, experiments, partner work, literature work, data analysis/result discussions, presentation of results, practice of laboratory technical skills and working techniques, preparation of protocols.

**Media:**

Experimental protocols and scientific articles

**Reading List:**

Introductory technical literature on the respective topics and methods is provided.

**Responsible for Module:**

Kapurniotu, Aphrodite; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Protein-Protein Wechselwirkungen (Seminar, 1 SWS)

Kapurniotu A

Peptiddesign und Mechanismen der Proteinaggregation und Zelldegeneration (Seminar, 1 SWS)

Kapurniotu A

Peptidchemie und -biochemie (Praktikum, 16 SWS)

Kapurniotu A, Calzi A, Marcon B, Wunderlich H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2441: Research Project Biopolymer Chemistry | Forschungspraktikum Chemie der Biopolymere

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The exam for this module consists of two parts. A written project report and an oral presentation. The presentation will be split in 20 min for the speech and then another 10 min for a discussion. The summary might be written in English or in German, while the presentation will be given in English. Both parts will be graded and will be regarded as 50% of the final grade.

In the project report the students have to show that they are capable to summarize their results in a way which is regarded by an expert in that field. They have to explain the state of the research before their work begun, the scientific idea behind their work, the compilation of their results and a scientific discussion.

In the presentation they have to show that they are capable to use a fixed time frame for the demonstration of their scientific findings in front of an expert audience.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This internship is dedicated to master students or to bachelor students in their 5th or 6th semester. The students should have the equal knowledge of a participant of the courses biochemistry I + II and cell biology.

The courses "protein technology: membranes and membrane proteins" and "membranes and membrane proteins: exercises" are recommended but not a pre-requisite.

#### Content:

Students will carry out an individual research project in the field of membranes and membrane proteins. like:

- role of individual amino acids in transmembrane segments (TMS)
- Interaction between TMS and TMS

- proteolytic cleavage of TMS
- structural flexibility of TMS
- interaction of TMS with neighbouring lipid molecules

Applied technologies may include:

- cloning of vectors for a genetic screening system
- kinetics of lipid flip
- expression and purification of membrane proteins
- mass spectrometric analysis of special peptides
- computer based molecular dynamic calculations.

### **Intended Learning Outcomes:**

Upon successful completion of this module, students are able to carry out a defined part of a scientific research project independently. The students will be able to plan further experiments in this field and to compare their findings with the results found by other scientists. They will have learned to schedule their experiments according to their needs and to evaluate the results with the help of statistical methods. They will be able to discover errors in their own experiments and to correct these mistakes independently. They will have learned to analyze their data and to summarize the fundamental findings.

### **Teaching and Learning Methods:**

This module is designed as a practical lab course and a scientific project. In a first talk the student will be informed about the scientific problem and the principal schedule. The students will do a literature search for relevant articles concerning their work. Under the direct supervision of a member of our group the students will learn how carry out their experiments for the first time. All further experiments as well as the evaluation of the data will be done by the student independently. During the lab course there will be several discussion meetings with selected members of our group to review the obtained findings and to consolidate the data analysis. At the end there will be a presentation for all members of our group.

### **Media:**

Scientific primary literature, online articles. The students will have full access on any source of scientific literature that our chair may offer.

### **Reading List:**

Scientific primary literature, online articles



**Responsible for Module:**

Langosch, Dieter; Prof. Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2546: Research Project Biotechnology of Natural Products | Forschungspraktikum Biotechnologie der Naturstoffe

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die benotete Laborleistung umfasst die Erstellung eines Protokolls (50% der Benotung) und die Bewertung der praktischen Tätigkeit (50% der Benotung). Im mindestens 20-seitigen Protokoll weisen die Studierenden nach, dass sie in der Lage sind die analytischen, biochemischen und molekularbiologischen Fragestellungen zu verstehen und dadurch die gewonnen Ergebnisse in strukturierter und verständlicher Weise wissenschaftlich korrekt darzustellen und zu interpretieren. Die Benotung der praktischen Tätigkeit umfasst folgende Kriterien: Planung der Experimente, Fachwissen, Arbeitsweise, Effizienz, Belastbarkeit, Auffassungsgabe, Zuverlässigkeit, Selbständigkeit, Flexibilität, Engagement.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Zur Durchführung des Praktikums sind Kenntnisse in analytischer, anorganischer und organischer Chemie sowie Biochemie und Molekularbiologie erforderlich.

#### Content:

Isolierung von Metaboliten, Proteinen, RNA oder DNA; Klonierung von Genen, Herstellung verschiedener Konstrukte und Transformationen für heterologe Expression oder RNAi, Agroinfiltration, Affinitätschromatographie, Expressionsanalysen, Biotransformationen, Proteinreinigung, PCR, qPCR, GC-MS, LC-MS

#### Intended Learning Outcomes:

Nach der Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage, experimentelle Arbeiten selbständig zu planen und durchzuführen. Sie können an den Analysegeräten selbständig arbeiten und dadurch analytische, biochemische oder

molekularbiologische Fragestellungen wie beispielsweise die Bestimmung von pflanzlichen Metaboliten, die Quantifizierung von Allergenen oder die Optimierung von mikrobiellen Wirtsorganismen zur Produktion von Glukosiden lösen. Darüber hinaus können sie beim Auftreten von Probleme eine systematische Fehlersuche einleiten und vorhandene Synergieeffekte im Team nutzen.

**Teaching and Learning Methods:**

Die Inhalte werden im Praktikum mittels Anleitungsgespräche, Demonstrationen, Experimente, Partnerarbeit und Ergebnisbesprechungen vermittelt. Zur Vor- und Nachbereitung stehen den Studierenden die Vorlesungsskripte der Professur, die eigene Mitschrift, Praktikumskripte der Professur sowie Literaturempfehlungen zur Verfügung. Sie üben labortechnische Fertigkeiten und mikrobiologische Arbeitstechniken, in Zusammenarbeit mit Praktikumpartnern. Im Rahmen der Dokumentation fertigen sie Protokolle an und führen Labortätigkeiten unter Anleitung von Post-docs und Doktoranden durch. Sie erhalten zudem ein eigenes Projekt nach Absprache bzw. Mitarbeit in einem laufenden Forschungsprojekt. Am Ende präsentieren sie ihre Ergebnisse im Rahmen des wissenschaftlichen Seminars der Professur.

**Media:**

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt. Als Grundlage oder zur Ergänzung werden die Lehrbücher der Instrumentellen Analytik, Biochemie und Molekularbiologie empfohlen.

**Responsible for Module:**

Wilfried Schwab (schwab@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum BiNa (Forschungspraktikum, 10 SWS)

Schwab W, Hoffmann T

Forschungspraktikum BiNa (Forschungspraktikum, 10 SWS)

Schwab W, Hoffmann T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ9901: Practical Course "Biomolecules" | Forschungspraktikum "Biomoleküle"

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 10	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2585: Molecular Methods in Bioanalytics | Kompaktkurs Molekulare Methoden der Bioanalytik

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung erfolgt anhand einer wissenschaftlichen Ausarbeitung (25-30 Seiten), wobei sich jeweils zwei Studierenden einem Thema widmen. Um die Einzelleistung bewerten zu können, werden die angefertigten Kapitel indiziert.

Die Durchführung der Laborexperimente bildet die Grundlage zur Erlangung der fachlichen Kompetenz. Die Studierenden zeigen anhand der wissenschaftlichen Ausarbeitung (Einleitung, Material und Methoden, Ergebnisse, Diskussion etc.), dass sie in der Lage sind, die wesentlichen Aspekte der Versuche strukturiert und reflektiert darzustellen.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

keine

#### Content:

Der Kompaktkurs soll praxisorientierte Einblicke in die Entwicklung und Anwendung bioanalytischer Methoden vermitteln.

Beispiele für Übungsthemen: Aufbau, Optimierung und Anwendung eines Immunoassays; Aufbereitung und Analyse biologischer Proben in der Massenspektrometrie Bewertung immunotoxischer Effekte im Phagozytose-Assay, Yeast-Screen zum Nachweis endokriner Disruptoren, etc.

**Intended Learning Outcomes:**

Nach Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, weitgehend selbständig einfache Experimente zu konzipieren, um bioanalytische Fragestellungen zu beantworten. Neben methodischen Fähigkeiten in der Bioanalytik wird selbständiges agieren und eigenverantwortliche Entscheidung gefördert.

**Teaching and Learning Methods:**

Lehrtechnik: Übung und Praktikum; Lernaktivitäten: Bearbeitung analytischer Fragestellungen. Optimierung bioanalytischer Methoden; Üben von labortechnischen Fertigkeiten; Zusammenarbeit in Zweiergruppen; Konstruktives diskutieren und kritisieren eigener Experimente; Lehrmethode: Fragend-entwickelnde Methode

**Media:**

Tafelarbeit, PowerPoint

**Reading List:**

Folienskript; aktuelle Literatur zu den spezifischen Themen

**Responsible for Module:**

Küster, Bernhard, Prof. Dr. kuster@tum.de Kramer, Karl, PD Dr. agr. karl.kramer@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Kompaktkurs Molekulare Methoden der Bioanalytik 1+2 (Übung, 5 SWS)

Küster B [L], Kramer K, Wilhelm S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2587: Practical Course and Seminar Biomolecular Spectroscopy | Kompaktkurs und Seminar Biomolekulare Spektroskopie

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung des Moduls wird in Form einer Laborleistung erbracht. Die Bestandteile der Laborleistung sind ein schriftliches Protokoll zu jedem Versuch, in dem das entsprechende Spektroskopieverfahren beschrieben, die erhaltenen Daten ausgewertet und diskutiert werden. Zusätzlich muss jeder Teilnehmer die Ergebnisse aus einem Versuch in einer Präsentation (Seminarvortrag, 15 min) mit anschließender Diskussion einem wissenschaftlichen Publikum vorstellen. Außerdem muss für jeden der vier Versuche der/die Teilnehmer\*in ein 60 minütiges Kolloquium mit besser oder gleich 4.0 bestehen. Der/die Teilnehmer\*in erhält somit jeweils eine Durchschnittsnote aus vier Kolloquien, eine aus den vier Bewertungen für die praktische Durchführung sowie eine Durchschnittsnote aus vier Protokollnoten. Die Gesamtnote ergibt sich aus dem Mittel dieser drei Durchschnittsnoten und der Note aus dem Seminarvortrag. Das schriftliche Versuchsprotokoll muss dem entsprechenden Versuchsbetreuer spätestens 3 Wochen nach Praktikumsende ausgedruckt ausgehändigt werden.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Es werden keine anderen Module als Teilnahmebedingung vorausgesetzt. Theoretische und praktische Kenntnisse der Grundlagen der Proteinbiochemie sowie der Proteinspektroskopie sind empfohlene Voraussetzungen.

Der Praktikumstermin wird nach Absprache mit den Teilnehmerinteressenten/-innen (mind. 4, max. 8 Studierende) festgelegt.



### **Content:**

Im Rahmen dieses Moduls (Praktikums) lernt der/die Studierende vier spektroskopische Methoden zur biomolekularen Charakterisierung von Proteinen kennen: UV/Vis-Absorptions-, Fluoreszenz- und Circular dichroismus-Spektroskopie sowie die Oberflächenplasmon-Resonanzspektroskopie.

UV/VIS-Absorptionsspektroskopie:

- Messung und Vergleich von Standardspektren
- Denaturierung und Faltung von Proteinen
- Quantifizierung von Protein/Nukleinsäure-Gemischen
- Proteinbestimmung durch Absorptionsmessung bei 205 nm
- Aufnahme einer Denaturierungskinetik
- Messung eines Chromoproteins
- Konzentrationsbestimmung verschiedener gelöster Substanzen

Fluoreszenzspektroskopie:

- Aufnahme von Fluoreszenz-Anregungsspektren und Fluoreszenz-Emissionsspektren
- Bestimmung einer Fluoreszenz-Quantenausbeute
- Untersuchungen zum Fluoreszenz-Quenching

### **Intended Learning Outcomes:**

Nach der erfolgreichen Teilnahme an diesem Modul sind die Studierenden in der Lage,

- biomolekulare UV/VIS-Absorptionsvorgänge sowie den Aufbau und die Funktion eines UV/VIS-Spektralphotometers zu verstehen
- UV/VIS-Spektren typischer Biomoleküle zu verstehen, zu analysieren und zu bewerten
- UV/VIS-Bestimmungsmethoden für wichtige Metabolite und Biopolymere zu entwickeln
- den Aufbau und die Funktion eines Lumineszenz-Spektralphotometers zu verstehen
- Fluoreszenzeigenschaften sowie -spektren typischer Biomoleküle zu verstehen, zu analysieren und zu bewerten
- Fluoreszenz-Bestimmungsmethoden für wichtige Metabolite und Biopolymere sowie Fluoreszenz-Testmethoden für biomolekulare Komplexierungsreaktionen zu entwickeln
- Chiralität und Circular dichroismus (CD) bei typischen Biomolekülen sowie den Aufbau und die Funktion eines CD-Spektralphotometers zu verstehen
- CD-Spektren typischer Biomoleküle zu erklären, zu analysieren sowie zu bewerten
- die Analyse der Sekundärstruktur sowie der Temperaturstabilität eines Proteins mittels CD-Spektroskopie durchzuführen, zu verstehen und zu bewerten
- die SPR-Technologie sowie den Aufbau und die Funktion eines SPR-Geräts zu verstehen
- SPR-Sensorgramme zu verstehen, zu analysieren und zu bewerten
- Experimente zur biophysikalischen Charakterisierung von Biomolekülen mittels Spektroskopie zu entwickeln

### **Teaching and Learning Methods:**

Bei der Lehrveranstaltung handelt es sich um ein Praktikum, in dem die Teilnehmer\*innen selbständig im Labor experimentelle spektroskopische Versuche entsprechend einer Versuchsvorschrift durchführen und somit ihre labortechnischen Fertigkeiten üben können. Ein/e Versuchsbetreuer\*in steht bei jedem Versuch zur Verfügung und dient als Ansprechpartner\*in. Zum Verständnis der theoretischen Grundlagen ist zudem das Studium einschlägiger Fachliteratur notwendig, was durch einen Fragenkatalog zu jedem Versuch unterstützt wird. Die Versuchsdaten müssen selbständig ausgewertet sowie aufgearbeitet werden.

Im abschließenden Seminar soll die Präsentation der aufgearbeiteten Ergebnisse (z. B. mittels PowerPoint) erfolgen. Für den Vortrag werden dem Teilnehmer\*innen Hinweise und Hilfestellungen zur Vorbereitung und Durchführung einer Präsentation wissenschaftlicher Ergebnisse gegeben.

### **Media:**

Die spektroskopischen Verfahren und Versuche werden detailliert in einem Praktikumsskript beschrieben, das den Teilnehmern mind. 3 Wochen vor Praktikumsbeginn zur Verfügung gestellt wird. Die Teilnehmer\*innen müssen dieses Skript lesen, die Inhalte verstehen und umsetzen sowie die wesentlichen Informationen daraus wiedergeben können. Das Seminar beinhaltet eine Präsentation der Ergebnisse (z. B. PowerPoint; Projektor).

### **Reading List:**

Lottspeich et al., "Bioanalytik", Spektrum 2012.

Creighton, "The Biophysical Chemistry of Nucleic Acids and Proteins", Helvetian Press 2010.

Schmidt, "Optische Spektroskopie", Wiley-VCH 2000.

### **Responsible for Module:**

Skerra, Arne; Prof. Dr. rer. nat. habil.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Kompaktkurs "Biomolekulare Spektroskopie" (Praktikum, 5 SWS)

Skerra A [L], Schlapschy M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20049: Practical Course Directed Evolution | Practical Course Directed Evolution

Version of module description: Gültig ab summerterm 2025

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Assessment will be done based on a written report of about 10-15 pages, which should be concise, coherent and visually arresting. Each group will write a report. It must be handed in within 3 weeks of completing the practical work. The report must summarize the key aims of the performed experiments, the obtained results as well as interpretation and discussion of the data. Accuracy of the data analysis and quality of the data presentation each make 50% of the final grade. By writing this report, the students show their ability to perform lab experiments, generate results, assess and interpret them, and present them in a written form. Students are required to sign the safety instructions before each day. They may miss three days with proper documentation (e.g., notification by a physician). Students cannot pass when they miss a day without documentation or miss more than three days.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in molecular biology, microbiology, biochemistry, genetics and chemistry. Wet-lab experience is required (incl. pipetting, working under sterile conditions).

#### Content:

Molecular biology techniques are must-have skills for future biology and biotechnology researchers. Complemented by SynBio techniques, student will be well equipped for future career challenges. These techniques include PCR, modern cloning strategies (e.g., Golden Gate or Gibson assembly), DNA isolation and purification (manually or via kit) from various sources, handling and cultivation of microbes, and protein engineering (e.g. by continuous directed evolution).

Continuous directed evolution is a powerful new SynBio tool to engineer proteins and to evolve desired protein functions. Hypermutation, translation, selection and replication of a target gene all takes place in a suitable platform organism that allows hands-off and fast protein evolution. Yeast is a popular platform organism to evolve proteins from eukaryotes. We will discuss advantageous and disadvantageous of various platform organisms and continuous directed evolution tools. This module is made for biology/biotechnology students and can be attended by anyone interested in SynBio, protein engineering, molecular biology, medical research, microbiology, etc.

The module is designed to teach the following:

- + Handling and cultivation of microbes (E. coli and yeast)
- + Transformation of E. coli and yeast
- + PCR amplification
- + State-of-the-art cloning techniques, e.g. Golden Gate cloning and Gibson assembly
- + DNA isolation, both manually or via kit from E. coli, yeast or purification from PCR experiments
- + Agarose gel and analysis of DNA band patterns
- + How to analyze Sanger sequencing results
- + Continuous directed evolution, e.g., OrthoRep
- + Basics of structural biology, e.g., how to map mutations in a protein model/crystal structure using ChimeraX

#### **Intended Learning Outcomes:**

Upon completion of the module the students know and understand:

- + what protein engineering can do to improve organisms
- + major molecular biology and SynBio protocols
- + what continuous directed evolution (e.g., OrthoRep) is and how it works

They will be able to apply basic molecular biology and SynBio techniques to engineer genes in microbes.

They can interpret and evaluate the obtained results and know how to present them appropriately in a written report.

#### **Teaching and Learning Methods:**

This module is practical wet-lab class which is held weekly throughout the semester. The focus is to teach major molecular biology and SynBio techniques, with the students performing a series of smaller experiments and analyzing the obtained data (in part with bioinformatics tools). The students will work in small groups. Two to three experiments will be performed each day of the practical course with prior safety instructions and introduction to the scheduled protocols. Throughout the course the students will collect results, which will be analyzed under supervision and compared to the data of others. Thereby the students will learn the theoretical and practical basics of molecular biology and SynBio techniques and how to use continuous directed evolution for protein engineering. The theoretical background will be discussed with the whole class prior to the scheduled experiments. Learning success is ensured by close supervision with daily safety instructions and discussion how to perform the scheduled experiments. Working in smaller groups will allow the students to work in a team but also to work hands-on every day of the course. Results will be analyzed as needed either with the whole class or in the single groups. Writing a

final report will teach the students how to summarize the experiments and how to present them appropriately.

**Media:**

Oral instructions, safety instructions, discussions, lab protocols, nucleic acid analysis tools, Chimera X, scientific report

**Reading List:**

Yeast: Current Protocols in Molecular Biology – Wiley (2017)

Molina, R.S., Rix, G., Mengiste, A.A. et al. In vivo hypermutation and continuous evolution. Nat Rev Methods Primers 2, 36 (2022)

**Responsible for Module:**

Dr. Ulschan Bathe [ulschan.bathe@tum.de](mailto:ulschan.bathe@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Practical Course Directed Evolution (Praktikum, 4 SWS)

Bathe U [L], Bathe U

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2297: Protein and Drug Design | Praktikum Protein- und Wirkstoffmodellierung

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the module is carried out in the form of a laboratory performance, which consists of a report (~10 pages). Students will perform exercises covering topics of drug and protein design (chemical space analyses, pharmacophore modelling, ligand-protein docking simulations, Molecular Dynamics simulations). Writing the report allows students to reflect explicitly once again on what they have learned, which leads to a consolidation of knowledge. In it, the students will demonstrate their acquired competencies in running simulations, completing and analysing modelling jobs, interpreting the results, and present them in writing. For each exercise, students will be evaluated for the successful performance of calculations (40%), the description of methodology and results (40%), and the interpretation of results in the context of the knowledge to be gained (20%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The module "Modeling and simulations of biological macromolecules" (WZ2235)

#### Content:

This course covers main computational approaches in drug and protein design, ranging from small molecule to protein analyses. Students will be provided with exercises addressing the following topics:

- Representation of chemical structures, fingerprints and molecular descriptors.
- Chemical datasets and descriptor-based chemical space analysis.
- Ligand-protein interactions and pharmacophore modelling.
- Ligand-protein interactions and molecular docking.
- Rigid vs. flexible ligand docking.

- Artificial intelligence for structure prediction: AlphaFold models and AlphaFold2 database.
- 3D protein visualization and analysis.
- Molecular Dynamics simulations.
- Molecular Dynamics trajectory analysis.

### **Intended Learning Outcomes:**

After successful completion of the module, students will be able to work with various programs dedicated to computer-aided drug design and protein modeling and simulations, and will be able to apply them independently to appropriate scientific problems:

- Perform chemical space analyses
- Develop pharmacophore models
- Run ligand-protein docking simulations using different software
- Design a Virtual Screening Pipeline
- Run Molecular Dynamics simulations
- Perform basic analyses of MD trajectories

### **Teaching and Learning Methods:**

Each topic will be introduced by a lecture that introduces theory and main applicability, a tutorial that show all passages will follow and finally the exercises will be performed by the students under the supervision of the instructor(s).

As a practical course, the content will be transmitted through the experimental learning – learning-by-doing. The students will be exposed to concrete experience and reflective observation, by performing the simulations and analyzing the results. This will allow to develop practical skills but also ‘abstract conceptualization’, learning from the experience (Kolb’s Experiential Learning Theory).

I will combine different teaching methods to ‘inform’ (frontal lecturing, drawing graphics in the blackboard), ‘process’ (individual work, sandwich method, think-pair-share) and ‘evaluate’ (by writing the final report) acquired knowledge.

For most topics, the same exercise will be assigned to all students. However, when applicable (e.g., in the case of docking software), different tutorials will be assigned so that students can share and compare the results obtained with different methods. This will allow students to experience individual and team work activities.

### **Media:**

Lecture slides, exercise tutorial instructions, research articles.

### **Reading List:**

Cheminformatics: A Textbook, Johann Gasteiger and Thomas Engel, Wiley

Molecular Modeling and Simulation, Tamar Schlick, Springer

Molecular Modelling. Principles and Applications, Andrew R. Leach, Prentice Hall

Molecular Design, Gisbert Schneider, Wiley

### **Responsible for Module:**

Di Pizio, Antonella, Prof. Dr. a.dipizio.leibniz-lsb@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Protein and Drug Design (Praktikum, 3 SWS)

Di Pizio A, Ferri F, Nicoli A, Steuer A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ8105: Practical Course Enzyme Optimization | Praktikum Enzymoptimierung

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 121	<b>Self-study Hours:</b> 61	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The intended learning outcomes are verified by a two-piece "Laborleistung" in the form of a written report and a oral presentation. The written laboratory report serves to deepen the scientific documentation and evaluation competences in the field of enzyme engineering. The presentation serves to test the presentation competence of scientific topics in front of an audience.

The written report contains a description of the three experiments and measurements carried out during the practical course, divided into introduction, execution/evaluation and insights gained (discussion).

Important additions are the respective theoretical basics incl. literature study and the necessary calculations.

The report represents 90 % and the presentation 10 % of the overall grade of the practical course.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Prerequisites for successful participation are knowledge in molecular biology, microbiology, protein chemistry and enzyme engineering.

Proof of the necessary previous training is a prerequisite for successful completion of the internship. Students who have taken the module "Enzyme Engineering" are exempt from this requirement. We reserve the right to check the prerequisites.

#### Content:

This course is intended to impart the molecular biological and protein chemical methods for the optimization of enzymes by means of two relevant examples. Essential contents are:

1. rational/computer-based approach: local (random) mutagenesis based on sequence comparisons, structural analyses and computer models,
2. purely evolutionary approach: local mutagenesis and recombination. In both approaches, assay methods are established, robots are used for high-throughput analysis and encapsulation methods for enzyme screening are applied.
3. application of optimized enzymes for simple technical conversions (enzyme immobilization, product quantification, enzyme recycling).

### **Intended Learning Outcomes:**

After participating in the course, the students will be able to perform various methods for enzyme optimization and to practically execute the essential elements (variant production, assay construction and screening, operation of necessary hardware) as well as to design simple enzymatic processes.

In addition, they can scientifically evaluate and document their results in the field of enzyme engineering.

### **Teaching and Learning Methods:**

The practical training takes place as a block event in Straubing (4 SWS). The experiments are carried out independently in small groups (maximum 3 persons). The contents of the module are discussed and queried at the beginning of each practical training day. The practical course following the lecture offers concrete possibilities for learning and applying standard methods used in enzyme optimization.

### **Media:**

A script of the practical course will be made available to the students in time. At the beginning of each day during the practical course, the upcoming work steps will be discussed using PowerPoint slides and blackboard notes, and questions will be answered.

### **Reading List:**

Recommendations:

"Directed Enzyme Evolution: Screening and Selection Methods" (Methods in Molecular Biology) and "Directed Evolution Library Creation: Methods and Protocols" (Methods in Molecular Biology), both Frances H. Arnold, George Georgiou (publisher), Springer, Berlin

"Protein Engineering Protocols" (Methods in Molecular Biology), Katja M. Arndt and Kristian M. Muller (publisher), Springer, Berlin

### **Responsible for Module:**

Volker Sieber (sieber@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20050: Research Internship Plant Metabolic Engineering in Yeast | Research Internship Plant Metabolic Engineering in Yeast

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Description of achievement and assessment methods:

This module is a six-week, full-time research project in the lab. The examination takes the form of a laboratory assignment. It includes planning and running a series of smaller wet-lab experiments, reading original literature and analyzing obtained results. The student will be supervised closely but will also be encouraged to work as independently as possible. Within eight weeks after completing the six-week lab work, the student will submit a research report of 10-15 pages. Assessment will be done based on the report which should be concise, coherent and visually arresting. It must summarize the background and key aims of the performed experiments, the obtained results as well as interpretation and discussion of the data in the context of available literature. Accuracy of the data analysis and quality of the data presentation each make 50% of the final grade. This includes proper and accurate descriptions of background, methods and results as well as detailed interpretation and discussion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in molecular biology, microbiology, biochemistry, genetics and chemistry. Wet-lab experience is required (incl. pipetting, working under sterile conditions).

#### Content:

Plant biology and biotechnology often depend on microbial model organisms, which grow faster than plants and are easier to manipulate. Yeast is an established platform organism to test and validate plant genes or to produce plant-derived products, i.e., metabolites and proteins. It is also used to engineer plant proteins because it provides a physiological environment close to plants. A state-of-the-art engineering method for plant proteins is continuous directed evolution

in yeast. It allows to evolve desired protein functions in a short time. For that, a yeast knock-out background is often needed in which the plant gene is expressed. Prior testing if the plant gene can complement the yeast knock-out is, therefore, a standard technique required for many engineering strategies. Directed evolution can then be used to evolve desired functions of plant proteins for crop improvement.

The module is designed to teach the following:

- + Handling and cultivation of yeast strains, yeast transformation
- + Yeast protoplast fusion and validation of clones
- + Target gene amplification (PCR) for cloning,
- + Golden Gate cloning
- + Plasmid transformation and propagation in *E. coli*
- + Total DNA isolation from yeast cells, agarose gel, PCR amplification and Sanger sequencing
- + DNA validation by Sanger sequencing
- + Directed evolution
- + Growth assays in yeast to test for complementation of plant genes
- + Growth assays under varying inhibitor concentrations to determine optimal conditions for protein engineering

### **Intended Learning Outcomes:**

The student will learn:

- + how to plan and conduct a research project/experiment
- + why yeast is an important model organism for plant research
- + how to apply basic molecular biology techniques to study plant genes in yeast
- + how to use the model organism yeast as an expression platform for plant genes
- + how to cultivate yeast and how to perform complementation assays in yeast
- + how to use directed evolution for plant protein engineering
- + how to cultivate yeast and how to evolve a plant protein
- + how to interpret and evaluate the obtained results, and how to present them appropriately in a written report

### **Teaching and Learning Methods:**

The student will learn the theoretical and practical basics how to use yeast as a model organism in plant research. Learning success is ensured by close supervision complemented by autonomous lab work. This includes daily discussions about the scheduled experiments, protocols and obtained results. In addition, the student will read original research articles. It will allow the student to understand the theoretical basics, learn how research results should be presented appropriately and what are up-to-date research and standards in the field. Supported by the supervisor, the student will analyze and interpret the obtained results, and discuss success and failure of the performed experiments. The student will write a final research report that will teach him/her how to summarize the research background, the used methods, the obtained results and how to discuss the data in the context of relevant literature.

### **Media:**

Oral instructions and discussions, lab protocols, relevant scientific publications, scientific report

**Reading List:**

Yeast: Current Protocols in Molecular Biology – Wiley (2017)

AH Kachroo, JM Laurent, A Akhmetov, M Szilagy-Jones, CD McWhite, A Zhao, EM Marcotte (2017) Systematic bacterialization of yeast genes identifies a near-universally swappable pathway eLife 6:e25093.

Molina, R.S., Rix, G., Mengiste, A.A. et al. In vivo hypermutation and continuous evolution. Nat Rev Methods Primers 2, 36 (2022)

**Responsible for Module:**

Dr. Ulschan Bathe [ulschan.bathe@tum.de](mailto:ulschan.bathe@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0227: Research Internship Chemical Biology | Research Internship Chemical Biology

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Laboratory assignment which include two presentations and a written report.

The acquisition of practical skills will be monitored by informal continuous discussion and labbook inspection. The acquisition of data analysis, data contextualization and data presentation competence will be assessed through two oral presentations (with slides) during the weekly group seminar of the Chair (one at the beginning (10 min) to introduce the project and one in the end (20 min), following the writing up of the report) as well as the writing-up of a project report. In these presentations, students demonstrate that they can perform modern chemical biology experiments and extract their significance.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Bachelor in Biological or Chemical Sciences.

#### Content:

The laboratory assignments are designed to endow the students with chemical biology know-how while answering particular research questions relevant to the larger research topics investigated in the laboratory. They are tailored according to the interest and background of the students but have all in common to investigate novel small molecule tools using quantitative mass spectrometry as a readout. All projects feature affinity enrichment ("pull-downs") and mass-spectrometry data processing and analysis. Either chemical synthesis or cell culture constitute the second skillset of the projects. Possible projects can therefore be e.g.: Preparation and evaluation of novel affinity probes, Target deconvolution of cell active molecules, Proteome-wide screening.

### **Intended Learning Outcomes:**

After the completion of the module, the students have acquired the basic experimental skills of chemical proteomics. They understand the scope and limitation of affinity-based proteome profiling. They are able to analyze and be critical of the mass-spectrometry readout that follows their pulldown experiments. Additionally they have either acquired cell culture know-how or they have been able to synthesize new chemical matter. Their report and oral presentations constitute a valuable training for their future masters thesis writing-up and defense.

### **Teaching and Learning Methods:**

Learning by doing is the key learning method of this laboratory assignment. Experimental and data analysis methods required for the assignment are explicated and demonstrated to each student individually. Written protocols for hands-on experiments are given to the students, which first perform them under close supervision by a mentor then in autonomy. Proactive suggestions of protocols variations are encouraged, which are discussed one-to-one. Timely discussions of results allow the assignment to move forward.

Presentations of the results are learned through oral presentations, helped by powerpoint slides, and final report writing. Attendance to the weekly group seminars serves both the acquisition of presentation skills (learn by example) and the contextualization of the laboratory assignment within the field of chemical biology (theoretical learning), where members of the Chair present their own work in progress.

### **Media:**

Hands-on experiments with protocols, powerpoint presentations, previous students reports, specialized literature.

### **Reading List:**

Specialized literature related to the exact laboratory assignment will be provided to the students prior to the beginning of the assignment.

### **Responsible for Module:**

Medard, Guillaume; Ph.D.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Chemische Biologie (Praktikum, 10 SWS)

Küster B [L], Wilhelm S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Theory Oriented Modules | Theorieorientierte Module

### Module Description

#### CH4790: Advances in Cryo-Electron Tomography | Advances in Cryo-Electron Tomography

Version of module description: Gültig ab winterterm 2017/18

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The assessment will be done in the form of an 25 minutes oral examination. The aim for the students is to demonstrate their ability to know and understand the basics of cryo-EM, the functional relationships between microscope and image formation and its application to three-dimensional image processing.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

No prerequisites necessary.

#### Content:

1. Essentials of the methodology, instrumentation and electron optics; 2. Contrast, dose and image formation; 3. A small excursion into reciprocal space - Mr. Tompkins meets Mr. Fourier; 4. Microscope operation, alignments, optical setups and image recording; 5. "A picture is worth a thousand words" – basics of image analysis; 6. The nitty-gritty of specimen preparation (cells frozen in time); 7. Micromachining with the focused ion beam – "cold cuts of cells"; 8. Markers, fiducials and tags – Useful little helpers; 9. Tomography – The best practice to get a tomogram; 10. Three-dimensional (3D) reconstruction – Secrets and solutions; 11. 3D image analysis – "Beating the noise, boosting the signal" – Sub-tomogram averaging and classification; 12. Segmentation and visualization – Mr. Tompkins in a 3D-Wonderland



**Intended Learning Outcomes:**

We will offer a lecture series and a guide on how to do cryo-electron tomography as of today. We explain and show how cryo-ET has advanced, what is now state-of-the-art and what can be expected in the future. Mr. Tompkins, the protagonist of a series of popular science books by the Russian physicist George Gamow, will accompany us on our fantastic voyage to the inner space of cells by cryo-ET. Tomography on frozen-hydrated cells is a formidable tool to visualize cells with the transmission electron microscope (TEM) in three dimensions (3D) and at molecular resolution. Cryo-electron tomography has a lot in common with cryo-electron microscopy (cryo-EM) and single-particle analysis (SPA). However, there are decisive differences and one is quite apparent: tomography allows imaging of molecules in cells quasi in vivo, while in SPA molecules are investigated separate and apart from their cellular hosts and their interacting partners, thus in vitro. Tomography therefore can be used to image the cellular proteome and to study the biogenesis of molecules and proteins as well as their degradation in their native environment. Moreover, protein and functional networks and the intricate connections of biological pathways can be visualized and examined directly within the cellular context.

The aim of this lecture series and the practicals is to build the basis to understand and perform cryo-electron tomography in both theory and practice. After successful completion of the module, students are able to: 1. to know and understand the basics of cryo-electron microscopy and tomography in theory and praxis; 2. to know and understand processes and workflows in cryo-EM/ET; 3. to remember fundamental principles of the image formation in EM and to explain the underlying physical basics; 4. to know and understand methods for three-dimensional image processing and to apply them on their own;

**Teaching and Learning Methods:**

Lecture course and practical course; Lecture and practicals

**Media:**

PowerPoint, films, remote microscope demonstration and operation, whiteboard

**Reading List:**

1. Electron Tomography - Methods for Three-Dimensional Visualization of Structures in the Cell. Edited by Joachim Frank: Springer; 2006. 2. Plitzko JM and Baumeister W. Chapter 7 – Cryo-electron tomography (CET). In Science of Microscopy. Edited by Peter Hawkes and John Spence: Springer; 2006, 1: 535-604. (new edition expected 2018)

**Responsible for Module:**

Plitzko, Jürgen Michael; Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advances in cryo-electron tomography – “Mr. Tompkins explores the cryo-world’s wonders” (CH4790a), Vorlesung (Vorlesung, 2 SWS)

Buchner J [L], Plitzko J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CH3039: Bioorganic Chemistry | Bioorganische Chemie

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulprüfung besteht aus einer Klausur (90 min), in der die Studierenden unterschiedliche Lernergebnisse abrufen sollen. Kenntnisse auf dem Gebiet der bioorganischen Chemie werden im Bezug auf wichtige biologische Fragestellungen wie die Bekämpfung von Krankheiten unter Anwendung von chemischen Werkzeugen wie die Entwicklung von selektiven Inhibitoren als Medikamente abgefragt. Dabei ist es wichtig sowohl die biologischen Herausforderungen sowie die chemischen Methoden zu kennen und aufzuzeigen. Dies wird durch z.T. praxisnahe Fragestellungen mit erforderlichen methodischen Antworten geprüft. Das Beantworten der Fragen erfordert teils eigene Formulierungen, teils Auflistungen und Zeichnungen, sowie Interpretationen und Transferieren des gelernten Wissens. Das Modul gilt mit einer Klausurnote besser oder gleich 4,0 als bestanden.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Grundkenntnisse in organischer Chemie, sowie Biochemie sind empfohlene Voraussetzung.

#### Content:

In den semesterbegleitenden Vorlesungen inkl. Übungen werden die folgenden Themen behandelt:

- Einführung in Terminologie „Bioorganische Chemie“ als interdisziplinäre Schnittstelle von Chemie, Biologie, Medizin und Analytik
- Präsentation der Meilensteine und Forschungshighlights der letzten 15-20 Jahre
- Wiederholung von Grundlagen der ribosomalen und nichtribosomalen Proteinsynthese mit dem Schwerpunkt wie die Natur Peptide herstellt

- Chemische Peptidsynthese am Beispiel der Festphase. Einführung der Boc und Fmoc Schutzgruppentechnologie, Präsentation verschiedener Kupplungsverfahren sowie geeigneter Linker
- Vorstellung der Proteinsemisynthese inspiriert durch das Protein Splicing
- Diskussion des Protein Splicings und mechanistische Analyse
- Einführung der nativen Protein Ligation sowie der dazu benötigten Strategien für die Proteinexpression sowie Peptiddesign
- Erweiterung des genetischen Codes als weiteres Beispiel für die Modifikation von Proteinen mit funktionalisierten Resten
- Einführung der 21. und 22. Aminosäure
- Vorstellung von Verfahren zur biotechnologischen Evolution der t-RNA Synthetase
- Beispiele zur Anwendung der Erweiterung des genetischen Codes
- Vorstellung von Posttranslationalen Modifikationen (PTM) und chemische Methoden diese zu detektieren
- Einführung der bioorthogonalen Ligation am Beispiel der Staudinger Reaktion, Click Chemie, und Diels Alder Reaktion mit inversem Elektronenbedarf
- Einführung von verschiedenen Enzymklassen, darunter vor allem Kinasen, Phosphatasen, Proteasen als medikamentative Angriffsziele
- Diskussion von Wirkstoffen, die diese Enzyme effektiv blockieren
- Vorstellung der chemischen Proteomik, darunter vor allem das aktivitätsbasierte Proteinprofiling
- Einführung in die Proteomforschung und Vorstellung der Massenspektrometrie
- Einführung der Photopharmakologie als neuartige Technologie zur Generierung schaltbarer Wirkstoffe

### **Intended Learning Outcomes:**

Nach dem Bestehen des Moduls sind die Studierenden in der Lage:

- Wichtige Begriffe der bioorganischen Chemie zu kennen und einzuordnen
- Ein Verständnis dafür zu entwickeln, wie durch die interdisziplinäre Kombination verschiedener Methoden komplexe biologische Fragen beantwortet werden können
- Zu verstehen welche aktuellen Fragen die Forschung beschäftigt und welche Lösungsansätze dafür gesucht werden
- Methoden zu wählen, die im Rahmen ihrer Forschungspraktika im chemisch-biologischen Bereich dazu dienen das Projekt weiterzuentwickeln
- Aktuelle Entwicklungen auch nach dem Vorlesungsende zu verfolgen und zu verstehen
- Publikationen zu Themen auf diesem Gebiet folgen zu können und sich kritisch damit auseinanderzusetzen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einer Vorlesung mit begleitender Übung (3 SWS). Die Vorlesungsmaterialien können von der Homepage des Dozenten heruntergeladen werden. Die Vorlesung selbst erfolgt mit PowerPoint-Folien (inklusive Abbildungen und Animationen) sowie zusätzlichen Tafelanschriften. Zitate und Hinweise auf aktuelle Publikationen werden während der Vorlesung gegeben, so dass Studierende auch weiterführende Originalliteratur hinzuziehen können. Das Skript und die Tafelanschriften sind für eine erfolgreiche Teilnahme ausreichend. Der

Dozent fasst zusätzlich am Anfang jeder Stunde den Stoff der letzten Vorlesung zusammen und klärt, falls notwendig, vorhandene Fragen. Am Ende jeder Vorlesung und zusätzlich bei relevanten Folien der PowerPoint Präsentation, werden sogenannte „take home messages“ formuliert und weitere Fragen geklärt.

**Media:**

Das Skript steht den Studierenden auf der Homepage des Dozenten als PDF zum Download zur Verfügung. Die Vorlesungsinhalte werden mit PowerPoint Präsentationen, sowie Tafelanschriften vermittelt. Zusätzlich erfolgt der Hinweis auf weiterführende Literatur.

**Reading List:**

Auf Grund der Aktualität der behandelten Themen, werden Hinweise auf aktuelle Publikationen während der Vorlesung, schriftlich in der PowerPoint Präsentation mitgeteilt, so dass Studierenden auch weiterführende Originalliteratur hinzuziehen können.

**Responsible for Module:**

Sieber, Stephan; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Bioorganische Chemie (CH3039a) (Vorlesung mit integrierten Übungen, 2 SWS)

Bach N, Hadian K, Sieber S

Frontiers in Chemical Biology (CH3039b) (Vorlesung mit integrierten Übungen, 1 SWS)

Bach N, Sieber S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CS0076: Enzyme Engineering | Enzym Engineering

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

To prove that the students are able to show ways to optimize enzymes in their properties and to do this methodically, there is a written exam with a duration of 60 minutes and a written seminar report has to be prepared, the total grade of which is composed of the exam grade (67%) and the grade of the seminar report (33%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Prerequisite for successful participation is proof of knowledge of the fundamentals of enzymatics, molecular biology molecular biology, bioprocess engineering, and general basic chemistry knowledge.

#### Content:

The aim of the module is to teach molecular biology and protein chemistry approaches for the optimization of enzymes, especially by variation of the primary structure. Essential contents are: Limitation analysis at the molecular level, rational methods, computational methods, evolutionary and combined methods, high throughput methods, robotics. The goal of the seminar is to teach basic bioinformatics tools used in rational enzyme design, such as ligand docking, energy minimization, and rational introduction of mutations. These methods will be practiced on real enzymes and used to generate improved enzyme variants for a specific engineering target.

#### Intended Learning Outcomes:

After attending the lecture, students are able to identify options for improving technically limited enzymes, to estimate the effort required for this and have the theoretical ability to methodically implement these improvements in the subsequent practical course Enzyme Optimization. After

participation in the seminar, the students are able to use different bioinformatic tools for rational enzyme design and to evaluate the results of the generated informatic predictions.

**Teaching and Learning Methods:**

The lecture is conducted as an ex cathedra teaching in order to provide the students with all necessary basics. In addition, the students work out individual methods and procedures independently, e.g. on the basis of current scientific literature, and present these to each other in a presentation. In the seminar, students are guided through the individual steps of a rational enzyme technology approach with the help of a script. The results of these steps are summarized in a written report to place the individual steps in a larger context. On the one hand, a seminar in which students present current literature on topics covered in the lecture as well as apply and deepen in silico methods for rational enzyme design is designed to internalize and deepen the methods and approaches for optimizing enzymes presented in the lecture. On the other hand, in the seminar students work on concrete problems and questions on topics of rational enzyme design and train and deepen application-oriented work with the help of the presented software packages.

The slides of the lecture and the seminar presentations will be made available online after the respective event.

**Media:**

PowerPoint, Slide scripts, scientific literature

Lecture: PPT and board

Seminar: PPT, board and software- and online based methods on individual PCs or in a PC classroom

**Reading List:**

For introduction the following books are advised:

“Directed Enzyme Evolution: Screening and Selection Methods” (Methods in Molecular Biology) und

“Directed Evolution Library Creation: Methods and Protocols” (Methods in Molecular Biology), beide

Frances H. Arnold, George Georgiou (Hrsg.), Springer, Berlin;

“Protein Engineering Protocols” (Methods in Molecular

Biology), Katja M. Arndt und Kristian M. Muller (Hrsg.), Springer, Berlin.

**Responsible for Module:**

Prof. Volker Sieber

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0453: Methods in Protein Biochemistry | Methoden der Proteinbiochemie

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students demonstrate their knowledge of the methods of protein biochemistry in a written examination (90 min). This covers the topics of molecular genetics for the expression of recombinant proteins in microorganisms, protein purification and protein characterization.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in microbiology, genetics and biochemistry

#### Content:

In this lecture, a fictitious example is used to explain step by step the way to produce a protein recombinantly in microorganisms.

First of all, the legal requirements to be observed when handling genetically modified organisms are discussed.

The main part of the lecture then focuses on the methods used in the laboratory to genetically modify microorganisms to express a foreign gene. Here, the focus is especially on achieving high yields and the resulting economic considerations when implementing the method in a production process.

Furthermore, the fundamentals of fermentation are discussed and strategies for its optimal use on a technical scale are discussed.

A chapter on protein purification rounds off the lecture and is at the same time the transition to the practical course "Methods in Protein Biochemistry", which is a useful supplement to the lecture and focuses on protein purification.

**Intended Learning Outcomes:**

After this internship the students are able to formulate a project plan with the goal of producing and purifying a recombinant protein on a technical scale.

**Teaching and Learning Methods:**

with media support

The lecture will be recorded on video and is available for download in the TUM learning platform.

**Media:**

**Reading List:**

The lecture script can be found on the central learning platform of TUM.

**Responsible for Module:**

Gütlich, Markus, Dr. rer. nat. [guetlich@tum.de](mailto:guetlich@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Methoden der Proteinbiochemie (Vorlesung, 1 SWS)

Gütlich M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2235: Modelling and Simulation of Biological Macromolecules | Modellierung und Simulation biologischer Makromoleküle

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination consists of a written exam (Klausur, 90 minutes) that will test the student's knowledge gained from the lecture course and the ability to solve problems by integrating this knowledge with previously unseen information. The answers to questions for background knowledge can be given as free text. The free text allows students to express their understanding at their personal competence level in their own words.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basics in physics, chemistry and biochemistry, as offered by the modules:

[CH0142] General and inorganic Chemistry with Laboratory Course

[CH0936-2] Introduction to Biochemistry

[PH9034] Physics for Life Sciences

[PH9035] Physics for Life Science Engineers 1

[WZ2634] Introduction to Bioinformatics I

#### Content:

This course covers main computational approaches in protein modelling, chemical and physical bases beyond their development:

- Computer-Aided Drug Design: concept and applicability
- Biomolecular interactions: classical vs. quantum mechanics, molecular force fields
- Binding energy: Thermodynamics
- Ligand-Protein interactions: Molecular Docking (sampling methods and scoring functions)
- Proteins in motion: Molecular Dynamics (MD) simulations
- Protein conformational landscape: Enhanced sampling and MD

- Ligand-Protein interactions: Ligand- vs. structure-based drug design
- Chemoinformatics: 3D-QSAR modelling and machine learning
- Protein structure prediction: Homology modelling, Artificial-Intelligence guided protein folding
- Computational protein design
- Machine learning in drug design: applicability, limitations and perspectives

### **Intended Learning Outcomes:**

After successful completion of the module, students:

- will know the physical basis by which protein interact with small molecules, amino acids, proteins, membranes and nucleic acids
- will be familiar with computational tools used for protein modelling
- will know the differences between various molecular models and algorithms
- will be able to select the appropriate models/algorithms for following applications:
  - Protein structure prediction
  - Protein design
  - Protein-ligand interactions
  - Protein-protein interactions
  - Sampling of protein conformations

### **Teaching and Learning Methods:**

The content of each topic will be transmitted to the students through frontal and interactive lecturing with the use of PowerPoint presentations. I will combine different teaching methods to 'inform' (presentation, drawing graphics in the blackboard), 'process' (presentation of case studies, individual work with webservers) and 'evaluate' (flashlight, Q&A sessions) acquired knowledge in each lecture, so that the students will always have the possibility to interact with the lecturer and other students. The most important points of each lecture will be repeated at the beginning of the next lesson to ensure the flow of topics has clear connections. Students will be also provided with Schrödinger licenses for their private laptops and will be trained to use webserver for protein prediction (AlphaFold, I-Tasser) and protein-protein docking simulations (ClusPro, HADDOCK). This way, the students will be exposed to concrete experience of lecture contents, by performing the simulations and analyzing the results.

### **Media:**

Lecture slides, whiteboard, research articles, webservers.

### **Reading List:**

Chemoinformatics: A Textbook, Johann Gasteiger and Thomas Engel, Wiley  
Molecular Modeling and Simulation, Tamar Schlick, Springer  
Molecular Modelling. Principles and Applications, Andrew R. Leach, Prentice Hall  
Molecular Design, Gisbert Schneider, Wiley

### **Responsible for Module:**

Di Pizio, Antonella; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Modelling and Simulation of Biological Macromolecules (Vorlesung, 2 SWS)

Di Pizio A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20018: Principles of peptide/protein synthesis and peptides in biomedicine and protein misfolding diseases | Prinzipien der Peptid-/Proteinsynthese und Peptide in Biomedizin und Proteinmissfaltungskrankheiten

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung wird für die Vorlesung mit einer schriftlichen benoteten Klausur (60 min) erbracht und mit einer mündlichen Präsentation des Studierenden, die im Rahmen des Seminars stattfindet. Die Modulnote wird aus der Klausurnote (50%) und der Note der mündlichen Präsentation (50%) berechnet.

In der schriftlichen Klausur müssen die Studierenden anhand von Wissens- und Verständnisfragen darlegen, dass sie die Grundlagen der chemischen Peptid-/Proteinsynthese auch im Bezug auf die Anwendung von synthetischen Peptiden in der Biomedizin erlernt und verstanden haben.

In der mündlichen Präsentation, die insgesamt 45 min. umfasst und aus einem 30 minütigen Vortrag (PowerPoint-Folien) und einer 15 minütigen Diskussion besteht, müssen die Studierenden nachweisen, dass sie in der Lage sind, eine einschlägige internationale wissenschaftliche Studie aus dem Gebiet des Seminars zu verstehen und sie sachgerecht und didaktisch sinnvoll aufbereitet vorzutragen. Dabei weisen die Studierende nach, dass sie das theoretische Umfeld der Studie sowie die methodischen Ansätze und die Prinzipien der experimentellen Techniken verstanden haben und nachvollziehbar erläutern können. In der Diskussion zeigen die Studierenden, dass sie in der Lage sind, in einen wissenschaftlichen Diskurs einzutreten und Standpunkte begründet zu vertreten oder zu widerlegen. Zu deren Präsentationen bereiten die Studierenden eine 2-seitige Tischvorlage (handout) vor, deren Benotung der mündlichen Präsentation miteinfließt.

Darüber hinaus wird diese Tischvorlage an alle Seminarteilnehmer verteilt und dient als Vorbereitungsmaterial für die Fragerunde bei der Diskussion der Präsentation.

#### Repeat Examination:

Next semester

**(Recommended) Prerequisites:**

Organische Chemie; Biochemie

**Content:**

Die Vorlesung des Moduls vermittelt grundlegende Kenntnisse über die chemischen Prinzipien und die Methoden der chemischen Peptid- und Proteinsynthese. Im Seminar finden dann betreute Präsentationen (auf Englisch) von wissenschaftlichen Artikeln mit den Ergebnissen aus aktuellen Forschungsarbeiten im Gebiet der Peptid- und Proteinmissfaltung und -aggregation im Zusammenhang mit zellgenerativen Krankheiten statt und es wird ein Handout über jede Präsentation vom Studenten angefertigt.

**Intended Learning Outcomes:**

Nach dem erfolgreichen Abschluss dieses Moduls haben die Studierenden ein breites Spektrum von Kenntnissen über die chemische Peptid- und Proteinsynthese und die biomedizinische Anwendung von synthetischen Peptiden erworben. Weiterhin haben sie Kenntnisse zu den Themen Protein-Protein Wechselwirkungen, Proteinfaltung- und -missfaltung sowie über Zusammenhänge mit zelldegenerativen Krankheiten und die Anwendung von synthetischen Peptiden in obigen Gebieten erworben. Darüber hinaus haben sie die Prinzipien von peptidchemischen, biochemischen, und biophysikalischen Methoden, die in den obigen Forschungsbereichen Anwendung finden, erlernt.

**Teaching and Learning Methods:**

In der Vorlesung werden grundlegende Kenntnisse über die chemischen Prinzipien und die Methoden der

chemischen Peptid- und Proteinsynthese und über die Anwendung von synthetischen Peptiden in der Biomedizin mittels PowerPoint- und (Overhead-)Folien-Präsentationen sowie mittels Tafelanschiebs. Darüber hinaus werden regelmäßig und interaktiv Übungen mittels Tafelanschiebs durchgeführt.

Im Seminar finden betreute studentische Präsentationen von wissenschaftlichen Artikeln über Forschungsarbeiten auf Gebiet der Peptid-/Proteinmissfaltung und -aggregation im Zusammenhang mit zelldegenerativen Krankheiten und der Anwendung von synthetischen Peptiden statt. Die Präsentationen finden mittels PowerPoint-Folien statt und werden von einem vertiefenden wissenschaftlichen Diskurs begleitet. Darüber hinaus werden entsprechende Tischvorlagen (handouts) von den Studierenden angefertigt. Vorlesung und Seminar werden durch intensives Literaturstudium begleitet.

**Media:**

Folien / Powerpoint / Tafelarbeit

**Reading List:**

Norbert Sebald und Hans Dieter Jakubke: Peptides: Chemistry and Biology (Wiley-VCH)  
Literaturangaben im Rahmen der Vorlesung und des Seminars.

**Responsible for Module:**

Kapurniotu, Aphrodite, Prof. Dr. rer. nat. akapurniotu@mytum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chemische Peptid- und Proteinsynthese (Vorlesung, 1 SWS)

Kapurniotu A

Proteinmissfaltung und -aggregation bei zelldegenerativen Krankheiten (Seminar, 2 SWS)

Kapurniotu A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0402: Structural Bioinformatics | Strukturbioinformatik [Structural Bioinformatics]

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module test involves a graded written exam.

The goal of the written exam (90 minutes) is to assess how well the students understand the basic concepts of protein structure analysis and prediction (like protein structure visualization, secondary structure assignment, tertiary structure assignment, quality of protein structure data, structural domains, signal peptides, intra protein contacts, structure function relationship) and how well they are able to reproduce them in limited time. Based on exemplary method calls, interrogation of input and output of methods, as well as the building of possible method pipelines to solve a specific bioinformatics problem, and the interpretation of method results, it is assessed how well the students are able to do bioinformatics analyses on their own, choose appropriate methods suitable to a specific problem and apply these. No electronic devices are allowed except for pocket calculators. Students are asked to write free-text answers to questions, solve algorithmic and logical problems, and to work through a limited number of multiple-choice questions by ticking the right answer.

To pass the module at least the score 4.0 is required.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Grundkenntnisse in der Bioinformatik (Sequenzanalyse, molekulare Evolution)

Grundkenntnisse in der Zellbiologie/Biochemie

Grundkenntnisse in der Statistik

#### Content:

The following topics are core elements of the module:

- protein structure visualization
- secondary structure assignment
- tertiary structure assignment
- quality of protein structure data
- structure databases
- structure comparison
- structural domains
- protein folding
- secondary structure prediction
- ab initio 3D structure prediction
- homology modelling
- threading
- signal peptides
- intra protein contacts
- structure function relationship

**Intended Learning Outcomes:**

The following topics are core elements of the module:

- protein structure visualization
- secondary structure assignment
- tertiary structure assignment
- quality of protein structure data
- structure databases
- structure comparison
- structural domains
- protein folding
- secondary structure prediction
- ab initio 3D structure prediction
- homology modelling
- threading
- signal peptides
- intra protein contacts
- structure function relationship

**Teaching and Learning Methods:**

The selected teaching approach Lecture course and the selected teaching method Oral talk are especially well suited for imparting basic concepts, methodological approaches as well as typical problems of structural bioinformatics to students with basic knowledge of bioinformatics. In particular the exercise serves as a way to deepen the learning content of the lecture. The students are expected to prepare a scientific publication covering an already discussed topic from the lecture. In the exercise the algorithms and methods used in the publication are discussed. Where possible, the usage of the methods and the analysis of selected case studies from the publication is presented in class. Thus, also the application of the methods is trained. It will be announced before each exercise which scientific publication will be discussed. The students are encouraged to



prepare the contents of the paper and familiarize their selves with the methods used. The lecturer discusses the procedures and methods in the exercise, and responds to questions and problems. Where possible, small selected case studies are solved together in the exercise, or are presented by students.

**Media:**

Scientific publications, presentation of slides, discussions during lectures, materials on the module Web page.age.

**Reading List:**

- Bourne & Weissig, Structural Bioinformatics
- Understanding Bioinformatics, M. Zvelebil and J.O.Baum, Garland Science 2008

**Responsible for Module:**

Frischmann, Dimitri; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Strukturbioinformatik (VO und UE) (Vorlesung, 4 SWS)

Frischmann D [L], Frischmann D, Parr M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CS0056: Technical Biocatalysis | Technische Biokatalyse

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The learning outcomes will be examined in a 90-minutes written test. With this exam, the students prove that they are able to realize and understand problems occurring in applied biocatalysis concerning enzyme immobilization and large-scale supply of enzymes, for example. Moreover they are able to solve those problems within a limited period of time. The answers will require calculations, written text and optional multiple choice answering. Use of one calculator during the exam is permitted.

The exercise does not include an examination of its own. Rather, the exercise is intended to help prepare students for the exam of the lecture.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Prerequisites for the successful participation is knowledge about enzymatic processes, molecular biology, bioprocess engineering and general fundamental principles of organic and inorganic chemistry.

#### Content:

The lecture technical biocatalysis will give a broad overview of the use of enzymes in industrial processes and current examples will convey a detailed insight into the technically important aspects. Main contents are:

Industrial relevant enzyme properties, essential enzyme classes and their mechanisms, whole cell catalysis vs. enzymatic catalysis, biocatalysis vs. classical chemical catalysis, methods for enzyme immobilization, enzymes in aqueous and in non-aqueous systems, enzymatic reactions combined with chemical reactions, large-scale supply of enzymes.

### **Intended Learning Outcomes:**

After attending the module, the students are able to evaluate the application of enzymes in different chemical and technical processes. They are able to understand and to reflect the behavior and the limitations of enzymes within those processes and they are able to plan sensible strategies to establish chemical conversions biocatalytically, as well as suggesting technical scenarios for new biocatalytical processes.

### **Teaching and Learning Methods:**

The module consists of a lecture (2 SHPW). The lecturer uses PowerPoint slides and board writings to convey theoretical groundwork and technical important aspects for the application of enzymes in industrial processes. The PPT slides are supplied online after each lecture.

The exercise is carried out with the help of PowerPoint presentations and blackboard writing. Students present any homework on the blackboard or with the help of a PowerPoint presentation. The exercise serves to deepen the topics covered in the lecture and serves the students during exam preparation. The topics of the lecture will be taken up and explained and illustrated by means of exemplary exam questions to make it easier for the students to prepare for the exam.

### **Media:**

The lecture presentation will be held with powerpoint and adobe acrobat reader and black board writings. The students will gain access to all of the necessary slides via moodle.

### **Reading List:**

Reinhard Renneberg, Darja Süßbier, Biotechnologie für Einsteiger, 3. Auflage, Spektrum Verlag Heidelberg 2010

A. Liese, K. Seelbach, C. Wandrey, Industrial Biotransformations, Wiley-VCH, 2006

Wolfgang Aehle, Enzymes in Industry, Wiley-VCH-Verlag Weinheim, 2007,

Drauz, Gröger, May, Enzyme Catalysis in organic Synthesis 3rd Ed., Wiley-VCH, 2012

Klaus Buchholz, Volker Kasche, Uwe T. Bornscheuer, Biocatalysts and Enzyme Technology, Wiley-VCH, 2005

Wim Soetaert, Erick J. Vandamme, Industrial Biotechnology, Wiley-VCH, 2010

### **Responsible for Module:**

Volker Sieber (sieber@tum.de) Jörg Carsten (Joerg.carsten@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Übungen zur Vorlesung Technische Biokatalyse (Übung, 1 SWS)

Sieber V [L], Köllen T

Technische Biokatalyse (Vorlesung, 2 SWS)

Sieber V [L], Sieber V, Köllen T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2933: Theoretical and Practical Protein Crystallography | Theorie und Praxis der Proteinkristallographie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Klausur (90 Min.) und Laborleistung (Protokoll).

Eine Klausur dient der Überprüfung der erlernten Kompetenzen. Die Lernenden zeigen in einer Klausur, ob sie die erarbeiteten Informationen beschreiben, interpretieren und auf ähnliche Sachverhalte übertragen sowie die unterschiedlichen Informationen zu einem neuartigen Ganzen verknüpfen können. Der Lehrende gibt den Termin der Prüfungsleistung (Klausur) zu Beginn der Lehrveranstaltung bekannt. Das in der Vorlesung erworbene theoretische Wissen wird im anschließenden Praktikum durch angeleitete Experimente weiter vertieft und angewendet. Nach Abschluss des Praktikums fertigt jeder Lernende eigenständig ein Protokoll an, in dem alle experimentellen Befunde beschrieben, ausgewertet und diskutiert werden. Die Modulnote errechnet sich zu 2/3 aus der Klausurnote und zu 1/3 aus der Praktikumsnote. Beide Teilleistungen müssen bestanden sein.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Voraussetzungen für die erfolgreiche Teilnahme sind grundlegende theoretische und praktische Kenntnisse der Proteinbiochemie (z.B. Grundvorlesung Biochemie und Biochemisches/Proteinchemisches Grundpraktikum).

#### Content:

Vorlesung: Kristallisation von Proteinen, Röntgenstrahlungsquellen und -detektoren, Beugung von Röntgenstrahlung, Symmetrie und Raumgruppen, reziprokes Gitter, Strukturfaktor, Fourier-Transformation, Patterson-Methode, Phasenproblem und Generierung der Elektronendichtekarte, Konstruktion, Verfeinerung und Validierung von Strukturmodellen.

Praktikum: Kristallisation von Proteinen mittels Dampfdiffusionstechniken, Auswertung von Kristallisationsexperimenten, Erfassung von Kristallmorphologie und Symmetrie, selektive Anfärbung von Proteinkristallen, Manipulation von Kristallen und Vorbereitung für die Datensammlung, Vermessung der Beugungsmuster und Indizierung der Reflexe, Reduktion und Skalierung der Röntgenbeugungsdaten, Lösung des Phasenproblems durch Molekularen Ersatz, Verfeinerung des Strukturmodells, Software-basierte Strukturvalidierung, publikationsreife Visualisierung von Proteinstrukturen, Nutzung von Strukturdatenbanken, Einführung in die wichtigsten Software-Pakete und Internetserver.

**Intended Learning Outcomes:**

Nach der Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage, die Grundlagen der Strukturaufklärung von Proteinen zu verstehen und eine Strukturbestimmung eines Proteins durchzuführen. Zu dem erworbenen Wissen zählen die Kristallisation von Proteinen, die Beugung von Röntgenstrahlung, die Interpretation des Beugungsdatensatzes, Lösungsmöglichkeiten für das Phasenproblem sowie die Konstruktion, Verfeinerung und Validierung von Strukturmodellen. Praktische Fähigkeiten beinhalten die Kristallisation von Proteinen, die Aufnahme und Bearbeitung von Röntgen-Beugungsdaten bis zur Konstruktion und Verfeinerung eines Strukturmodells.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Vorlesung (2 SWS) & Praktikum (1 Wo.)

Lernaktivität: Studium der Literatur; Übung von technischen und experimentellen Fertigkeiten

Lehrmethode: Präsentation und Experiment

**Media:**

Die Vorlesung erfolgt mit graphischer Präsentation (Projektor und Powerpoint) sowie Tafelanschrieb. Während des Praktikums wird im Labor des Lehrstuhls experimentell gearbeitet.

**Reading List:**

Rhodes, "Crystallography Made Crystal Clear: A Guide for Users of Macromolecular Models", Academic Press 2006. Drenth, "Principles of Protein X-Ray Crystallography", Springer 2006. McPherson, "Introduction to Macromolecular Crystallography", John Wiley & Sons 2009. Rupp, "Biomolecular Crystallography", Garland Science 2010.

**Responsible for Module:**

Skerra, Arne, Prof. Dr. rer. nat. habil. [skerra@tum.de](mailto:skerra@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Cells Specialization | Vertiefungsbereich Zellen

### Practice Oriented Modules | Praxisorientierte Module

#### Module Description

## CH0172: Practical Lab Course: Biotechnological Techniques in Mammalian Cells | Forschungspraktikum: Biotechnologische Verfahren in Säugetierzellen

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the module will take the form of a laboratory performance. During the laboratory performance, a current research topic in the field of biotechnological processes in mammalian cells is worked on. The laboratory performance consists of the following elements: Activity in the laboratory, research protocol with evaluation and discussion and lecture (presentation, approx. 20 min) in the ratio 3:3:1.

In the exam, students demonstrate that they can plan, perform, and statistically evaluate laboratory experiments with all relevant samples and associated controls. The resulting data can be interpreted by the students in the context of the overall biotechnological objective, so that follow-up experiments can be planned that are as informative as possible.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

A bachelor's degree in natural sciences is an advantage. Students should have a solid understanding of molecular biology techniques and mammalian cell physiology.

#### Content:

Practical and analytical research work embedded in current biotechnological projects on genetic and protein engineering of mammalian cells, involving state-of-the-art gene-editing methods, advanced reporter systems, molecular actuation of cellular processes, and tissue engineering.

### **Intended Learning Outcomes:**

After successfully passing the module, students will:

- have a realistic assessment of the biotechnological possibilities and limitations of current research on genetic and protein engineering of mammalian cells, and its impact, on regenerative medicine approaches,
- be able to assess options for the analysis and manipulation of cellular processes via genetically encoded components,
- master advanced cloning methods,
- master state-of-the-art mammalian cell culture techniques including cutting edge gene-editing methods

### **Teaching and Learning Methods:**

The module consists of a 12-week research internship (10 SWS). During the internship, students work on a research topic under supervision. The experimental work on current (sub-)projects, the analysis and presentation of the research results shall stimulate the students to work independently and to think critically.

### **Media:**

Literature research, lab work, digital data analysis, PowerPoint presentation.

### **Reading List:**

Suitable primary literature will be announced by the instructor. The following is intended to be a stand-alone literature search.

### **Responsible for Module:**

Westmeyer, Gil; Prof. Dr.med.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum: Biotechnologische Verfahren in Säugetierzellen (CH0172)  
(Forschungspraktikum, 10 SWS)

Westmeyer G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### LS20044: Research Project in Microbiome Manipulation and Bioinformatics | Forschungspraktikum: Manipulation des Mikrobioms und Virom-Bioinformatik

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students are required to write a clear, concise, and well-structured protocol, which demonstrates their ability to conduct independent research, analyze data, and draw conclusions. In addition, students must present and defend their findings to the lab member, and head of the group in one of our group meetings.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Have adequate understanding of biology, genetics, and biochemistry of microorganisms. Additionally, being familiar with one or more of the following techniques like qPCR, anaerobic culturing, flow cytometry, and standard microbiology methods is essential. Have a basic understanding of metagenomic and/or integrative omics. In addition, proficiency in programming languages, including R and/or Python is desired.

#### Content:

You will gain experience in anaerobic culturing, working with bioreactors, plate readers, and flow cytometry, as well as phage-bacteria interactions in complex ecosystems. In addition, you will be taught how to design specific tools for manipulating the human microbiome. Students will analyze DNA and RNA sequencing data and will learn to integrate and visualize complex multi-omics data.

#### Intended Learning Outcomes:

Upon completing this module, students will gain extensive knowledge of microbiome in health and disease, and different methods for microbiome manipulation as well as metagenomics, and

integrative omics. They will also develop skills in experiment design and execution, as well as effective communication of their findings within the microbiology and microbiome research.

**Teaching and Learning Methods:**

As a member of our team, you will be involved in our weekly group meetings, which include journal clubs and progress reports. In addition, you will receive interactive one-to-one training in the lab to help you are adequately trained in each method.

**Media:**

Original scientific articles and books.

**Reading List:**

Original scientific articles and books. We will choose and recommend scientifically relevant materials for each project.

**Responsible for Module:**

Deng, Li, Prof. Dr. Dr. li.deng@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum: Manipulation des Mikrobioms und Virom-Bioinformatik  
(Forschungspraktikum, 10 SWS)

Deng L [L], Xue J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZme2677: Researchperiod Blood-forming Stem Cells | Forschungspraktikum blutbildender Stammzellen

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 20	<b>Contact Hours:</b> 280

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Daily, active participation in the internship is expected. A presentation (30 min, graded) serves to test the theoretical skills learned in the internship. The students show in the lecture if they are able to structure the learned knowledge and present the essential aspects. They should be able to describe and interpret the acquired information, combine it meaningfully and transfer it to similar situations. The lecture grade is a sub-grade of the module (30%). To check the understanding as well as the ability to describe, evaluate and interpret the experiments carried out during the practical training, a protocol has to be kept, which is checked by a certificate (graded). The protocol forms the 2nd sub-grade of the module (70%). The examination of the cell biological working techniques learned in the practical course and their application to new questions takes place during the work (ungraded).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

A good knowledge of cell biology and biochemistry is required to better understand the internship.

#### Content:

During the internship, basic knowledge about examinations of haematopoietic stem and progenitor cells and stromal cells will be taught. Contents are among other things isolation of haematopoietic stem cells and stromal (niche) cells by means of flow cytometric methods, development of different cell culture methods for the determination of function and quality of haematopoietic stem and progenitor cells, molecular methods of the investigation of signaling pathways in rare cell types (immunofluorescence, flow cytometry), and an introduction to in vivo methods for the determination of stem cell function.

### **Intended Learning Outcomes:**

After participating in the module courses, students will have a basic theoretical understanding and expertise of hematopoietic stem cells. Furthermore, they have learned and practiced basic cell biological working techniques. They should have learned,

- to understand (stem) cell biological questions and working techniques and to develop technical questions themselves.
  - to understand the relationship between stem and progenitor cells and stroma (niche) cells.
  - to apply the acquired knowledge to more in-depth questions.
  - to understand the most important experiments on the basic topics of molecular cell biology and to be able to master them in terms of handling (technical and manual).
  - to apply basic experimental know-how including safety and material knowledge (e.g. mastery of sterile working techniques and phenotypic identification of different cell populations), both for known trained experiments and for unknown experiments to be deduced from the literature.
- The module should also help to develop problem-solving skills, and promote interest in cell biology, hematological problems and the importance of somatic stem cells.

### **Teaching and Learning Methods:**

Event type/teaching technique: Lecture, practical course Teaching method: Lecture; in practical course, instructional talks, demonstrations, experiments, partner work, discussion of results.

Learning activities: Study of literature and practical course script; practice of laboratory skills and cell biological work techniques; cooperation with practical course partners; preparation of work protocols and a summary of the entire course (with presentation of results and discussion).

### **Media:**

Powerpoint,  
script (download possibility for lecture material), practical course script

### **Reading List:**

EThere is no textbook available that covers all contents of this module. It is recommended as a basis or as a supplement:

Helgason, C.D., Miller, C.L. Basic Cell Culture Protocols. Methods in Molecular Biology, Springer Protocols, 4. Auflage (ISBN 978-1-62703-128-8)

### **Responsible for Module:**

Oostendorp, Robert; Apl. Prof.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0513: Research Project Cell Biology | Forschungspraktikum Zellbiologie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung entspricht einer Laborleistung.

Die Planung und Durchführung der Laborexperimente bilden die Grundlage zur Erlangung der fachlichen Kompetenz. Die Studierenden zeigen anhand einer Eingangs- und einer Abschlusspräsentation (jeweils etwa 20 min) sowie eines zusammenfassenden Praktikumsberichtes, dass Sie in der Lage sind, die wesentlichen Aspekte des von ihnen bearbeiteten Forschungsprojektes zum Thema Tumorzellbiologie strukturiert und reflektiert darzustellen. Die Gesamtnote errechnet sich aus der Abschlusspräsentation (15%), dem Praktikumsbericht (25%) und der praktischen Laborleistung (60%) mit wesentlichen Kriterien des wissenschaftlichen Arbeitens, wie z.B. Organisation von Arbeitsabläufen, Nachvollziehbarkeit der Aufzeichnungen, Grad des selbständigen Arbeitens etc.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Abgeschlossenes BSc-Studium in den Biowissenschaften.

#### Content:

In diesem Forschungspraktikum werden einzelne Aspekte aktueller Forschungsprojekte bearbeitet. Die Themen werden auf aktuelle experimentelle Fragestellungen abgestimmt. Methodisch stehen Techniken zur Aufklärung oder Nutzung der Signaltransduktion, primär in humanen Zellkulturmodellen im Vordergrund.

Beispiele wären:

- Etablierung von Tumorzelllinien (Genome editing, Reporter etc)
- Tumorsphäroid-Modelle im Live cell imaging
- Untersuchung der Zell-Wirkstoff-Interaktion

**Methodisch:**

Zellkulturtechnologie, molekularbiologische und proteinbiochemische Methoden aus aktuellen Fragestellungen, welche am Lehrstuhl bearbeitet werden.

**Intended Learning Outcomes:**

Nach Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, experimentelle Lösungen für definierte, zellbiologische Fragestellungen zu schaffen. Die Studierenden erlangen hierbei ein vertieftes Verständnis, wie Ergebnisse vor dem experimentellen Hintergrund zu werten sind. Neben methodischen Fähigkeiten, primär in Zellkulturtechnologie und Molekularbiologie, werden selbständiges agieren und eigenverantwortliche Entscheidung gefördert.

**Teaching and Learning Methods:**

Lehrtechnik: Praktikum; Lernaktivitäten: Bearbeiten von zellbiologischen Fragestellungen und deren Lösungsfindung; Üben von labortechnischen Fertigkeiten; Konstruktives diskutieren und kritisieren eigener Experimente; Lehrmethode: Fragend-entwickelnde Methode

**Media:**

Skriptum

**Reading List:**

Einführende Literatur wird zum jeweiligen Praktikumsthema als Ausgangspunkt für eigene Recherchen der aktuellsten Literatur zur Verfügung gestellt.

**Responsible for Module:**

Küster, Bernhard, Prof. Dr. kuster@tum.de Kramer, Karl, PD Dr. agr. karl.kramer@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Zellbiologie (Forschungspraktikum, 10 SWS)

Küster B [L], Kramer K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1817: Research Project Molecular Fungal Genetics | Forschungspraktikum Molekulare Pilzgenetik

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Regular, active participation in the practical course is expected. The accomplishments in the lab will be graded, including the preparation and execution of the experiments, necessary calculations, the documentation and analysis in form of a lab journal (written report) as well as the interpretation of the results. The students demonstrate with the lab journal that they are able to correctly structure and reflect the critical aspects of their experiments. The accomplishments in the lab will be extended by a final oral presentation (30 min) of the research rationale & results to the other members of the group at the end of the lab course to test the communicative competences of the students.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Good basic knowledge of microbiology and biochemistry, basic skills in molecular biological lab techniques, and participation in the module "Molecular Biology of Biotechnologically Relevant Fungi" are recommended but not mandatory.

#### Content:

In the lab course (6-week laboratory internship, full-time), the students will participate in ongoing research projects of the group under supervision of experienced lab members. Foci will be the molecular biology, gene regulation and physiology of filamentous fungi. In particular the handling of model organisms, their molecular, physiological and biochemical characterization and modification will be conveyed. Independent literature research will be taught and performed to deepen the knowledge basis regarding the specific topics of interest.

**Intended Learning Outcomes:**

After participation in the module courses, the students are able to

- to understand the applied microbiological, genetic and/or biochemical special methods, including safety and material knowledge, and to master them in terms of action,
- plan and carry out experiments independently
- to keep laboratory protocols in a meaningful and comprehensible way.

**Teaching and Learning Methods:**

The research-related internship enables relatively independent microbiological/molecular biological work under guidance and serves to prepare students for future experimental microbiological theses (master's thesis, doctoral dissertation). By working on a research project, students gain experience under everyday laboratory conditions and acquire broad experimental know-how. The module promotes interest in fungi, their application in research and development, and their importance for humans and the environment.

Translated with [www.DeepL.com/Translator](http://www.DeepL.com/Translator) (free version)

Teaching technique: lab course under individual supervision; critical discussion and reflection of experimental work with supervisor and lab members. Learning activities: literature research, experimental work, generation of a written lab journal and preparation of an oral presentation to the group.

**Media:**

**Reading List:**

current literature of covered topics; mostly to be researched by students themselves

**Responsible for Module:**

Benz, Johan Philipp, Prof. Dr. rer. nat. [benz@hfm.tum.de](mailto:benz@hfm.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Pilzgenetik (Forschungspraktikum, 10 SWS)

Benz J, Cheng T, Tamayo Martinez E

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).



## Module Description

### WZ2376: Research Project on Pathogenic Bacteria | Forschungspraktikum Pathogene Bakterien

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b>	<b>Contact Hours:</b> 300

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The required examination performance corresponds to "Laborleistung" (achievements in the lab). At first, your work will consist of scientific tests and measurements of and with pathogenic bacteria. It is important to show care, speed (without haste), initiative and accuracy. During the internship, a log ("laboratory journal") must be kept; the extent will depend entirely on the needs during lab work. This practical part is weighted with 50%.

At the end, a written analysis should be submitted. Writings includes the above-mentioned experiments, the respective theoretical basics including literature study, the practical implementation, with any necessary calculations, their documentation and evaluation as well as the interpretation of the results with regard to the knowledge found in scientific literature. Follow the classic arrangement from "Heading - Summary - Introduction - Material & Methods - Results - Discussion - References". The documentation should not exceed 30 pages. This part is weighted with 40%.

A short 10-minute presentation complements the previous parts to test your communicative competence in presenting scientific topics to an audience. Here you put together about 10 slides in e.g. PowerPoint - with about the following division for the slides: Title 1, Introduction 2, Methods 2, Result 3, Discussion 1, Miscellaneous 1. The weighting here is 10%.

In summary, the students prove that they have learned to plan experiments with pathogenic bacteria, carry them out responsibly and document them adequately in accordance with good scientific practice. The students also show that they can discuss their test results and classify the technical context with reference to the scientific literature.

#### Repeat Examination:

Next semester

**(Recommended) Prerequisites:**

The prerequisite is a completed BSc. in Molecular Biotechnology, Nutrition and Biomedicine, Biology, or Biochemistry. Interest in molecular biology, pleasure in laboratory work, fine motor skills to cope with the experimental requirements in the modern research laboratory.

**Content:**

Participation in individual aspects of current microbiological research projects on molecular genetics and ecology of pathogens in the Core Facility Microbiome at the ZIEL - Institute for Food & Health. Examples would be: translational and transcriptomics of *Pseudomonas aeruginosa* with emphasis on overlapping encoded genes, experimental translational arrest of overlapping open reading frames; phenotypic analysis of novel putative protein-coding nucleotide sequences from pathogenic *Escherichia coli*. Other pathogenic bacteria, especially intestinal pathogens, are also of interest. Species which could be mentioned here can be other pathogens and bacteria, which are, depending on the environment, sometimes pathogenic or even probiotic (example *Enterococcus faecalis*).

**Intended Learning Outcomes:**

After participating in this module, the students have a basic understanding in applying safety-relevant microbiological methods when dealing with bacterial pathogens - depending on the specific topic, in the pathogen laboratory of level R1 or R2 and in the genetic engineering laboratory of security level S1, S2 or S3\*\* .

In addition, the students learn how to use advanced molecular genetic methods for the genetic modification of pathogenic bacteria. These include, for example, cloning methods and directed mutagenesis. Depending on the topic, handling of real-time quantitative PCR and / or digital-droplet PCR and sequencing techniques is learned. Further, sequencing like transcriptomics and translomics might be applied. The associated bioinformatic evaluation methods are also included. Furthermore, how the results are embedded in existing knowledge ("publications") is taught (falsification, verification).

**Teaching and Learning Methods:**

- 1) Practical work in the laboratory: Here you will learn how to work in the laboratory, first under supervision and then, if possible, independently.
- 2) Instruction talks: You will be introduced to the experiments and their possible dangers; you will receive explanations of the processes.
- 3) Demonstrations: here we show how, for example, certain movements are to be carried out on material and machines.
- 4) Experiments: These are planned with the supervisor and carried out in the lab.
- 5) Literature work: here you should gain an overview of your topic and experiments and make use of published protocols.
- 6) Data analysis / discussion of results: the data obtained must be contextualized - also in the sense of whether the experiment worked in principle, whether improvements need to be made, which follow-up experiments are in order, etc.
- 7) Presentation of results: first as a laboratory journal, then as a written elaboration and, finally, lecture. Here you learn presenting results to other specialists, such you are your results can be

subjected to scientific criticism (keyword "peer review"). Other scientists must be able to falsify or verify their experiments and hypotheses.

**Media:**

A laboratory journal is kept during the internship. Participation in weekly, scientific meetings of the other scientific employees is requested. Necessary literature for references and for self-study can usually be obtained online. At the end of the internship, a presentation of 10 min is to be given, which includes use presentation tools.

**Reading List:**

The research internship is embedded in current research work at the Core Facility Microbiome of the ZIEL Institute for Food & Health. The prerequisite is knowledge of the last published scientific articles by this working group, according to the chosen topic. Additional current literature is provided.

**Responsible for Module:**

Neuhaus, Klaus, PD Dr. rer. nat. habil. neuhaus@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum pathogene Bakterien (Forschungspraktikum, 10 SWS)

Neuhaus K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2540: Research Project Microbial Physiology and Gene Regulation | Forschungspraktikum Mikrobielle Physiologie und Genregulation

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Anwesenheitszeiten ergeben sich aus der vom Studierenden durchzuführenden und mit dem Betreuer abzusprechenden Versuchsplanung. Die Studierenden zeigen durch Versuchsplanung, experimentelle Versuchsdurchführung, Ergebnisprotokollierung und -auswertung, dass sie fortgeschrittene experimentelle Methoden der bearbeiteten Forschungsthematik erlernt haben. Am Ende des Forschungspraktikums werden die experimentellen Ergebnisse in einem unbenoteten Kurzvortrag präsentiert. Als benotete schriftliche Prüfungsleistung wird ein Praktikumsprotokoll erstellt. Das Praktikumsprotokoll soll in der Form wie eine wissenschaftlichen Publikation aufgebaut sein, die Versuchsplanung und –durchführung beschreiben, die wesentlichen erhaltenen Ergebnisse unterfüttert durch aussagekräftige Abbildungen/Tabellen übersichtlich darstellen und diese unter Bezugnahme auf relevante Originalliteratur nachvollziehbar interpretieren.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzung sind gute Grundkenntnisse in Mikrobiologie und Biochemie, grundlegende mikrobiologische und biochemische Arbeitstechniken, sowie Teilnahme am Modul Organismische und Molekulare Mikrobiologie oder vergleichbare Vorkenntnisse.

#### Content:

Im Rahmen des Forschungspraktikums arbeiten die Teilnehmer unter Anleitung an aktuellen Forschungsprojekten der Arbeitsgruppen des Lehrstuhls für Mikrobiologie. Inhaltliche Schwerpunkte sind Molekularbiologie, Genregulation und Mikrobielle Physiologie. Es werden spezielle Methoden des praktischen Arbeitens mit Mikroorganismen, der molekularbiologischen Charakterisierung und Modifizierung, der wachstumsphysiologischen und/oder enzymatischen

Charakterisierung vermittelt. Durch Eigenstudium von fachwissenschaftlicher Literatur werden vertiefte Kenntnisse zur jeweils bearbeiteten Thematik erworben.

**Intended Learning Outcomes:**

Durch das forschungsnahe Praktikum unter Anleitung haben die Studierenden folgende Fähigkeiten erworben:

- relativ eigenständiges mikrobiologisches/molekularbiologisches Arbeiten.
- Erfahrung unter Bedingungen des Laboralltags
- Ein breites experimentelles Know-how von angewandten mikrobiologischen, genetischen und/oder biochemischen Spezialmethoden inklusive Sicherheits- und Materialwissen verstehend nachvollzogen und handlungsmäßig beherrschen.
- Ein hohes Maß an Selbständigkeit im Planen und Durchführen von Experimenten.
- Fähigkeit zur Führung von aussagekräftigen, nachvollziehbaren Laborprotokollen.
- Kritisches und kreatives Denken vertieft sowie Fähigkeiten zum Lösen von Problemen erweitert.
- Kompetenz zur sorgfältigen Durchführung und Protokollierung von Laborexperimenten, kritischen Hinterfragung von Versuchsdaten und übersichtlichen schriftlichen Darstellung von Experimentalergebnissen.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Laborpraktikum, Individuelle Anleitung im experimentellen Arbeiten durch erfahrene Labormitglieder; Kritische Besprechung von Experimentalergebnissen mit den Betreuern und Arbeitsgruppenleitern..

Lernaktivitäten: Literaturstudium, experimentelles Arbeiten; Anfertigen eines aussagekräftigen, nachvollziehbaren Laborprotokolls; Vorbereitung von Kurzpräsentationen von Ergebnissen.

**Media:**

**Reading List:**

Wissenschaftliche Fachliteratur nach Bedarf.

**Responsible for Module:**

Wolfgang Liebl (wliebl@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Mikrobielle Physiologie und Genregulation (Forschungspraktikum, 10 SWS)

Liebl W, Ehrenreich A, Baudrexl M, Edelmann H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2542: Research Project Microbial Diversity and Molecular Phylogeny | Forschungspraktikum Mikrobielle Diversität und Molekularphylogenie

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Anwesenheitszeiten ergeben sich aus der vom Studierenden durchzuführenden und mit dem Betreuer abzusprechenden Versuchsplanung. Die Studierenden zeigen durch Versuchsplanung, experimentelle Versuchsdurchführung, Ergebnisprotokollierung und -auswertung, dass sie fortgeschrittene experimentelle Methoden der bearbeiteten Forschungsthematik erlernt haben. Am Ende des Forschungspraktikums werden die experimentellen Ergebnisse in einem unbenoteten Kurzvortrag präsentiert. Als benotete schriftliche Prüfungsleistung wird ein Praktikumsprotokoll erstellt. Das Praktikumsprotokoll soll in der Form wie eine wissenschaftlichen Publikation aufgebaut sein, die Versuchsplanung und –durchführung beschreiben, die wesentlichen erhaltenen Ergebnisse unterfüttert durch aussagekräftige Abbildungen/Tabellen übersichtlich darstellen und diese unter Bezugnahme auf relevante Originalliteratur nachvollziehbar interpretieren.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzung sind gute Grundkenntnisse in Mikrobiologie und Biochemie, grundlegende mikrobiologische und biochemische Arbeitstechniken, sowie Teilnahme am Modul Organismische und Molekulare Mikrobiologie oder vergleichbare Vorkenntnisse.

#### Content:

Im Rahmen des Forschungspraktikums arbeiten die Teilnehmer unter Anleitung an aktuellen Forschungsprojekten der Arbeitsgruppen des Lehrstuhls für Mikrobiologie. Es werden spezielle Methoden des praktischen Arbeitens mit Mikroorganismen und der Anwendung von Methoden zur Identifizierung, molekularbiologischen Charakterisierung und systematischen Einordnung von Mikroorganismen vermittelt. Inhaltliche Schwerpunkte sind Mikrobielle Diversität, Molekularbiologie

und Molekularphylogenie. Durch Eigenstudium von fachwissenschaftlicher Literatur werden vertiefte Kenntnisse zur jeweils bearbeiteten Thematik erworben.

**Intended Learning Outcomes:**

Durch das forschungsnahe Praktikum unter Anleitung haben die Studierenden folgende Kompetenzen erworben:

- relativ eigenständiges mikrobiologisches/molekularbiologisches Arbeiten
- Erfahrung unter Bedingungen des Laboralltags
- breites experimentelles Know-how angewandter mikrobiologischen, genetischen und/oder biochemischen Spezialmethoden inklusive Sicherheits- und Materialwissen verstanden, nachvollzogen und handlungsmäßig beherrscht.
- hohes Maß an Selbständigkeit im Planen und Durchführen von Experimenten
- Fähigkeit zur Führung von Aussagekräftigen, nachvollziehbaren Laborprotokollen
- Kritisches und kreatives Denken verstärkt sowie Fähigkeiten zum Lösen von Problemen erweitert
- Kompetenz zur sorgfältigen Durchführung und Protokollierung von Laborexperimenten, kritischen Hinterfragung von Versuchsdaten und übersichtlichen schriftlichen Darstellung von Experimentalergebnissen.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Laborpraktikum, Individuelle Anleitung im experimentellen Arbeiten durch erfahrene Labormitglieder; Kritische Besprechung von Experimentalergebnissen mit den Betreuern und Arbeitsgruppenleitern..

Lernaktivitäten: Literaturstudium, experimentelles Arbeiten; Anfertigen eines aussagekräftigen, nachvollziehbaren Laborprotokolls; Vorbereitung von Kurzpräsentationen von Ergebnissen.

**Media:**

**Reading List:**

Wissenschaftliche Fachliteratur nach Bedarf.

**Responsible for Module:**

Liebl, Wolfgang; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Mikrobielle Diversität und Molekularphylogenie (Forschungspraktikum, 10 SWS)

Liebl W, Ehrenreich A, Baudrexl M, Edelmann H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2557: Research Project Soil Microbiology | Forschungspraktikum Bodenmikrobiologie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfung ist eine Laborleistung. Sie setzt sich zusammen aus einem praktischen Laborteil mit etwa 150 Zeitstunden. In diesem werden nach wissenschaftlichem Standard Daten gewonnen, die dann auszuwerten sind. Um die angestrebte Forschungskompetenz nachzuweisen ist im Anschluss an das Praktikum ein Bericht (Umfang 8-12 Seiten) anzufertigen, der den Standards einer wissenschaftlichen Publikation nahekommt (Titel, Einleitung, Material und Methoden, Ergebnisse, Diskussion, Literatur). Der Bericht wird um eine Präsentation (20 min) ergänzt, um die kommunikative Kompetenz bei der Darstellung von wissenschaftlichen Themen vor einer Zuhörerschaft zu überprüfen.

Die Note ergibt sich aus der Gesamtleistung, die sich aus einer

- A) allgemeinen Bewertung (Zusammenarbeit mit Betreuer, selbstständiges Arbeiten, Zuverlässigkeit, Protokollführung),
  - B) fachlichen Bewertung des Berichts (Literaturstudium, logische Strukturierung, Darstellung des Wesentlichen, wissenschaftliches Verständnis, Bewertung der Ergebnisse),
  - C) fachliche Bewertung der Präsentation
  - D) praktischen Fähigkeiten (technisches Verständnis, technische Durchführung, Sorgfalt und Umgang mit Betriebsmitteln)
- zu jeweils gleichen Teilen (A:B:C:D=2:1:1:2) zusammensetzt.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Voraussetzung für die Teilnahme am Forschungspraktikum sind die erfolgreiche Teilnahme an Lehrveranstaltungen der mikrobiellen Ökologie z.B. die erfolgreiche Teilnahme am Modul Bodenmikrobiologie 1.



**Content:**

Verschiedene Methoden der Molekularbiologie (z.B. Proteomik, DNA-/RNA-Analysen, Metabolitanalysen, biochemische Tests, stabile Isotopenanalyse). Datensammlung, Datenauswertung und Dateninterpretation mit Hilfe von fortgeschrittener statistischer Analytik sowie Berichts-anfertigung.

**Intended Learning Outcomes:**

Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage

- Fragestellungen und Arbeitstechniken der Bodenmikrobiologie zu verstehen, kritisch zu beurteilen und fachliche Fragen und deren Lösung selbst zu entwickeln.
- Boden-Mikroorganismen-Gemeinschaften mit modernen molekularbiologischen Methoden (z. B. Hochdurchsatzsequenzierung, Biostatistik unter Anwendung von R) zu charakterisieren.
- einfache Analysen komplexer Sequenzdatensätze selbstständig durchzuführen.
- funktionelle Charakterisierung mikrobieller DNA-sequenzen anhand von Datenbanken (FUNguild, FUNtraits) zu vollziehen.
- ggf. weitere Methoden zur Charakterisierung mikrobieller Gemeinschaften (stabile Isotopen-Techniken anzuwenden).
- Daten eigenständig zu erfassen, auswerten und im Kontext der aktuellen wissenschaftlichen Literatur zu interpretieren.
- vorhandenes Grundlagenwissen mit aktuellen Publikationen zum behandelten Thema eigenständig zu verknüpfen.
- neu generiertes Wissen in der praktischen Forschung anzuwenden.
- eine Forschungsfrage zu bearbeiten, in den wissenschaftlichen Zusammenhang zu stellen und zu diskutieren.

**Teaching and Learning Methods:**

- Experimente unter 1:1 Anleitung durch wissenschaftliches Personal (Learning by doing) in bestehenden, laufenden Forschungsarbeiten, um Einblicke in Forschungsabläufe zu bekommen
- Präsentationen um Ergebnisse zusammenzustellen und zu diskutieren:
  - o Kurzpräsentationen (Figure of the day) in regelmäßigen Labortreffen als regelmäßiges Feedback
  - o Abschlusspräsentation der Ergebnisse als Übung zu Vortragsstil und Feedback
- Abschlussbericht als Übung und Anleitung zum Verfassen einer wissenschaftlichen Arbeit

**Media:**

Mitarbeit im Labor, Dialog mit Betreuenden

**Reading List:**

nach Absprache mit den Betreuenden

**Responsible for Module:**

Pritsch, Karin; Apl. Prof. Dr. rer. nat. habil.: karin.pritsch@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2927: Research Project Molecular Microbial Enzymology | Forschungspraktikum Molekulare Mikrobielle Enzymatik

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Anwesenheitszeiten ergeben sich aus der vom Studierenden durchzuführenden und mit dem Betreuer abzusprechenden Versuchsplanung. Die Studierenden zeigen durch Versuchsplanung, experimentelle Versuchsdurchführung, Ergebnisprotokollierung und -auswertung, dass sie fortgeschrittene experimentelle Methoden der bearbeiteten Forschungsthematik erlernt haben. Am Ende des Forschungspraktikums werden die experimentellen Ergebnisse in einem unbenoteten Kurzvortrag präsentiert. Als benotete schriftliche Prüfungsleistung wird ein Praktikumsprotokoll erstellt. Das Praktikumsprotokoll soll in der Form wie eine wissenschaftlichen Publikation aufgebaut sein, die Versuchsplanung und –durchführung beschreiben, die wesentlichen erhaltenen Ergebnisse unterfüttert durch aussagekräftige Abbildungen/Tabellen übersichtlich darstellen und diese unter Bezugnahme auf relevante Originalliteratur nachvollziehbar interpretieren.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzung sind gute Grundkenntnisse in Mikrobiologie und Biochemie, grundlegende mikrobiologische und biochemische Arbeitstechniken, sowie Teilnahme am Modul Organismische und Molekulare Mikrobiologie oder vergleichbare Vorkenntnisse.

#### Content:

Im Rahmen des Forschungspraktikums arbeiten die Teilnehmer unter Anleitung an aktuellen Forschungsprojekten der Arbeitsgruppen des Lehrstuhls für Mikrobiologie. Es werden spezielle Methoden des praktischen Arbeitens mit Mikroorganismen, der molekularbiologischen Charakterisierung und Modifizierung und/oder der Proteinreinigung und -charakterisierung vermittelt. Inhaltliche Schwerpunkte sind Molekularbiologie und Enzymatik. Durch Eigenstudium

von fachwissenschaftlicher Literatur werden vertiefte Kenntnisse zur jeweils bearbeiteten Thematik erworben.

**Intended Learning Outcomes:**

Durch das forschungsnahe Praktikum sind die Studierenden in der Lage unter Anleitung relativ eigenständig mikrobiologische/molekularbiologische Arbeiten durchzuführen. Nach der Absolvierung dieses Moduls haben die Studierenden folgende Kompetenzen erworben:

" Durch die Mitarbeit an einem Forschungsprojekt Erfahrung unter Bedingungen des Laboralltags .

" Ein breites experimentelles Know-how. Die angewandten mikrobiologischen, genetischen und/oder biochemischen Spezialmethoden können inklusive Sicherheits- und Materialwissen verstanden und nachvollzogen werden und werden handlungsmäßig beherrscht.

" Es ist hohes Maß an Selbständigkeit im Planen und Durchführen von Experimenten erreicht.

" Die Fähigkeit zur Führung von Aussagekräftigen, nachvollziehbaren Laborprotokollen.

" Kritisches und kreatives Denken weiter verstärkt sowie Fähigkeiten zum Lösen von Problemen entwickelt.

- Kompetenz zur sorgfältigen Durchführung und Protokollierung von Laborexperimenten, kritischen Hinterfragung von Versuchsdaten und übersichtlichen schriftlichen Darstellung von Experimentalergebnissen.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Laborpraktikum, Individuelle Anleitung im experimentellen Arbeiten durch erfahrene Labormitglieder; Kritische Besprechung von Experimentalergebnissen mit den Betreuern und Arbeitsgruppenleitern..

Lernaktivitäten: Literaturstudium, experimentelles Arbeiten; Anfertigen eines aussagekräftigen, nachvollziehbaren Laborprotokolls; Vorbereitung von Kurzpräsentationen von Ergebnissen.

**Media:**

**Reading List:**

Wissenschaftliche Fachliteratur nach Bedarf.

**Responsible for Module:**

Wolfgang Liebl (wliebl@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Mikrobielle Enzymatik (Forschungspraktikum, 10 SWS)

Liebl W, Ehrenreich A, Baudrexl M, Edelmann H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ3926: Research Project Molecular Biology of Intestinal Microbiota | Forschungspraktikum Molekularbiologie intestinaler Mikrobiota

Version of module description: Gültig ab summerterm 2018

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is graded to validate the learning objective – i.e. confirmation of a small method- and research-oriented project, partly supervised and self-guided and its utilization - according to good scientific practice. This includes a corresponding achievement in the lab, documented in the form of an internship report with accompanying presentation as conclusion. --- An internship report (about 20 pages) has to be handed in and a presentation about the completed lab work has to be held with final discussion (about 20 minutes lecture time, excl. Discussion). Both, description and documentation of the experimental procedures, analysis and description of individual experiments according to good scientific practice are checked, and the communicative competence are assessed, regarding the scientific subject, questions about results or experimental approaches used for sample material, the processing of the samples, and the data evaluation. The module is passed when graded for the protocol of at least “sufficient”.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Exercises in Microbiology or similar

#### Content:

- \*DNA isolation from complex microbiomes
- \*Analysis of DNA
- \*PCR
- \*gel cleanings
- \*sterile working
- \*growing anaerobic bacteria
- \*Library making

\*Sequencing using NGS

### **Intended Learning Outcomes:**

Within a larger research project (usually microbiota of the intestines and their functional research), students are able to work on a subject-restricted project (eg with reference to specific samples, organisms or processes to be optimized) largely scientifically (laboratory and bioinformatic evaluation, usually 80:20), documented and evaluated in writing according to good scientific practice (lab book or final report), and presented in a scientific presentation (about 20 minutes in a laboratory seminar or similar). In particular, students learn to extract nucleic acids from samples (e.g., stool, skin, human and animal internal organs, bacterial cultures, etc.) quantitatively and without inhibitors. The isolated nucleic acids are enzymatically treated according to their nature (DNA, RNA), so that they lead to experimental libraries to be sequenced. Depending on the sequencing technology used (DNAseq, RNAseq, RIBOseq, etc., if appropriate using low-content samples), this includes fragmentation, tagmentation, ligation, PCR, phosphorylation, exo- and endonuclease treatment, density gradient centrifugation, etc. Students learn to accompany the process with quality control (QC) to obtain high-quality libraries and avoiding contaminations. The QC includes using conventional agarose gels, PAGE, capillary electrophoresis (BioAnalyzer or similar), dye-based assays (Qbit, etc.), etc. Furthermore, the students learn about suitable control reactions (mock, negative, positive) and how their results should be considered in data evaluation. In summary, you have an understanding of the experimental procedures for Next Generation Sequencing. To analyze the data, you will get to know bioinformatic software pipelines, which will be used depending on the question, the samples and the method of library production: IMNGS.org, Rhea, Bioconductor, usegalaxy.org, qiime2, RDP, MEGA-X, SILVA, KEGG, EcoliWiki, etc. For further discussion of the results, students are able to search in databases for literature and for gene data (eg scholar.google.com, NCBI, Genbank, and other). --- As mentioned, the focus varies according to the specific project and may also include the cultivation of bacteria under anaerobic conditions, ie. sterile and contamination-free work on an anaerobic workbench.

### **Teaching and Learning Methods:**

Introduction into the laboratory with a supervising scientist in a one-to-one basis, after that autonomous work in the lab after consultation. Self studies on how to conduct searches in literature and sequence data bases, data evaluation under supervision, conduction a report after consultation.

### **Media:**

Publications of international journals about the topics

### **Reading List:**

Current literature, for instance, Bazanella et al. (2017) Randomized controlled trial on the impact of early-life intervention with bifidobacteria on the healthy infant fecal microbiota and metabolome. *Am J Clin Nutrition*, 106(5): 1274–1286, <https://doi.org/10.3945/ajcn.117.157529> and references therein about the methods used

**Responsible for Module:**

Neuhaus, Klaus; PD Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekularbiologie intestinaler Mikrobiota

10 SWS

Neuhaus, Klaus

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ9902: Practical Course "Cells" | Forschungspraktikum "Zellen"

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:



**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ME2624-2: Classical and Molecular Virology Course | Praktikum der klassischen und molekularen Virologie

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 8	<b>Total Hours:</b> 240	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 120

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): Präsentation: 25-35 min; Bericht:45-75 Seiten

Regelmäßige, aktive Teilnahme an den Lehrveranstaltungen wird erwartet.

Das Erreichen der angestrebten Lernergebnisse wird überprüft durch die täglichen praktischen Arbeiten, durch die Präsentation des\*r Studierenden (Englisch) und das Praktikumsprotokoll (Englisch oder Deutsch). Es wird die Durchführung von Versuchen, deren Interpretation und auch deren Auswertung durch Zweiergruppen unter Anleitung nach Skriptvorgabe überprüft.

Die Prüfungsleistung des Moduls wird durch die Präsentation und den Bericht erbracht.

Bericht:

Schriftliche Aufarbeitung (Praktikumsbericht) und Zusammenfassung aller Praktikumsversuche.

Die Studierenden zeigen, ob sie in der Lage sind, das erworbene praktische Wissen zu strukturieren (Einleitung, Methoden, Ergebnisse und Diskussion), die Ergebnisse zu analysieren und die wesentlichen Aspekte der einzelnen Versuche im Kontext darzustellen. Der Nachweis der erworbenen praktischen Erkenntnisse erfolgt, indem die Versuchsdurchführung und die Ergebnisse beschreiben und interpretieren sowie anhand von selbst angeeigneten Informationen aus der Literatur diskutiert werden (1-2 Diskussionspunkte je Versuch).

Präsentation:

Die Studierenden zeigen durch eine Präsentation ergänzend zu dem schriftlichen Bericht, ob sie in der Lage sind, selbstständig erarbeitete Inhalte zu strukturieren und zu kommunizieren. Inhalte zu translationalen Themengebieten im Bereich Virologie (z.B. Lentivirale Vektoren in der Forschung, Virus-Wirts-Interaktionen und daraus resultierende Immunevasion-Strategien, therapeutische Entwicklungen und Prävention von mikrobiellen Erkrankungen) sowie deren komplexe Aspekte im Kontext der Biologie von Viren stehen im Fokus. Diese sollen auf die wesentlichen Inhalte reduziert, zusammengefasst und mündlich in verständlicher Form dargestellt werden. Bei der anschließenden Gruppendiskussion soll ein vertieftes Verständnis nachgewiesen werden, indem auf Fragen, Anregungen oder Diskussionspunkte eingegangen werden kann.

## **Repeat Examination:**

### **(Recommended) Prerequisites:**

Grundkenntnisse in Molekular- und Zellbiologie, Immunologie (empfohlen) und Virologie sind erforderlich, Erfolgreiche Teilnahme an Modul WZ2496 (Molekulare und Medizinische Virologie Teil I und II) ist empfohlen.

### **Content:**

Die Studierenden lernen die grundlegenden Techniken der klassischen und molekularen Virologie in der Praxis und der Theorie kennen. Zusätzlich gibt jeder Student einen Vortrag auf Englisch zu praktikumsrelevanten Themen des jeweiligen Kurses. Im Eigenstudium sollen die Studierenden diese Vorträge vorbereiten und zusätzlich ein schriftliches Handout für Ihre Kollegen generieren, welches als Zusammenfassung die wichtigsten Punkte des Vortrags beinhalten soll.

Die wesentlichen Techniken des Praktikums und Studienleistungen beinhalten das Erlernen von gerichtete Mutagenese viraler Genome, Anzucht und Direktnachweise von Viren, Nachweis viraler Nukleinsäuren, Analyse der Sedimentationseigenschaften viraler Partikel, Teste zum Nachweis von Antikörpern gegen Viren, Analyse der Immunreaktion auf Virusinfektionen, Durchflusszytometrische Analysen von humanen Zellen, immunohistochemische Analyse von Lebern und lymphatischen Organen und die transkriptionale Analyse von chronisch entzündeten Organen.

### **Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme am Modul sind die Studierenden in der Lage

- allgemeine Begriffe der Virologie zu definieren und zu verstehen
- moderne Techniken der Virologie zu kennen und deren Möglichkeiten und Limitationen einzuschätzen
- Prinzipien der Virologie experimentell zu adressieren und an praktischen Beispielen anzuwenden
- grundlegende Mechanismen der Virus-Wirts-Interaktionen zu erfassen
- Immunevasion durch Viren zu analysieren und zu klassifizieren
- translationale Ansätze in der Virologie zu analysieren und zu diskutieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus dem Praktikumsteil (Laborlehre), dem Seminar mit Einzelpräsentationen und Gruppendiskussionen sowie dem abschließenden Erstellen eines schriftlichen Praktikumsberichts.

Lehrtechniken: Seminar, Übung, Laborlehre

Lehrmethode: Präsentation, Vortrag, Gruppenarbeit (Auswertung der Ergebnisse und Diskussion der vorgestellten Literatur), Laborlehre

Lernaktivitäten: Üben von technischen und labortechnischen Fertigkeiten, Materialrecherche, Studium der relevanten Literatur, Vorbereiten und Halten von Präsentationen sowie deren kritische Diskussion, Rechnen von Übungsaufgaben, Erstellen der Praktikumsberichte

Lernmethode: Gruppenarbeit, Präsentation, Experiment

**Media:**

Skriptum, Power Point Präsentation

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt. Als Grundlage oder zur Ergänzung wird empfohlen:

Flint et al.; Principles in Virology; Modrow et al., Molekulare Virologie

**Responsible for Module:**

Prof. Dr. Andreas Pichlmair, Prof. Dr. Ulrike Protzer

**Courses (Type of course, Weekly hours per semester), Instructor:**

Praktikum der klassischen und molekularen Virologie (Praktikum, 8 SWS)

Pichlmair A [L], Deng L, Ebert G, Möhl-Meinke B, Pichlmair A, Vincendeau M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2077: Internship Cell-Based Methods in Tumor Biology | Praktikum Zellbasierte Methoden der Tumorbilogie

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 10	<b>Contact Hours:</b> 80

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfung ist eine Laborleistung, die aus dem praktischen Arbeiten, dem Testat und dem Abschlussprotokoll besteht. Die Gesamtnote des Moduls ergibt sich aus dem Ergebnis für diese drei Teile, wobei die Gewichtung (Praktisches Arbeiten : Testat : Abschlussprotokoll) im Verhältnis (2:1:1) ist.

Im praktischen Teil werden im Durchschnitt pro Tag von den Studierenden je zwei Versuche/ Messungen durchgeführt (die z.T. aufeinander methodisch aufbauen, bedingt durch Zellkultur-Verfahren).

Die erlernten Methoden, die durchgeführten Experimente, ihre Auswertung und Interpretation werden in schriftlicher Form als Protokoll dokumentiert, nach dem Grund-Aufbau eines wissenschaftlichen Fachartikels (Umfang 10 Seiten, benotet). Weiterhin wird durch den Betreuer der Kenntnisstand zum Ende des Praktikums erhoben, dieses mündliche Testat (20 Minuten) dient der Überprüfung der erworbenen Kompetenzen. Eine aktive Teilnahme am Praktikum wird vorausgesetzt.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Besuch des Moduls "Molekulare Zellbiologie der Tumorentstehung"

#### Content:

Das Forschungspraktikum orientiert sich inhaltlich an den beiden Vorlesungen des Moduls "Molekulare Zellbiologie der Tumorentstehung". Die Forschungsmethoden, die in der aktuellen biomedizinischen Grundlagenforschung zur Anwendung kommen, sollen eingeführt und demonstriert werden. Der Schwerpunkt liegt auf zellbiologischen Verfahren, insbesondere der

Zell- und Gewebekultur etablierter und primärer Tumorzellen murinen und humanen Ursprungs, adhärent sowie in Suspensionskultur. Steriles, sorgfältiges Arbeiten an der Sterilbank, die gängigen Verfahren (Passagierung, Erhebung der Zellzahl, Einfrieren/Auftauen von Zellen, Kulturbedingungen, Etablierung von Primärkulturen, Transfektionsmethoden, Isolierung von Zellklonen, mikroskopische Analyse, Herstellung von Proteinlysaten aus Zellen, Testung auf Mykoplasmen-Kontamination) sollen erlernt werden. Grundkenntnisse über die Isolierung, Charakterisierung und genetische Manipulierung von Tumorzellen sollen vermittelt werden.

**Intended Learning Outcomes:**

Nach dem erfolgreichen Abschluss dieses Moduls sind die Studierenden in der Lage grundlegende zellbiologische Arbeitstechniken auszuüben und zellbiologische Experimentalansätze zu entwickeln. Außerdem können sie das erworbene Wissen zu zellbiologischen Fragestellungen und Arbeitstechniken auf vertiefte Fragestellungen anwenden.

**Teaching and Learning Methods:**

Veranstaltungsform / Lehrtechnik: Anleitungsgespräche und -anweisungen, Demonstrationen, Experimente, Ergebnisbesprechungen, Vorstellung der Resultate in der Gruppe, kritische Lektüre von englischsprachiger Fachliteratur, Vortrag, Anfertigung eines Protokolls.

**Media:**

Praktikumsskript

**Reading List:**

"Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt. Aktuelle Fachliteratur wird je nach Thema des Praktikums vom Betreuer ausgegeben. Als Grundlage oder zur Ergänzung wird empfohlen: 1) Biology of Cancer, Robert Weinberg, Garland Science 2006; ISBN: 0815340761

2) Lehrbuch der Molekularen Zellbiologie, Alberts et al., Wiley VCH, 2007. ISBN: 3527311602

3) The Mouse in biomedical research. James G. Fox (Ed.). Academic Press, 2007. ISBN: 9780123694546

4) Mouse Models of Human Cancer. Eric C. Holland (Editor), Wiley-VCH, 2004. ISBN: 978-0-471-44460-2"

**Responsible for Module:**

Klaus-Peter Janssen (klaus-peter.janssen@mytum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2539: Seminar on Microbial Effectors | Proseminar Mikrobielle Wirkstoffe

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the oral examination (30 min) the students show that they are able to present and competently discuss a previously agreed microbiological topic on microbial active ingredients in a PowerPoint presentation in a clear and understandable way and to summarize the essential points of the topic in writing as a handout. The quality and clarity of the lecture/handout and the competence of the discussion of questions on the topic are included in the grade with a weighting of 70:30.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Knowledge of the basics of microbiology (lecture General Microbiology), human biology and biochemistry is required.

#### Content:

In this module current topics from the field of production and mode of action of mikrob. active ingredients, for example toxins, bacteriocins, antibiotics, pathogenicity factors and pathogenicity mechanisms of bacterial pathogens.

#### Intended Learning Outcomes:

After completing this module, students are able to

"Gain new up-to-date knowledge on basic topics of microbiology using various pathogenic microorganisms.

"Acquire the ability to present scientific contents of microbiology in an understandable form.

" To promote critical and creative thinking and to develop skills for professional discourse.

"To promote interest in microbiology, microbiological problems and the importance of microorganisms for humans and the environment.

The acquired knowledge prepares students for independent preparation of scientific lectures and their presentation.

**Teaching and Learning Methods:**

Event type/teaching technique: seminar; teaching method: seminar presentations by the participants; subsequent discussion of the presentations.

Learning activities: study of literature, preparation of presentations, critical examination of contents and presentation performance through discussion with the lecturer.

**Media:**

Presentations using PowerPoint, handouts.

**Reading List:**

Individually selected primary literature.

**Responsible for Module:**

Wolfgang Liebl (wliebl@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Proseminar - mikrobielle Wirkstoffe [MID WZ2539] (Seminar, 2 SWS)

Liebl W

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ0407: Research Project on Beneficial Properties of the Early Life Microbiota | Research Project on Beneficial Properties of the Early Life Microbiota

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The type of assessment for this module is a laboratory assignment (Laborleistung). This module aims to teach you how to design and conduct independent research in a supportive lab environment. Your proposal will take the form of asking a hypothesis-driven research question based on existing literature/data, that you then attempt to answer by experimental work. The project will be partly supervised and self-guided in the lab – according to good scientific practice, and this lab work and your conduct in the lab will account for 40% of the overall mark. Your internship report resulting from your lab work should be written in the form of a scientific research paper, and should include the following sections (accounting for 50% of the overall mark)

(i) Title

(ii) Abstract

(iii) Materials and Methods

(iv) Results

(v) Discussion

There is a strict word limit of 6000 (+10%). This does not include figure legends or references.

Your report will be assessed on the following:

- Abstract
- Introduction
- Materials and Methods
- Quality of Results
- Presentation of Results
- Data Handling
- Discussion
- Future Work Suggestions
- References

- **Written Expression**

You will also give a 15-minute presentation (+ 5 minutes scheduled for questions) on your research project. This exercise aims to get you thinking about how to present your work to a non-expert audience.

Your presentation will be assessed on the following (10% of the overall mark):

- Context and communication of science
- Clarity
- Structure
- Oral delivery and visual aids
- Conclusions and answering questions

The module is passed when at least 40 out of 100 points have been granted.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:**

Bachelor's in Molecular Biotechnology, Biology or Biochemistry, or other relevant areas.

**Content:**

Practical work in a microbiome and microbiology research lab, which combines wet and dry lab approaches.

**Intended Learning Outcomes:**

You will work within a larger research project, which involves understanding how certain commensal microbes, particularly *Escherichia (E.) coli* spp., shape mucosal immunity and how this affects the subsequent development of autoimmunity and inflammatory diseases. As one of the first gut colonizers after birth, *E. coli* might significantly impact the training and priming of the mucosal immune system. However, little is known about *E. coli*'s imprinting properties in the context of gut immunity.

You may focus on studying different aspects of host-commensal or host-pathogen interactions with a particular focus on either commensal, probiotic, or pathogenic *E. coli*. Other aspects may involve developing and optimizing cutting-edge methods and assays, isolating microbes, and undertaking studies to probe beneficial microbial function, e.g., production of novel anti-microbial and/or immune stimulation.

**Teaching and Learning Methods:**

Introduction to the lab and training in appropriate methods by a team member of our lab, followed by individual working and teamwork. Problem-solving training, experimental design, and data analysis will also be developed throughout the project.

**Media:**

Blogs and potential for peer-reviewed scientific publication(s).

**Reading List:**

- Gerner RR, Hossain S, Sargun A, Siada K, Norton GJ, Zheng T, Neumann W, Nuccio SP, Nolan EM, Raffatellu M. Siderophore Immunization Restricted Colonization of Adherent-Invasive Escherichia coli and Ameliorated Experimental Colitis. *mBio*. 2022 Oct 26;13(5):e0218422.
- Gerner RR, Nuccio SP, Raffatellu M. Iron at the host-microbe interface. *Mol Aspects Med*. 2020 Oct;75:100895.
- Tilg H, Adolph TE, Gerner RR, Moschen AR. The Intestinal Microbiota in Colorectal Cancer. *Cancer Cell*. 2018 Jun 11;33(6):954-964.
- Gerner RR, Klepsch V, Macheiner S, Arnhard K, Adolph TE, Grander C, Wieser V, Pfister A, Moser P, Hermann-Kleiter N, Baier G, Oberacher H, Tilg H, Moschen AR. NAD metabolism fuels human and mouse intestinal inflammation. *Gut*. 2018 Oct;67(10):1813-1823.
- Moschen AR, Gerner RR, Wang J, Klepsch V, Adolph TE, Reider SJ, Hackl H, Pfister A, Schilling J, Moser PL, Kempster SL, Swidsinski A, Orth Höller D, Weiss G, Baines JF, Kaser A, Tilg H. Lipocalin 2 Protects from Inflammation and Tumorigenesis Associated with Gut Microbiota Alterations. *Cell Host Microbe*. 2016 Apr 13;19(4):455-69.

**Responsible for Module:**

Gerner, Romana, Prof. Dr. romana.gerner@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Research Project on Beneficial Properties of the Early Life Microbiota (Forschungspraktikum, 16 SWS)

Gerner R [L], Gerner R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Theory Oriented Modules | Theorieorientierte Module

### Module Description

#### WZ2626: Applied Microbiology | Angewandte Mikrobiologie

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Regular and active student participation is expected. A written exam (60 min, graded) serves as proof of the theoretical knowledge acquired in the lecture courses. In the exam, the students demonstrate their ability to structure the body of acquired knowledge, e.g. about metabolic pathway-based compound conversion and its consequences for biotechnology and environment or about the effects of changes/manipulations in the metabolism on biosynthetic performance (see anticipated learning goals), and to summarize the important aspects of the study matter. The students should be able to describe, interpret, combine in a meaningful way the information learnt, and to transfer this knowledge to similar issues.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

A good background knowledge in organic chemistry and biochemistry is of advantage for a better understanding of the lecture courses.

#### Content:

Basic knowledge about metabolic pathways (biosynthetic and degradative capabilities) in microorganisms is repeated and extended in the lecture courses. Furthermore, advanced-level knowledge about the metabolism of microorganisms, in particular prokaryotic microorganisms, and about the application of microorganisms in biotechnological processes is taught. The contents include central metabolism and connected biotechnologically relevant biosynthetic pathways for primary and secondary metabolites, as well as for biopolymer production. Further contents are degradation pathways for sugars, polysaccharides, lignin, proteins, nucleic acids, xenobiotics. Selected examples help to illustrate the applications of organisms and/or their enzymes as well

as the optimization of microorganisms and their metabolism for improved production processes in biotechnology.

**Intended Learning Outcomes:**

After completion of the courses of this module the students have acquired an advanced level of theoretical understanding about the metabolic capabilities of microorganisms and their application potential in biotechnological processes.

The module should further help develop the ability to solve problems, and boost the students' interest for microbiological issues and for the important role of microorganisms for mankind and the environment.

The students are able to

" understand interconnections between metabolic pathways and conversion of compounds by microorganisms.

" understand, by virtue of selected examples, the effects of changes/manipulations in the metabolism on biosynthetic performance.

" understand, by virtue of selected examples, the effects and consequences of degradation processes in biotechnology and environment.

" apply the acquired knowledge to in-depth problems.

**Teaching and Learning Methods:**

Form/technique of teaching: lecture courses. Teaching method: oral lecture.

Learning activities: study of lecture handout scripts and own notes.

**Media:**

Presentations using PowerPoint,

Handout script (download option for lecture material).

**Reading List:**

There is no textbook available that comprehensively covers all content matter of this module.

Some aspects are covered in the following books:

Fuchs G. (Hrsg.) Allgemeine Mikrobiologie. 8. Auflage, 2007. Georg Thieme-Verlag Stuttgart.

Antranikian G. (Hrsg.) Angewandte Mikrobiologie. 2006. Springer-Verlag Berlin Heidelberg.

**Responsible for Module:**

Liebl, Wolfgang, Prof. Dr. [wliebl@tum.de](mailto:wliebl@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Angewandte Mikrobiologie - Abbauleistungen (Vorlesung, 1 SWS)

Liebl W, Ehrenreich A

Angewandte Mikrobiologie - Biosyntheseleistungen (Vorlesung, 2 SWS)

Liebl W, Ehrenreich A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2375: Evolution of Pathogens | Evolution von Krankheitserregern

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden zeigen in einer benoteten Klausur (60 min), dass sie das in der Vorlesung und in den Übungen erworbene Wissen zu grundlegenden mikrobiellen Evolutionsprozessen (z.B. molekulare Quellen der Variabilität bakterieller Genome, Darwin'sche Selektionsprozesse, neutrale Evolution nach Kimura) auf Problemstellungen der Evolution von Krankheitserregern anwenden können. Sie zeigen in der Klausur, dass sie in der Lage sind, in begrenzter Zeit und ohne Hilfsmittel den Erwerb und die nachfolgende Evolution von Pathogenitätsfaktoren (wie beispielsweise Toxine, Pathgenitätsinseln) sowie die molekularen Evolutionsprozesse, welche der de novo Entstehung, Adaptation sowie der Verbreitung von Antibiotikaresistenzen zugrunde liegen, kritisch modellieren und diskutieren zu können.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Kenntnisse in Allgemeiner Mikrobiologie, Molekularer Bakteriengenetik und Biologie pathogener Bakterien.

#### Content:

Teil 1, Einführung in die Evolutionsbiologie: Methoden der Evolutionsforschung, Entstehung von Variabilität in Individuen, Fixierung von Allelen in Populationen.

Teil 2, Bakterielle Genome und Populationsstrukturen: Bakterielle Genome als Ergebnis fixierter Mutationen, Typisierung bakterieller Populationen, Intraspezifische phylogenetische Populationsanalyse.

Teil 3, Evolution von Antibiotikaresistenzen: Wirkungen von Antibiotika, Ökologie des mikrobiellen Resistoms, Mechanismen der Antibiotikaresistenz, Evolution von Antibiotikaresistenzen.

Teil 4, Ökologie als angewandte Evolutionsbiologie: Ökologische Rahmenbedingungen, Invertebraten und Vertebraten als Wirte, Wirtswechsel, Populationsökologie, Virulenzgentransfer

und Pathogenitätsinseln, Ökologie intrazellulärer Pathogene, Reduktive Evolution bei Pathogenen und Symbionten.

**Intended Learning Outcomes:**

Nach dem erfolgreichen Abschluss dieses Moduls kennen die Studierenden die grundlegenden Methoden der Evolutionsforschung sowie experimentell belegte Evolutionsprozesse bei Prokaryonten und sind in der Lage ihr Wissen auf molekularbiologische und epidemiologische Daten (z.B. Antibiotikaresistenzevolution, Populationen von Pathogenen) anzuwenden. Darüber hinaus sind die Studierenden in der Lage experimentell nicht reproduzierbare Konzepte aus der vergleichenden Biologie (z.B. Sequenzvarianzen, Existenz von Pathogenitätsinseln, reduzierte Genome) vor dem Hintergrund der in der Vorlesung erlernten, experimentell verifizierten Evolutionsprozesse zu interpretieren und Evolutionshypothesen zu formulieren. Diese Fähigkeit wird durch kritische Lektüre von Fallstudien aus der Literatur und deren Diskussion in der Gruppe eingeübt.

**Teaching and Learning Methods:**

Lehrtechniken: Vorlesung mit begleitender Übung.

Lehrmethode: Vortrag, Fallstudien, interaktiver Diskurs mit Studenten während der Vorlesung.

Lernaktivitäten: Auswendig lernen; Lösen von Übungsaufgaben; Studium von anspruchsvoller Originalliteratur als Hausaufgabe; Präsentation in Kurzform in den Übungen; gemeinsame kritische Analyse der in den Originalarbeiten angewendeten Problemlösungsstrategien in der Gruppe.

**Media:**

Tafelanschrieb, Powerpoint Präsentationen, Vorlesungsfolien

**Reading List:**

Leider existiert kein Lehrbuch, die Quellen des unterrichteten Stoffs sind daher auf den Vorlesungsfolien zum Selbststudium angegeben. Als Unterstützung wird folgendes allgemeines Lehrbuch zur Evolutionsbiologie empfohlen: Barton et al (2007) Evolution. Cold Spring Haror, New York.

**Responsible for Module:**

Neuhaus, Klaus, PD Dr. rer. nat. habil. neuhaus@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Übungen zur Ökologie und Evolution pathogener Bakterien (Übung, 1 SWS)

Neuhaus K [L], Neuhaus K

Ökologie und Evolution von pathogenen Bakterien (Vorlesung, 2 SWS)

Neuhaus K [L], Neuhaus K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2404: Introduction to Mammalian Cell Culture | Einführung in die Kultivierung von Säugetierzellen

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul setzt sich aus den Lehrveranstaltungen "Praktikum" und "Seminar" zusammen.

Die Prüfungsleistung der LV „Praktikum“ erfolgt anhand einer Laborleistung, die sich aus einem Testat (30 Minuten), einer Präsentation (10 Minuten) sowie der Bewertung der praktischen Arbeit zusammensetzt. Die Bewertungskriterien der praktischen Arbeit umfassen die Fortschritte bei den praktischen Fähigkeiten, Motivation und Kenntnisse über den Praktikumsablauf. Die Gewichtung der drei Teilnoten erfolgt 1:1:1.

Mit der erfolgreichen Ablage der Prüfungsteile weisen die Studierenden die Befähigung nach, das erlernte Wissen zu strukturieren und die wesentlichen Aspekte darzustellen. Sie sollen die erarbeiteten Informationen beschreiben, interpretieren, sinnvoll kombinieren und auf ähnliche Sachverhalte übertragen können. Das Manuskript zum Praktikum dient zur Vorbereitung für das Praktikum.

Zusätzlich zum Praktikum werden mit den Studierenden Seminare durchgeführt, in denen sie mittels Literatur praktische Themen der Kultivierung von Säugetierzellen erarbeiten und präsentieren müssen. Die Prüfungsleistung im Seminar umfasst eine Präsentation (15 Minuten).

Gewichtung Laborleistung:Präsentation = 6:4.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Bachelor-Abschluss in Biologie bzw. Molekulare Biotechnologie



**Content:**

Im Rahmen des Praktikums werden Grundkenntnisse über die Isolierung, Charakterisierung und genetische Manipulierung von Säugetierzellen vermittelt. Inhalte sind u.a.: Steriles Arbeiten, Mikroskopie, Kulturbedingungen, Etablierung und Konservierung von Zelllinien und Primärkulturen, Bestimmung von Zellzahlen, Transfektionsmethoden, Isolierung und Expansion von Zellklonen, Anwendung und Detektierung von Markergenen.

Im Seminar werden insbesondere die Hintergründe und theoretischen Kenntnisse zu den durchgeführten Experimenten vermittelt. Im Rahmen des Praktikums werden grundlegende Methoden zu praktischen Arbeiten mit Säugetierzellen vermittelt. Im zugehörigen Seminar stellen die Studierenden relevante Literatur bezüglich Zellkultur vor.

**Intended Learning Outcomes:**

Nach der Teilnahme an den Modulveranstaltungen besitzen die Studierenden das grundlegende theoretische Verständnis und Fachwissen für die Kultivierung und genetische Manipulierung von Säugetierzellen. Weiterhin haben sie grundlegende zellbiologische Arbeitstechniken erlernt und geübt. Sie verstehen zellbiologische Fragestellungen und Arbeitstechniken und können das erworbene Wissen auf vertiefte Fragestellungen anwenden.

Die Studierenden haben weiterhin Fähigkeiten zum Lösen von Problemen entwickelt, sowie Einblicke in die Zellbiologie und zellbiologische Problemen erworben.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Praktikum, Seminar

Lehrmethode im Praktikum: Anleitungsgespräche, Demonstrationen, Experimente, Partnerarbeit, Ergebnisbesprechungen.

Lehrmethode im Seminar: Vortrag

Lernaktivitäten: Studium von Skripten, -mitschrift, Praktikumsskript und Literatur; Üben von labortechnischen Fertigkeiten und zellbiologischen Arbeitstechniken; Zusammenarbeit mit Praktikumpartner; Anfertigung von Protokollen und Präsentationen.

**Media:**

Präsentationen mittels PowerPoint,

Praktikumsskript (Downloadmöglichkeit für Vorlesungsmaterial) Publikationen zu zellkulturspezifischen Themen

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt.

Als Grundlage oder zur Ergänzung wird empfohlen:

Sabine Schmitz; Der Experimentator: Zellkultur;

R. Ian Freshney: Culture of Animal Cells: A Manual of Basic Technique

**Responsible for Module:**

Schusser, Benjamin; Prof. Dr.med.vet.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Einführung in die Kultivierung von Säugetierzellen (Zellkultur - Praktikum) (Praktikum, 3 SWS)

Bak A, Bauer B, Fischer K, Flisikowska T, Pauli T

Zellbiologische Fragestellungen (Zellkultur - Seminar) (Seminar, 2 SWS)

Fischer K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2451: Introduction to Mycopathology | Einführung in die Mykopathologie

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 60 schriftlich.

Regelmäßige, aktive Teilnahme an den Lehrveranstaltungen wird erwartet. Eine Klausur (60 min, benotet) dient der Überprüfung der in der Vorlesung erlernten theoretischen Kompetenzen. Die Studierenden zeigen in der Klausur, ob sie in der Lage sind, das erlernte Wissen zu strukturieren und die wesentlichen Aspekte darzustellen. Sie sollen die erarbeiteten Informationen beschreiben, interpretieren, sinnvoll kombinieren und auf ähnliche Sachverhalte übertragen können.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzung sind Kenntnisse der Grundlagen der Mikrobiologie (Vorlesung Allgemeine Mikrobiologie). Zum besseren Verständnis sind gute Kenntnisse in organischer Chemie und Biochemie vorteilhaft.

#### Content:

Übersicht über Erkrankungen durch Pilze, Pathogenitätsfaktoren auf molekularer Ebene, Mykotoxine, Allergene bei Pilzen, Antimykotika und ihre Wirkmechanismen, Resistenzmechanismen, Materialschädigung und Lebensmittelverderb durch Schimmelpilze, Chemie der antimyzetischen Maßnahmen.

#### Intended Learning Outcomes:

Nach der Teilnahme an dem Modul besitzen die Studierenden einen breiten Überblick und zum Teil vertiefte theoretische Kenntnisse über filamentöse Pilze und Hefen und ihre Rolle als pathogene Mikroorganismen, Interaktionen zwischen Pathogen und Wirt, sowie die Rolle von Pilzen bei Material- und Lebensmittel-schädigenden Vorgängen. Sie sollen

" in der Lage sein, wichtige pilzliche Krankheitserreger einschließlich der durch sie verursachten Krankheitsbilder zu benennen.

" beispielhaft molekulare Mechanismen von Pathogenitätsfaktoren, Antibiotikawirkung und -resistenz zu benennen und erläutern können.

" ein Verständnis über die Möglichkeiten zur Behandlung von Infektionen durch Pilze entwickeln.

" lernen, das erworbene Wissen auf vertiefte Fragestellungen anwenden.

Das Modul soll weiterhin Fähigkeiten zum Lösen von Problemen entwickeln helfen, sowie das Interesse an Mikrobiologie fördern.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Vorlesung Lehrmethode: Vortrag, Demonstrationen

Lernaktivitäten: Studium von Vorlesungsskript und -mitschrift, ggf. Literaturstudium.

**Media:**

Präsentationen mittels Powerpoint, praktische Demonstrationen

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt.

**Responsible for Module:**

Wolfgang Liebl (wliebl@wzw.tum.de) Köberle, Martin, Dr. rer. nat. martin.koerberle@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Einführung in die Mykopathologie (Vorlesung, 2 SWS)

Liebl W [L], Köberle M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2402: Microbial Toxins in Food | Mikrobielle Toxine in der Nahrung

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden weisen in einer benoteten Klausur (60 min) nach, dass sie in der Lage sind in begrenzter Zeit und ohne Hilfsmittel ihr Fachwissen über mikrobielle Toxinbildner, deren Habitaten und Toxinen darzustellen. Zudem sollen sie grundlegende toxikologische Arbeitstechniken beschrieben sowie toxikologische Probleme mikrobieller Herkunft in ihrer Bedeutung für die Lebensmittelsicherheit einordnen können.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Grundkenntnisse in Anatomie, Physiologie und Biochemie.

#### Content:

Vermittlung toxikologischer und analytischer Grundlagen. Darstellung relevanter Bakterien-, Pilz- und Algentoxine: Ökologie der Toxinbildner; biochemische und pathophysiologische Wirkungen der Toxine; Vorkommen in der Nahrungskette ("carry over"); Prophylaxemaßnahmen, gesetzliche Reglementierungen.

#### Intended Learning Outcomes:

Nach der Teilnahme an den Modulveranstaltungen besitzen die Studierenden das grundlegende theoretische Verständnis und Fachwissen über mikrobielle Toxinbildner, deren Habitaten und deren Toxine. Weiterhin haben sie grundlegende toxikologische Arbeitstechniken (z.B. Zellkulturversuche, LC-MS/MS) erlernt und geübt. Sie können toxikologische Probleme mikrobieller Herkunft analysieren und bewerten.

Das Modul soll weiterhin Fähigkeiten zum Lösen von Problemen entwickeln helfen, sowie das Interesse an mikrobiellen Toxinen und deren Bedeutung für die Lebensmittelsicherheit fördern.

**Teaching and Learning Methods:**

Vorlesung und Übungen im Labor

**Media:**

PowerPoint

**Reading List:**

**Responsible for Module:**

Meyer, Karsten, Dr. agr. karsten.meyer@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Mikrobielle Toxine in der Nahrung (Vorlesung, 2 SWS)

Meyer K [L], Meyer K

Analytik mikrobieller Toxine (Übung, 2 SWS)

Meyer K [L], Meyer K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2449: Microbial Diversity and Development | Mikrobielle Vielfalt und Entwicklung

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In a presentation (20 min) followed by a discussion on special topics of microbial diversity (overview of selected taxa, microbial communities and / or methods for characterization of microorganisms) the participants show that they can independently prepare and present a special microbial topic to an expert audience and also answer more in-depth questions. The material covers the entire microbial diversity and goes in the technical depth significantly beyond the depth achievable in the lecture.

The examination results for the examination of theoretical competences (written examination, 60 min) and the ability to work independently on a very specific topic and to represent this in speech and answer (presentation) are counted (2:1). The module is passed if the weighted average grade is better than 4.1.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

A good background knowledge in organic chemistry and biochemistry is of advantage for a better understanding of the lecture courses.

#### Content:

In the courses of this module, basic knowledge about the phylogenetic and metabolic diversity of microorganisms and their role for the environment, mankind and biotechnology, is repeated and extended with advanced-level knowledge. The contents include for example cell-cell-communication and developmental processes in particular with prokaryotic microorganisms, systematics and phylogeny, adaptation of microorganisms to their habitats, the role of microorganisms in selected habitats, in global element cycles, and in selected technical processes (e.g., wastewater treatment). In seminar presentations, changing groups of microorganisms and

microbial communities, as well as their properties and importance, are presented and discussed in lectures.

**Intended Learning Outcomes:**

After completion of the courses of this module the students have acquired an advanced level of theoretical understanding about relationships among microorganisms, the adaptation of microorganisms to various environmental conditions, the role of their metabolic capabilities for mankind and nature, and about the processes of cell-cell-communication and cellular differentiation. They should be able to

" understand and critically discuss various methods of identification, differentiation and taxon affiliation in microbial systematics.

" understand the diversity of microbes and microbial communities in natural habitats.

" understand, by virtue of selected examples, the interconnections between metabolic pathways and the conversion of substances by microorganisms and the environment.

" to work independently on a topic in the field of microbial diversity and to present and discuss the gained knowledge competently and in a well understandable way to an audience.

" apply the acquired knowledge to in-depth problems.

The module should further help develop the ability to solve problems, and boost the students' interest for microbiological issues and for the important role of microorganisms for mankind and the environment.

**Teaching and Learning Methods:**

Form/technique of teaching: lecture courses. Teaching method: oral lecture.

Learning activities: study of lecture handout scripts and own notes. Preparation, presentation and discussion of short lectures by students.

**Media:**

Presentations using Powerpoint,

Handout script (download option for lecture material).

**Reading List:**

There is no textbook available that comprehensively covers all content matter of this module.

**Responsible for Module:**

Liebl, Wolfgang, Prof. Dr. [wliebl@tum.de](mailto:wliebl@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Proseminar - mikrobielle Diversität (Seminar, 2 SWS)

Liebl W, Stecher-Letsch B

Mikrobielle Diversität und Entwicklung (Vorlesung, 2 SWS)

Liebl W, Stecher-Letsch B, Ehrenreich A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2452: Modern Methods in Microbiological Diagnostics | Moderne Methoden mikrobiologischer Diagnostik

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden zeigen in einer benoteten Klausur (60 min), dass sie einen Einblick in das breite Spektrum der mikrobiologischen Diagnostik gewonnen haben und einschätzen können, welche Aussagekraft verschiedene Methoden für die Identifizierung und Differenzierung diverser Mikroorganismen haben. Dafür sind keine Hilfsmittel zulässig.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzung sind Kenntnisse der Grundlagen der Mikrobiologie (Vorlesung Allgemeine Mikrobiologie).

#### Content:

Übersicht über moderne Methoden der Identifizierung und Differenzierung von Pilzen und ihre Anwendungsmöglichkeiten: klassische kulturelle Methoden, molekularbiologische Methoden, physikalische-chemische Methoden, immunologische Methoden.

#### Intended Learning Outcomes:

Durch die Teilnahme an dem Modul gewinnen die Studierenden einen Einblick in das breite Spektrum der mikrobiologischen Diagnostik, einschließlich ihrer jeweiligen Vorzüge bzw. Einschränkungen in der Praxis. Sie lernen einzuschätzen, welche Methoden für welche Mikroorganismen geeignet sind und welche Aussagekraft welche Methoden bei der Identifizierung und Differenzierung verschiedener Keime besitzen.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Vorlesung Lehrmethode: Vortrag, Demonstrationen  
Lernaktivitäten: Studium von Vorlesungsskript und -mitschrift, ggf. Literaturstudium.

**Media:**

Präsentationen mittels Powerpoint, praktische Demonstrationen

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt.

**Responsible for Module:**

Wolfgang Liebl (wliebl@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Moderne Methoden mikrobiologischer Diagnostik (Vorlesung, 2 SWS)

Köberle M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**Specialization Area Organisms | Vertiefungsbereich Organismen****Practice Oriented Modules | Praxisorientierte Module****Module Description****LS20031: Research Internship Plant-Microbe Interaction |  
Forschungspraktikum Pflanze-Mikroben Interaktion**

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

The examination of the module is based on a laboratory assignment. The students conduct a six-week, full-time research project in the lab, during which they carry out a smaller set of experiments (2-5) fairly independently, but under close supervision. After completion of the laboratory work, they write a protocol of approximately 10-15 pages in length, which should be handed in within 8 weeks after completion of the experimental work. With the protocol the students demonstrate their ability to summarize the theoretical background and key aims of the performed experiments, to present the acquired results in a concise and coherent manner, and to interpret and discuss the experimental data in the context of available literature. The grade is based on the accuracy of the data analysis (50%) and the quality of the data presentation (50%). For the latter the evaluation is based on whether the theoretical background is properly described, the data is presented in a detailed and visually arresting manner, the calculations and application of statistical tests are accurate, and the results are interpreted and discussed properly.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:**

Basic knowledge in plant molecular biology, biochemistry, genetics and chemistry. Practical experience with essential wet-lab techniques such as pipetting and working under sterile conditions.

### **Content:**

Plants interact with microbes in many ways. These interactions can be either beneficial, as in the case of symbiosis, or problematic, as in the case of pathogens. Depending on the type of interaction, plants have evolved different molecular modes, which are utilized for symbiont recruitment or establishment or pathogen defenses and while these usually differ, some modes are conserved. Studying these events, to gain a deeper understanding of the underlying molecular and biochemical modes, may enable us to develop tools and procedures that benefit plant performance. In addition, research in this field has the potential to uncover molecular mechanisms of organismal interactions that are conserved across the biological kingdoms and can thus benefit our understanding of immunity also in animal systems.

This module is designed to teach students a subset of the following techniques:

- + Storage and cultivation of fungal symbionts or pathogens
- + Culturing of plants for infection assays and infection protocols
  
- + Phenotyping of plants to evaluate symbiosis or disease development
- + Quantitative histological assays to evaluate pathogen spread
- + Evaluating molecular read-outs of interactions such as marker gene expression (qPCRs) or altered abundance of proteins relevant for the interaction (western blotting)
- + Other relevant methods of molecular biology and biotechnology (for example transformation, genome-editing, line selection, protein-protein interaction assays in vitro and in vivo)
- + Work with model plants (*Arabidopsis*) and crops (Legumes and others)

### **Intended Learning Outcomes:**

Upon completion of this module students are able:

- + to understand the principles of research approaches used to study plant-microbe interactions;
- + to assess for which scientific questions it may be helpful to use them;
- + to plan and to carry out basic experiments using plant-microbe experimental systems;
- + to interpret and evaluate the results obtained in a written report.

### **Teaching and Learning Methods:**

Close theoretical and practical supervision combined with autonomous lab work enables the student to understand and apply basic experiments in Plant-Microbe Interaction research. By discussing lab protocols, the student analyses the underlying methodological principles of the experiments. By reading original research articles the student learns to assess quality standards for approaches in the field. By writing a research report the students learn to summarize the obtained results and discuss them in the context of relevant literature.

### **Media:**

Oral instructions, lab protocols, and relevant scientific publications.

### **Reading List:**

**Responsible for Module:**

Poppenberger-Sieberer, Brigitte, Prof. Dr. [brigitte.poppenberger@tum.de](mailto:brigitte.poppenberger@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Pflanze-Mikroben Interaktion (Forschungspraktikum, 10 SWS)

Poppenberger-Sieberer B [L], Poppenberger-Sieberer B

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20036: Research Project Host-Parasite-Interaction and Immunobiology of Parasitic Infections | Forschungspraktikum Wirts-Parasit-Interaktion und Immunbiologie Parasitärer Infektionen

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination performance is in the form of a laboratory performance (active and regular participation). Active participation includes the correct use of the laboratory equipment, efficient planning and protocol-compliant execution of the experiments, as well as documentation and statistical analysis of the data collected.

The practical report (# 25 pages in length: Title page, abstract, introduction, research question/hypotheses, material/methods, results and discussion, literature) serves to test the ability to describe, evaluate and interpret the experiments carried out in the practical course on the topic of host-parasite interactions. The experiments or data analyses carried out in the practical course and described in the protocol must also be presented in the form of a lecture (15 minutes, in English), so that the ability to present the scientific work orally and the ability to engage in scientific, critical discussion beyond the written form can also be assessed.

A grade is awarded for the overall performance (active participation, internship report and presentation, assessed at a ratio of 5:3:2).

As part of the research internship, students demonstrate the following skills: structured planning of experiments, careful and precise execution of experiments, correct documentation of results and data analysis, statistical analysis of data and critical discussion and evaluation of the results obtained.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Knowledge of immunology and microbiology, as well as molecular methods.

**Content:**

Parasites were there before us! - and our understanding of the interaction between parasite and host is still not deep enough. In the research internship, students work under supervision on ongoing research projects in the Infection Pathogenesis group. Methodologically, research projects may involve isolation and culture of various parasitic developmental stages, viability and motility assays, immune cell co-cultures, diagnostic and molecular methods, antigen isolation and separation, immune assays for seroconversion, and innate and acquired immune system responses.

**Intended Learning Outcomes:**

The aim of this module is for students to develop an understanding of the different types and consequences of the interaction between parasites and the host's immune response. After successfully completing the research practical, students will be able to translate research questions into experimental approaches, correctly methodically implement and record experiments and have a thorough understanding of experimental data handling (interpretation, limitations, troubleshooting). Methodological skills to uncover parasite-host interactions, such as diagnostics, the maintenance of parasites in in vitro cultures, and functional assays with host immune cells and parasites are promoted. In addition, students acquire the competence to handle risk group 2 pathogens safely and responsibly, thus laying the foundation for work in pathogen laboratories.

**Teaching and Learning Methods:**

Literature work, instructional discussions, practical laboratory work under supervision and with risk group 2 pathogens with a focus on sterile and safe working techniques in cell culture and parasitological laboratory methods, documentation, data analysis and discussion, presentation of results.

**Media:**

**Reading List:**

The scientific literature is issued on a project-specific basis.

**Responsible for Module:**

Ebner, Friederike, Prof. Dr. rer. nat. [friederike.ebner@tum.de](mailto:friederike.ebner@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Wirts-Parasit-Interaktion und Immunbiologie Parasitärer Infektionen  
(Forschungspraktikum, 10 SWS)

Ebner F, Hohensee L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0003: Internship Reproductive Biotechnology | Forschungspraktikum Biotechnologie der Reproduktion

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination is done in an Internship Report (10 – 20 pages), supplemented by a 15 min presentation . The final assessment is made up of 70% of the report and 30% of the presentation. The written report covers the theoretical background, literature, research question, methods, obtained results, and conclusion of the laboratory work.

In the presentation, the students have to present their scientific achievements and collected data in a concise way. Furthermore, the presentation focuses on the student's ability to discuss their results in front of a critical scientific audience and to put her/his results into a bigger context of the (current) literature.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

B.Sc. Life Sciences; basic knowledge of molecular biology and immunology

#### Content:

During the internship the student will work on an independent sub-project in the field of reproductive biotechnology/ immunology and learn different scientific methods. The sub-project is integrated into a larger overall project.

Depending on the project, techniques of molecular biology, cell biological, animal breeding and embryological methods will be learned. The student will expand his/her knowledge in the fields of embryology, stem cell biology, immunology, and molecular biology.

#### Intended Learning Outcomes:

Upon successful completion of this module, students



- are able to apply molecular biological, cell biological, embryological, cell culture and immunological methods in an efficient, time-saving manner
- analyze data
- are able to design experiments with all necessary controls and interpret the results
- have increased their competence in scientific reading and writing
- can display scientific data in publication quality
- are able to work in an independent fashion

**Teaching and Learning Methods:**

The students conduct a six-week research internship in the lab.

Hands on training, Close theoretical and practical supervision combined with autonomous lab work.

Prepare and give a presentation. Read and apply standard operating protocols; Writing a laboratory lab book.

**Media:**

Oral instructions, lab protocols, PowerPoint presentations

**Reading List:**

Tier-Biotechnologie, Hermann Geldermann, Ulmer UTB Verlag Stuttgart, 2005

Avian Immunology 3. Edition; ISBN: 978-0-12-396965-1

Animal Biotechnology 1; ISBN: 978-3319923260

Animal Biotechnology 2; ISBN: 978-3319923475

**Responsible for Module:**

Benjamin Schusser benjamin.schusser@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0467: Practical Course on Experimental Genetics of Mammals | Forschungspraktikum Experimentelle Genetik der Säugetiere

Version of module description: Gültig ab winterterm 2009/10

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 260	<b>Self-study Hours:</b> 110	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

keine

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

LaborProjektarbeit unter Anleitung, bei Bedarf Englisch

#### Media:

#### Reading List:

#### Responsible for Module:

Martin Habré de Angelis (hrabe@mytum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Experimentelle Genetik der Säugetiere (Forschungspraktikum, 10 SWS)

Hrabé de Angelis M, Beckers J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2256: Practical Course in Molecular Physiology | Forschungspraktikum Molekulare Physiologie

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 100	<b>Contact Hours:</b> 200

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 30 mündlicher Vortrag + praktisch (SL), Gewichtung 1/2.

Die Gesamtnote des Moduls wird aus zwei Einzelbewertungen errechnet. Hierzu zählen: (1) Die Studienleistung während des Praktikumszeitraums mit Fokus auf den praktischen Übungen im molekularbiologischen-, und -physiologischen Labor, Verständniskontrolle durch individuelle Gespräche. (2) Eine schriftliche Zusammenfassung am Ende des Praktikums über die dargelegten theoretischen Inhalte und Ergebnisse.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Grundkenntnisse klassische Physiologie und expressionelle Regulation

#### Content:

6 weeks at the facilities of the institute

.....

basic techniques in molecular physiology

#### Intended Learning Outcomes:

! Diese Angabe fehlt für das Modulhandbuch !

! Bitte unbedingt unter Benennung des Moduls an michael.scharmann@wzw.tum.de melden !

#### Teaching and Learning Methods:

Lehrtechnik: Praktikum. Lehrmethode: Vorträge, Gruppenarbeit, Referate. Lernaktivitäten: Relevante Literaturrecherche; Studium von Literatur; Üben von labortechnischen Fertigkeiten; Vorbereiten und Durchführen von Präsentationen

**Media:**

Flipchart, Tafelarbeit, PowerPoint, Folien

**Reading List:**

Freitext

**Responsible for Module:**

Michael Pfaffl (michael.pfaffl@mytum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Physiologie, MolBiotechM (Forschungspraktikum, 10 SWS)

Berner J, Donhauser L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2273: Practical Course in Phytopathology | Forschungspraktikum Phytopathologie

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 100	<b>Contact Hours:</b> 200

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

A detailed internship report (preferably in English) in conjunction with an accurately kept laboratory book serves to verify the knowledge acquired during the internship and the performance of the practical work. In the internship report, students show whether they are able to place the practical work in the scientific-theoretical context and whether they are able to adequately present and interpret the results of their research. Furthermore, the results should be discussed appropriately, e.g. by including scientific publications from the relevant subject area. A concluding presentation about the project in English rounds off the internship.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Fundamentals of molecular plant sciences and cell biology

#### Content:

Insight into the problem-oriented work with modern methods of life sciences (co-immunoprecipitation, qRT-PCR, GoldenGate cloning, etc.) Acquisition of a profound understanding and ability to apply research methods in the agrobiosciences. Insights into the scientific approach to questions from relevant research projects, e.g. MAMP recognition, molecular evolution of plant defence, plant susceptibility factors. Learning how to present research results.

#### Intended Learning Outcomes:

After participating in the module course, students are able to create experimental solutions for current problems in phytopathological research. By working on and participating in current research projects, students gain a deeper understanding of how results are to be evaluated against the experimental background. In addition to methodological skills, primarily in molecular biological,

protein biochemical and bioinformatics methods, independent action and autonomous decision-making are encouraged. The performance of laboratory experiments forms the basis for the acquisition of technical competence.

**Teaching and Learning Methods:**

Practical laboratory work; instructional talks, demonstrations, experiments, literature work, data analysis/result discussions, presentation of results, practice of laboratory technical skills and working techniques, preparation of protocols.

**Media:**

Protocols and scientific literature

**Reading List:**

Introductory technical literature on the respective topics and methods is made available in the form of publications.

**Responsible for Module:**

Ralph Hückelhoven hueckelhoven@wzw.tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Agrobiowissenschaften Pflanze/Phytopathologie (Forschungspraktikum, 10 SWS)

Hückelhoven R, Hausladen J, Müller M, Schempp H, Bradai M, Hein S, Maroschek J, Steidele C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2380: Research Project Plant Systems Biology | Forschungspraktikum Pflanzensystembiologie

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students conduct a six-week research project in the lab. The work-schedule can be adjusted to the curriculum of the students. The examination will be in the form of an oral presentation (20-30 min) within the progress report meeting of the department in German or English language. This presentation will be graded. Besides scientific criteria also the graphic representation of the results, figures following publication quality guidelines (Adobe Photoshop, Adobe Illustrator), will be paid attention to.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of plant biology, morphology and cell biology is recommended. Basic techniques for working in the molecular biology laboratory is strongly recommended such as clean pipetting.

#### Content:

The practical training teaches profound skills in one or more of the following techniques: (I) gene expression analysis (evaluation of microarray data, quantitative real time PCR, reporter gene analysis in intact organisms), (II) cell biology (confocal microscopy, analysis of different cell compartments using GFP-fusion proteins etc.) or (III) biochemistry (expression and purification of recombinant proteins from bacteria, functional assays). The participants are being introduced into current topics in molecular plant biology, that are being worked on in the department. Statistical methods are applied for data evaluation. Many of these techniques are applicable to other (non-plant) organisms.



**Intended Learning Outcomes:**

Upon successful completion of this module, students are able to perform advanced experimental techniques in – but not limited to - plant biology, specifically Plant Systems Biology in an efficient and productive manner. The students can evaluate data and are able to design experiments with all necessary controls, apply statistical tests, and interpret the results. The students further have increased their competence in display of scientific data in publication quality and presentation of these data to a scientific community.

**Teaching and Learning Methods:**

Close theoretical and practical supervision combined with autonomous lab work.

Form of studies/study techniques: Study of the lecture script, lecture comments and appropriate literature. Preparation of a written report with publication quality figures. Working with time pressure. Meeting deadlines.

**Media:**

Working with the handout. Basic skills in using one of the two softwares, Adobe Photoshop or Adobe Illustrator. Working independently on a fluorescence microscope or other state-of-the-art equipment.

**Reading List:**

Plant Physiology (Taiz/Zeiger) 5th edition. Molecular Biology of the Cell (Alberts).

**Responsible for Module:**

Schwechheimer, Claus; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum I, II, III und IV (PlaSysBiol PR I, II, III, IV) – M.Sc. (Forschungspraktikum, 10 SWS)

Schwechheimer C [L], Schwechheimer C, Hammes U, Denninger P, Giordano G, Hsu B, Kim N, Koutnik-Abele S, Kudamala S, Mohammadi Nakhjiri Z, Schulz L, Zappone D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2384: Research Project 2 Molecular Biology of Plant | Forschungspraktikum 2 - Molekularbiologie der Pflanzen

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Time allowed (in min.): 30 oral tests + graded test report.

To check the comprehension as well as the ability to describe, evaluate and interpret the experiments carried out during the practical training, a protocol has to be kept, which is checked and graded. In a colloquium, students demonstrate their ability to structure the acquired knowledge and to present the essential aspects of molecular biology of plants. They should be able to describe, interpret and combine the acquired information in a meaningful way and apply it to similar situations. The overall grade of the module consists of the protocol grade and the colloquium grade (1:1).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

For a better understanding of the contents imparted during the internship, a profound knowledge of the biological and molecular basics is required; in addition, in-depth experimental experience in plant sciences and a completed bachelor thesis are prerequisites

#### Content:

Das Praktikum führt die Teilnehmer vertieft an aktuelle Themen und Methoden der molekularen Pflanzenbiologie heran. Die Teilnehmer arbeiten dabei zusammen mit Wissenschaftlern Hand in Hand an aktuellen Forschungsprojekten des Lehrstuhls. Das Praktikum wird für verschiedene Themenbereiche angeboten. Themenbereiche sind die Streßphysiologie der Pflanzen, der pflanzliche Xenobiotika-Metabolismus, pflanzliche Peroxisomen und Zellteilung. Die Festlegung des Themas erfolgt nach Absprache.

**Stressphysiologie:** Gegenwärtig werden am Lehrstuhl die pflanzliche Reaktion auf Trockenstress, Salzstress und Starklichtstress untersucht. Aktuell spielen in diesem Zusammenhang die Wurzel-Spross-Kommunikation unter Stressbedingungen und Abscisinsäure-vermittelte Signaltransduktion bzw. Anpassungsreaktionen in Wildtyp und speziellen Mutanten eine wichtige Rolle. Techniken: In vivo-Imaging Verfahren (Detektion von Luciferaseaktivität mit zellulärer Auflösung, Thermokamera, Calcium-Imaging), transiente Expression im Protoplastensystem, Konfokalmikroskopie, SDS-PAGE, Western Blot, Klonierung.

**Programmierter Zelltod:** Gegenwärtig wird in der Arbeitsgruppe Gietl die Funktion der KDEL-Cystein Endopeptidasen in Entwicklung und Pathogen-Abwehr, sowie ihr Transport innerhalb der Zelle untersucht. Techniken: Pflanzenanzucht; Inokulierung mit biotrophen, semi-biotrophen und nekrotrophen Pilzen, Beurteilung des Befallsstadiums; Untersuchung von Reporterlinien bzw. ko-Mutanten; Mikroskopie, Konfokalmikroskopie; Proteinuntersuchungen (Hochregulierung der KDEL-Cystein Endopeptidasen, Immunpräzipitation, Aktivitätsmessung).

**Xenobiotika-Metabolismus:** Fremdstoffe (Xenobiotika) werden in der Pflanze modifiziert und vielfach an hydrophile Substanzen wie Zuckermoleküle und Glutathion konjugiert. Im Rahmen des Praktikums werden grundlegende analytische Methoden wie HPLC, Hefetransformation, Klonierungen und Enzymassays verwendet. An der Glutathionkonjugation beteiligte Pflanzenenzyme werden in Hefe als Modellsystem exprimiert und ihre Funktion bei der Pestiziddetoxifikation untersucht.

**Zellteilung:** Die Arbeitsgruppe Assaad untersucht Zellteilung, Zellwandbildung, Membranverkehr und Allokationsentscheidungen in *Arabidopsis thaliana*. Mit Methoden der Molekulargenetik, Zellbiologie und Biochemie wird die Regulierung des Wachstums in Antwort auf unterschiedliche Stressbedingungen untersucht. Zum Einsatz kommen Techniken wie Mutantanalyse, Kartierung, positionelle Klonierung, Live Imaging und Immunlokalisierung anhand von Konfokalmikroskopie und Immunpräzipitation.

### **Intended Learning Outcomes:**

By participating in the research internship, students acquire in-depth theoretical knowledge and a specific understanding of

"questions of molecular plant biology

"Modern working techniques of plant physiology

You will then be able to apply the acquired knowledge to in-depth questions, to competently apply modern working techniques of plant physiology and to experiment with plants, especially with *Arabidopsis*

### **Teaching and Learning Methods:**

The internship introduces the participants to current topics and methods of molecular plant biology. The participants work hand in hand with scientists on current research projects of the chair. The internship is offered for different topics. Topics are stress physiology of plants, plant xenobiotic metabolism, plant peroxisomes and cell division. The topic will be determined by arrangement.

**Stress Physiology:** Currently, the department is investigating the plant response to drought stress, salt stress and high intensity light stress. Currently, root-sprout communication under stress conditions and abscisic acid-mediated signal transduction or adaptation reactions in wild type and special mutants play an important role in this context. techniques: In vivo imaging techniques (detection of luciferase activity with cellular resolution, thermal camera, calcium imaging), transient expression in the protoplast system, confocal microscopy, SDS-PAGE, western blot, cloning.

**Programmed cell death:** Currently, the Gietl group is investigating the function of KDEL-cysteine endopeptidases in development and pathogen defense, as well as their transport within the cell. Techniques: Plant growth; inoculation with biotrophic, semi-biotrophic and necrotrophic fungi, assessment of the stage of infestation; investigation of reporter lines or co-mutants; microscopy, confocal microscopy; protein studies (upregulation of KDEL-cysteine endopeptidases, immunoprecipitation, activity measurement).

**Xenobiotic metabolism:** Foreign substances (xenobiotics) are modified in the plant and often conjugated to hydrophilic substances such as sugar molecules and glutathione. During the practical course basic analytical methods such as HPLC, yeast transformation, cloning and enzyme assays are used. Plant enzymes involved in glutathione conjugation are expressed in yeast as a model system and their function in pesticide detoxification is investigated.

**Cell division:** The Assaad group studies cell division, cell wall formation, membrane traffic and allocation decisions in *Arabidopsis thaliana*. Using methods from molecular genetics, cell biology and biochemistry, the regulation of growth in response to different stress conditions is studied. Techniques such as mutant analysis, mapping, positional cloning, live imaging and immunolocalization using confocal microscopy and immunoprecipitation are applied.

**Media:**

Presentations via PowerPoint, blackboard writing,  
Internship script (PowerPoint presentations can be downloaded)

**Reading List:**

Weiler and Nover: General and molecular botany. Thieme publishing house.  
Peter Schopfer and Axel Brennicke: Plant Physiology. Spektrum Akademischer Verlag.  
Lincoln Taiz and Eduardo Zeiger: Plant Physiology. Spektrum Akademischer Verlag  
Bob Buchanan, Wilhelm Gruissem and Russell L. Jones: Biochemistry & Molecular Biology of Plants. John Wiley & Sons  
Professional articles from scientific journals (adapted to the chosen working topic).

**Responsible for Module:**

Grill, Erwin; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum II: [WZ2384] (Forschungspraktikum, 10 SWS)

Assaad-Gerbert F, Wiese C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2401: Research Project 'Molecular Plant Breeding' | Forschungspraktikum Molekulare Pflanzenzüchtung

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a project report (approx. 15-20 pages), which is to be submitted at the end of the module and is graded. The report contains a short introduction to the topic, the scientific research questions, the applied material and methods, the results and a discussion of the results in the context of current literature.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in molecular genetics and plant breeding. Previous practical experience with molecular techniques and/or handling of plants is an advantage.

#### Content:

The individual projects that students will work on encompass current topics of plant breeding and address different aspects of ongoing research projects. The projects cover the acquisition of scientific methods and comprise molecular genetic laboratory and/or modern phenotyping methods for agronomic traits. Depending on the individual project, different molecular techniques are applied (e.g. DNA extraction from plant material, PCR, DNA cloning and sequencing, analysis of molecular markers, gene expression analysis). We also offer topics related to drought stress in field or greenhouse experiments with a strong focus on application in crop plants, where physiological and agronomic traits are assessed. In projects with a focus on phenotyping, students will learn how to plan and conduct field or greenhouse experiments and how specific phenotypes are measured. During the project, the appropriate scientific analysis and interpretation of the data will be addressed, which includes e.g. statistical data analysis, mapping of genes/QTL, characterization of genes, literature work.

A list of current projects is available at [www1.ls.tum.de/plantbreeding/](http://www1.ls.tum.de/plantbreeding/). Upon agreement own topics can be suggested.

**Intended Learning Outcomes:**

In the research project "Molecular Plant Breeding" the students will learn to design experiments in the lab or greenhouse/field in individual case studies. They gain experience in planning and conducting the experiments, organizing the work and analyzing experimental data. Upon successful completion of the research project, students are able to scientifically analyze, interpret, discuss and present their obtained results in the context of current literature.

**Teaching and Learning Methods:**

Depending on the individual project, the students will gain and practice laboratory skills and/or knowledge on handling of plants in greenhouse/field experiments through hands-on lab practicals and/or hands-on phenotyping methods. Through instruction by their advisor, they will learn to define specific scientific questions related to their individual topic, to find solutions to solve these questions and to discuss the results. By preparing an oral presentation and a final written report, students learn how to adequately describe their experiments, how to structure the results and how to discuss the results in view of current literature.

**Media:**

Experimental studies related to current research projects, current literature

**Reading List:**

Project-specific current literature will be provided for each project.

General:

- Grotewold, Chappell and Kellogg: Plant Genes, Genomes and Genetics. Wiley-Blackwell, 2015. ISBN: 978-1-119-99887-7
- Brown: Genomes 4. Garland Science, 2017. ISBN 978-0-815-345084
- Abraham Blum: Plant Breeding for Water-limited Environments, Springer Science + Business Media S.A.; ISBN-10:1441974903

**Responsible for Module:**

Schön, Chris-Carolin; Prof. Dr.sc.agr. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Pflanzenzüchtung (Forschungspraktikum, 10 SWS)

Avramova V, Barl L, Kränzlein M, Polzer C, Lin Y, Würstl L, Guffanti F

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### WZ2417: Research Project Genetics 2 - Developmental Genetics | Forschungspraktikum Genetik 2 Entwicklungsgenetik

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

This is a six-week practical training with six hours regular participation every day (mo. – fri.) - working times and schedule by arrangement. Preparation, realization, interpretation and discussion of experiments. Participation in a colloquium of plant sciences. The grading will be based on the quality of the practical performance (60%) and its record (40%), which has to be written in form of an original scientific report.

In his/her practical performance the student demonstrates that he/she has acquired practical skills and techniques such that he/she is able to appropriately perform experimental work in the field of molecular biology. He/she also demonstrates to be able to operate corresponding devices and to reproducibly record the experiment carried out.

The student demonstrates that he/she is capable to evaluate the data in a meaningful scientific way, to interpret and discuss the obtained results in context of his/her theoretical knowledge and to make corresponding conclusions. He/she have the ability to process the results and summarize them in an intelligible form.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Fundamental knowledge in Genetics, Biochemistry, Chemistry, Plant Sciences, working experience (including safety aspects) in a molecular biology lab.

#### Content:

Investigating a current scientific project from the field of the course supervisor. Perform work covering molecular and genetic techniques and scientific analysis (statistics where required) and train interpretation of experimental results. The focus lies on the molecular analysis of developmental processes, in particular plant embryo development and cell biology. Techniques



depending on the project treated: molecular cloning, epigenetic modifications, molecular analysis of plant mutants, use of transgenic reporters (e.g. GHFP, YFP, tagged constructs etc.) in vivo, transcriptomics, (q)RT-PCR, in situ hybridization, FISH, histology, chromosome analysis, flow cytometry, antibody staining, fluorescence and confocal laser scanning microscopy including FLIM, FLIM-FRET, FRAP, Anisotropy, protein analysis, cell culture.

**Intended Learning Outcomes:**

After the successful performance of this module the students are experienced in: independent scientific working, current techniques in molecular biology and data/literature investigation. They learn to include/to link knowledge published in relevant literature with the results obtained in the project investigated in the course.

**Teaching and Learning Methods:**

Practicum, project work. The students plan and perform their experiments as well as the literature search largely independently. They prepare a scientific evaluation of their experimental results.

**Media:**

Lab work, literature search, internet search.

**Reading List:**

There is no text book specifically designed for this training course. The students receive original literature and corresponding methodological literature/material at the beginning of the course.

**Responsible for Module:**

Torres Ruiz, Ramon; Prof. Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2474: Research Project in Molecular Physiology | Forschungspraktikum Molekulare Physiologie

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination takes place as part of a laboratory assignment, which consists of a report (15-20 pages) and a presentation (20-30 minutes) about the performed practical work in the scientific context. One-half of each of these examination performances is included in the final examination mark.

Regular attendance during the practical course is required. A written summary of the practical work with a theoretical background serves to review the skills acquired during the practical course. Students should document their work in an appropriate scientific manner and structure and present the essential aspects of the knowledge they have acquired. A presentation on the work is given within the working group or in the institute's internal seminar.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

BSc lecture in basic animal or human physiology.

#### Content:

Cell isolation, cell culture, tissue culture, extraction of cells, nucleic acids and proteins, transcriptomics, transcript expression analysis (real-time RT-PCR), protein analysis using ELISA or flow cytometry, blotting techniques, use of databases, sequence analysis, bioinformatics, biostatistics, etc.

#### Intended Learning Outcomes:

After successfully participating in the module, students acquire basic skills and abilities for molecular biology work in the laboratory. In addition, they will acquire the ability to critically

scrutinize their own experimental results for causes of variance. Students will acquire knowledge about the correct scientific documentation of results. In the presentation as well as in the report, students clearly demonstrate that structuring according to scientific topics must be distinguished from the chronological approach.

**Teaching and Learning Methods:**

Teaching technique: Laboratory work

Teaching method: individual work, experiments

Learning activities: literature research, conducting experiments, critical evaluation of results, searching for causes of variance, summarizing in written and oral presentations

**Media:**

Own laboratory work, data acquisition, evaluation , and presentations using PowerPoint

**Reading List:**

**Responsible for Module:**

Zehn, Dietmar; Prof. Dr.med.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Physiologie, BiologieM (Forschungspraktikum, 10 SWS)

Zehn D, Pfaffl M

Forschungspraktikum Molekulare Physiologie, BiologieM (Forschungspraktikum, 10 SWS)

Zehn D, Pfaffl M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2481: Practical Course in Developmental Genetics of Plants 2 | Forschungspraktikum Entwicklungsgenetik der Pflanzen 2

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students are still being supervised but perform experiments in a largely independent fashion. Advanced techniques of plant developmental genetics will be used (for example, qRT-PCR, protein purification, confocal microscopy, etc) and documented. Students work out the scientific background of the experiments and participate in the seminar series of the lab. Successful participation of the module is assessed by a graded presentation (20 min presentation + 10 min discussion, language will be English). In the presentation, students demonstrate that they are able to overview the theoretical background and main objectives of the experiments conducted, present the results obtained in a concise and coherent manner, and interpret and discuss the experimental data.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Advanced students of biochemistry, biology, molecular biotechnology and agricultural biosciences.

#### Content:

Students work in the lab consisting of group leader, PhD students, postdocs and technical personnel. They will address experimentally a given problem in a partly supervised and partly independent fashion. The work and results will be documented and discussed in a written lab protocol. Students regularly participate in the lab's seminar series.

#### Intended Learning Outcomes:

Upon successful completion of this lab course, students are able to perform advanced experimental techniques in plant developmental genetics and cell biology in an efficient manner. They will be able to evaluate their data and apply statistical tests. They are able to design

experiments with all necessary controls and interpret the results. Students also gained additional experience in the documentation and presentation of results . Furthermore, students are able to work in an independent fashion.

**Teaching and Learning Methods:**

Personal supervision of experimental work combined with autonomous lab work. Self-study of literature.

**Media:**

Lab work, discussions with group members, oral presentation, documentation of results.

**Reading List:**

Taiz et.al. 2023 “Plant Physiology and Development” 7th edition, Oxford University Press  
Original research literature and reviews.

**Responsible for Module:**

Schneitz, Kay Heinrich; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Entwicklungsgenetik der Pflanzen 2 (Forschungspraktikum, 10 SWS)

Schneitz K, Boikine R, Yun N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2517: Research Project Plant Developmental Genetics 1 | Forschungspraktikum Entwicklungsgenetik der Pflanzen 1

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students work experimentally in the laboratory under supervision. Common techniques of plant developmental genetics are applied in practice (e.g. crosses, cloning, PCR, etc) and documented in a protocol booklet. The students also work out the scientific background of the experiments to be carried out. They therefore regularly participate in the seminars of the working group. The results are presented and discussed in a short lecture (20 min).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of genetics and molecular and cell biology is required.

#### Content:

The students work experimentally in the laboratory as members of a working group consisting of the group leader, PhD students and postdocs, technical staff and, if necessary, students. Under supervision a task from the field of plant developmental genetics formulated at the beginning is worked on. A laboratory record must be kept of the experimental plan, the work performed and the results obtained. At the end, the students prepare a protocol in which the topic is introduced, the methods and materials are described, the results are reproduced and briefly discussed in comparison with relevant literature. They take part in the regular seminars of the working group.

#### Intended Learning Outcomes:

After completing the laboratory internship, the students are able to perform basic experimental techniques in the field of plant developmental genetics and cell biology. They have gained basic experience in the recording and presentation of scientific results.

**Teaching and Learning Methods:**

Personal supervision of the practical work in the laboratory. Private study of literature.

**Media:**

Internship, discussion in the working group, own oral presentation, transcript of the elaborated results in form of a short scientific paper (protocol).

**Reading List:**

Original literature and review articles.

**Responsible for Module:**

Schneitz, Kay Heinrich, Prof. Dr. [kay.schneitz@tum.de](mailto:kay.schneitz@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Entwicklungsgenetik der Pflanzen 1 (Forschungspraktikum, 10 SWS)

Schneitz K, Boikine R, Yun N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2545: Research Project Animal Biotechnology | Forschungspraktikum Biotechnologie der Tiere

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

A laboratory performance is set as the examination performance.

In the course, the laboratory performance is assessed, i.e. the preparation and practical execution of the experiments, any necessary calculations, their documentation and evaluation in the form of a laboratory protocol, as well as the interpretation of the results with regard to the knowledge to be gained. In the protocol, the students show whether they are able to structure the work they have carried out and present the essential aspects. They should be able to describe and interpret the results and place them in a meaningful context to the knowledge gained in the lab.

The laboratory performance is complemented by a final presentation (15 min) to test communicative competence in presenting scientific topics to an audience.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The module is suitable for students in BSc (5th/6th semester) or Master. Basic knowledge in molecular biological methods is recommended.

#### Content:

Within the framework of the research internship in animal biotechnology, students will work on an independent sub-project and become familiar with different scientific methods or possibly establish new methodological approaches themselves. The project will be part of an overall project and the students will learn to understand a specific task area in the larger context. Depending on the project, they will learn practical skills in molecular, cell biological or embryological methods and expand their academic knowledge in the field of stem cell biology, animal models for tumor research or other human diseases and xenotransplantation.



**Intended Learning Outcomes:**

Students will learn the following:

- Independent scientific work
- Acquisition of new methods, such as genome editing, PCR, cell culture
- Project planning and practical implementation
- Working out solutions to problems independently
- Project description and presentation
- Independently conduct literature search and practical implementation of theoretical knowledge
- Integration and cooperation in a group, social competence

**Teaching and Learning Methods:**

Independent development of relevant literature, implementation of an independent sub-project under the guidance of a project manager.

**Media:**

Presentations using PowerPoint  
Internship report

**Reading List:**

Project relevant literature

**Responsible for Module:**

Flisikowska, Tatiana; Dr. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Biotechnologie der Tiere (Forschungspraktikum, 10 SWS)

Fischer K, Flisikowska T, Flisikowski K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2558: Research Project Molecular Soil Microbiology | Forschungspraktikum Molekulare Bodenmikrobiologie

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 100	<b>Contact Hours:</b> 200

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Exam duration (in min.): 30 minutes (seminar lecture).

Regular, active participation in the courses is expected. The student receives his/her own scientific topic which he/she will work on during the practical course under the supervision of an experienced researcher. It is expected that the student will also evaluate the data and, through discussions with the supervisor, will be able to critically interpret the knowledge gained. This is done a) by preparing a protocol about the major outcomes of the course and b) by a seminar lecture and subsequent discussion

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Introductory lecture "Microbial Ecology and Microbiomes"; Microbiological practical courses for beginner; Basic knowledge of molecular methods such as PCR

#### Content:

Topics for the course are based on current work in the Research Unit for Comparative Microbiome Analysis at the Helmholtz Zentrum München. These are listed under [www.helmholtz-muenchen.de/comi](http://www.helmholtz-muenchen.de/comi). A topic is selected together with the direct supervisor; the topic is set in such a way that it can be finalized in 10 weeks and that it is self-contained so that initial findings can be discussed. The methods to be used are well established; accordingly, a quick success in learning new tools is guaranteed.

**Intended Learning Outcomes:**

Independent processing of scientific questions; Application of learned and new methods in soil microbiology; Experimental planning based on statistical criteria including evaluation of the data sets. Ecological interpretation of molecular biological data sets.

**Teaching and Learning Methods:**

Practicing laboratory skills and microbiological work techniques; Discussion with doctoral students and postdocs from the Research Unit

**Media:**

independent lab work based on established protocols

**Reading List:**

Soil Microbiology and Biochemistry, Eldor A. Paul (Author), Francis E. Clark; ISBN-10: 0125468067

**Responsible for Module:**

Schlöter, Michael, Prof. Dr. rer. nat. habil. [schloter@tum.de](mailto:schloter@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Umweltmikrobiologie (Forschungspraktikum, 10 SWS)

Schlöter M, Schulz S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2631: Research Project Molecular Ecology and Evolutionary Biology of Plants | Forschungspraktikum Molekulare Ökologie und Evolutionsbiologie der Pflanzen

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

By writing a written report on the research project, the students show that they are able to structure the data they have compiled themselves, present it convincingly and evaluate it methodically. In addition, the students give a lecture of about 20 minutes in which they show that they are able to summarize and present the results in a comprehensible way. They should show that they are able to connect questions from the auditorium to the theoretical context in a coherent way, both in terms of subject matter and content, and to convey them in a comprehensible manner. The module grade consists of the minutes (80%) and the presentation (20%)

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in genetics/botany/evolutionary biology

#### Content:

Participation in ongoing research projects or work on own molecular genetic topics. Within the scope of practical activities, important and scientifically relevant working methods and methods of research in molecular ecology/molecular phylogenetics are taught.

#### Intended Learning Outcomes:

After attending the module course, students will have in-depth practical knowledge of working methods in molecular ecology or phylogenetics. They have learned to plan, set up and independently carry out a project, including scientific literature research. They have acquired the ability to work in a critical scientific manner, including data evaluation and presentation of results at scientific events.

**Teaching and Learning Methods:**

Focus on practical activities in the laboratory under supervision, followed by independent work with the learned methods and discussion of results

**Media:**

Practical exercises in the laboratory

**Reading List:**

Neis-Beeckmann, P. 2009. "Molecular Biology for Dummies: The Stuff That Life Is Made Of" --  
Knoop, V. & Mueller, K. 2009. "Genes and Family Trees: A Handbook on Molecular Phylogenetics",  
2nd ed. -- Hall, B.G., 2011. "Phylogenetic Trees Made Easy: A How-to Manual," 4th ed.

**Responsible for Module:**

Hanno Schäfer [hanno.schaefer@tum.de](mailto:hanno.schaefer@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Ökologie und Evolutionsbiologie der Pflanzen für  
Fortgeschrittene (Forschungspraktikum, 10 SWS)  
Schäfer H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ9903: Practical Course "Organisms" | Forschungspraktikum "Organismen"

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS10042: Lab Course Plant Immunology and Stress Physiology | Lab Course Plant Immunology and Stress Physiology

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is rated via written examination (Klausur, essay exam, no multiple choice, without the use of learning aids, 100% of the grade, 90 min). The written exam tests the ability of the student to remember the principles, power and limitations of technologies for testing immunological and stress physiological parameters. They have to show their ability to transfer the knowledge on new practical problems and scientific questions. Student have to show their ability to design experiments suitable to test a given hypothesis from the plant stress and immunity field. Students have to show their ability to extract scientific conclusions from experimental data presented in the exam.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of plant stress physiology and immunology. Ideally, successful completion of one of the M.Sc. modules: Immunology, Crop and Livestock Health and Disease, Host-Parasite-Interaction, or Plant Stress Physiology. Basic experience in laboratory techniques, such as pipetting, working with standard laboratory equipment, data processing and display.

#### Content:

In this module, students are introduced to planning and performing immunological and stress physiological experiments in order to analyze the immune system and stress responses of plants. Students gain knowledge about theoretical background, power and limitations of technologies applied.

Examples of methods/technologies usually performed during the exercise are:

- Measuring calcium signaling in plants
- Measuring reactive oxygen species



- Transfection of plants for interference with immuno-competence
- Measuring of stress hormone ethylene
- Measuring of chlorophyll fluorescence
- Phenotyping plant immune competence
- Measuring MAP Kinase activation

Data are collected in small groups of students. Students process and evaluate own and peers' data for short supervised presentation and discussion.

### **Intended Learning Outcomes:**

Upon completion of the module, students know and understand state of the art technologies in plant immunity and stress physiology. They made hands on experience in laboratory technologies in plant immunity and stress physiology. They are able to self- sufficiently select and apply suitable methods from literature and exercises for measuring plant immunity and stress and to evaluate and interpret data. Students know advantages and disadvantages of different methods for judging a plant's stress and immune status. They can interpret and display own data and discuss them in front of an audience of peers. This enables students for measuring and judging plant performance under adverse environmental conditions and pathogen pressure.

### **Teaching and Learning Methods:**

The module consists of two consecutive one-week lab courses on plant immunology and stress physiology. Theoretical background is introduced by supervisors/tutors on a daily basis. In small parallel groups, the students will be guided by each one supervisor/tutor to plan and conduct experiments in order to analyze the a) plant immune system and b) stress responses. The students will perform supervised hands-on experiments and analyze the resulting data in a guided way. Analyzed data will be presented to the supervisor and the group and results are critically discussed.

### **Media:**

We provides scripts, protocols, and data processing templates. We present in PowerPoint and round table discussion.

### **Reading List:**

Buchanan 2015, Biochemistry & Molecular Biology of Plants. Review and original literature are additionally provided.

### **Responsible for Module:**

Hückelhoven, Ralph, Prof. Dr. rer. nat. hueckelhoven@tum.de

### **Courses (Type of course, Weekly hours per semester), Instructor:**

lab course plant immunology (Übung, 2 SWS)

Schempp H, Müller M, Steidele C, Hoheneder F, Maroschek J, Hein S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1818: Fungal Genetics Exercise | Pilzgenetische Übung

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Regular, active participation in the practical course is expected. In the course of the exercise, data are gathered that will be used to write a final course result protocol. The students demonstrate by writing this 10-25-page course journal that they are able to correctly structure and reflect the critical aspects of their experiments. In the course journal, also aspects such as activity/productivity, creativity and independence during the course work will be evaluated and will be part of the final grade.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Prior participation in the lecture "Molecular Biology of Biotechnologically Relevant Fungi" is recommended.

#### Content:

During the theoretical part of the exercise, the course content will be taught individually and in group settings. In particular aspects such as: General developmental and cell biology of filamentous fungi; Relevance of fungi in basic and applied science; Fungi as pathogens of man, animals and plants.

During the practical part of the exercise, the focus will be on the following topics: Molecular manipulation of filamentous fungi; Cloning of transformation constructs and fungal transfection; Analysis of resulting progeny by fluorescent microscopy; Employing classical genetics techniques in crossings; Characterization of a series of unknown metabolic mutants by physiological and biochemical assays; Sugar analytic by HPAEC-PAD.

**Intended Learning Outcomes:**

Upon completion of the module, students will have gained basic knowledge regarding the biology of filamentous fungi and their relevance for basic and applied science. The students will furthermore have understood how to approach scientific questions (educated experimental planning, execution, analysis and interpretation). They will have learned how to apply molecular and genetic techniques using filamentous fungi to manipulate model organisms towards the elucidation of the functioning of eukaryotic cells. These techniques are also the basic concept for current biotechnological and industrial applications.

**Teaching and Learning Methods:**

In this exercise, which consists of a theoretical and a practical part, lab-technical skills will be acquired and practised in group settings by way of practical teaching methods, such as experiments. These skills include: Dealing with scientific questions and solution finding by experimental approaches, and constructive discussion and critical reflection of own experiments.

**Media:**

Course script and Powerpoint slides

**Reading List:**

current literature of covered topics; mostly to be researched by students themselves

**Responsible for Module:**

J. Philipp Benz [benz@hfm.tum.de](mailto:benz@hfm.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Pilzgenetische Übung (Übung, 5 SWS)

Benz J [L], Benz J, Cheng T, Tamayo Martinez E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1576: Research Project 'Plant Growth Regulation' | Research Project 'Plant Growth Regulation'

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the module is done in the form of a laboratory assignment. The students conduct a six-week research project in the lab. The work-schedule can be adjusted to the curriculum of the students. After the practical work, a protocol (approximately 15 to 20 pages) has to be prepared and handed in usually within 4 weeks after the laboratory work has been concluded. By preparing the protocol the students demonstrate the ability to summarize the theoretical background and key aims of the performed experiments and to present the acquired results in a concise and coherent manner and to interpret and discuss the experimental data in the context of available literature. The grade is based on the accuracy and correctness of the results (50%) and the quality of presentation and evaluation of the data (50%), particularly the description of the theoretical background, presentation of raw data, calculations, application of statistical tests and interpretation and discussion of the results.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in plant molecular biology, biochemistry, genetics and development. Practical experience with basic lab working techniques such as pipetting and working under sterile conditions. Successful completion of the lecture Plant Biotechnology.

#### Content:

As primary resource of biomass, plants grow by continuous formation of modular organs. The net growth is the result of different growth parameters, including the rate of organ formation, the size of the single organs, and the overall amount of formed organs. Moreover, it is strongly dependent on environmental conditions (nutrients, water, light and temperature) and the germplasm (constitution

of limiting genetic factors and overall genome structure). Plant growth optimization is thus a multifactorial process and strongly dependent on the specific utilization of the crop.

The present research project deals with the molecular characterization of genetic factors that act to limit the different growth parameters mentioned above. Known and novel important yield-affecting loci are identified and positioned in the established regulatory network. Methods and techniques applied in the framework of the course will depend on the individual project and may include: Quantitative analysis of shoot growth (leaf formation rate, determination of meristem size), quantitative analysis of shoot regeneration in tissue culture, gene expression analysis (GUS reporter/qPCR/Western blotting), cloning of T-DNA constructs, plant transformation, PCR genotyping, protein expression and purification, fluorescence and electron microscopy.

### **Intended Learning Outcomes:**

Upon completion of this module students are able:

- to understand key scientific aims in the field of Plant Growth Regulation;
- to assess methods to identify relevant molecular factors controlling plant growth;
- to experimentally characterize regulatory pathways affecting leaf formation rate, elongation growth and shoot architecture;
- to interpret results from biochemical, genetic and physiological experiments dealing with Plant Growth Regulation.
- to present the obtained data in a written report and to discuss the results in the context of relevant literature.

### **Teaching and Learning Methods:**

Close theoretical and practical supervision combined with autonomous lab work enables the student to understand and apply basic experiments in Plant Growth Regulation. By discussing lab protocols the student analyses the underlying methodological principles of the experiments. By reading original research articles the student learns to assess quality standards for experiments analyzing plant growth parameters. By writing a research report the student learns to summarize the obtained results and discusses it in the context of relevant literature.

### **Media:**

Oral instructions, lab protocols, relevant scientific publications.

### **Reading List:**

Plant Physiology and Development (2014) L. Taiz and E. Zeiger, Sinauer Associates Inc., U.S.;  
Plant Biotechnology and Agriculture: Prospects for the 21st Century (2011) A. Altman and P. M. Hasegawa, Academic Press.

### **Responsible for Module:**

Sieberer, Tobias; Dr. nat. techn.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Wachstumsregulation der Pflanzen (Forschungspraktikum, 10 SWS)  
Poppenberger-Sieberer B, Sieberer T, Ramirez V

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1577: Research Project 'Biotechnology of Horticultural Crops' | Research Project 'Biotechnology of Horticultural Crops'

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students conduct a six-week research project in the lab. The work-schedule can be adjusted to the curriculum of the students. The examination performance is provided in the form of a report (approx. 15 to 20 pages), which must usually be submitted within 4 weeks of completion of the laboratory work. By preparing a report the students demonstrate the ability to summarise the theoretical background and key aims of the performed experiments and to present the acquired results in a concise and coherent manner and to interpret and discuss the experimental data in the context of available literature. The grade of the report is based on the accuracy and correctness of the results (50%) and the quality of presentation and evaluation of the data (50%), particularly the description of the theoretical background, presentation of raw data, calculations, application of statistical tests and interpretation and discussion of the results.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in plant molecular biology, biochemistry, genetics and development. Practical experience with basic lab working techniques such as pipetting and working under sterile conditions. Successful completion of the lecture(s) Crop Biotechnology and/or Plant Biotechnology is highly recommended.

#### Content:

The students work on a research project in the lab on one of the following topics:

- a) plant hormone signalling
- b) impact of environmental cues on plant growth and development
- c) heterologous expression of plant proteins

Methods and techniques applied in the framework of the course will depend on the individual project and may include: cloning, plant transformation, PCR, qPCR, Western blot analysis, protein expression and purification, assays for enzymatic activity, EMSA, chromatin IP, fluorescence and electron microscopy, phenotypic characterisation of plants, cold or heat stress assays, ion leakage assays, dose response assays and quantification of metabolites and nutrients by chromatographic and spectroscopic techniques. Statistical methods are applied for data evaluation. Many of these techniques are applicable to other (non-plant) organisms.

### **Intended Learning Outcomes:**

Upon successful completion of this module students:

- have acquired competence in several laboratory techniques related to biotechnology in horticultural crops including cloning of genes, heterologous expression of plant proteins and generation and analysis of transgenic plants
- can perform experiments in an efficient, time saving manner
- can evaluate data and apply statistical tests
- are able to design experiments with all necessary controls and interpret the results
- have increased their competence in scientific reading and writing
- can display scientific data in publication quality

### **Teaching and Learning Methods:**

Close theoretical and practical supervision combined with autonomous lab work. Reading original research articles. Reading and application of laboratory protocols. Discussion of the protocols and the underlying principles of the experiments. Writing of a laboratory book. Written documentation of the experiments and results.

### **Media:**

Oral instructions, lab protocols, relevant scientific publications.

### **Reading List:**

The literature depends on the individual project and will be provided ahead of the course.

Biotechnology of Horticultural Crops, 2018, Authors: D. Stevens & D. Ware, Publisher: ED-Tech Press

Biotechnology in Horticulture: Methods and Applications, 2013, Authors: KV Peter, Publisher: New India Publishing Agency

### **Responsible for Module:**

Poppenberger-Sieberer, Brigitte, Prof. Dr. [brigitte.poppenberger@tum.de](mailto:brigitte.poppenberger@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Biotechnologie gartenbaulicher Kulturen (Forschungspraktikum, 10 SWS)

Poppenberger-Sieberer B, Sieberer T, Bathe U

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2629: Research Project Chemical Genetics | Research Project Chemical Genetics

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the module is done in the form of a laboratory assignment. The students conduct a six-week research project in the lab. The work-schedule can be adjusted to the curriculum of the students. This includes the conductance of 1 to 4 experiments and the subsequent preparation of a protocol (approximately 15 to 20 pages) which has to be handed in usually within 4 weeks after the laboratory work has been concluded. By preparing the lab protocol the students demonstrate the ability to summarize the theoretical background and key aims of the performed experiments and to present the acquired results in a concise and coherent manner and to interpret and discuss the experimental data in the context of available literature. The grade is based on the accuracy of data analysis (50%) and the quality of data presentation (50%), including the description of the theoretical background, presentation of raw data, calculations, application of statistical tests and interpretation and discussion of the results.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in plant molecular biology, biochemistry, genetics and chemistry. Practical experience with basic lab working techniques such as pipetting and working under sterile conditions. Successful completion of the lecture Plant Biotechnology.

#### Content:

Chemical Genetics is a novel interdisciplinary approach in which small molecules are used to identify proteins responsible for the expression of a specific phenotype (forward chemical genetics) or to affect the function of a specific protein and assess the morphological, physiological and molecular consequences within the organism (reverse chemical genetics). Chemical genetic

approaches are not only useful in basic research questions, they can also directly lead to the development of drugs and agrochemicals.

This module will teach students a subset of the following techniques by participating in a research project in the lab:

- Storage and handling of a chemical library;
  - Design of a chemical genetic screen;
  - Set up of a chemical genetic screen in conformity with the required quality standards;
  - Phenotype-based small molecule screening in *Arabidopsis thaliana*
  - Phenotype-based small molecule screening horticulturally relevant plant species;
  - Expression marker-based small molecule screens;
- 
- Hit confirmation assays;
  - Dose response assays;
  - Structure/function analysis using cheminformatic methods;
  - Establishment of an in vitro assay to test ligand-target interaction.

### **Intended Learning Outcomes:**

Upon completion of this module students are able:

- to understand the principles of chemical genetic research approaches;
- to assess for which scientific questions a chemical genetic approach might be helpful;
- to plan and to carry out basic chemical genetic experiments in plants according to the required quality standards;
- to interpret and evaluate the results obtained in chemical genetic screens in a written report.

### **Teaching and Learning Methods:**

Close theoretical and practical supervision combined with autonomous lab work enables the student to understand and apply basic experiments in Plant Chemical Genetics. By discussing lab protocols, the student analyses the underlying methodological principles of the experiments. By reading original research articles the student learns to assess quality standards for chemical genetic approaches. By writing a research report the student learns to summarize the obtained results and discusses it in the context of relevant literature.

### **Media:**

Oral instructions, lab protocols, and relevant scientific publications.

### **Reading List:**

Plant Chemical Genomics: Methods and Protocols (2014) G. R. Hicks and S. Robert, Humana Press; Plant Chemical Biology (2014) D. Audenaert and P. Overvoorde, John Wiley & Sons.

### **Responsible for Module:**

Sieberer, Tobias, Dr. nat. techn. tobias.sieberer@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Chemische Genetik (Forschungspraktikum, 10 SWS)

Poppenberger-Sieberer B, Sieberer T, Andrade Galan P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Theory Oriented Modules | Theorieorientierte Module

### Module Description

#### LS20032: Biological Warfare Agents - A Dark Side of Microbiology | Biological Warfare Agents - A Dark Side of Microbiology

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the written exam (90 min), students answer questions about the significance of dangerous infectious diseases and historical and current threats posed by biological warfare agents, among other topics. They explain procedures for preventing, detecting, and mitigating potential risks that biotechnological research may pose. They distinguish the hazards of natural, deliberate or accidental releases of pathogens or biological toxins. In addition, they can explain the most important procedures of applied basic research on biosafety and biosecurity. They describe basic principles and methods, e.g., forensic identification of microorganisms. They reflect on the risks posed by Dual-Use Research of Concern and apply the knowledge gained in the context of their own research questions.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

none

#### Content:

The lectures will provide a basic knowledge of dangerous infectious diseases, their potential for misuse and the dangers of Dual-Use Research of Concern (DURC). This includes knowledge of the biology and clinical features of high consequence pathogens, including modes of transmission and pathomechanisms. Furthermore, the basics of medical biodefence and microbiological investigations of outbreaks of bacterial and viral pathogens and biological toxins will be covered, including examples of their application in biotechnological research projects. Lectures will provide background information and theory directly related to applied medical and biotechnological

research projects. Basic and specialised methods of practical laboratory work for the detection of dangerous pathogens and bioforensic investigation are taught. Students apply their newly acquired knowledge in practical case studies.

### **Intended Learning Outcomes:**

On completion of the module, students will have a basic theoretical understanding and knowledge of the importance of dangerous infectious diseases, the historical and current threats posed by biological warfare agents, and the potential risks posed by the unintended consequences of biotechnology research. In addition, they will have understood and practised the basic procedures for the prevention, detection and containment of such hazards. They should be able to

- recognise the hazards of natural, deliberate or accidental releases of pathogens or biological toxins.
- have an insight into the most important procedures in basic applied biosafety and biosecurity research,
- use fundamental principles and methods, e.g. forensic identification of microorganisms, development of advanced detection and treatment approaches, analytical methods for biotoxins,
- understand risks through Dual-Use Research of Concern (DURC) and adapting them to their own research questions.

The module also aims to develop students' problem-solving skills and interest in applied microbiology and the responsibility of science towards people and the environment.

### **Teaching and Learning Methods:**

Form/technique of teaching: lectures.

Teaching method: oral lecture; teamwork, discussion of results.

Learning activities: study of lecture notes and own notes; study of literature.

Accompanying the lectures, the students have to work on case studies (ungraded) and thus, show their ability to transfer the training contents to challenges in own research projects.

### **Media:**

Presentations using PowerPoint, handout script (download option for lecture material)

### **Reading List:**

There is no textbook that comprehensively covers all the contents of this module. The following documents and books are recommended as basic or supplementary literature:

Medical aspects of biological warfare, eds. Joel Bozue, Christopher K. Cote, Pamela J. Glass, Fort Sam Houston, Texas, Office of the Surgeon General, Borden Institute, 2018, ISBN 9780160941597, <https://irp.fas.org/threat/cbw/medical.pdf>

National Academy of Sciences Leopoldina and German Research Foundation (2022): Freedom of Science and Responsibility for Science - Empfehlungen zum Umgang mit sicherheitsrelevanter Forschung / Scientific Freedom and Scientific Responsibility - Recommendations for Handling of Security-Relevant Research, 2nd updated edition. Halle (Saale), [https://www.leopoldina.org/fileadmin/redaktion/Publikationen/Nationale\\_Empfehlungen/2022\\_DFG-Leopoldina\\_Empfehlungen\\_Wissenschaftsfreiheit\\_web.pdf](https://www.leopoldina.org/fileadmin/redaktion/Publikationen/Nationale_Empfehlungen/2022_DFG-Leopoldina_Empfehlungen_Wissenschaftsfreiheit_web.pdf)

Whitby S, Novossiolova T, Walther G and Dando M (2015) Preventing Biological Threats: What You Can Do. A Guide to Biological Security Issues and How to Address Them. University of Bradford, Bradford Disarmament Research Centre. [https://www.bradford.ac.uk/media-v8/site/news/archive/Preventing-Biological-Threats-What-You-Can-Do-\(PDF,-10.6mb\).pdf](https://www.bradford.ac.uk/media-v8/site/news/archive/Preventing-Biological-Threats-What-You-Can-Do-(PDF,-10.6mb).pdf).

**Responsible for Module:**

Wölfel, Roman, Apl. Prof. Prof. Dr.med. [roman.woelfel@tum.de](mailto:roman.woelfel@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Biological Warfare Agents - A Dark Side of Microbiology (Vorlesung, 2 SWS)

Wölfel R, Stöcker K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1696: Crop Genomics | Crop Genomics

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the written exam (90 min, Klausur) students explain without additional helping material the principles of genetic and bioinformatics strategies of genome analysis in crop plants. They demonstrate that they understand the different layers of genome analysis in crop plants, and that they are able to apply the required genomic and bioinformatics approaches in case studies and judge which methods can be applied in specific cases. They can explain the use of genomic data to analyze genotype-phenotype associations. The grade of the exam will be the final grade of the module.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Successful completion of Bachelor's courses in genetics, molecular biology, plant breeding and statistics is required. Basic knowledge in bioinformatics and skills in R programming or a computer language like Python is highly recommended.

#### Content:

- Genome organization in crop plants (theory)
- Next generation sequencing and genotyping technologies (theory)
- Genome sequencing and annotation (theory)
- Accessing biological sequence information from databases (theory, exercises)
- DNA sequence comparison and alignment, homology searches (theory, exercises)
- Analysis of genomic sequence data, detection of sequence variants (theory, exercises)
- Analysis of gene expression through genome-wide approaches (theory, exercises)
- Comparative genome analysis (theory)
- Genotype-phenotype association for complex agronomic traits (theory, exercises)
- Application of genomic methods in applied plant breeding programs (theory)

**Intended Learning Outcomes:**

Upon successful completion of the module students are able to evaluate molecular methods and the bioinformatic and genetic concepts of genome analysis in crops. They understand the genome organization of crop plants and can explain the concepts of next generation genome sequencing, genome annotation and functional analysis of crop plants. They are able to access biological sequence information from databases and understand the concept of DNA sequence comparison and alignment. Students are able to analyze plant genomics data and to use bioinformatic/statistical approaches for the analysis of genotype-phenotype associations. Successful students can judge which approaches are appropriate for specific situations.

**Teaching and Learning Methods:**

Theoretical concepts are demonstrated in PowerPoint presentations. Practical application of these concepts will be through computer exercises and tutorials using experimental data sets. Students show their ability to understand and solve problems using current literature and to analyze and evaluate the required methods with presentations.

Students are encouraged to attend the weekly talks of the SFB924 seminar series (dates and topics announced under <http://sfb924.wzw.tum.de>), which are given by national and international experts in plant molecular biology and plant genomics.

**Media:**

PowerPoint presentations, whiteboard. Lecture slides will be provided online in pdf format. Computer exercises, application training (analysis of sequence data, genotype-phenotype associations)  
Current literature

**Reading List:**

Brown: Genomes 4. Garland Science, 2017. ISBN 978-0-815-345084  
Grotewold, Chappell and Kellogg: Plant Genes, Genomes and Genetics. Wiley-Blackwell, 2015. ISBN: 978-1-119-99887-7

Current literature from specific journals will be announced during the lecture.

**Responsible for Module:**

Schön, Chris-Carolin; Prof. Dr.sc.agr. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Crop Genomics (Vorlesung mit integrierten Übungen, 4 SWS)  
Ouzunova M, Mayer K, Haberer G, Kamal N, Würstl L, Teran Pineda M  
For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ0308(2): Developmental Genetics | Entwicklungsgenetik

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 60.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Grundlegende Kenntnisse der Biologie (insbesondere Zellbiologie und Genetik)

#### Content:

#### Intended Learning Outcomes:

Am Ende der Veranstaltung sollen die Studenten

- 1.) Kenntnisse über die grundlegenden zellbiologischen Vorgänge der tierischen Entwicklungsbiologie besitzen;
- 2.) die Prinzipien der molekularen Regulation dieser Prozesse benennen und erklären können

#### Teaching and Learning Methods:

Vortrag/Vorlesung auf Deutsch (Folien auf englisch); Vorlesung mit Fragen (im Verlauf oder am Ende der Vorlesung); Skript zur Nacharbeit während Vorlesung - kurz vor Prüfung online

#### Media:

- 1.) Molekulare Prinzipien der Entwicklungsbiologie: laterale Inhibition Organisationszentren Rechts-Links-organisation Epitheliale-Mesenchymale Transformation
- 2.) Molekulare Grundlagen essentieller entwicklungsbiologischer Prozesse: Befruchtung Implantation Gastrulation Achsenbildung Differenzierungsprozesse Stammzellbiologie - Altern
- 3.) Molekulare Grundlagen der Organogenese: Nervensystem Sinnesorgane Darm Lunge Pankreas Knochen (Extremitäten) Muskeln

**Reading List:**

1.) Developmental Biology, Gilbert, 9th edition; Sinauer Associates 2.) Vorlesungsskript, verteilt in Vorlesung, kurz vor Prüfung online

**Responsible for Module:**

Hrabé de Angelis, Martin, Prof. Dr. rer. nat. hrabe@mytum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Vorlesung Entwicklungsgenetik (Vorlesung, 2 SWS)

Hrabé de Angelis M, Beckers J, Vogt-Weisenhorn D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2480: Plant Developmental Genetics 2 | Entwicklungsgenetik der Pflanzen 2

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Time allowed (in min.): 30 oral (VO) + 20 oral (SE).

Regular, active participation in the courses is expected. The examination will be in the form of a written examination and a presentation. The written exam (30 min) serves to test the theoretical skills learned in the lecture. In the written exam, students show whether they are able to structure the knowledge they have acquired and present the essential aspects. They should be able to describe and interpret the acquired information, combine it meaningfully and transfer it to similar situations. In the seminar (20 min) the acquired skills are tested in practice and the presentation style is worked on. The average of the exam grade and seminar grade forms the overall grade of the module.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

For a better understanding of the lecture a good knowledge of genetics, molecular biology and cell biology is required.

#### Content:

The lecture provides in-depth knowledge of plant developmental genetics. The contents are: Photomorphogenesis, flower induction, meristem identity, flower organ identity, flower organogenesis, gametophyte, fertilization process, parental control of embryogenesis. In the seminar, students discuss and present central and newer aspects of plant developmental genetics using relevant original literature.

**Intended Learning Outcomes:**

After participating in the module, students will have a basic understanding of selected plant development processes. They will be able to understand, analyse and evaluate developmental genetic approaches and findings in context and to present these aspects in an understandable way to a group of scientists. They can also transfer these skills to other biological questions and/or organisms. Furthermore, this module is intended to promote interest in developmental genetics and developmental biology problems and issues.

**Teaching and Learning Methods:**

Event type/teaching technique: Lecture, presentation.

Learning activities: Study of lecture notes, lecture notes, and literature. Processing of the podcasts. Presentation and critical classification of original literature.

**Media:**

Presentations via PowerPoint,

Script, audio and video podcasts (possibility to download lecture material).

**Reading List:**

There is no textbook available that covers all contents of this module. It is recommended as a basis or as a supplement:

Smith, A.M., Coupland, G., Dolan, L., Harberd, N., Jones, J., Martin, C., Sablowski, R., Amey, A. (2010) "Plant Biology", Garland Science, UK.

Leyser, O., Day, S. (2003) "Mechanisms in Plant Development", Blackwell Publishing, Oxford, UK.

**Responsible for Module:**

Kay Schneitz [schneitz@wzw.tum.de](mailto:schneitz@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Entwicklungsgenetik der Pflanzen 2 (Vorlesung, 2 SWS)

Schneitz K [L], Schneitz K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0635: Genetic Engineering of Livestock | Genetic Engineering of Livestock

*Genetic engineering of livestock for applications in agriculture and biomedicine*

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The acquired knowledge will be assessed in an oral exam (20 minutes per each student) where the students provide evidence that he/she understood of genome engineering and that he/she can apply the knowledge in a new and different context. The students have to demonstrate their new skills on a hypothetical experiment such as the generation of a pig with a tissue specific reporter gene expression. They should prove their ability that they can describe, interpret and structure the newly obtained information and that they can combine it with previous knowledge and use it in slightly altered circumstances.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

BSc in Agriculture, Molecular biology, biology or related areas. Basic knowledge about genetics and molecular biology.

#### Content:

Content includes:

- detailed information of the animal genome organization including eukaryotic gene structure.
- The function of the main structural and regulatory gene elements.
- Principles of DNA recombination, cloning vector design, usage of restriction enzymes, bacterial transformation, random transgene integration, DNA microinjection, methods for identification of a genetically modified organism,
- Generation of vectors for gene targeting, homologous recombination, tissue-specific recombination.
- Genome editing, CRISPR-Cas9 technology in livestock.

- Examples of genetically modified livestock.
- Ethical aspects of genome modification in livestock.

### **Intended Learning Outcomes:**

After successful completion of the module, the students have fundamental knowledge regarding genome modification in livestock (mammals and birds) and their application in agriculture and biomedicine.

The student are able to:

- recognise strengths and weaknesses of different methods for genome modification in mammalian and avian livestock
- use the acquired knowledge to select and design the optimal genome modification strategy to achieve a defined goal, such as disease resistance.
- describe examples of existing genetically modified livestock and can discuss what the possible benefit could be for either humans or animals
- manipulate animal cells in the laboratory
- understand the ethical issues connected to genome modifications in livestock
- read and discuss literature about genetically engineering of livestock animals

### **Teaching and Learning Methods:**

The module consists of a lecture (2 SWS), a seminar (1 SWS), and an exercise (1 SWS).

During the lecture, the theoretical background is taught. Students should study the provided script and are encouraged to ask and answer questions during the lecture. It is essential that knowledge acquisition is examined throughout the course by discussing technical and scientific problems such as, which method is applicable to change large areas of the genome, which if only a single base should be exchanged.

For the seminar and exercise part students will work in groups, they will be encouraged to carry out an in-depth study of literature, assess the presented results and learn to question the validity of published results. Some hands-on experience will bring the subject to life and connect the theoretical and practical knowledge.

### **Media:**

PowerPoint presentations, Lab experimentations, download of required information and literature.

### **Reading List:**

The lecture will mostly use examples from recent research. Publications will be circulated with the students.

Animal Biotechnology 1 <https://doi.org/10.1007/978-3-319-92327-7>

Animal Biotechnology 2 <https://doi.org/10.1007/978-3-319-92348-2>

### **Responsible for Module:**

Schusser, Benjamin, Prof. Dr.med.vet. [benjamin.schusser@tum.de](mailto:benjamin.schusser@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Practical introduction to methods of genetic engineering (Übung, 1 SWS)

Fischer K, Flisikowska T, Flisikowski K

Genetically modified livestock (Vorlesung, 2 SWS)

Schusser B [L], Fischer K, Flisikowska T, Flisikowski K, Schusser B

Genetically modified livestock- current literature overview (Seminar, 1 SWS)

Schusser B [L], Fischer K, Flisikowski K, Schusser B

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1035: Host-Parasite-Interaction | Host-Parasite-Interaction

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is rated via written examination, Klausur, (essay exam, no multiple choice, without the use of learning aids, (100 % of the grade; 90 min). The exam tests the ability of the students to transfer the deep knowledge of principles of molecular plant pathogen interaction on new scientific questions. Students have to show their ability to design experiments suitable to test a given hypothesis from molecular host-parasite interactions. Students have to show in how far they are able to extract scientific progress from original data or experiments presented in the exam.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of Plant Sciences and Phytopathology at the B.Sc. Level

#### Content:

In this modul, students reach a deep understanding of plant-pathogen interaction at the molecular level. This comprises pattern-triggered immunity, effector-triggered susceptibility, effector-triggered immunity and translational research. This is not restricted to model plants but extends to crops and fills the gap between basic research and applied plant sciences in breeding and biotechnology for disease resistance. In interactive learning structures with small groups, we train reading and understanding of original literature (Journal Club). In the practical course, we learn real time PCR, plant immune response assays, transient transformation of plants, cell biology of plant defense reactions, etc.

#### Intended Learning Outcomes:

Education to become a molecular plant pathologist, who is able to judge and design approaches for increasing disease resistance in model and crop plants.

Upon successful completion of the module, students are able



- to understand the molecular basis of plant pathogen interactions in depth.
- to transfer theoretical background and definitions of molecular host parasite interactions.
- to analyze plant immune responses.
- to collect new theoretical knowledge from literature and understand innovative technologies in plant immunity and susceptibility.
- to carry out key molecular methods for quantification of plant immune reactions and disease susceptibility (e.g. real time PCR, reactive oxygen measurement, transient transformation of plants, cell biology of plant defense reactions) in hands-on experience
- to generate experimental design and carry out evaluation of plant disease resistance tests in model and crop plants.

Additionally, students are able to process and present complex information from original literature.

### **Teaching and Learning Methods:**

In the lecture students gain knowledge about theoretical background of plant parasite interactions, which is extracted and focussed by the lecturers from review literature. In the exercise, students practise in small groups key methods for quantification of plant immune reactions and disease susceptibility. They make hands-on experience, practise the use of molecular methods and devices, document their data under guidance and discuss them with group members and supervisors. In the journal club, students are guided in small groups how to critically read original research papers, digest information and present most central findings from a recent original paper.

### **Media:**

PowerPoint

### **Reading List:**

Buchanan 2015: Biochemistry & Molecular Biology of Plants. Review literature provided

### **Responsible for Module:**

Hückelhoven, Ralph; Prof. Dr. rer. nat.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Host-Parasite-Interaction (Seminar, 2,5 SWS)

Hückelhoven R, Hein S, Maroschek J, Müller M, Steidele C

Host-Parasite-Interaction (Vorlesung, 1,5 SWS)

Hückelhoven R, Steidele C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1085: Science of Laboratory Animals | Labortierwissenschaft

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 60.

Regelmäßige, aktive Teilnahme an den Lehrveranstaltungen wird erwartet. Eine Klausur (60 min, benotet) dient der Überprüfung der in Vorlesung und Praktikum erlernten theoretischen Kompetenzen. Die Studierenden zeigen in der Klausur, ob sie in der Lage sind, das erlernte Wissen zu strukturieren und die wesentlichen Aspekte darzustellen. Sie sollen die erarbeiteten Informationen beschreiben, interpretieren, sinnvoll kombinieren und auf ähnliche Sachverhalte übertragen können. Die Klausurnote bildet die Gesamtnote des Moduls.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Zum besseren Verständnis sind Kenntnisse in Zoologie und/oder Tierwissenschaft erforderlich

#### Content:

Umfang, Art und Zweck von Tierversuchen in Deutschland; Ethische Abwägungen, 3-R-Prinzip; Anatomische, physiologische und ethologische Grundlagen von Labortieren; Fütterung, Haltung, Züchtung und Krankheiten von Labortieren; Hygienemaßnahmen in der Labortierhaltung; Tierschutzrecht und rechtliche Grundlagen zur Betreibung von Versuchstierhaltungen.

#### Intended Learning Outcomes:

Tierartgerechte Haltung und Umgang mit Labortieren unter den spezifischen Anforderungen größerer und kleinerer Forschungslaboratorien; Vorbereitung auf die Konzeption von Tierversuchen und Tierversuchsanträgen; Reduktion von Tierversuchen nach dem 3-R-Prinzip

#### Teaching and Learning Methods:

Vorlesung im Seminarstil

**Media:**

Powerpoint-Präsentationen, die den Teilnehmern zur Verfügung gestellt werden

**Reading List:**

Weiss, J., Maeß, J., Nebendahl, K. (Hrsg.): Haus- und Versuchstierpflege, 2. Auflage, 2003, Enke-Verlag, Stuttgart.

**Responsible for Module:**

Dr. Karsten Meyer (karsten.meyer@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1993: Laboratory Animal Science | Laboratory Animal Science [VTK]

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination consists of a written exam (Klausur, 90 min) in which students have to answer various questions on laboratory animal science topics without any aids. Answering the questions partly requires students to formulate their own answers and partly requires them to mark multiple answers.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Fundamentals of Anatomy, Physiology, Laboratory Animal Science, BSc Biology/Life Sciences, BSc Molecular Biotechnology, BSc Agricultural and Horticultural Sciences, BSc Nutritional Sciences

#### Content:

The following topics are covered in the module:

- Laws relating to animal testing
- Exposure assessments and score sheets
- Alternative methods to animal testing
- Blood collection and application techniques
- Genetics and breeding in animal experiments
- Biotechnological techniques in pigs and chickens
- Poultry as laboratory animals
- Bats as laboratory animals
- Snakes as laboratory animals
- Monitoring of animal testing facilities
- Neurology and behavior of small rodents
- Handling of small rodents

- Injections (s.c., i.p. i.m. i.v.)
- Blood sampling techniques
- Oral application of substances

**Intended Learning Outcomes:**

After successfully attending the module courses, students will be able to name various procedures, relevant laws and methods of laboratory animal science. Students will be able to understand and apply these regulations after completing the module. Students will be able to assess the different interpretations and applications of laws, methods and animal models and actively support the planning of animal experiments. After completing the module, students will be able to carry out initial handling of laboratory animals such as mice, rats and rabbits and perform injections and blood sampling under supervision.

**Teaching and Learning Methods:**

The module consists of a seminar (2 SWS) and an exercise (2 SWS).

The seminar provides basic knowledge on the topics described. PowerPoint presentations are used to illustrate the most important aspects of the respective topics to the participants and are critically scrutinized in a subsequent discussion.

As part of the exercise, the handling of these rodent species is practiced using mouse, rat and rabbit models and blood sampling, as well as injections and applications of substances are practiced.

**Media:**

Presentation (PowerPoint), blackboard work, practical exercises

**Reading List:**

Lecture notes, legal texts, LAS-online course

**Responsible for Module:**

Schusser, Benjamin; Prof. Dr.med.vet.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1174: Molecular Biology of Biotechnologically Relevant Fungi | Molekulare Biologie Biotechnologisch Relevanter Pilze

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination takes the form of a written exam (60 minutes) and a presentation (60 minutes; pass/fail credit requirement).

Regular, active participation in the courses is expected. A written exam (60 min, graded) serves to test the theoretical skills learned in lectures and seminars. In the written exam, the students show whether they are able to structure the knowledge they have acquired and present the essential aspects of the topics discussed. In addition, they should also show that they are able to combine the interrelationships of the molecular biology of fungi in a meaningful way and transfer them to similar topics (e.g. a current but not discussed topic of fungal biotechnology). The presentation (in English) with subsequent discussion is designed to teach independent scientific research and to demonstrate the ability to present complicated scientific relationships in a structured and logical way. The module grade is determined by the grade of the written examination. The module is passed if a grade better than 4.1 is achieved and the course work (lecture) is successfully completed.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

For better understanding, basic knowledge of microbiology is advantageous.

#### Content:

The course is to teach basic knowledge about the diversity and physiology of fungi, and in addition covers more in-depth information on fungal biotechnological applicabilities. A focus will be the unique capability of fungi to degrade and convert plant biomass. Exemplary contents that will be discussed are: gene technology (bio-engineering), plant cell walls as substrate and their

degradation, signaling pathways of substrate perception, biotechnological applications of enzymes and small-molecule production, as well as application of fungi in the agricultural industry.

In the practical/seminar part of the course, selected topics will be discussed in more detail by student presentations and with the help of practical examples. In addition, an excursion to the Clariant Sunliquid demonstration plant in Straubing is planned, where bioethanol is being produced from fungal conversion of biomass.

### **Intended Learning Outcomes:**

After successful participation in the module, the students will have advanced knowledge of the biotechnological applications of fungi for the production and development of natural and artificial biocompounds.

They will be able to:

- recapitulate the fungal metabolic capabilities
- comprehend and name the fundamental signaling pathways for metabolic adaptation
- using selected examples, classify the respective enzyme systems and their functions in anabolic/catabolic reactions
- understand the molecular techniques for genome manipulation and strain development and discuss them
- critically assess the pros and cons of the presented production systems.

Moreover, the module is intended to help develop problem-solving skills as well as to foster the interest for eukaryotic microbiology, its advantages and disadvantages, and the importance particularly of filamentous fungi for environment and industry.

### **Teaching and Learning Methods:**

Teaching technique: Lecture - teaching method: presentation; development of general concepts on the chalkboard

In the demonstration: teaching method: talk, demonstration; learning activity: research of relevant literature, prepare and give a talk, constructive discussion of the contents

### **Media:**

PowerPoint presentation; chalkboard work; original research papers; lab demonstrations

### **Reading List:**

Unfortunately no text book is available that covers all the contents of the course, but the following sources are good for basics and as additional reading:

- Money, Nick, 2007, "Triumph of the Fungi: A Rotten History", Oxford Univ. Press
- Hudler, G.W., 1998, "Magical mushrooms, mischievous molds", Princeton University Press
- Kendrick, Bryce, 2000, "The Fifth Kingdom", 3rd ed., Focus Pub/R Pullins Co
- Kavanagh, Kevin, 2011, "Fungi – Biology and Applications", Wiley-VCH
- Arora, D.K., 2004, "Fungal Biotechnology in Agricultural, Food, and Environmental Applications – Mycology Series; Vol. 21", Marcel Dekker, Inc.
- Kück, U. et al., 2009, "Schimmelpilze – Lebensweise, Nutzen, Schaden, Bekämpfung", Springer
- Kubicek, C.P., 2013, "Fungi and Lignocellulosic Biomass", Wiley-Blackwell

**Responsible for Module:**

Benz, Johan Philipp; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare Biologie biotechnologisch relevanter Pilze (Vorlesung mit integrierten Übungen, 4 SWS)

Benz J [L], Benz J, Tamayo Martinez E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2221: Methods in Biotechnology | Methods in Biotechnology (Seminar)

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 2	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2371: Molecular Plant Physiology - Responses to Abiotic Stress | Molekulare Pflanzenphysiologie - abiotische Stressfaktoren

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination will be in the form of a written graded test and an oral presentation which will take place during the seminar. The module grade is calculated from the written exam grade (50%) and the grade of the oral presentation (50%).

In the written exam (90 min) the students show that they are able to describe the presented experimental approaches to understand the molecular mechanisms of plant-abiotic interactions and to critically interpret the experimental data obtained. Furthermore, the students show in the exam their ability to design experimental approaches to elucidate the associated molecular mechanisms themselves. No aids are allowed for this.

In the oral presentation, which lasts 45 minutes in total and consists of a 30-minute presentation (PowerPoint presentation) and a 15-minute discussion, the students must demonstrate that they are able to grasp the content of a typical international scientific study from the field of the seminar and present it in an understandable and didactically meaningful way. At the same time, the students must demonstrate that they have also understood the theoretical background of the study as well as the methodological approaches and the principles of experimental techniques and that they can explain them in a comprehensible manner. In the discussion the students show that they are able to enter into a scientific discourse and to represent or refute points of view in a well-founded way.

#### Repeat Examination:

Next semester

**(Recommended) Prerequisites:**

In order to understand the contents taught, a solid knowledge and practical experience in molecular biology, biochemistry and plant physiology are essential. It is not necessary to attend the module Molecular Plant Physiology 1.

**Content:**

This module focuses on the molecular mechanisms of the interactions between plants and abiotic factors. Abiotic stress is the most important factor limiting plant growth and food production. Drought stress, salt stress, oxygen deficiency, radiation (UV radiation, strong light), heavy metals and xenobiotics are treated as abiotic factors. Induced changes in metabolism and involved signal transduction pathways as well as avoidance and adaptation strategies are presented. Special attention will be paid to individual stress-tolerant species or ecotypes with tolerance to e.g. salt or heavy metals and their particularly effective adaptation strategies. In the seminar, students deal with current research in the field of stress physiology and work out the relation of these research results to the content of the lecture.

**Intended Learning Outcomes:**

learning outcomes:

After the successful completion of this module, students will have in-depth knowledge of

"analytics and experimental approaches

"the importance of abiotic stress factors for plant growth

"molecular mechanisms of stress signal transduction

"Adaptation strategies

"Presentation and interpretation of scientific data

"Review and presentation of scientific literature

The knowledge imparted can be applied in various areas of both basic and applied plant sciences. Students are able to define the requirements that plants would have to meet for increased tolerance to abiotic stress and can develop promising strategies for the generation or evaluation of stress-tolerant plants.

**Teaching and Learning Methods:**

Event type/teaching technique: Lecture and seminar

Learning activities: study of lecture notes, lecture notes, interaction between lecturer and students, presentation by students

**Media:**

Presentations via PowerPoint, blackboard writing, script (download option for lecture material)

**Reading List:**

Ernst-Detlef Schulze, Erwin Beck, Klaus Müller-Hohenstein: Plant Ecology. Spektrum Academic Publishing House

Peter Schopfer and Axel Brennicke: Plant Physiology. Spektrum Akademischer Verlag.

Lincoln Taiz and Eduardo Zeiger: Plant Physiology. Spektrum Akademischer Verlag

Park S. Nobel: Physicochemical and Environmental Plant Physiology. Academic Press

Bob Buchanan, Wilhelm Gruissem and Russell L. Jones: Biochemistry & Molecular Biology of Plants. John Wiley & Sons

Professional articles from scientific journals. In-depth literature on individual work topics will be presented by the students.

**Responsible for Module:**

Erwin Grill (Erwin.Grill@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2385: Molecular Plant Physiology - Plant Water Relations and Metabolism | Molekulare Pflanzenphysiologie - Wasserhaushalt und Stoffwechsel

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination will be in the form of a written graded test and an oral presentation which will take place during the seminar. The module grade is derived from the exam grade (50%) and the grade of the oral presentation (50%).

In the written exam (90 min), the students show that they are able to describe the experimental approaches to understanding the water, sulfur and nitrogen balance of plants presented in the module and to critically interpret the experimental data obtained in the process. Furthermore, the students show their ability to design experimental approaches to elucidate the associated molecular mechanisms. No aids are allowed for this.

In the oral presentation, which lasts 45 minutes in total and consists of a 30-minute presentation (PowerPoint presentation) and a 15-minute discussion, the students must demonstrate that they are able to grasp the content of a typical international scientific study from the field of the seminar and present it in a comprehensible and didactically meaningful way. At the same time, the students must demonstrate that they have also understood the theoretical background of the study as well as the methodological approaches and the principles of experimental techniques and that they can explain them in a comprehensible manner. In the discussion the students show that they are able to enter into a scientific discourse and to represent or refute points of view in a well-founded way.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

A solid knowledge and practical experience in molecular biology, biochemistry and plant physiology are essential to understand the contents.

### **Content:**

This module deals with the central topics of plant water balance, lipid metabolism and sulfur balance.

The main focus of the lecture is on these topics: chemical and physical properties of water; the water potential concept; transport resistances and regulatory processes on the way of water from soil solution to the plant and from there to the atmosphere; aquaporins; measurement methods; biochemistry of cuticle and epicuticular waxes; biogeochemical sulfur cycle, sulfur uptake and assimilation; Biosynthesis of central sulfur compounds; phytochelatins; sulfur compounds and biotic interactions; detoxification of xenobiotics; nitrogen uptake, assimilation and transport in the plant; symbioses with air nitrogen-fixing partners; nitrogenous compounds and biotic interactions. In the seminar, students deal with current research in the field of plant water, sulfur and nitrogen balance and work out the relation of these research results to the content of the lecture.

### **Intended Learning Outcomes:**

After the successful completion of the module, the students will have in-depth knowledge of

- "analytics and experimental approaches

- "the vegetable water balance

- "Structure and biochemistry of plant surfaces

- "the vegetable sulfur balance

- "the plant lipid metabolism

- "the critical review of scientific publications

- " Presentation techniques

The knowledge imparted can be applied in various areas of both basic and applied plant sciences. Students can assess the resilience of experimental approaches and develop their own research approaches.

### **Teaching and Learning Methods:**

Event type/teaching technique: Lecture and seminar.

Learning activities: study of lecture notes, lecture notes, interaction between lecturer and students

### **Media:**

Presentations via PowerPoint, blackboard writing,

Script (download option for lecture material)

### **Reading List:**

Ernst-Detlef Schulze, Erwin Beck, Klaus Müller-Hohenstein: Plant Ecology. Spektrum Academic Publishing House

Peter Schopfer and Axel Brennicke: Plant Physiology. Spektrum Akademischer Verlag.

Lincoln Taiz and Eduardo Zeiger: Plant Physiology. Spektrum Akademischer Verlag

Park S. Nobel: Physicochemical and Environmental Plant Physiology. Academic Press

Bob Buchanan, Wilhelm Gruissem and Russell L. Jones: Biochemistry & Molecular Biology of Plants. John Wiley & Sons

**Responsible for Module:**

Dr. Alexander Christmann (christma@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2420: Molecular Genetics | Molekulare Genetik

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the exam (60 min.) the students document knowledge in molecular genetics, which reaches beyond basic background. They demonstrate the understanding of relevant scientific approaches.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Lectures and seminars in genetics, cell biology, genomics, developmental genetics of plants and animals

#### Content:

The lecture deals with current issues in molecular genetics based on selected examples from original work published by international groups in leading scientific journals. The students gain insight into topical questions, methods and genetic models and they learn how developing lines of investigation, based on basic knowledge, lead to new findings.

The lecture leads the students closely to modern molecular genetics. The value of this lecture lies in the fact that it aims to go beyond established textbook knowledge. Particular attention is paid to the understanding of molecular genetic processes and the strategies, which are designed to elucidate them. Mechanisms and phenomena, which are not addressed in this depth in a general lecture in genetics, as for instance exceptional alleles, epistatic interactions between genes, networks etc. represent special focuses. Further attention is paid to the strategic and experimental problems, which arise with a particular scientific question.

Depending on newly arising issues or interests additional parts called "excursus" are implemented in the lecture, for instance if a new finding becomes relevant or an old finding becomes relevant again for a particular theme. A particular excursus is not necessarily taken up every year again.

Notably, the students are requested to discuss and question the obtained knowledge. The selected issues are intended to train the students such that they acquire competence to critically analyze work in this field.

Some selected subjects:

- Forms of alleles: amorph, hypo-, hyper-, anti-, neomorph, haploinsufficiency
- Temperature sensitive mutations
- Multiple allelism
- Penetrance
- Expressivity
- Gene interaction/forms of epistasis
- Targeted mutagenesis
- Transcription factors/-suppressors
- RNA interference
- Epigenetics
- Gene redundancy
- Polyploidy
- Horizontal Gene Transfer

#### **Intended Learning Outcomes:**

Basic demands in the field of molecular biology are introduced. The students are trained to recognize important questions therein and to think about experimental approaches for their solution. The highlighted issues allow combining approaches from classical/formal with those of molecular genetics - one of the most efficient and powerful approaches in modern biology. The students also learn to use knowledge about peculiarities of model organisms in this field. In particular, they learn that due to their biological and genetic peculiarities, different model organisms are suited to investigate different scientific questions. At the end of the lecture the students have knowledge about organisms as disparate as *Drosophila melanogaster*, *Coenorhabditis elegans*, *Arabidopsis thaliana*, *Zea mays*, *Saccharomyces cerevisiae* and others. The students are aware about important genetic insights gained through the analyses of these model organisms and their relevance for humans (e. g. "phenologues"). Since this lecture is mainly based on original work, they learn to understand the difficulties, problems and main features linked to outstanding scientific publications. At the same time they get insight into the field of current science and the work of international groups.

#### **Teaching and Learning Methods:**

PowerPoint presentations including special presentations of selected issues based on original publications. During the lecture the students are encouraged to take part in the discussion.

#### **Media:**

PowerPoint presentations and videos are provided for download (login information is given at the beginning of the lecture).

**Reading List:**

Bruce Alberts et al., Molecular Biology of THE CELL, 2014, 6th ed. (and higher), Garland Science New York.

Wilhelm Seyffert (Hrsg.), Lehrbuch der Genetik, 2003, 2te Aufl. (and higher) Spektrum Akademischer Verlag Heidelberg-Berlin.

Ben Lewin et al., GENES XI, 2014 (and higher), Jones & Barlett Learning, Burlington.

James D. Watson et al., Molecular Biology of the Gene 2008, 6th ed. (and higher), Pearson Education/Benjamin Cummings San Francisco.

Literature/Articles cited in the lecture.

**Responsible for Module:**

Torres Ruiz, Ramon; Prof. Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare Genetik [WZ2420] (Vorlesung, 2 SWS)

Torres Ruiz R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2556: Modern Methods in Microbial Ecology | Moderne Methoden der mikrobiellen Ökologie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 165	<b>Contact Hours:</b> 135

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination takes place at the end of the two-semester module by means of a written exam (60 min). The questions refer to the theoretical knowledge acquired in the lectures and the knowledge deepened or practically applied in the seminar or practical course. In the written exam, for example, the molecular methods presented in the lectures are to be named and discussed for specific questions. In the written exam, the students show that they are able to structure the knowledge they have acquired and to present the essential aspects. Regular, active participation in the courses is expected.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Introductory lecture "Ecological Microbiology and Microbiomes"; beginner's microbiology practical course; basic knowledge of molecular methods such as PCR.

#### Content:

Molecular methods play a very important role in microbial ecology to capture the diversity of microorganisms in the environment. However, new approaches to isolate previously unknown prokaryotes are also of great importance in understanding about ecosystem functioning. Accordingly, the module will address a wide range of methods used in modern microbial ecology. These include PCR-based methods as well as high-throughput sequencing techniques or the use of stable isotopes. But also classical methods, which play an important role in routine analysis, such as biomass measurements or enzyme activity determinations are presented and learned in practice. Finally, future directions, especially with regard to proteomics and metabolomics, will also be discussed.

**Intended Learning Outcomes:**

After completion of the course, students are able to independently make a selection from the "box of methods" that are best suited for specific questions in microbial ecology. Students are familiar with the advantages and disadvantages of individual methods and are thus able to recognize the complementarity and synergies of individual approaches. Furthermore, students are able to use appropriate methods independently, e.g. in the context of a master thesis or PhD. Through the seminar, knowledge from current research is used to develop perspectives of microbial ecology for the future.

**Teaching and Learning Methods:**

Course type/teaching technique: lecture, seminar; practical course Teaching method: lecture; in practical course instructional discussions, demonstrations, experiments, partner work, discussion of results.

Learning activities: study of lecture notes, transcript, practical script and literature; practice of laboratory skills and microbiological working techniques; collaboration with practical partner; preparation of protocols.

**Media:**

Lecture: script; PowerPoint presentation; seminar: literature; practical: script; independent work

**Reading List:**

Handbook of Molecular Microbial Ecology; ed: Frans J. de Bruijn; John Wiley & Sons; ISBN-10: 0470647191

**Responsible for Module:**

Schlöter, Michael; Prof. Dr. rer. nat. habil. [schloter@tum.de](mailto:schloter@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Moderne Methoden der Mikrobiellen Ökologie (Vorlesung, 2 SWS)

Schlöter M, Schulz S

Moderne Methoden der Mikrobiellen Ökologie (Seminar, 2 SWS)

Schlöter M, Schulz S

Moderne Methoden der Mikrobiellen Ökologie (Praktikum, 5 SWS)

Schlöter M, Schulz S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2691: Microorganisms in Food | Mikroorganismen in Lebensmitteln

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulleistung wird in Form einer benoteten Klausur mit der Dauer von 60 min erbracht, in der keine Hilfen zugelassen sind. Die Prüfung besteht aus Fragen, welche im Freitext beantwortet werden. Die Klausur dient der Überprüfung der in den Vorlesungen erworbenen Kompetenzen: Die Studierenden sollen zeigen, dass sie die Bedeutung von fermentierenden Mikroorganismen für industrielle Lebensmittelproduktion verstanden haben. Aspekte der Interaktion von Mikroben mit Produktionsanlagen sollen in der Klausur erklärt und ihre Bedeutung für die Lebensmittelhygiene diskutiert werden.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Vorlesung und Übungen in Allgemeiner Mikrobiologie

#### Content:

Vorlesung Lebensmittelmikrobiologie und Hygiene: Vorlesung: Begleitflora und mikrobieller Lebensmittelverderb; Krankheitserreger in Lebensmitteln; Infektion und Intoxikation; Infektionsketten; Bedeutung von lebensmittelbedingten Erkrankungen; Beispiele für die Herstellung fermentierter Lebensmittel; Starterkulturen und Reifungskulturen; Gentechnisch veränderte Mikroorganismen in der Lebensmittelproduktion (Anwendungsbeispiele, Risiken, Gen-Ethik); Biologische Konservierungsverfahren (Enzyme, Schutzkulturen); Physikalische Konservierungsverfahren (Trocknung, Temperatur, Bestrahlung, Druck); Chemische Konservierungsmittel (Wirkungsweisen, Einsatz, Risiken); Mikrobiologische Qualitätssicherung (Risikoanalyse, HACCP-Konzept, Eigenkontrollen).

Vorlesung Mikrobiologie der Milch und Milchprodukte: Starter- und Reifungskulturen; Mikrobiologie der Milchen: Rohmilch, Past Milch, ESL Milch, UHT Milch, Kondensmilch. Milchpulver; -

Mikrobiologie der Sauermilcherzeugnisse: Sauermilchen, Kefir, Joghurt; Mikrobiologie der Käseherstellung: Frischkäse, Sauermilchkäse, Labkäse; Mikrobiologische Produktionsprobleme.

**Intended Learning Outcomes:**

Die Studierenden haben grundlegendes Fachwissen über zur Lebensmittelmikrobiologie erworben. Realistische Einschätzung der Bedeutung Lebensmittel verderbender Mikroorganismen sowie der Bedeutung lebensmittelbedingter Intoxikationen und Infektionen, Konservierungsverfahren und Qualitätssicherungskonzepte. Erwerb theoretischer Erkenntnisse zur Analyse von mikrobiologischen Produktionsproblemen in der Lebensmittelindustrie. Fähigkeit zur Interpretation mikrobiologischer Daten in der interdisziplinären Zusammenschau mit lebensmitteltechnologischen Prozessen und lebensmittelhygienischen gesetzlichen Vorgaben.

**Teaching and Learning Methods:**

Vorlesungsvorträge mit Lehrdialogen zur Vertiefung des Verständnisses.  
Lernaktivitäten: Anfertigen einer Vorlesungsmitschrift, Studium vom Vorlesungsskript, Beantwortung von Übungsfragen, Nacharbeit des Stoffes mit dem Lehrbuch.

**Media:**

PowerPoint, Lehrfilme, Tafelarbeit, Script, Lernhilfe (Übungsfragen), Exkursionen mit Demonstrationen.

**Reading List:**

Madigan MT et al (2013) Brock Mikrobiologie, Kapitel über Lebensmittelmikrobiologie. Pearson  
Krämer J, Prunge A (2017) Lebensmittelmikrobiologie. utb Verlag  
Märtlbauer E, Becker H (2016) Milchkunde und Milchhygiene. utb Verlag

**Responsible for Module:**

Siegfried Scherer siegfried.scherer@wzw.tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20035: Parasite Immunology | Parasite Immunology

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulleistung besteht aus einer schriftlichen, benoteten Prüfung (90min) zu den Vorlesungsthemen. Dabei belegen die Studierende ihren Kenntnisstand zu parasitären Abwehrmechanismen, Parasit-Wirts-Interaktionen, Diagnostik und Immunevasionsmechanismen. Es werden Zuordnungsaufgaben, Multiple-Choice-Fragen sowie Freitextaufgaben zu beantworten sein, ohne die Verwendung von Hilfsmitteln.

Als freiwillige Mid-Term Leistung kann zusätzlich eine Präsentation im Rahmen des Seminars absolviert werden. Bei der Fallbearbeitung arbeiten die Studierenden an einem klinischen Fall, der zu analysieren, zu bewerten und kritisch zu diskutieren ist. Die Ergebnisse der Fallbearbeitung werden in einer Präsentation (15min) vorgestellt. Die Präsentation kann als Mid Term Leistung zu 20% mit der Klausurnote verrechnet werden. Der Notenbonus wird nur auf eine bestandene Klausur (4,0 oder besser) angerechnet werden.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Kenntnisse der Immunologie und Physiologie.

Vorkenntnisse in Biochemie

#### Content:

- Einführung in die Parasitologie: Definition von Parasiten und deren Klassifizierung, direkte und indirekte Lebenszyklen von Parasiten, Wirt-Parasit-Interaktionen, Wirtsspezifität
- Grundlagen der Immunabwehr gegen Protozoen: Abwehrmechanismen gegen Protozoen, Rolle verschiedener Immunzellen bei der Parasitenabwehr, Immunpathologien



- Grundlagen der Immunabwehr gegen Helminthen: Hyper- und Hyporeaktivität gegen parasitäre Infektionen, akute und chronische Abwehrmechanismen gegen Helminthen, immunbasierte Behandlungsstrategien
- Immunevasionsstrategien und Immunmodulation: Parasit-Wirt-Interaktion, Mechanismen der Immunmodulation durch Parasiten, concomitant immunity, Hygiene-Hypothese und Helminthenabgeleitete Therapien
- Klinische Aspekte der Parasitenimmunologie: Zoonoseerreger, immunbasierte Diagnosemethoden für Parasiteninfektionen und Behandlungsstrategien
- Immunprophylaxe: Herausforderungen der Impfstoffentwicklung, Design von Impfantigenen
- Wechselwirkungen zwischen Parasiten und dem Wirtsmikrobiom: Einfluss des Mikrobioms auf die Parasitenabwehr, Auswirkungen parasitärer Infektionen auf das Mikrobiom
- Labormethoden zur Immunbiologie der Parasiten: Kleintiermodelle, parasitäre Zyklen im Labor

**Intended Learning Outcomes:**

Nach der Teilnahme an diesem Modul verfügen die Studierenden über sichere Grundkenntnisse zur Klassifizierung von Parasiten, der Interaktion von Parasiten und dem Immunsystem ihrer Wirte, kennen Immunevasionsstrategien und die Bedeutung immunmodulatorischer Moleküle in der Parasit-Wirtsbeziehung. Studierende können die Bedeutung parasitärer Infektionen für Mensch und Tier einschätzen und immunbasierte Interventionsstrategien und Immunprophylaxe kritisch beurteilen.

**Teaching and Learning Methods:**

Vorlesung (eigenständige Nachbearbeitung anhand VL-Folien, Mitschriften, Literatur)  
Seminar (Gruppenarbeit, Fallbearbeitung- und Vorstellung, Anwendung der theoretischen Hintergründe zu Immunabwehrmechanismen gegen Parasiten auf komplexe, klinische Fälle)

**Media:**

In den Vorlesungen wird mit Powerpoint, Slido und Tafelanschrieb gearbeitet.

**Reading List:**

Lucius, Loos-Frank, Lane: Biologie von Parasiten, 3. Auflage  
Tracey Lamb, Immunity to Parasitic Infection

**Responsible for Module:**

Ebner, Friederike, Prof. Dr. rer. nat. [friederike.ebner@tum.de](mailto:friederike.ebner@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Grundlagen der Immunologie der Parasiten (Vorlesung, 2 SWS)  
Ebner F

Fallstudien und aktuelle Forschungsthemen parasitärer Infektionen (Seminar, 2 SWS)  
Ebner F [L], Hohensee L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ1185: Plant Epigenetics and Epigenomics | Plant Epigenetics and Epigenomics

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a presentation (20 min) followed by discussion (10 min). The presentation should summarize and interpret the results obtained from analyzing published epigenomic datasets using the computational skills acquired during the Computer Practical sessions. The presentation is a means to measure the student's ability to understand a technical/scientific subject, to analyze and evaluate facts and factors of influence, to summarize the subject and present it to an audience, and to conduct a discussion about the presented subject

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge of genetics, cell biology, statistics

#### Content:

The course will cover:

- Components and functions of the plant epigenome: DNA methylation, histone modifications
- Measuring epigenomes: array-based and NGS based bulk and single cell technologies
- Analyzing plant epigenomic data: Array and NGS based computational tools for bulk and single cells
- Plant epigenome and environmental variation
- Plant epigenome and genetic variation
- Epigenetic inheritance in plants: Mitotic and meiotic inheritance
- Current perspectives on the agricultural and evolutionary implications of epigenetic inheritance in pl

### **Intended Learning Outcomes:**

Students will be able to:

- Interpret the molecular components of epigenomes
- Interpret functions of epigenomes
- Identify the sources of population level epigenomic variation
- Explain modern measurement technologies
- Distinguish the conceptual background of different computational tools
- Apply computational tools to epigenomic data
- Analyze the implications of epigenetic and epigenomics
- Carry out presentation skills

### **Teaching and Learning Methods:**

The following teaching methods will be used:

- Lectures: The goal of the lectures is to provide an in-depth overview of the main concepts, approaches and research questions in plant epigenetics and epigenomics.
- Computer tutorial: The goal of the computer tutorials is to reinforce the lecture contents with hands-on experience. The main aims are: 1) to get hands-on experience with the type of epigenomic datasets that is routinely generated in this field; 2) to get hands-on experience with software tools for the analysis of epigenomic datasets; 3) to be able to evaluate the output from these software tools, and to use the output as a way to answer concrete biological research questions.
- Seminars: The goal of the seminars is to discuss recent scientific literature in plant epigenetic and epigenomics. The aim is to demonstrate how the concepts, approaches and research questions presented in the course provide a means to decode complex scientific articles in this field.

### **Media:**

PowerPoint presentations, software practicals

### **Reading List:**

Spillane, C.; McKeown, P. (2020). Plant Epigenetics and Epigenomics (2. Aufl.) Springer.  
Richards, E. (2006). Inherited epigenetic variation — revisiting soft inheritance. Nature Reviews Genetics, 7 (395–401). <https://www.nature.com/articles/nrg1834>  
Henderson, I.; Jacobsen, S. (2007): Epigenetic inheritance in plants. Nature, 447 (418-424). <https://www.nature.com/articles/nature05917>

### **Responsible for Module:**

Johannes, Frank; Prof. Dr.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Plant Epigenetics and Epigenomics (Vorlesung, 3 SWS)  
Johannes F

Plant Epigenetics and Epigenomics - Computer Practical (Praktikum, 2 SWS)

Johannes F [L], Johannes F, Zhang Z

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2381: Plant Systems Biology (Lecture and Seminar) | Pflanzensystembiologie (Vorlesung und Seminar)

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

At the end of the module, students independently answer a list of questions within the framework of a scientific paper, for which they have four weeks to prepare.

The scientific paper tests the acquired knowledge on the basis of a real or fictitious biological problem or finding, and tries to illuminate this problem or the same finding from different perspectives in its entirety. In doing so, it actively seeks to answer biological and systems biology questions about the biological topic of auxin biology being addressed, using publicly available online resources and databases. Thus, the biochemical and genetic interaction data on auxin biology and systems biology work, especially the multiple effects of these plant hormones on growth and differentiation processes, e.g. with different -omics resources will be reviewed. The grade of this scientific paper will be included with 70% in the final grade.

In the seminar, each student presents a recent publication in the field of plant systems biology in the form of a talk (approx. 30 min). By doing so, students demonstrate that they are able to summarize scientific data, present it to an expert audience in the form of a presentation, and discuss the data presented. The quality of the presentation (quality of the illustrations, the conception of the presentation as well as the understanding, communication and discussion of the biological content) will be graded (30%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of plant biology, morphology and cell biology is recommended.

The module is aimed at students with a background in biology, biochemistry or biotechnology. Prior knowledge of mathematics or computer science is not assumed.

The module is thematically and temporally coordinated with the exercise PlaSysBiol offered in the same period and a simultaneous participation in the exercise module is recommended; however, the modules can also be taken separately.

**Content:**

This module provides in-depth knowledge of the systems biology analysis of genomic, proteomic and metabolomic data (umbrella term -omics). The techniques underlying the individual approaches or resources are explained and critically evaluated in biological contexts. The focus is on transcriptional and protein interaction networks, cell biological and biochemical methods, and modeling of cell biological and developmental processes.

Thematically, the module is largely oriented towards the biology of the plant hormone auxin (auxin receptor action, auxin signal transduction, auxin transport, auxin transport regulation), which is currently best understood in terms of systems biology studies and modeling and has a non-negligible importance for plant growth. In the accompanying seminar, students will present (PowerPoint presentation) a recent paper in the field of plant systems biology. The topics build on the contents of the lecture, but go thematically further in depth or allow the transfer of the biology or methodology learned in the lecture to other topics.

**Intended Learning Outcomes:**

Following participation in the module, students will have detailed knowledge to answer systems biology questions, specifically, but not exclusively, in plant biology. This includes the independent identification of selected genes and gene mutants in databases, the search and evaluation of proteomic and phosphoproteomic as well as protein-protein interaction data in databases, knowledge of the most important biochemical and cell biological methods, their advantages and disadvantages and thus knowledge for the critical evaluation of available data sets.

Students will be able to summarize scientific data in a meaningful way and present it in a visually appealing way, to present it compactly to an expert audience and to discuss controversial data.

**Teaching and Learning Methods:**

Learning activities: Study of the lecture notes, transcript and literature. If necessary, transfer of what has been learned to the PlaSysBiol module (exercise) taking place in the same period. Development of a new topic (seminar topic). Preparation and execution of presentations. Constructive criticism of own work and the work of others. Working under time pressure. Meeting deadlines.

The module consists of a lecture (2 SWS) and a seminar (2 SWS). The seminar takes place as a block seminar following the lecture cycle. In the seminar, students present recent publications in plant systems biology in lectures. The seminar topic is chosen by the students from the environment of the material covered in the lecture.

A recent publication will be discussed and prepared together with the chair. The seminar presentation of about 30 minutes can be discussed with the chair in advance. Possible topics are systems biology work on gene expression analysis, protein-protein interaction networks, or cell biology approaches.

**Media:**

Lecture supported by a PowerPoint presentation or similar. The lecture notes will be made available online.

**Reading List:**

Plant Physiology (Taiz/Zeiger) 5th edition. Molecular Biology of the Cell (Alberts). Auxin Signaling: From Synthesis to Systems Biology (Estelle/Weijers/Ljung)

**Responsible for Module:**

Schwechheimer, Claus, Prof. Dr. [claus.schwechheimer@tum.de](mailto:claus.schwechheimer@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Pflanzensystembiologie SE (Seminar, 2 SWS)

Schwechheimer C [L], Schwechheimer C, Denninger P, Hammes U

Pflanzensystembiologie VL (Vorlesung, 2 SWS)

Schwechheimer C [L], Schwechheimer C, Denninger P, Hammes U

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Medicine Specialization | Vertiefungsbereich Medizin

### Practice Oriented Modules | Praxisorientierte Module

#### Module Description

### WZ2750: Course block: Neurobiology of isolated tissue | Blockpraktikum: Neurobiologie am isolierten Gewebe

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module-related examinations will be a scientific report in which the students should explain the theoretical background and the applied techniques. Furthermore, they shall show that they are able to plan, conduct and evaluate experiments using scientific standards and rules.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in physiology and neurobiology are required. Prior attending of the lectures 'Human and animal physiology', 'Neurobiology' and 'Sensory physiology' is recommended.

#### Content:

4 weeks intracellular labelling of neurons in chicken brain slices, 1 week whole-cell patch-clamp, 1 week optical imaging

#### Intended Learning Outcomes:

Upon completion of the module, students are able: a) to discuss the theoretical background for the conducted experiments, b) to evaluate different electrophysiological techniques for their usefulness in experiments with isolated tissue, c) to conduct electrophysiological in vitro experiments. This includes preparing the tissues, different methods for the analysis of neural networks (single cell recordings, optical imaging, tracing) and histological processing. Furthermore, students will know different methods for data analysis, statistics and graphical presentation of results.



**Teaching and Learning Methods:**

Laboratory

**Media:**

study of specialist literature, practice laboratory skills

**Reading List:**

'Neuroscience: Exploring the brain'; specialist literature will be provided during the course.

**Responsible for Module:**

Prof. Dr. Harald Luksch

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockpraktikum: Neurobiologie am isolierten Gewebe

Nummer: 0000003704

Dr. Stefan Weigel

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2753: Course block: Neurobiology of intact animals | Blockpraktikum: Neurobiologie am intakten Organismus

Version of module description: Gültig ab summerterm 2016

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 120

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module-related examinations will be a scientific report in which the students should explain the theoretical background and the applied techniques. Furthermore, they shall proof that they are able to plan, conduct and evaluate experiments using scientific standards and rules.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in physiology and neurobiology are required. Prior attending of the lectures 'Human and animal physiology', 'Neurobiology' and 'Sensory physiology' is recommended.

#### Content:

3 weeks extracellular recordings of neurons in the auditory midbrain (IC) of mice, generation of acoustic stimuli and data analysis with Matlab®. At the beginning of the course students will have to present a short talk on a topic relevant for neuronal processing of sound.

#### Intended Learning Outcomes:

Upon completion of the module, students are able: a) to apply (under supervision) basis techniques for electrophysiological recordings in in-vivo preparation of the mouse and chicken. b) Furthermore, students will know different methods for data analysis, statistics and methods of stimulus generation for auditory and visual neuroscience experiments with Matlab®.

#### Teaching and Learning Methods:

Laboratory

**Media:**

study of specialist literature, practice laboratory skills

**Reading List:**

Neuroscience: Exploring the brain'; specialist literature will be provided during the course.

**Responsible for Module:**

PD Dr Uwe Firzlaff, Prof. Harald Luksch

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockpraktikum: Neurobiologie am intakten Organismus (Praktikum, 8 SWS)

Firzlaff U [L], Luksch H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ3214: Experimental Immunology and Pathology | Experimental Immunology and Pathology

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Aufgrund des Pandemiegeschehens wird die alternative Prüfungsform "unbeaufsichtigte schriftl. Fernprüfung" (WZ3214o) angeboten.

Students have to hand in 6 lab reports (appx. 20 pages) covering the topics presented in the lab course including mouse dissection, histopathology, genotyping, immune phenotyping, gene expression analysis and microbiological analysis. The students demonstrate with the reports that they have gained deeper knowledge and understanding of the specific methodologies, lab equipment and measurement methodologies and can analyse data with the use of appropriate software tool as well as statistics. They show that they are able to complete extensive laboratory tasks, know how to evaluate and interpret data and results and identify possible sources of error. In the written examination students demonstrate theoretical knowledge on the methodologies used in the lab and underlying medical, biochemical and analytical processes by answering questions without helping material. The final grade is an averaged grade from the written examinations (8.34 % each/ overall 50%) and from the lab reports (8.34 % each/ overall 50%).

#### Repeat Examination:

Next semester

**(Recommended) Prerequisites:**

Basic knowledge in immunology

**Content:**

The practical lab course demonstrates the use of an animal model of intestinal inflammation in biomedical research.

Starting with mouse dissection, different techniques and methodologies to analyze disease-associated alterations at

the organ- and cellular level are applied including: histopathology, genotyping, immune phenotyping, gene

expression analysis and microbiological analysis.

**Intended Learning Outcomes:**

Students acquire detailed and differentiated knowledge on the laboratory work with animal models of diseases and

are able to assess the possibilities and limits of these techniques. They apply relevant research methodologies and

are able to link scientific questions on disease outcomes to research technologies and immunological/ physiological

alterations.

Upon completion of the module, students have improved their practical laboratory working and scientific writing

skills.

**Teaching and Learning Methods:**

Within the module, students attend short lectures on the background of the methods used in the lab course, prior to

their practical work in the lab. Within the practical lab course the students work in teams of two students. Each part

of the internship is supervised individually.

**Media:**

**Reading List:**

**Responsible for Module:**

Haller, Dirk; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Experimental Immunology and Pathology (Übung, 5 SWS)

Haller D [L], Aguanno D, Kisling S, Krammel T, Omer H, Ren S, Riva A, Schmöller I,

Schwamberger S, Smith K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MEIM580: Research Internship Immunology | Forschungspraktikum Immunologie [meim580]

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Academic assessment will be performed in form of a laboratory work. Students need to demonstrate during the six week internship that they gained insight into experimental expertise to plan and prepare, conduct experiments, analyse the resulting data (including error management), show analytical thinking and self organization.

Integral part of the laboratory work is the data documentation in form of a laboratory protocol according to good scientific standards, as well as a summarizing dossier.

The protocol and dossier documents the experimental work and the resulting data. It is structured into a description of the goals (including the scientific introduction), the description of methods, the description of experimental results (including interpretation and error analysis), and a detailed discussion in the frame of the scientific context.

During discussion meetings with the supervisor for preparation of experiments and analysis of the results, as well as the final presentation, students will demonstrate their understanding of the scientific background, the applied methods. Furthermore, they will show a correct presentation of their results, data interpretation and will be able to derive appropriate working hypotheses and future experiments.

The overall marking will be composed of the evaluation of the laboratory work (50%), the written protocol (25%) and the final presentation. The evaluation of the practical work will be conducted according to qualitative criteria (e.g. quality of experimental data, planning and conduction the experiments, data analysis, interpretation of results, error analysis, social competencies, capacity for team work, motivation, self organization, reliability, and independency).

#### Repeat Examination:

Next semester

**(Recommended) Prerequisites:**

Knowledge of basic immunology; e.g. Module ME510

**Content:**

Based on state-of-the-art research project, this internship introduces in most recent immunological techniques. Participating in the research project or self responsible conduction of project parts will give in depth experience inc conduction research in the field of tumor immunology and the relevant experimental settings.

**Intended Learning Outcomes:**

Participating in this lab rotation will teach the students to successfully select and apply relevant immunological and tumor related techniques. Furthermore, they will learn to analyse, validate and evaluate thei experimental results appropriately, and summarize them in a scientific dossier and a presentation.

**Teaching and Learning Methods:**

Practical laboratory work, design and planning of experiments, data analysis and validation, literature work, documentation of experimental procedures ( goal, methods, results and discussion). Preparation of an experimental dossier and a presentation, oral presentation.

**Media:**

Lab work, literature search

**Reading List:**

Project relevant literature will be provided by the supervisor

**Responsible for Module:**

Prof. Dr. Dirk Busch (dirk.busch@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Immunologie (Praktikum, 10 SWS)

Buchholz V, Busch D, Gerhard M, Mejias Luque R, Prazeres da Costa C, Schumann K, Meyer H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### ME2436: Research Project Molecular Oncology | Forschungspraktikum Molekulare Onkologie

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Duration of the examination (in min.): Minutes as academic achievement + 30 oral.

The ability to present and interpret the experiments carried out during the practical training is tested in the form of a presentation in the supervising lecturer's working group (30 min, graded, 25%). The experiments must also be documented and discussed in the form of a protocol. The protocol serves to check the ability to describe, evaluate and interpret the experiments performed in the practical course (15-25 pages, 75% graded) according to the IMRAD structure of a scientific publication (introduction, Mat&Meth, results, discussion).

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

The attendance of the module "Molecular Oncology" is required.

#### Content:

The internship will be carried out in the research group of Prof. Dr. rer. nat. Achim Krüger at the Klinikum rechts der Isar of the TUM, Institute for Experimental Oncology and Therapy Research. The tasks for the internship are based on the current research focus.

The experiments may include current and new molecular (e.g. DNA cloning, vector construction) and cell biological (e.g. transfection and infection of mammalian cells) and biochemical (RNA and protein purification and analysis) methods as well as specific techniques in tumor biology (e.g. proliferation, migration, invasion assays, immunohistochemistry).

#### Intended Learning Outcomes:

After successful completion of the module, students possess basic experimental knowledge and are able to independently apply modern working techniques in biochemistry, molecular biology,

histology, cell culture, transcriptomics and proteomics. By working in the laboratory in a current field of molecular oncology, current research topics are understood and solutions to problems are developed independently. The skills and techniques learned can be easily transferred to other areas of expertise.

After completing the module, students will know the specific requirements for the preparation of a protocol in molecular oncology. They can carry out experiments, apply the methods learned, collect and evaluate data and present them in a lecture.

**Teaching and Learning Methods:**

Event type/teaching technique: Practical training; teaching methods in practical training: instructional talks and instructions, demonstrations, experiments, discussion of results, group meetings, technical literature, lecture, preparation of minutes

**Media:**

Lecture: Presentations using PowerPoint

Protocol: Text as Word file, graphics as Excel or PowerPoint files

**Reading List:**

Current technical literature provided by the supervisor of the internship

**Responsible for Module:**

Achim Krüger [achim.krueger@lrz.tu-muenchen.de](mailto:achim.krueger@lrz.tu-muenchen.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Onkologie (Praktikum, 10 SWS)

Krüger A [L], Krüger A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ME60855: Research Project viral gene transfer | Forschungspraktikum Viraler Gentransfer

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Protocol/minutes (ca. 25 pages) / oral presentation (ca. 30 min.)

A protocol/minutes describing the experiments performed in the format of a scientific publication (introduction, materials and methods, results and discussion) must be written. The protocol serves to check the ability to describe, evaluate and interpret the experiments performed in the practical course and will be 75 % graded.

The oral presentation (graded 25 %) allows to test the students' the ability to present and interpret the experiments.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Attendance at module "viral and non-viral gene transfer: methods and applications in research and therapy" is required.

#### Content:

The 6-weeks internship will be carried out in the research group of PD Dr. rer. nat. Martina Anton at the Klinikum rechts der Isar der TUM at the Institute of Molecular Immunology. Students will be participating in current research topics in the field of viral gene transfer, which are the basis for the respective internship topic.

Experiments may include molecular biology and tissue culture techniques, e. g. DNA cloning, plasmid purification, culture of cell lines and/or primary cells, transfection, infection/transduction of mammalian cells, purification of viral vectors (e. g. AAV, AdV, RV/LV), titration methods, reporter gene assays, gene expression analyses, ELISAs, proliferation assays, differentiation assays.

### **Intended Learning Outcomes:**

After successful participation, students possess basic experimental knowledge and are able to independently apply common methods in molecular biology, tissue culture, vector construction and production. Since experiments are connected to current research projects in the area of “viral gene transfer”, students gain insight into current research topics. Independent problem solving is encouraged. Acquired knowledge in molecular and cell biology techniques and skills, like sterile techniques and safe work can be easily transferred to other research projects.

Students know theory and practice of the executed methods, generate and interpret data.

Students are able to produce protocols, present scientific experiments and their results in the field of viral gene transfer and are able to discuss them in the context of up-to-date literature.

### **Teaching and Learning Methods:**

Event type/teaching technique: research lab training

Teaching methods in practical training: oral instructions to topic, oral and written instructions, demonstration, experiments, discussion of results, technical literature, written protocol/minutes, oral presentation.

The oral introduction includes background and research question and is intended to describe the relevant scientific background. The oral and written instructions explain execution and background of the techniques. Demonstration by trained personnel guarantees the transition from abstract description to actual execution in the lab. While conducting experiments themselves, students practice and exercise common methods. Discussion of results exercises presenting, analysis and interpretation of scientific results, under guidance of the supervisor. Additionally, it allows to identify possible problems and thereby optimize experiments in the future. Independent literature study is intended to deepen the understanding of the research question in the context of the literature. This way students exercise literature searches and use them in their oral presentation and protocol. The protocol is written like a scientific publication in the IMRAD structure (Introduction, M&M, Results, Discussion and References).

With the protocol and talk students demonstrate, that they are able to present and discuss experiments, their results and data in the context of viral gene transfer.

### **Media:**

Presentation: PowerPoint

Protocol/minutes: Text (word) with graphs produced in Excel, PowerPoint, photomicrographs (if applicable)

### **Reading List:**

Current technical literature (PubMed) provided by supervisor.

### **Responsible for Module:**

Martina Anton, [martina.anton@tum.de](mailto:martina.anton@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Viraler Gentransfer (Forschungspraktikum, 10 SWS)

Anton M [L], Anton M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0463: Practical Course in Neurogenetics | Forschungspraktikum Neurogenetik

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Bachelor	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

A written report (graded) is used to check the theoretical skills learnt. In the report, the students show whether they are able to write scientifically and present the essential aspects of their research internship. The report grade constitutes 50% of the module's overall grade, with 50% being the student's practical work. This includes activities that are necessary for the creation and analysis of mouse models for neuropsychiatric diseases, depending on the chosen field, e.g. performing PCR analyses, various behavioural tests, histochemical staining, etc.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Bachelor's degree. Theoretical knowledge in genetics is required.

#### Content:

Participation in current research projects in the field of Neurogenetics  
(Development of the central nervous system, pathoetiology of diseases of the central nervous system)

#### Intended Learning Outcomes:

Student obtain knowledge about design, running and analysing of research projects in the field of Neurogenetics in the lab.

#### Teaching and Learning Methods:

Internship Teaching method: during the internship instructional talks, demonstrations, experiments, partner work, discussion of results.

Learning activities: practical course script and literature; practicing laboratory skills and genetic work techniques; cooperation with practical course partners; preparation of protocols.

**Media:**

Lab work

**Reading List:**

There is no textbook available that covers all contents of this module. It is recommended as a basis or as a supplement:

Larry R. Squire

fundamental neuroscience

Ed. by Larry R. Squire, Darwin Berg, Floyd E. Bloom et al.

**Responsible for Module:**

Daniela Vogt [daniela.vogt@helmholtz-muenchen.de](mailto:daniela.vogt@helmholtz-muenchen.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Neurogenetik (Forschungspraktikum, 10 SWS)

Deussing J, Floss T, Giesert F, Hölter-Koch S, Vogt-Weisenhorn D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2249: Practical Course in Molecular Nutritional Medicine | Forschungspraktikum Molekulare Ernährungsmedizin

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 10	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:



**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2399: Practical Course: Nutrition and Immunology | Forschungspraktikum Ernährung und Immunologie

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination performance is based on the laboratory performance.

The experiments, their evaluation and interpretation are documented and discussed by the students in written form (protocol). This protocol is written and graded according to the basic structure of a scientific article. In doing so, the students demonstrate that they are able to apply the theoretical and practical knowledge in this field to the results obtained and to summarize, present and interpret the data in a scientifically sound manner.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

A 6-week blocked laboratory practicum examines current issues in inflammatory bowel disease, tumorigenesis, nutrition, and intestinal microbiota or cellular stress mechanisms as part of ongoing research.

#### Intended Learning Outcomes:

After successful completion of the module, students possess theoretical competences in the field of immunology and inflammatory processes as well as practical competences in molecular biological, cell physiological, animal experimental and/or microbiological techniques. They are able to work on a scientific problem based on their own guided project.

**Teaching and Learning Methods:**

Working on a scientific question by means of an own project. In doing so, problem-oriented approaches to solutions are to be found. The students plan the experiments in cooperation with their supervisor and carry them out independently. They independently conduct literature research and make a scientific evaluation of the results; practical training, preparation, execution, interpretation and discussion of experiments.

**Media:**

**Reading List:**

suitable papers matching the topic of the research internship

**Responsible for Module:**

Haller, Dirk, Prof. Dr. rer. nat. dirk.haller@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

External: Forschungspraktikum Ernährung und Immunologie (Forschungspraktikum, 1 SWS)

Haller D [L], Haller D, Ocvirk S, Schmöller I, Skurk T

Forschungspraktikum Ernährung und Immunologie (Forschungspraktikum, 16 SWS)

Haller D [L], Schmöller I, Aguanno D, Krammel T, Ocvirk S, Omer H, Ren S, Riva A, Schwamberger S, Skurk T, Smith K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2428: Research Internship Molecular Cell Biology of Tumorigenesis | Forschungspraktikum Molekulare Zellbiologie der Tumorentstehung

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Time allowed (in min.): 20 min (oral test).

The students present the methods applied as well as the results achieved in the course of the internship in the form of a lecture in the working group seminar (20 min, graded). The experiments, their evaluation and interpretation will also be documented and discussed in written minutes, following the basic structure of a scientific article (10-20 pages, graded). The final grade is made up equally of the sub-grades for the lecture, the practical work and the practical training protocol (1:1:1).

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Visit of the module "Molecular cell biology of tumorigenesis"

#### Content:

The content of the research lab is based on the two lectures of the module "Molecular Cell Biology of Tumor Development": the development and progression of tumors is taught on a molecular genetic, biochemical and cell biological basis. Current laboratory methods from biochemistry, molecular biology, mouse genetics, tumor immunology and cell culture technology are learned and, as far as possible within the framework of the practical course, applied independently. Evaluation (including standard statistical methods) and critical interpretation of the experiments form a further part of the practical course.

#### Intended Learning Outcomes:

By participating in the module, students are able to perform basic cell biological, biochemical, molecular biological experimental procedures that are currently used in experimental cancer

research. In addition to practical experimental knowledge, students are also able to plan experiments in a meaningful way, to evaluate them independently and to interpret them critically. In addition, the presentation and communication of research results is learned and deepened through the practical lecture and the practical protocol.

**Teaching and Learning Methods:**

Form of event / teaching technique: Instructional talks and instructions, demonstrations, experiments, discussion of results, presentation of the results in the group, critical reading of English-language specialist literature, lecture, preparation of minutes.

**Media:**

Presentations via Powerpoint

**Reading List:**

There is no textbook available that covers all contents of this module. Current technical literature will be handed out by the supervisor depending on the topic of the internship. The following is recommended as a basis or supplement: 1) Biology of Cancer, Robert Weinberg, Garland Science 2006; ISBN: 0815340761

2) Textbook on Molecular Cell Biology, Alberts et al., Wiley VCH, 2007 ISBN: 3527311602

3) The Mouse in biomedical research. James G. Fox (Ed.). Academic Press, 2007. ISBN: 9780123694546

4) Mouse Models of Human Cancer. Eric C. Holland (Editor), Wiley-VCH, 2004. ISBN: 978-0-471-44460-2

**Responsible for Module:**

Klaus-Peter Janssen klaus-peter.janssen@lrz.tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2454: Research Internship Molecular Pathology and organ-specific Carcinogenesis | Forschungspraktikum Molekulare Pathologie und organspezifische Karzinogenese

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Duration of the examination (in min.): Protocol as study achievement + 30 min presentation. The ability to present and interpret the experiments carried out during the practical training is tested in the form of a presentation in the supervising lecturer's working group (30 min, ungraded). The experiments must also be documented and discussed in the form of a protocol. The protocol serves to check the ability to describe, evaluate and interpret the experiments carried out during the practical training (10-20 pages, graded). The overall mark for the module consists of 20% lecture and 80% protocol.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Attendance of the module "Molecular pathology and organ-specific carcinogenesis" is required.

#### Content:

The internship is carried out in the working group of a lecturer participating in the lectures "Molecular Pathology" or "Organ-Specific Molecular Carcinogenesis" at the Institute of Pathology of the Technische Universität München or at the Institutes of Pathology or Radiobiology of Helmholtz Zentrum München in Neuherberg. The tasks for the internship are based on the current research focus of the lecturers and take up a partial aspect of the lectures. Basic techniques of molecular pathology and molecular biology are used in the experiments.

#### Intended Learning Outcomes:

In the practical training basic experimental knowledge and modern working techniques are taught. By working in the laboratory in a current field of molecular pathology or organ-specific

carcinogenesis, the students are able to understand current research topics and develop solutions to problems independently. The skills and techniques learned can also be transferred to other fields.

**Teaching and Learning Methods:**

Event type/teaching technique: Practical training; teaching methods in practical training: instructional talks and instructions, demonstrations, experiments, discussion of results, group meetings, technical literature, lecture, preparation of minutes

**Media:**

Lecture: Presentations using PowerPoint

Protocol: Text as Word file, graphics as Excel or PowerPoint files

**Reading List:**

Current literature provided by the supervisor of the internship

**Responsible for Module:**

Birgit Luber luber@lrz.tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2464: Research Project Neurobiology of Isolated Networks | Forschungspraktikum Neuronale Netzwerkanalyse

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Regelmäßige, aktive Teilnahme ist erforderlich. Die Studierenden werden sich anhand von Eigenrecherche mit geeigneter Literatur auf die jeweils untersuchten Aspekte der visuellen und multimodalen Verarbeitung vorbereiten; die Studierenden werden in die Lage versetzt, in Übereinstimmung mit heute gültigen wissenschaftlichen Standards Versuche zu planen, durchzuführen und auszuwerten. Im Anschluß an das Praktikum wird der Kompetenzzuwachs in Form eines Protokolls schriftlich abgeprüft.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Grundlegende Kenntnisse der Physiologie und Neurobiologie auf dem Niveau der Vorlesung "Neurobiologie" sind nötig. Der vorherige Besuch dieser Vorlesung wird empfohlen.

#### Content:

In dem Praktikum werden wissenschaftliche Vorgehensweisen zur Analyse neuronaler Netzwerke am Beispiel von in vitro Präparationen des Hühnerhirns theoretisch und praktisch vorgestellt. Dies beinhaltet elektrophysiologische Versuche an Nervenzellen in Hirnschnitten. Die Studenten werden nach einer Einarbeitungszeit die Versuche selbständig durchführen, auswerten und die Ergebnisse präsentieren.

#### Intended Learning Outcomes:

Ziel ist das Erlernen von Techniken zur Durchführung elektrophysiologischer Versuche an in vitro Präparaten. Dies beinhaltet die Herstellung von in vitro Präparaten, Techniken zur Analyse neuronaler Netzwerke (z.B. Einzelzelleableitung, Optical Imaging, Tracing) sowie histologische



Aufbereitungen. Darüber hinaus werden Auswertmethoden, statistische Methoden und die grafische Darstellung von Ergebnissen erlernt.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Laborlehre

Lehrmethode: Fragend-entwickelnde Methode, Einzelarbeit, praktische Demonstrationen, eigenständige Labortätigkeit, Experiment. Lernaktivitäten: Studium der ausgeteilten Grundlageninformationen, Bearbeiten von Problemen und deren Lösungsfindung, Üben von labortechnischen Fertigkeiten, Produktion von wissenschaftlichen Berichten..

**Media:**

Ein Skript zu diesem Praktikum wird ausgeteilt bzw. als Download auf Moodle zur Verfügung gestellt. Zusätzlichen Informationen werden auf Moodle kommuniziert (URLs, weitere Texte).

**Reading List:**

Als grundlegendes Lehrbuch wird "Neuroscience: Exploring the brain" von Baer empfohlen. Spezialliteratur steht dem Studenten im Labor zur Verfügung.

**Responsible for Module:**

Harald Luksch (Harald.Luksch@wzw.tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Neuronale Netzwerkanalyse (Forschungspraktikum, 10 SWS)

Luksch H, Weigel S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2477: Research Project Molecular Virology | Forschungspraktikum Molekulare Virologie

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 100	<b>Contact Hours:</b> 200

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The student works experimentally in the laboratory as a member of a working group consisting of the group leader, PhD students and postdocs, technical staff and students, if applicable. He/she works under supervision on a task from the field of virology formulated for him/her at the beginning. He/she will keep a laboratory record of the experimental plan, the work performed and the results obtained. At the end the student prepares a protocol (graded), in which he/she demonstrates that he/she is able to describe the materials and methods, describe and summarize the results obtained and discuss them briefly in comparison with the relevant literature, in which the topic is introduced, the methods and materials are described, the results are presented and briefly discussed in comparison with relevant literature. He/she will participate in the regular seminars of the working group.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Knowledge of molecular biology is required. Basic knowledge in cell biology, immunology and virology is recommended.

#### Content:

The student works experimentally in the laboratory as a member of a working group consisting of the group leader, PhD students and postdocs, technical staff and students, if applicable. He/she works under supervision on a task from the field of virology formulated for him/her at the beginning. He/she will keep a laboratory record of the experimental plan, the work performed and the results obtained. At the end, the student prepares a protocol in which the topic is introduced, the methods and materials are described, the results are reproduced and briefly discussed in comparison with relevant literature. She/he participates in the regular seminars of the working group.

**Intended Learning Outcomes:**

After completing the laboratory internship, the student will be able to perform basic experimental techniques in the fields of virology, microbiology and cell biology. She/he has gained first experiences in protocol taking and presentation of scientific results.

**Teaching and Learning Methods:**

Direct, personal instruction for practical work in the laboratory. Private study of literature.

**Media:**

Internship, discussion in the working group, own oral presentation, transcript of the elaborated results in form of a short scientific paper (protocol)

**Reading List:**

Depending on topic, original literature and review articles

**Responsible for Module:**

Ulrike Prof. Dr. Protzer (protzer@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Molekulare Virologie (Praktikum, 2,5 SWS)

Pichlmair A [L], Protzer U, Pichlmair A, Ebert G, Vincendeau M, Wettengel J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2665: Research Procect Neurogenetics for Advanced | Forschungspraktikum Neurogenetik für Fortgeschrittene

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

One laboratory performance will be graded: The graded laboratory performance includes the preparation of a protocol and a presentation.

Part of the laboratory performance is the elaboration of the respective theoretical basics incl. literature study. This also includes the description of the experiments, the preparation and practical execution, any necessary calculations, their documentation and evaluation as well as the interpretation of the results with regard to the knowledge to be gained. The laboratory performance is supplemented by a presentation to test communicative competence in presenting scientific topics to an audience.

The concrete components of the laboratory performance and the competences to be tested with it include regular practical work on a small scientific project, a written protocol (introduction, material and methods, results, discussion and literature with a total of 20 pages), and at the end of the practical work a short presentation (30 min) in the context of the institute seminars. Internship duration is 6 weeks full time. Protocol and presentation are evaluated (2:1). The practical performance documented in the protocol will be evaluated primarily on quality (thoroughness, accuracy, documentation, problem-solving strategies) but also on efficiency and quantity. In the written protocol (German or English), the students show whether they are able to structure the experiments carried out, the results and the context of their work and to present the essential aspects. They should be able to describe, interpret and combine the results obtained in a meaningful way and apply them to the current scientific context. In the presentation (preferably in English), the students should again demonstrate how their results fit into the current state of research and be able to present their understanding in this respect by means of a discussion. This also gives the students the opportunity to train for scientific presentations.

### **Repeat Examination:**

Next semester / End of Semester

### **(Recommended) Prerequisites:**

It is recommended to attend the lecture of genomics and/or developmental genetics (compulsory lecture in the bachelor program), or similar. It is advantageous to attend the lectures Neurogenetics I and II concomitant to the internship. Good knowledge of English (laboratory language) is recommended.

### **Content:**

During the internship, students will gain knowledge about practical work in a research laboratory - especially about working in the field of neurogenetics, working with mouse models and their generation, and working with cellular model systems. Contents include: 1. latest molecular biological technologies for the generation of mouse models as well as 2. characterization of these mouse models (especially in the field of neuropsychiatric diseases) and cellular systems derived from them. The work is always integrated into an ongoing current research project of the Department of Developmental Genetics. Applied methods and methods to be learned depend on the research project. However, as examples can be mentioned: Cloning and testing of new vectors to create animal models; gene expression analyses by qPCR - luciferase assays, application of viral vectors for acute elimination of gene expression (knock-down); biochemical methods (Western blots, activity measurements of proteins); histological analyses of mouse models (immunohistochemical, in situ hybridizations; quantitative analyses), metabolic analyses of organs and cell cultures; mitochondrial analyses etc.. The practical work will be guided. However, the goal is to achieve independence and self-responsibility for the experiment(s) performed during the course of the practical.

### **Intended Learning Outcomes:**

The most important competence to be acquired in this internship is the practical experience in carrying out a small scientific project.

After participating in the module, students will have acquired initial experience and competence in scientific work and presentation of scientific results, both in written and oral form. Furthermore, in-depth practical and theoretical content will be taught in at least one neurogenetic method.

Therefore, the following competencies will be acquired in this internship:

1. practical work in the research field of neurogenetics - learning of methods (molecular biological, histological),
2. structured written (protocol) and oral (presentation) processing of the obtained results against the background of a specific scientific question.

After participation in the module, students will be able to perform scientific work in a neurogenetics laboratory, will have learned at least two basic methods from the molecular biological or histological field, and will be able to place results obtained in the laboratory in the context of known knowledge (literature), present them clearly, and interpret them critically. They will be able to discuss and orally defend their results.

**Teaching and Learning Methods:**

Type of event: practical course

Teaching method: in the practical course, instructional discussions, demonstrations, experiments, discussion of results, feedback on the quality of the practical work.

Learning activities: study of background literature (in English only), internship script and literature; practice of laboratory skills, teamwork; preparation of protocols; preparation of a presentation.

**Media:**

Presentations by means of PowerPoint, script (download option for lecture material), practical script.

**Reading List:**

No textbook is available that covers all the content of this module. Recommended as a foundation or supplement:

L. R. Squire: Fundamental Neuroscience, ed. Larry L. Squire, Darwin Berg, Floyd E. Bloom et al.

**Responsible for Module:**

Vogt-Weisenhorn, Daniela, Dr. Dr. rer. nat. [daniela.vogt@mytum.de](mailto:daniela.vogt@mytum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Neurogenetik für Fortgeschrittene (Forschungspraktikum, 10 SWS)

Floss T, Giesert F, Hölter-Koch S, Vogt-Weisenhorn D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ9904: Practical Course "Medicine" | Forschungspraktikum "Medizin"

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### LS20005: Models in Computational Neuroscience (M.Sc.) | Models in Computational Neuroscience (M.Sc.)

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the module is carried out in the form of a laboratory performance, which consists of the following elements: activity in the laboratory, lab report (~10 pages) with evaluation and discussion and presentation (30 minutes) in a ratio of 3:3:1. In it, the students demonstrate the ability to design models in computational neuroscience, code computer programs, analyze data and visualize data. They also demonstrate the ability to present their data to other computational neuroscientists, and synthesize what they learned in a concise written up record of their work.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Students are expected to have some mathematical knowledge (linear algebra, differential equations) and some programming skills (Matlab, Python or C/C++).

#### Content:

Minimum of 6-8 weeks research project in laboratory with hands on training in the analysis of neuroscience data and the building of network models.

Depending on the aim of the research project, different methods and questions will be in focus. For instance:

- simulating network models in Julia, Python or Matlab
- designing differential equation descriptions of network interactions

- mathematical analysis based on dynamical systems
- image analysis using ImageJ software
- statistical analysis with Julia, Python or Matlab
- dimensionality reduction techniques of high-dimensional data
- extracting model parameters from experimental data
- conceptual discussion and literature searches to understand and propose ideas, results, hypotheses

### **Intended Learning Outcomes:**

Upon successful participation the students are able to:

- Analyze neuroscience data from electrophysiological or calcium imaging recordings
- Build network models of connected excitatory and inhibitory neurons in numerical simulations
- Include synaptic plasticity rules in the network models for the self-organization of network connectivity
- Analyze the output of the networks in terms of activity and connectivity
- Interpret the numerical results to make predictions for experiments
- Work in the laboratory independently

### **Teaching and Learning Methods:**

Students will work in the lab and learn from PhD students.

They will be given detailed instructions and sample numerical code to perform the simulations.

They will read scientific literature to determine new parameters for their models.

They will learn mathematical methods for writing down differential equations, analyzing them using dynamical

systems and visualizing them from PhD students and sample code from related projects.

They will have weekly meetings with their other PhD students and give regular presentations on their progress to get feedback.

They will get regular help with checking their code and analysis.

### **Media:**

### **Reading List:**

### **Responsible for Module:**

Gjorgjieva, Julijana, Prof. Ph.D. [gjorgjieva@tum.de](mailto:gjorgjieva@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Models in Computational Neuroscience (M.Sc.) (Forschungspraktikum, 10 SWS)

Gjorgjieva J, Ferreira Castro A, Festa D, Fritz I, Getz M, Gupta D, Herbert E, Malakasis N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **ME2506: Differentiation of human stem cells into pancreatic organoids for diabetes and cancer research (Research internship) | Humane Stammzellendifferenzierung in Pankreas Organoide für die Diabetes- und Krebsforschung (Forschungspraktikum)**

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 20	<b>Contact Hours:</b> 280

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

The examination performance corresponds to a laboratory assignment. Daily presence and active participation in the laboratory setting is expected. A presentation (30 min, graded) serves to ensure that the student has learned theoretical competences in the studied field. The student needs to demonstrate general knowledge of the field, ability to structure data and results, focus on the relevant aspects of the practical work, and present conclusions drawn from the experiments conducted. Placing the work in context of the current state of the art of the field is expected. The grade of the presentation will be a part of the whole grade (30%).

A laboratory protocol containing all experiments, results, and conclusions will be assessed to determine understanding of the work conducted in the module. This part will constitute the 2nd part of the overall grade of the module (70%). Assessment of the practical aspects with regards to cell culture and analysis of stem cell differentiation will occur during the time in the laboratory.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Basic knowledge in cell culture and aseptic techniques is strongly recommended.

Basic knowledge in cell and molecular biology is strongly recommended.

Basic lab techniques are strongly recommended.

#### **Content:**

This module consists of a six-week lab course which will teach background knowledge and important techniques for human stem cell culture and differentiation into functional cells using the example of pancreatic islet cells, hormone producing cells essential for the regulation of glucose

homeostasis or pancreatic exocrine cells that form the precursor for pancreatic adenocarcinoma. The lab course will cover general properties of human stem cells, how they can be guided towards a defined differentiation path, and how to test the maturity state of the generated cells. Students will learn how to handle undifferentiated stem cells, initiate 3D differentiation of these cells towards the gastrointestinal organs, and analyze the resulting pancreatic organoids at different stages. For the analysis of differentiated cells, essential molecular and cell biology techniques including fluorescence activated cell sorting (FACS), immunofluorescent labeling, microscopy, and quantitative PCR assays will be applied.

### **Intended Learning Outcomes:**

After the successful completion of the module the student will gain general understanding of how human stem cells can be guided towards differentiation into the pancreatic lineages. The student will learn how to culture human stem cells, guide differentiation by addition of signaling factors, analyze molecular and cellular properties of differentiated cells. The overarching goal is for the student to be exposed to general principles of stem cell and pancreas biology as well as develop a deeper interest in organoids technology as a tool to define, understand, and modulate pancreatic diseases. The learning outcomes include:

- Understand and apply the basic principles of human stem cell culture and differentiation for basic research and disease modeling.
- Apply learned knowledge to generate novel hypotheses regarding relevant questions in pancreas biology and disease.
- . Recognize the concept of cell lineage specification and ability to identify functional pancreatic cell types phenotypically and molecularly.

The student will obtain the following technical expertise:

- Carry out routine stem cell techniques such as:
  - o Media preparation.
  - o Sterile handling of undifferentiated stem cells (culturing, passaging).
  - o Initiation of guided differentiation of human stem cells towards the pancreatic lineages.
- Utilize molecular and cell biological assays to analyze stem-cell derived organoids by:
  - o Fluorescence activated cell sorting (FACS)
  - o Immunofluorescent labeling
  - o Microscopy
  - o Gene expression via quantitative PCR
- Document and evaluate experimental data and present their results.

### **Teaching and Learning Methods:**

Way of instruction: Lectures and instruction in laboratory practice; demonstration of experimental settings and instrumentation; discussion of results and guidance in preparation of laboratory book notes and protocols; support in generating of summary lab notes consisting of presentation of data, results, and discussion thereof.

### **Media:**

PowerPoint

### **Reading List:**

There is no science book available that covers all aspects of this module. It is recommended to read the following publications as foundation for the module.

Balboa, D. et al. Functional, metabolic and transcriptional maturation of human pancreatic islets derived from stem cells. *Nat Biotechnol* 40, 1042–1055 (2022).

Wiedenmann, S. et al. Single-cell-resolved differentiation of human induced pluripotent stem cells into pancreatic duct-like organoids on a microwell chip. *Nat Biomed Eng* 5, 897–913 (2021).

Breunig, M. et al. Modeling plasticity and dysplasia of pancreatic ductal organoids derived from human pluripotent stem cells. *Cell Stem Cell* (2021) doi:10.1016/j.stem.2021.03.005.

Nair, G. G. et al. Recapitulating endocrine cell clustering in culture promotes maturation of human stem-cell-derived  $\beta$  cells. *Nat Cell Biol* 21, 263–274 (2019).

### **Responsible for Module:**

Matthias Hebrok, Matthias.hebrok@tum.de

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0267: Research Project: Novel Therapeutic Strategies to Treat Aging-Related Diseases | Research Project: Novel Therapeutic Strategies to Treat Aging-Related Diseases

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 50	<b>Contact Hours:</b> 250

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination assesses lab performance of the students and will consist of a written report summarizing the work experience and knowledge acquired during the internship (~20 pages). Students demonstrate with the reports that they have gained deeper knowledge of the topic and the specific lab methodology including its equipment, measurement methods and analytical tools. In addition, reports show how students performed in the lab, especially with regard to clean work at master level and in compliance with good scientific practise rules. Students know how to document this knowledge and their results and evaluations. The final grade is given for the report.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Basic knowledge of molecular biology; previous lab experience is preferable

#### Content:

6-week research internship for students of the master's program Biology. Different projects in the field of pathway analysis, molecular signaling, stem cell research and drug discovery.

#### Intended Learning Outcomes:

Upon successful completion of this module, students gain knowledge on how cells develop an aging phenotype in normal and disease states, with a particular focus on cells derived from patients with a premature aging disorder such as Hutchinson-Gilford progeria syndrome (HGPS). On the basis of this knowledge, students are able to understand some molecular processes that drive cells to enter senescence and put all performed experiments into the correct context. To examine these mechanisms, the students perform different methods including cell culture, western

blotting, qPCR, biochemical assays, cell transfection and microscopy. Moreover, the students test specific research questions on HGPS and perform an independent project, starting by designing the experimental approaches, carrying out the experiments and analyzing the results.

**Teaching and Learning Methods:**

Laboratory course + literature research + presentation and discussion of research results in a weekly lab meeting + journal club

**Media:**

**Reading List:**

Lopez-Otin, C., Blasco, M.A., Partridge, L., Serrano, M., Kroemer, G., The hallmarks of aging. Cell, 2013. 153(6): p. 1194-217. Gordon LB, Rothman FG, Lopez-Otin C, Misteli T (2014) Progeria: a paradigm for translational medicine. Cell 156 (3):400-407. doi:10.1016/j.cell.2013.12.028 Gabriel, D., Roedel, D., Gordon, L.B., Djabali, K., Sulforaphane enhances progerin clearance in Hutchinson-Gilford progeria fibroblasts. Aging Cell, 2015. 14(1): p. 78-91.

**Responsible for Module:**

Djabali, Karima; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Theory Oriented Modules | Theorieorientierte Module

### Module Description

#### WZ2460: Current Topics in Neurobiology | Aktuelle Themen der Neurobiologie

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students take two seminars offered as part of this module.

A presentation (20-30 min) must be given in each seminar.

The module examination thus consists of two presentations, the grades of which are counted 1:1.

Students will have to prepare for the general topic of each lesson by means of introductory texts each week; this general part will be talked through together at the beginning of the seminar. Afterwards, one student at a time will present an in-depth text or a recent publication from a high-class peer-reviewed journal; this additional information will then be discussed. The entire course is held in English. The grade of a presentation is determined from the assessment of participation and prior knowledge in the general preliminary information and discussion (30 %) as well as from the student's own presentation performance (categories text comprehension, completeness, structuring, presentation style, handout, together 40 %) and participation in the special discussion (20 %).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of neurobiology, at least on the level of the lecture "Human and Animal Physiology", should be available. Further neurobiological knowledge, for example from other lectures of the chair, is also advantageous (but not a prerequisite).



**Content:**

Basic and advanced aspects of neurobiology including methods, formal and theoretical foundations, model systems for basic research and for applied research, pharmaceutical research, molecular and molecular biological aspects of complex functions and dysfunctions. These contents are introduced basally by means of basic articles (mostly textbook excerpts, more rarely simpler reviews) and then brought up to the current state of knowledge by means of more recent, top-class published articles. The assessment of further developments in the respective research areas is explicitly made.

**Intended Learning Outcomes:**

Students acquire scientifically sound, basic knowledge of neurobiology and an overview of current developments in the most important research areas. After completing this seminar, students will be able to extract current research results from publications, put them into context and integrate them into their knowledge system. The topics discussed are not to be understood as a completed historical process. In particular, students will develop ideas about how research lines and processes behave with regard to their further development and will be able to understand the mechanisms of the science establishment.

**Teaching and Learning Methods:**

Event type/teaching technique: Seminar

teaching method: seminar, question-developing method, presentation, group work

Learning activities: studying the basic information given out, researching material, summarising documents, preparing and giving presentations, gathering information in special lectures, incorporating new information supported by question and answer sessions.

**Media:**

Literature will be distributed or made available for download on Moodle. Own presentations are to be created using PowerPoint or similar presentation techniques. Additional information will be communicated on Moodle (URLs, further texts)

**Reading List:**

The basic textbook "Neuroscience. Exploring the brain." by Bear, Connors, Paradiso from the Lippincott, Williams and Wilkins publishing house is recommended as the basic textbook, in the English version. The German edition ("Neuroscience." from Spektrum Verlag) is more expensive and not in the language used in the seminar. Other textbooks of neurobiology are also suitable for the basic contents.

**Responsible for Module:**

Luksch, Harald, Prof. Dr. rer. nat. harald.luksch@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Aktuelle Themen der Neurobiologie: Biologie und Neuroethologie der Fledermäuse (Seminar, 2 SWS)

Firzlaff U

Aktuelle Themen der Neurobiologie: Zelluläre und molekulare Neurophysiologie (auf Englisch)  
(Seminar, 2 SWS)

Weigel S, Michel K, Bühner S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ME2759: Blood-Forming Stem Cells as a Model for Somatic Stem Cells | Blutbildende Stammzellen als Modell für somatische Stammzellen

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 128	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Der Modul ist aufgebaut aus Vorlesungen (insgesamt 1 SWS: Einleitung somatischer Stammzellen, embryologische Entwicklung des Blutsystems, verschiedene Aspekte der adulten Stammzellen, Stammzellnische, klinische Anwendungen von blutbildenden Stammzellen). Auch werden in Seminare der Kursteilnehmer aktuelle Forschungsbeispiele aus der Literatur vorgestellt und diskutiert (0,5 SWS).

Die Prüfungsleistung stellt sich zusammen aus: Seminarvortrag (etwa 30 min + Diskussion, 40%) und die Verfassung einer Hausarbeit (60%) zur Kontrolle des Verständnisses sowie der Fähigkeit zur Beschreibung, Interpretation und Bewertung. Das Modul ist bestanden, wenn das gemittelte Ergebnis besser als 4,1 ist.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Zum besseren Verständnis dieses Theorieteils sind gute Kenntnisse in Zellbiologie und Biochemie erforderlich.

#### Content:

Im Rahmen dieses theoretischen Moduls werden spezielle Kenntnisse über somatische, und insbesondere blutbildender Stamm- und Vorläuferzellen und Stromazellen vermittelt.

Es werden 5 Vorlesungen stattfinden, und anschliessend 5, von den Studenten vorbereiteten Seminare in dem aktuelle Forschungsbeispiele präsentiert und besprochen werden sollten.

#### Vorlesungen

1. Einleitung in der Stammzellbiologie, somatische Stammzellen

2. Embryologische Entwicklung des Blutsystems und blutbildenden Stammzellen
3. normale Physiologie der blutbildenden Stammzellen und die Stammzellnische
4. Abnorme Physiologie der Stammzellen bei Alterung chronische Erkrankungen und Malignitäten
5. klinische Relevanz von blutbildenden Stammzellen

In den Seminaren sollen von den Teilnehmern aktuelle Forschungsergebnisse der Literatur vorbereitet, präsentiert und diskutiert werden. Dabei werden Themen wie:

- 1 - Stammzellidentität und Isolation
  - 2 - Stammzellverhalten (Regeneration, Apoptose, Überleben, Proliferation, Differenzierung)
  - 3 - Stammzellnische (Identität, Isolation, Relevanz für das Verhalten der Stammzelle)
  - 4 - Maligne Entartungen des Blutsystems und leukämische Stammzellen
- ausführlich zur Sprache kommen

Ergänzt werden die Vorlesungen und Seminare durch eine Hausarbeit (in englischer Sprache) in dem die Teilnehmer ihr Verständnis der erworbenen Kenntnisse beschreiben, Interpretieren und bewerten.

**Intended Learning Outcomes:**

Nach der Teilnahme an den Modulveranstaltungen besitzen die Studierenden das theoretische Verständnis und spezielle Fachwissen über blutbildenden Stammzellen. Weiterhin haben sie wesentliche Konzepte somatischer Stammzellen integriert, evaluiert und in einer Hausarbeit beschrieben. Sie haben gelernt:

- die Herkunft der somatischen Stammzellen und deren Entwicklung in Embryonen zu verstehen
- grundlegende funktionelle Verhaltensweisen blutbildender Stammzellen zu verstehen
- (Stamm)zellbiologische Fragestellungen und Arbeitstechniken aus aktuelle Forschungsliteratur zu verstehen, kritisch zu evaluieren und fachliche Fragen selbst zu entwickeln.

**Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Vorlesungen, Seminare, Hausarbeit.

Lehrmethode: Vorlesungen, Literaturrecherchen, Diskussionen, Präsentationen, Partnerarbeit (bei höheren Studentenzahlen), Ergebnisbesprechungen.

Lernaktivitäten: Studium von Literatur; Präsentation eines aktuellen Forschungsmunuscript; Anfertigung einer Hausarbeit

**Media:**

Original Fachliteratur, Präsentationen mittels Powerpoint, Photoshop

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt.

**Responsible for Module:**

Oostendorp, Robert; Apl. Prof.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2074: Biomolecular Food Technology | Biomolekulare Lebensmitteltechnologie

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 54	<b>Self-study Hours:</b> 24	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 90.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Beherrschung der analytischen, biochemischen und genetischen Grundbegriffe

#### Content:

Analytical techniques used for metabolomics (LC-ESI-MSn, etc.), smell and taste reception (biochemistry and genetics), aroma biotechnology (biosynthesis, function, metabolism, genetic engineering), chemistry, function, metabolism and bioavailability of vitamin C and E, lipid biotechnology (biosynthesis, metabolism and genetic engineering)

#### Intended Learning Outcomes:

Knowledge of the functional principle of modern analytical instruments, the molecular basics of smell and taste perception, vitamin function und lipid biotechnology

#### Teaching and Learning Methods:

Vortrag

#### Media:

**Reading List:**

Friedrich Lottspeich, Haralabos Zorbas, Bioanalytik Spektrum Akademischer Verlag, 1998; Tsung Min Kuo, Harold Gardner, Lipid Biotechnology Marcel Dekker Verlag, New York, 2002

**Responsible for Module:**

Wilfried Schwab (w.schwab@mytum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Biomolekulare Lebensmitteltechnologie (Vorlesung, 2 SWS)

Schwab W

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MH4E8080: Current Topics in Tumor Immunology | Current Topics in Tumor Immunology

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The theoretical skills acquired in the lecture will be assessed at the end of the semester in a written examination (60 minutes, without aids). In the written exam, the students show whether they are able to reproduce the knowledge they have learned and the basics of tumor immunology. They should be able to describe, combine, and transfer the information obtained to other issues.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of cell biology and immunology. Interest in translational issues.

#### Content:

Various levels of interaction between the immune system and cancer are taught. This also includes the basics of immunology and molecular cell biology. In addition, the content is developed in a translational context. The following topics are covered.

1. Immune system: basics and introduction
2. Immune system during carcinogenesis
3. Immunescape vs. immunosurveillance
4. Immunological therapy concepts
5. Tumor microenvironment
6. Antibodies and tumor suppression
7. What defines immunogenicity?
8. Modern aspects of immunotherapy
9. Autoimmunity and chronic inflammation



**Intended Learning Outcomes:**

After completing the lecture, students will be able to differentiate between different levels of cancer-immune cell interaction. In particular, the processes during carcinogenesis are contrasted with the immune system's reactions (immune surveillance and immune escape). The acquired knowledge can be transferred to immunological treatment concepts in the following. This includes the presentation of the processes in the tumor microenvironment and the association with antibodies and tissue-specific molecular properties. Furthermore, students can differentiate and evaluate various aspects of modern immunotherapies and design critical scenarios such as autoimmunity or chronic inflammation. Students can thus answer questions from tumor immunology independently and in a solution-oriented manner. Furthermore, they can classify new developments and existing concepts in this specialist area, such as new forms of therapy, and explain the underlying mechanisms. In addition, students will be able to transfer basic ideas, in the tradition of transnational research, to other fields of knowledge and describe and apply concepts there.

**Teaching and Learning Methods:**

The learning objectives are conveyed in a lecture. This is supported by a presentation and supplemented with interactive elements (TED, cards, open questions). As part of the lecture, students will also be encouraged to discuss the topics presented and complementary specialist literature.

**Media:**

Powerpoint, Flipped Classroom, TED-Online (PINGO), Skript, Moodle-Kurs

**Reading List:**

A collection of slides is available online (Moodle)

Molecular oncology - development, progression and therapy of cancer; Wagener, Christoph; Müller, Oliver; Thieme, 2022; ISBN: 9783132433540

Biology of Cancer, Robert Weinberg, Garland Science 2006; ISBN: 0815340761

Janeway Immunology, Murphy, Kenneth M. Weaver, Casey ISBN 978-3-662-56003-7

**Responsible for Module:**

Klaus-Peter Janßen, klaus-peter.janssen@tum.de Tobias Dreyer, tobias.dreyer@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0219: Chemosensory Perception | Chemosensory Perception

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the written examination (90 min) students demonstrate by answering questions without helping material the theoretical knowledge of the biology of taste, smell, and chemesthetic perception as well as extra-sensory processes involving chemoreceptors. To answer the questions, own wordings are necessary and sketches of biomolecules and signaling pathways.

In addition, there is the option of taking a voluntary mid-term assignments as course work in accordance with APSO §6, 5. For this, a report on a scientific publication (1 page plus summary graphic) is to be prepared. This is supplemented by a presentation to test the communicative competence in presenting the contents to an audience.

Passing the course performance will improve the module grade by 0.3 if, based on the overall impression, this better characterizes the student's performance level and the deviation has no influence on passing the examination. No retake date will be offered for the mid-term performance. In case of a repetition of the module examination, a mid-term performance already achieved will be taken into account.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in molecular biology, biochemistry, cell biology and physiology is required.

#### Content:

The basics of aroma- and taste recognition, evaluation, and analysis on a molecular level are communicated.

In detail, the following topics are discussed:- basics of human taste recognition (molecules, anatomy, morphology and function of gustatory and olfactory structures, receptors, genetic variability and its influence on sensory sensitivity, establishment of preferences and aversions, the connection between sensory perception and food preferences, extra-sensory functions of taste and odorant receptors, oral somatosensory perception, basic taste modalities, signal transduction).

**Intended Learning Outcomes:**

Upon completion of the module, students understand the molecular bases of taste and smell perception. The students will be able to separate those percepts from other chemosensory cues such as chemesthesis or pheromone detection. Moreover, students are familiar with the putative physiological relevance of extra-sensory chemosensory stimuli. The importance of the chemical senses for food preferences and consumption is known.

**Teaching and Learning Methods:**

The content of the lecture is presented by means of powerpoint presentations. Students are motivated to broaden their knowledge by reading complementary literature relevant to the topic.

The seminar will give the students the chance to follow the rapid development of chemosensory research directly by reading and discussing recent publications. Students will choose a paper and critically present it to their peers. Additional literature research for a solid introduction into the field of research is requested. The fellow students are motivated to discuss the presentations. This will deepen the understanding of the contents presented during the lecture and enable the students to critically evaluate novel results.

**Media:**

PowerPoint presentations will be used. The content of the lectures will be made available for download as pdf-files.

**Reading List:**

not specified

**Responsible for Module:**

Behrens, Maik; Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chemosensory Perception (Vorlesung, 2 SWS)

Behrens M

Chemosensory Perception (Seminar, 2 SWS)

Behrens M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2693: Cognitive Neuroscience | Cognitive Neuroscience

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students will demonstrate an overview of cognitive processes in the brain during a written exam (60 min.). They can describe the cellular basis and the network architecture in the brain that lead to cognitive processing, and elaborate on the scientific status quo of cortical processing during various cognitive tasks. In addition, they can evaluate and predict the consequences of lesions and pharmacological interventions in the cortex for psychological processes and mental states. Finally, they will demonstrate an overview of the various methodological approaches to study the cognitive functions in the (human) brain.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Students should have a basic knowledge of neurobiological processes in general, at least on the level of a physiology course, better though on the level of the "neurobiology" lecture held at the WZW (or a comparable lecture series).

#### Content:

computation of sensory information in the mammalian cortex; differences between cortical and non-cortical structures in the forebrain of vertebrates; Structure of the Cortex, canonical circuits, processing principles in the Cortex, Models of cortical function, malfunctions of the cortex in pathological situations, Role of the prefrontal cortex, Role of the hippocampus, Cortical processing of sensory input, Sleep, Food intake, Decision making, Cravings and Addiction, Emotions, Consciousness and Free Will. In addition, we will demonstrate options for technological interactions with the brain, and give an overview of the current approaches for analysing brain functions in the behaving organism.

**Intended Learning Outcomes:**

After the exam, students can sketch cortical processing, derive these computations from the underlying neurobiological foundations, and explain their functions for the organism. The students will acquire special knowledge on the role of the cortex, can integrate new information into this knowledge framework, and have an overview of pathologies and the possibilities to manipulate cognitive processes.

**Teaching and Learning Methods:**

Teaching mode: Lecture Teaching method: Presentation. Learning activities: Reading of basic texts, preparation and review of lecture materials, internet searches, summarizing of subjects.

**Media:**

The powerpoint presentations of this lecture series will be made available on Moodle. Additional information (URLs, additional texts, self-assessments etc.) will be available on Moodle as well.

**Reading List:**

The basic textbook for this lecture is "Neuroscience. Exploring the brain" from Bears, Connors and Paradiso, published by Lippincott, Williamsn and Wilkins. However, all other modern neurobiology textbooks are also appropriate.

**Responsible for Module:**

Harald Luksch Harald.Luksch@wzw.tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MH4E2598: Entwicklung von Impfstoffen gegen Infektionskrankheiten | Entwicklung von Impfstoffen gegen Infektionskrankheiten

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Regular, active participation is expected; short presentations on a given topic; The module exam will be made through a lecture.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

basic knowledge in virology and immunology

#### Content:

In this module, students receive an overview of

- " immunological principles of vaccinology
- " vaccine formulations (antigen selection, adjuvants, DNA and vector-based vaccines)
- " current aspects of vaccine development (personalized vaccines, immunosenescence)
- " selected examples of innovative vaccines

#### Intended Learning Outcomes:

At the end of the module, students will be able to

- " understand and apply general concepts of vaccinology
- " understand, describe and discuss basic immunological mechanisms / modes of action of vaccines
- " understand and explain vaccination strategies
- " understand new aspects of vaccine development and evaluate their significance
- " analyze and assess current developments in the field of vaccinology

**Teaching and Learning Methods:**

The module consists of a seminar, students will be encouraged to study the literature and to discuss the topics

Teaching Technology: Seminar

Teaching Method: presentation, lecture, group work (discussion of the presented literature)

Learning activities: relevant material research, study of literature, preparing and conducting presentations

**Media:**

Power Point

**Reading List:**

There is no textbook available that covers all the contents of this module; recommended basic literature: Modrow, S., Falke, D., Truyen, U., Schätzl, H. Molekulare Virologie, Springer, 3. Auflage 2010

S. J. Flint. Principles of Virology, John Wiley & Sons; Auflage: 3. Auflage 2009

**Responsible for Module:**

Ulrike Protzer (protzer@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Entwicklung von Impfstoffen gegen Infektionskrankheiten (Seminar, 2 SWS)

Protzer U [L], Kosinska A, Mergner J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20007: Introduction to Computational Neuroscience | Introduction to Computational Neuroscience

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 7	<b>Total Hours:</b> 210	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In a graded final 20 minute presentation (slides, e.g. with Power Point) the students present their project work, where they aim for reproducing results from a scientific paper with methods of computational neuroscience, that are taught in the lecture and practiced in the tutorials. In addition, the students should synthesize the relevant findings of the paper and critically discuss the modeling choices of the authors, following examples that are given throughout the lecture.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Previous exposure to python is helpful, but not required.

Basic knowledge of neuroscience/neurophysiology is recommended.

#### Content:

Introduction to programming with python

The concepts and implementation in python of:

Neuroelectronics - Cable Properties, different neuron models and synaptic conductances

Network models - Feed-forward and recurrent models with spiking and rate-based neurons

Plasticity and Learning - spike time dependent and rate based plasticity rules and synaptic normalization

Neural Codes - Mutual information, Spike trains and receptive fields

Machine Learning - Dimensionality reduction, Model fitting, Generalized Linear Models,

Reinforcement learning



### **Intended Learning Outcomes:**

Upon completion of the module students will be able to

- describe the field of computational neuroscience and its sub-disciplines, like dynamical systems, machine learning, stochastic processes and information processing.
- understand the different levels of, and approaches to modeling of biological processes
- understand general concepts of model fitting, like mean squared error, maximum likelihood estimate and the variance/bias trade-off
- implement classical but still relevant models of computational neuroscience (e.g. Leaky Integrate and Fire, Hodgkin-Huxley, Wilson-Cowan, Hopfield), compare their level of description and analyze their strength and weaknesses.

Finally, they will be able to deconstruct computational neuroscience papers into the components taught in the lecture.

### **Teaching and Learning Methods:**

The students learn the basic concepts of computational neuroscience in the lecture and can solidify the learned material in hands-on tutorials with peer-programming tasks and interactive notebooks. Furthermore, they will apply the learned concepts from the lecture and the tutorials in a group-project, that consists of a mix of self-study and guided sessions and leads to a final presentation; where the students present their findings and how they relate to the learned concepts.

### **Media:**

The lecture consists of a PowerPoint presentation.

The tutorials consist peer-programming sessions with the use of interactive notebooks. The project work consist of self-study sessions and guided sessions and a Power Point presentations prepared by the students.

### **Reading List:**

Dayan, P., & Abbott, L. F. (2005). Theoretical neuroscience: computational and mathematical modeling of neural systems. MIT press.

Bear, M., Connors, B., & Paradiso, M. A. (2020). Neuroscience: Exploring the Brain, Enhanced Edition: Exploring the Brain. Jones & Bartlett Learning.

MacKay, D. J., & Mac Kay, D. J. (2003). Information theory, inference and learning algorithms. Cambridge university press.

### **Responsible for Module:**

Gjorgjieva, Julijana, Prof. Ph.D. [gjorgjieva@tum.de](mailto:gjorgjieva@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Introduction to Computational Neuroscience – Lecture (M.Sc.) (Vorlesung, 2 SWS)

Gjorgjieva J

Introduction to Computational Neuroscience – Project Work (M.Sc.) (Projekt, 2 SWS)

Gjorgjieva J [L], Ferreira Castro A

Introduction to Computational Neuroscience – Exercise (M.Sc.) (Übung, 2 SWS)

Gjorgjieva J [L], Ferreira Castro A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ME2453: Molecular Pathology and Organ-Specific Carcinogenesis | Molekulare Pathologie und organspezifische Karzinogenese

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die regelmäßige Teilnahme an den Vorlesungen "Molekulare Pathologie" und "Organspezifische Molekulare Karzinogenese" ist erforderlich. Zwei Klausuren (jeweils 90 min, Single choice, benotet) dienen der Überprüfung der in den Vorlesungen erworbenen theoretischen Kompetenzen.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The basic knowledge of molecular biology and genetics acquired during the bachelor's program should be sufficient for understanding the lectures. Attending other modules is not required.

#### Content:

The lecture "Molecular Pathology" teaches methodological basics of tissue analysis on the highest scientific level and deals with interdisciplinary aspects of pathological processes. Special emphasis is placed on oncogenes and tumor suppressor genes, cell adhesion and metastasis, signal transduction, cell cycle and apoptosis, angiogenesis, environmental carcinogenesis and cancer stem cells. This will provide an understanding of the molecular mechanisms of oncogenesis. In the lecture "Organ-Specific Molecular Carcinogenesis", basic tumor classifications are explained and organ-specific carcinogenesis is explained in detail and in an understandable way for carcinomas of the stomach, colon, liver, pancreas, mamma, lung and urogenital tract. In addition, leukemias and lymphomas, brain tumors, and endocrine tumors are covered. In addition, leukemias and lymphomas, brain tumors and endocrine tumors are treated.

**Intended Learning Outcomes:**

After attending the two lectures, the students will have basic knowledge of molecular pathology, molecular pathological working techniques and organ-specific molecular carcinogenesis. They should have learned to understand molecular pathological questions and working techniques and to develop solutions independently, to understand molecular mechanisms of oncogenesis and to recognize interrelationships and particularities of carcinogenesis of different organs. The module should provide an insight into human pathology and arouse interest in the diagnosis and therapy of cancer.

**Teaching and Learning Methods:**

Course type/teaching technique: Lecture, teaching method: lecture; learning activities: study of lecture material, lecture notes and literature

**Media:**

Presentations via Powerpoint,  
Script (download option for lecture material)

**Reading List:**

There is no textbook available that covers all contents of this module. It is recommended as a basis or as a addition:

C. Wagener, O.Müller (Hsg.) Molecular Oncology, Georg Thieme Verlag, Stuttgart, 2010.

**Responsible for Module:**

Luber, Birgit; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare Pathologie (Vorlesung, 2 SWS)

Luber B [L], Azimzadeh O, Dreyer T, Härteis S, Luber B, Mörtl S, Rosemann M, Schöffler P, Steiger K, Wirth J

Organspezifische Molekulare Karzinogenese (Vorlesung, 2 SWS)

Luber B [L], Azimzadeh O, Dreyer T, Luber B, Mörtl S, Muckenhuber A, Nawroth R, Neff F, Sarker R, Schicktanz F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ME2649: Molecular Oncology II | Molekulare Onkologie II

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfung wird in Form einer Übungsleistung abgenommen. Diese Übungsleistung setzt sich zusammen aus drei Komponenten:

- Benotung der mündlichen Beteiligung (nach 1,0; 1,3; 1,7...) in der Veranstaltung; benotet werden 6 aus 8 Veranstaltungen nach dem Zufallsprinzip.
- Benotung der Hausaufgabe (nach 1,0; 1,3; 1,7...) (Powerpointdarstellung)-; ; benotet werden 6 von 8 Hausaufgaben nach dem Zufallsprinzip.
- Benotung des Vortrags (nach 1,0; 1,3; 1,7..., einmal pro Semester) dient der Überprüfung der im Modul erworbenen Kompetenzen.

Bei den Prüfungen dürfen alle möglichen Hilfsmittel eingesetzt werden. Die Bewertung der mündlichen Beteiligung erfolgt an Hand des Engagements und der Kenntnis der Studierenden bzw. deren Entwicklung im Laufe der Veranstaltung. Die Hausaufgaben werden bezüglich Vollständigkeit, Richtigkeit und didaktischer Qualität bewertet, die Vorträge entsprechend der didaktischen Aufbereitung. Die Leistung ist an die Teilnahme am Seminar verknüpft und kann im Folgesemester wiederholt werden, wenn der/die Studierende wieder einen Platz bekommt. Die Gewichtung der Leistungen mündliche Beteiligung/Hausaufgabe/Vortrag ist 5:2:3.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Bestandener Abschluss der Vorlesung Molekulare Onkologie 1

#### Content:

Im Seminar: Einführung in die Theorie der Wissenschaft und Aufbau einer Publikation. Bearbeiten von Abstracts von Originalpublikationen aus folgenden Themenbereichen: 1.) Merkmale der Tumorprogression 2.) Ursachen der Tumorentstehung 3.) Onkogene 4.) Tumorsuppressorgene

5.) Epigenetik 6.) Umwelt der Zelle 7.) Mechanismen der Metastasierungskaskade 8.) Proteasen/Proteolytisches Netzwerk 9.) Spezifische Methodik der Molekularen Onkologie 10.) Förderung der Tumorprogression durch TIMP-1. Entwickeln und Notieren der relevanten Methodik. Als Hausaufgabe: Entwickeln einer vergleichenden Powerpointpräsentation der selbst vorgeschlagenen Experimente versus der tatsächlich durchgeführten. Präsentation der Hausaufgabe.

### **Intended Learning Outcomes:**

Die Studierenden sind in der Lage selbständig die experimentelle Vorgehensweise zu entwickeln, die einer ihnen fremden Forschungsleistung (den Studierenden vorgegeben als englischsprachiges Abstract einer Originalpublikation) aus dem Gebiet der modernen molekularen Tumorforschung zugrunde liegen sollte. Die Studierenden erfassen in kurzer Zeit das Thema, die Fragestellung, das Neue in den Ergebnissen und die Relevanz der Forschungsleistung im Gebiet der molekularen Onkologie. Dabei sind sie in der Lage, ihr Wissen aus der Vorlesung Molekulare Onkologie 1 anzuwenden und mit den methodischen Kenntnissen früherer biochemischer und molekularbiologischer Vorlesungen und Praktika zu verknüpfen. Durch die Vertiefung und Anwendung dieser Vorkenntnisse erzielen die Studierenden die Fähigkeit, eigene methodische Herangehensweisen zu entwickeln und kritisch zu beleuchten. Durch den Vergleich der eigenen Vorschläge mit den tatsächlich von den Forschern durchgeführten Experimente (Inhalt der Hausaufgabe an Hand der Gesamtpublikation) entwickeln und verbessern die Studierenden ihre wissenschaftlichen Fähigkeiten. Im Seminargespräch erinnern die Studierenden die Lehrinhalte früherer Vorlesungen und befähigen sich, spätere Prüfungsgespräche (WPP; Doktorprüfung) routiniert anzugehen. Sie sind zudem später in der Lage, effizient wissenschaftliche Publikationen zu bewerten (Review Prozess). Neben der Fähigkeit, moderne Tumorforschung zu verstehen und zu bewerten, bringen sie somit alle Voraussetzungen mit, die für die Aufnahme einer Projektstätigkeit in der Forschung (z.B. Master-, Doktorarbeit) notwendig sind.

### **Teaching and Learning Methods:**

Veranstaltungsform/Lehrtechnik: Seminar; gemeinsames Erarbeiten der Experimentvorschläge; Eigenstudium in der Hausarbeit.

Lehrmethode: Diskussion; Befragung

Lernaktivitäten: Studium von Vorlesungsmaterial, Teilnahme an der Diskussion (Lesen und Verstehen des Abstracts, Entwickeln der Experimentvorschläge); Anfertigen eines Notizprotokolls der Diskussion; Lesen und Verstehen der Gesamtpublikation (Eigenstudium); Ausarbeitung der Gegenüberstellung (Eigenstudium); Vortrag der Gegenüberstellung mit Diskussion.

### **Media:**

Das Abstract wird als Auszug auf einem Blatt Papier ausgeteilt. Die Originalpublikation wird in ihrer Gesamtheit gleich nach dem Seminar über die eLearning Plattform „moodle“ zur Verfügung gestellt. Die Gegenüberstellung erfolgt mit Hilfe einer Powerpointdarstellung. Die Gegenüberstellungen aller Teilnehmer Vorlesungsfolien werden am Tag vor dem nächsten Seminar als pdf über die eLearning Plattform „moodle“ zur Verfügung gestellt.

**Reading List:**

Keine.

**Responsible for Module:**

Krüger, Achim; Apl. Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare Onkologie II (Seminar, 2 SWS)

Krüger A [L], Krüger A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2427: Molecular Cell Biology of Tumorigenesis | Molekulare Zellbiologie der Tumorentstehung

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

A written exam (60 min, graded, without aids) at the end of the second semester serves to test the theoretical competences learned during the module. In the written exam, the students show whether they are able to structure the acquired knowledge from tumor biology and to present the essential aspects. They should be able to describe the acquired information, interpret it, combine it in a meaningful way and transfer it to similar situations.

In addition, there is the possibility to take a voluntary course achievement as a mid-term achievement according to APSO §6 para. 5. For this, an oral presentation (20 min) on a current scientific article is to be given, and a handout (2 pages) on the presentation is to be provided. The module grade will be improved by 0.3 if the student's performance is better characterized by the overall impression and if the deviation has no influence on the passing of the examination. No retake date will be offered for the mid-term performance. In the event of a repeat of the module examination, a mid-term performance already completed will be taken into account. The mid-term performance (lecture and handout) is intended to demonstrate the acquisition of competence in the independent and critical interpretation of current research papers from the English-language literature.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none



### **Content:**

The development and progression of tumors is taught on a molecular genetic and cell biological basis. General basics of molecular cell biology are also taught, especially in the first part, while the second part focuses on translational aspects. Topics:

- Tumor Viruses
- Oncogenes, tumor suppressor genes and tumor modulators
- Signal transduction and growth factors
- Cytoskeleton, cell adhesion and cell migration
- Cell cycle and cell division
- Telomere structure, immortalization, senescence chromosomal instability.
- Apoptosis, necroptosis, necrosis, autophagy, pyroptosis and other forms of cell death.
- Angiogenesis
- Adult stem cells and "tumor stem cells", tumor metabolism
- Embryonic development of the mouse, embryonic stem cells, knock-out and knock-in technique
- Mouse models in biomedical research: Xenotransplant models, transgenesis in mice
- Tissue-specific and inducible models: Cre/LoxP, Crispr/Cas mutagenesis
- Imaging techniques in tumor research (multiphoton microscopy, MRT, PET/CT, OCT)
- Tumor-Stroma Interactions
- Basics of tumor immunology
- Basics of "rational therapy"

### **Intended Learning Outcomes:**

After successful completion of the module, students will have in-depth knowledge of cell biology and molecular biology from all aspects of tumor biology and cancer research.

They know how to move independently and confidently between clinical application and basic scientific knowledge in the field of biomedical cancer research. Students are able to independently evaluate current, English-language technical literature in the field of cancer research. Successful graduates have acquired a broad knowledge to analytically structure and experimentally solve problems in the field of cancer research, supported by practical research skills and experimental-analytical knowledge from the research internship.

### **Teaching and Learning Methods:**

The module consists of two lectures and an tutorial. During the lecture, the learning outcomes are conveyed through lectures, supported by presentations. Students are encouraged to study the technical literature and to deal with the content of the topics. During the tutorial, moderated discussions are held to consolidate the topics learned. In addition, homework will be given during the "tutorial" to help students to understand the contents of the lecture in greater depth, for example, on the genetic basis of transgenesis in pre-clinical animal models. In addition, the students give presentations during the tutorial, including a written handout, in order to practise a technically correct verbal expression.

### **Media:**

Presentations via PowerPoint, blackboard work; Inverted Classroom at a selected lecture date per semester; films; online feedback survey via PINGO

script (download possibility for lecture material on TUMonline) set to Moodle

**Reading List:**

There is no textbook available that covers all contents of this module. The following is recommended as a basis or supplement: 1) Biology of Cancer, Robert Weinberg, Garland Science 2006; ISBN: 0815340761  
2) Textbook of Molecular Cell Biology, Alberts et al., Wiley VCH, 2007 ISBN: 3527311602  
3) The Mouse in biomedical research. James G. Fox (Ed.). Academic Press, 2007. ISBN: 9780123694546  
4) Mouse Models of Human Cancer. Eric C. Holland (Editor), Wiley-VCH, 2004 ISBN: 978-0-471-44460-2

**Responsible for Module:**

Janßen, Klaus-Peter, Apl. Prof. Dr. rer. nat. klaus-peter.janssen@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Molekulare Zellbiologie der Tumorentstehung (Teil 1) (Vorlesung, 2 SWS)  
Janßen K [L], Janßen K, Laschinger-Bolzer M

Molekulare Zellbiologie der Tumorentstehung (Teil 1) (Übung, 1 SWS)  
Janßen K [L], Janßen K, Laschinger-Bolzer M

Molekulare Zellbiologie der Tumorentstehung (Teil 2) (Vorlesung, 2 SWS)  
Janßen K [L], Laschinger-Bolzer M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2457: Neurobiology | Neurobiologie

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden zeigen in einer benoteten Klausur (90 min), dass sie in der Lage sind in einer begrenzten Zeit und ohne Hilfsmittel die zugrunde liegenden Mechanismen und Randbedingungen neurobiologischer Prozesse zu verstehen und darzulegen. Sie müssen neurobiologische Befunde auf ihre entwicklungsbiologischen und molekularbiologischen Ursachen zurückführen, komplexe Krankheitsbilder in ihrer Entstehung beurteilen, und physiologische Erklärungen für Gehirnleistungen darstellen. In Transferaufgaben sind sie in der Lage, auf der Basis des erworbenen Orientierungswissens der gesamten Neurobiologie Befunde einzuordnen und einzuschätzen.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Successful participation in the lecture "Human and Animal Physiology"

#### Content:

Basic Neuroscience: development of the nervous system, neurophysiology, biophysics, synaptic transmission, learning, emotions, speech, degenerative brain diseases, mental diseases, consciousness.

#### Intended Learning Outcomes:

Students will acquire a basic knowledge of the entire neuroscience spectrum, will learn to build upon that basis and to integrate new data, will have insight into current research fields.

#### Teaching and Learning Methods:

Teaching method: Lecture

Teaching method: Presentation, lecture, question-developing method

Learning activities: studying the basic information provided, reviewing the information provided, researching material, summarising documents

**Media:**

A script for this practical course will be handed out or made available for download on Moodle. Additional information will be communicated on Moodle (URLs, further texts)

**Reading List:**

Bear et al., Neurowissenschaften

**Responsible for Module:**

Luksch, Harald; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2490: Neurogenetics: The Pathoetiology of the Neurological and Psychiatric Diseases | Neurogenetische Grundlagen von neurologischen und psychiatrischen Erkrankungen

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden zeigen in einer benoteten Klausur (60 min, 2 Klausuren/nach jedem Semester eine), dass sie grundlegenden Konzepte der Entwicklung des zentralen Nervensystems verstehen und zusammenfassen können. Sie sollen komplexe Sachverhalte über die molekularen Grundlagen und Entstehung von neuropsychiatrischen Erkrankungen in begrenzter Zeit aufzeigen können. Darüber hinaus sollen sie zeigen, dass sie ihr erlerntes Wissen dazu nutzen können, Fallbeispiele analysieren und beurteilen zu können.

Der Durchschnitt der beiden Klausuren ergibt dann die Gesamtnote.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Theoretische Kenntnisse in der Genetik (Entwicklungsgenetik der Tiere) sind wünschenswert.

#### Content:

1. Molekulare und zellbiologische Prinzipien der Entwicklung des zentralen Nervensystems: Neurogenese - Neuronale Migration - Netzbildung - Synaptogenese - elektrische Maturation;
2. Morphologie und Funktion des Großhirns, Kleinhirns, Hippocampus, Basalganglien, Amygdala, Rückenmarks;
3. Erkrankungen des ZNS und deren molekularen Grundlagen: Alzheimer, Parkinson, Schizophrenie, Depression, Infektionen, Rückenmarkserkrankungen, Schlaganfall, Epilepsie, Prionerkrankungen, Erkrankungen des Hypothalamus

**Intended Learning Outcomes:**

Nach der Teilnahme an der Modulveranstaltung besitzen die Studierenden das grundlegende theoretische Verständnis über die Entstehung des Nervensystems. Sie sollen die Prinzipien der molekularen Regulation dieser Prozesse verstehen und diese erklären können, Kenntnisse über die Funktion und Morphologie zentraler Strukturen des ZNS besitzen und die Pathogenese (molekulare) von Erkrankungen des ZNS verstehen. Des Weiteren soll das Modul Interesse an der Neurogenetik fördern.

**Teaching and Learning Methods:**

Lehrmethode: Vorlesung mit fragend-entwicklender Methode

Lernaktivitäten: Studium von Literatur, Lernen von grundlegenden Prozessen, Problemlösung

**Media:**

Powerpoint, Skriptum auf der neuen Moodle-Plattform, Filme

**Reading List:**

Es ist kein Lehrbuch verfügbar, das alle Inhalte dieses Moduls abdeckt. Als Grundlage oder zur Ergänzung wird empfohlen:

Larry R. Squire Fundamental Neuroscience

Ed. by Larry R. Squire, Darwin Berg, Floyd E. Bloom et al.

**Responsible for Module:**

Wurst, Wolfgang, Prof. Dr. rer. nat. w.wurst@mytum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Neurogenetische Grundlagen von neurologischen und psychiatrischen Erkrankungen (Vorlesung, 2 SWS)

Deussing J, Floss T, Vogt-Weisenhorn D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ME2413: Pharmacology and Toxicology for Students of Life Sciences | Pharmakologie und Toxikologie für Studierende der Biowissenschaften (Vertiefung)

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module concludes with a written exam (75 min) in the form of free questions. Two to three questions are formulated for each topic, covering the essential learning content of the module from the beginnings of drug development through the various drug classes to toxic and addictive effects. A special focus is on current drug developments in pharmacology. Through regular active participation in the course and self-study on the basis of the instructional slides provided, the students are enabled to reproduce the knowledge acquired and present the essential aspects in a structured way in a limited time and without aids. Through their own formulations, the students show in the exam whether they have reached a deeper understanding of the topics. The exam is passed if at least grade 4.0 has been achieved. A possibility for repetition is given at the end of the semester.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Module WZ2522: General Pharmacology for students of life sciences (bachelor)

#### Content:

As part of the module the knowledge in pharmacology will be extended from the bachelor's degree. The knowledge of many novel drug classes for treatment of common and serious diseases is acquired. In a historical overview, examples of drugs from nature are learned. The development and optimization of drugs is discussed from drug design to the approval of drugs. Clinical studies and the transmissibility to humans are discussed. Additional contents includes the treatment of tumors and cancer pain, allergies and autoimmunity, infectious diseases such as HIV, heart rhythm disorders and psychoses, as well as biologicals, gene therapy, toxicology and dependence on

psychotropic substances. The seminar serves to strengthen and expand the lecture content, and provides the opportunity for practical exercises.

**Intended Learning Outcomes:**

After completing the module, students are able to reproduce the development of a drug from target identification through lead identification and optimization up to the approval and clinical studies. The students can name different resources for drugs and classify alternative treatment methods. They are able to remember important new drug groups, their targets and mechanisms of action. For each drug class, students can reproduce the lead compounds. They are further able to remember the most common and serious side effects and drug interactions and explain their occurrence. With this knowledge they can differentiate treatment options for common and serious diseases. Finally, students are able to detect toxic and addictive effects and select appropriate antidotes and remedies.

**Teaching and Learning Methods:**

The module consists of a lecture and a seminar. In the lecture the necessary knowledge is mediated through lectures and presentations by department staff. Students are encouraged to study the literature and discuss the issues with each other. In the seminars, the contents of the lecture is deepened and expanded. Different learning and teaching methods are used. E. c. Students prepare and show presentations in small groups or they answer specific questions or collaborate on selected (case) examples. Occasionally, examination questions are exercised. To prepare for each seminar a relevant material research is necessary.

**Media:**

PowerPoint, board work, flipchart, exercise sheets, OnlineTED, movies, downloads

**Reading List:**

There is no textbook available that covers all the contents of this module. Current literature is provided by the respective lecturers. As a basis or to supplement is recommended: Pharmakologie und Toxikologie: Arzneimittelwirkungen verstehen - Medikamente gezielt einsetzen von Heinz Lüllmann, Klaus Mohr und Lutz Hein (Gebundene Ausgabe - 18. Auflage von Januar 2016)

**Responsible for Module:**

Stefan Engelhardt (Stefan.Engelhardt@tum.de) Andrea Welling@tum.de (andrea.welling@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### me551: Advanced Immunology | Spezielle Immunologie [me551]

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Academic assessment will be performed in form of a written exam in a multiple choice format (60 min).

In this framework, students need to demonstrate their in depth knowledge on recent scientific topics in the field of immunology. Specifically, their ability to frame and critically review these research topics within the overall research in immunology will be assessed. Students are expected to demonstrate their ability to critically evaluate the suitability and limitations of experimental approaches for answering relevant research questions. This ability will provide the basis for conducting a future research project within a Master or PhD thesis in the field of Immunology.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Knowledge of basic immunology; e.g. Module ME510

#### Content:

The module 'advanced Immunology' is designed for students, who wish to strengthen their knowledge in immunology, which they acquired in the module 'Introduction to Immunology'. The focus of the lecture series 'Advanced Immunology' are recent research projects and achievements in the field based on examples of current research programs. The basic knowledge on mechanisms of immunological defense will be expanded by discussing more complex immunological procedures (e.g. autoimmunity, tumor immunity). Open questions in immunological research will be discussed and most recent research results will be presented.

#### Intended Learning Outcomes:

Successfully completing this module will enable the students to understand and evaluate the most important experimental procedures for answering immunological research questions. On the

basis of recent research projects, the students learn to approach, plan and conduct the relevant experiments and receive an in-depth insight into the current research in the field.

Attending this lecture series will provide the students with the ability to apply the basic knowledge acquired in the module 'Introduction to Immunology' to novel research projects, evaluate the immunological approaches and develop innovative research solutions. These abilities will provide the basis for a future Master- or PhD thesis in the field of Immunology.

**Teaching and Learning Methods:**

Lecture series; power point presentations; interactive discussion

**Media:**

Power point presentation; corresponding pdf file will be uploaded to TUM Moodle and can be retrieved by the students.

**Reading List:**

Original scientific publications (provided by lecturers)

Murphy K., Weaver C & Berg L.: Janeway's Immunobiology. 10th Edition ISBN

978-0-393-88491-3 Abul K. Abbas, Andrew H. Lichtman und Shiv Pillai: Cellular and Molecular Immunology (Englisch), 10. Edition, Verlag: ELSEVIR, ISBN-10: 0323757480.

**Responsible for Module:**

Dirk Busch (dirk.busch@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED160004: Tissue Engineering and Regenerative Medicine: Fundamentals and Applications | Tissue Engineering and Regenerative Medicine: Grundlagen und Anwendungen

#### *Tissue Engineering*

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

The learning outcomes will be examined in a written examination (duration: 90 min). This test will assess the degree of understanding in the field of tissue engineering and regenerative medicine, from scaffold design to clinical translation. Students have to demonstrate this understanding in the broader context of the overall strategic approach used to solve a clinical problem. This also includes ethical and regulatory considerations. For example, they have to demonstrate that they are able to:

1. evaluate a specific clinical problem,
2. formulate ethical and regulatory aspects, and
3. make an informed choice of the preferred strategy.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

#### **Content:**

Tissue engineering and regenerative medicine (TERM) is a fast-growing field that addresses some of the major healthcare challenges, which result from the human incapability to regenerate diseased or lost tissues and organs. The biofabrication of living tissues and organs can potentially solve issues such as donor shortage and increasing waiting lists for organ transplantation, the lack of devices able to grow with the pediatric patients and the unavailability of therapies for yet untreated diseased. Furthermore, bioengineered human tissues and organs can serve as models for disease modeling and drug testing, with the advantage of being more predictive of the human

response than the animal models, and the additional potential benefit of reducing the number of animals required for preclinical testing.

This course will provide the students with the fundamentals to understand how the convergence of different disciplines such as engineering, biology, material science and medicine can result in new therapeutical solutions and have transformative implications for the future health care.

The course 'Tissue Engineering and Regenerative Medicine' will provide a general understanding of tissue growth and development as well as the tools and theoretical information necessary to design tissues and organs.

Specifically, the following topics will be covered in this module (subjected to change):

- Principles of tissue engineering
- Scaffolds: materials and characterization
- Scaffold design, biomimicry
- Biofabrication technology
- Cell source, isolation, growth, differentiation
- Bioreactor technology (from microfluidics to whole organ bioreactors)
- Mechanical loading and culture conditions
- Tissue/organ design and development
- Tissue analysis and characterization
- Current applications (e.g. cardiovascular, bone, skin, neural, muscle tissue engineering etc)
- Cell therapy
- Regulatory and ethical considerations
- Translational approaches to the clinical settings

#### **Intended Learning Outcomes:**

After successful participation in the module Tissue Engineering and Regenerative Medicine the students will be able to

- understand the principles of tissue engineering and regenerative medicine
- evaluate the existing strategies and their specific advantages and disadvantages
- apply tissue engineering principles to the solution of medical problems requiring the regeneration of tissue
- demonstrate an understanding of the rationale to employ cells, biomaterial scaffolds, biochemical and mechanical stimulation, for the (re)generation of tissues and organs in vitro and in vivo
- demonstrate knowledge of current clinical applications for different organs and tissues
- analyze current challenges in the field of TERM
- formulate regulatory considerations

#### **Teaching and Learning Methods:**

The module consists of a lecture and an exercise. Materials and additional information are available online to all registered students in a digital format via the Moodle eLearning platform. Questions and answers (Q&A) sessions are offered to clarify topics presented in the lectures and to further deepen aspects of interest upon students' request. The exercise will strengthen the theoretical knowledge provided in the lectures. Students will solve and discuss problems related to the field of TERM, and learn to implement different strategies for in vitro and in vivo tissue

generation. The exercises are an essential format to help the students to acquire the teaching goals of this module.

**Media:**

Presentations, handouts, videos, case study descriptions

**Reading List:**

Will be given in the courses, e.g.

Meyer, Ulrich; Handschel, Jörg; Wiesman, Peter; Meyer, Peter. „Fundamentals of Tissue Engineering and Regenerative Medicine”. 2016. Springer, Berlin. ISBN-13: 9783662518304.

**Responsible for Module:**

Mela, Petra; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Tissue Engineering and Regenerative Medicine: Fundamentals and Applications (Vorlesung, 3 SWS)

Mela P [L], Mela P, Zhong Z, Radwansky C, Mansi S

Tissue Engineering and Regenerative Medicine: Fundamentals and Applications (Übung, 2 SWS)

Mela P [L], Mela P, Zhong Z, Radwansky C, Mansi S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Technology / Industrial Application | Vertiefungsbereich Technik / Industrielle Anwendung

### Practice Oriented Modules | Praxisorientierte Module

#### Module Description

### ED180011: Applied Systems Biotechnologie | Angewandte Systembiotechnologie [ASysBioTech]

*Theory and practical working in Systems Biotechnology*

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination takes the form of an exercise, which consists of two colloquia (at the beginning and at the end of the practical work) and a written report. Based on the colloquia (each 30 minutes), the students should show that they know the specific techniques (experimental & theoretical), e.g. B. to cultivate bacteria / microorganisms on a laboratory scale. At the end of the practical work, a report of around 20 pages must be prepared. In the report, the students summarize their laboratory work, the observations and results and show that they can quantitatively record the metabolic behavior by measuring the time course of substrate, product and biomass, and can combine the data with a stoichiometric model.

The weighting of the parts is as follows 1 (colloquium 1)/1 (colloquium 2)/3 (final report). All part must be finished successfully.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Basic knowledge in molecular biology, fermentation techniques, and mathematical modeling is required. These basics can be obtained, for example, in the master course "Industrial Biotechnology".

**Content:**

Cultivation of microorganisms - Sampling techniques - Analysis of a mathematical model

**Intended Learning Outcomes:**

After participating in this internship, the students are able to cultivate bacteria/microorganisms on a laboratory scale, to quantitatively record the metabolic performance by measuring substrate, product and biomass processes and to combine the data with a stoichiometric model.

**Teaching and Learning Methods:**

The module takes the form of practical work (laboratory work). This includes the practical design of the experiment, including preparation of the reactor, cultivation of bacteria, independent sampling, and final cleaning. A script, containing essential information, is provided for data evaluation and mathematical modelling. The internship is carried out as a block internship over several days. The students are given the task of cultivating a modified bacterial strain (with two gene constructs that lead to different fluorescence) in an experiment with a 1-liter bioreactor, collecting data and integrating them into a mathematical model.

In the first half of the internship, a bio-reactor run is started and samples are taken and evaluated. Since the gene constructs result in fluorescence, the amount of the two proteins can be easily estimated. Further learning content of the practical work is sterile work, as well as analytical methods for the determination of sugar and alcohols. The data should then be used for a simple mathematical model, which takes place in the second half of the internship. The metabolic model is set up and analyzed in a Matlab environment using the COBRA toolbox (constrained based reconstruction and analysis). The model combines the data with a mechanistic representation of the processes taking place in the cell and enables a quantitative description of the processes. The focus is on the description of the intracellular metabolic flux when, at the same time, the bacteria starts synthesizing the heterologous protein. On the one hand, the students should be able to learn and apply the role of the FBA (flux balance analysis) and also take into account information about the cellular resource distribution via the two fluorescence markers. In this way, they learn to cultivate bacteria/microorganisms on a laboratory scale, to quantitatively record metabolic performance by measuring substrate, product and biomass processes and to combine the data with a stoichiometric model.

**Media:**

A script is provided for the module, which summarizes the exact schedule, the task and the theoretical background. In an introductory event, the module is presented in detail with slides.

**Reading List:**

(1) Systems Biology (A. Kremling). CRC Press Chapman & Hall 2013

**Responsible for Module:**

Andreas Kremling

**Courses (Type of course, Weekly hours per semester), Instructor:**

Angewandte Systembiotechnologie (Praktikum, 4 SWS)

Kremling A [L], Beentjes M, Garcia Lima J, Hermann L, Klein L, Meiners C, Pflüger-Grau K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### CS0280: Research Internship Method and Process Development for Biotechnology | Forschungspraktikum Methoden- und Prozessentwicklung für die Biotechnologie [PraktMPB]

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Following the internship, an internship report is to be written as an examination performance, which on the one hand demonstrates the ability to write scientifically and on the other hand the understanding of the experimental work carried out. The report should follow the IMRAD structure of a scientific publication. (Introduction, material and methods, results and discussion). The length is between 10 and 25 pages, depending on the topic worked on.

In addition, an ungraded presentation of 20 minutes on the results obtained with discussion in the plenum with the supervising lecturers and expert audience should be held to check the communicative competence and presentation of the content.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Attending the lectures "Enzym Engineering" or "Technical Biocatalysis", both offered in Garching, is beneficial but not mandatory

#### Content:

The methods and content taught during the practical course depend on the current research topics at the chair. Basically, process, method and apparatus development in the chemical-biotechnological environment are taught, especially for fermentations and enzyme-catalyzed processes.

Exemplary is the topic "Microfluidic high-throughput screening of enzymes" (location Garching). Here, students learn, among other things:

- Driving microfluidic unit operations such as encapsulation of particles, injection of a continuous phase into droplets (pico-injection), fusion of 2 droplets or fluorescence-based screening of droplets in high throughput (for example of enzyme activity assays).
- Determine optimal process parameters to operate microfluidics for the desired research question
- Design of microfluidic chips using AutoCAD to achieve desired functions
- Analysis of microfluidic generated Big-Data using Python

The internship can be completed - depending on the topic - at campus Garching or TUM Straubing campus.

### **Intended Learning Outcomes:**

By participating in the research internship (6 weeks, whole day), students acquire an in-depth understanding of technical operations and functionalities of biotechnologically relevant apparatus, as well as the ability to develop new methods for chemo-enzymatic processes. The focus is on technical aspects, such as development of new processes, unit operations or identification of optimal process parameters.

The students work preferably in the context of current research projects of the Chair of Chemistry of Biogenic Resources. Through the internship, they gain an insight into the current state of knowledge of the specific field and expand their skills for the targeted planning and execution of research and development work.

### **Teaching and Learning Methods:**

At the beginning, the students are to familiarize themselves with the topic independently in order to obtain an overview of the methods and their application potential for the underlying research question. On this basis, students are to create a processing plan to address the research question. The practical research work will first be carried out under the guidance of the supervisors to ensure that the peculiarities of the sensitive (optical) devices are sufficiently known and that all safety measures (e.g. laser protection or biological safety) are ensured. Subsequently, students should be capable of independent operation of the devices/processes used.

The results produced and the further procedure will be discussed immanently with the supervisors so that hypothesis-guided work and analysis competence are practiced and the dynamic nature of the research process is made clear.

### **Media:**

Presentations by means of PowerPoint and on whiteboard, case descriptions of comparable scientific work as well as computer-aided programs

### **Reading List:**

### **Responsible for Module:**

Prof. Volker Sieber

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Methoden- und Prozessentwicklung für die Biotechnologie

(Forschungspraktikum, 16 SWS)

Köllen T, Malubhoy Z, Sieber V

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20026: Research Internship Current Topics in Bioinformatics | Forschungspraktikum Aktuelle Themen der Bioinformatik

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 195	<b>Contact Hours:</b> 105

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

For the performance assessment, students complete a project work (a report) with a presentation. The students apply their knowledge to current problems and show that they are able to evaluate, interpret and concisely present the results. The overall grade of the module consists of the presentation and the report (weighting presentation 40% and report 60 %).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Programming skills are a pre-requisite. The course is offered to the students of the following disciplines: biology, molecular biotechnology, bioinformatics, biochemistry, chemistry, and biophysics (master/bachelor)

#### Content:

Research internship with changing, current topics in the field of the Chair for Bioinformatics. The interns work under the supervision and in collaboration with one of the institute's staff members and learn special techniques as well as the analysis of data.

Typical project topics include:

- a) Analysis and prediction of protein interactions
- b) Evolution and host specificity of viruses
- c) Comparative genomics
- d) Protein structure analysis and prediction
- e) RNA informatics
- f) Analysis of heterogeneous OMICs data

**Intended Learning Outcomes:**

Upon successful completion of the module the students are able to create bioinformatics solutions for specific biological problems in genomics, proteomics, structural biology, and evolution. The students have an in-depth understanding of bioinformatics algorithms and databanks as well as practical experience in applying statistical methods and machine learning. Furthermore, the students have learned to work independently and make independent decisions.

**Teaching and Learning Methods:**

Teaching technique: practical course. Teaching method: practical tasks, supervision during the internship,

Instructional discussions. Learning activities: study of literature, practical work on the computer, development of predictive models and software tools.

**Media:**

Work with a computer, talk (PowerPoint)

**Reading List:**

Project-specific literature

**Responsible for Module:**

Frischmann, Dimitri, Prof. Dr. rer. nat. dimitri.frischmann@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Aktuelle Themen der Bioinformatik (Forschungspraktikum, 7 SWS)

Frischmann D [L], Frischmann D, Abbas Q

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS30069: Research Internship Precision Fermentation & Microbial Food Protein | Forschungspraktikum Precision Fermentation & Microbial Food Protein

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird durch die Ableistung des 7-wöchigen Forschungspraktikums abgeschlossen (Vollzeit). Die unbenoteten Studienleistungen in Form einer Laborleistung werden mit einem schriftlichen Projektbericht als Zusammenfassung der wissenschaftlichen Ergebnisse (max. 15 Seiten), sowie einer kurzen mündlich vorgetragenen Präsentation (ca. 10 Minuten) erbracht. Die schriftliche Arbeit und die Präsentation können in deutscher oder englischer Sprache verfasst werden.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Kenntnis über allgemeine Grundlagen der Biotechnologie sowie ein Interesse an biotechnologischen Prozessen und modernen Fragestellungen der Biotechnologie werden vorausgesetzt. Abhängig von der thematischen Ausrichtung des Forschungspraktikums und des Projekts können verschiedene Vorkenntnisse von Vorteil sein. Die detaillierten Voraussetzungen (falls zutreffend) zur erfolgreichen Teilnahme am Forschungspraktikum werden zwischen Studierenden und Betreuendem vor Aufnahme des Forschungspraktikums individuell abgestimmt.

#### Content:

Das Praktikum bietet den Studierenden die Gelegenheit, das bereits erworbene theoretische und praktische Wissen im Rahmen eines Forschungspraktikums auf eine konkrete Forschungsfrage der Cellular Agriculture anzuwenden. Es handelt sich um individuelle Forschungspraktika, die verschiedenen Themen, Fachrichtungen und Methodenspektren zugeordnet werden können. Die Durchführung des Forschungspraktikums findet in den Laboren der Professur für Cellular Agriculture statt. Für die gesamte Zeit des Forschungspraktikums werden die Studierenden

von einem unserer Mitarbeitenden intensiv betreut. Ein Fokus liegt zudem darauf, nach einer Einführung, das Thema eigenständig zu bearbeiten, und dabei ebenfalls Vorschläge für die weiterführende Bearbeitung des Themas einzubringen. Die Studierenden können somit Ihre Erfahrungen in der eigenverantwortlichen Bearbeitung eines Forschungsthemas verstärken, und den Verlauf des Praktikums selbst aktiv mitgestalten.

Im Forschungspraktikum Precision Fermentation & Microbial Food Protein können verschiedene Produkte (alternative Lebensmittelproteine, selbstassemblierende Proteine, natürliche und teilsynthetische Proteine und Polymere zum Bioscaffolding, Wachstumsfaktoren, verschiedene Metabolite etc.) thematisiert werden. Hierzu können unter anderem folgende übergeordnete Methoden und Arbeitsansätze in den Forschungsthemen behandelt werden:

Molekularbiologische Methoden:

- Molekulare Bioprozesskontrolle für bakterielle Kultivierungen (Konstruktion von Stämmen mit natürlichen, synthetischen oder teilsynthetischen Regulationsmechanismen zur Expressionskontrolle eines Zielproteins)
- Stammentwicklung und Optimierung für hocheffiziente rekombinante Proteinproduktionssysteme

Methoden der Bioprosesstechnik:

- Entwicklung optimierter Bioprosesse durch gezielte Medienauswahl und Nährstoffzugabe (Fed-Batch Entwicklung)
- Prozessmodellierung, Soft-Sensoren und Künstliche Intelligenz in der Bioprosesskontrolle und Optimierung

### **Intended Learning Outcomes:**

Es handelt sich um individuelle Forschungspraktika, die verschiedenen Themen, Fachrichtungen und Methodenspektren zugeordnet werden können. Nachfolgende Lernziele sollen jedoch übereinstimmend für alle Forschungspraktika an der Professur für Cellular Agriculture erreicht werden.

Nach erfolgreichem Abschluss des Moduls:

- haben die Studierenden einen Einblick in das Forschungsfeld der Cellular Agriculture, der Herstellung biotechnologischer Alternativen zu konventionellen landwirtschaftlichen Produkten, gewonnen, und können grundsätzliche wissenschaftliche Fragestellungen benennen und erklären
- sind die Studierenden in der Lage, theoretisches Wissen und theoretisch erlernte Methoden für konzeptionelle und/oder praktische Aufgabenstellungen anzuwenden, und somit wissenschaftliche Fragestellungen unter Anleitung eines Betreuenden zu bearbeiten
- im Rahmen des bearbeiteten Themas für die Planung und Durchführung der Experimente selbstständig zu agieren und eigenverantwortlich Entscheidungen zu treffen

- den täglichen Verlauf ihrer Arbeit nach gängigen Regeln zu dokumentieren, dass die angewandten Methoden und Ergebnisse nachvollzogen werden können
- in Feedbackgesprächen erreichte Zwischenergebnisse klar zu kommunizieren und angemessene Vorschläge für die weiterführende Bearbeitung des Themas auszuarbeiten und wiederzugeben
- in einem schriftlichen Bericht das von Ihnen bearbeitete Thema in den wissenschaftlichen Kontext des Forschungsfelds einzusortieren, und die eingesetzten Methoden im Detail zu erläutern, sowie die gewonnenen Ergebnisse zu dokumentieren, analysieren, interpretieren und bewerten.

### **Teaching and Learning Methods:**

Das Modul findet als Blockpraktikum statt. Zu Beginn werden zunächst in Form eines Anleitungsgesprächs der Inhalt des Forschungspraktikums, die thematische Einordnung sowie die zugrundeliegenden Prinzipien der individuellen Experimente besprochen, und einführende Literatur zur Verfügung gestellt. Eine weiterführende eigenständige Literaturrecherche kann, je nach Thema insbesondere zu Beginn des Forschungspraktikums, erforderlich sein. Die Durchführung des Forschungspraktikums findet in den Laboren der Professur für Cellular Agriculture statt. Für die gesamte Zeit des Forschungspraktikums werden die Studierenden von einem unserer Mitarbeitenden intensiv betreut. Hierbei finden regelmäßigen Besprechungen statt, in denen der Fortschritt besprochen und Pläne für die weitere Entwicklung der Praktikumsinhalte innerhalb des vorgegebenen Zeitrahmens entwickelt werden. Nach einer praktischen Einführung in die Experimente und Methoden zu Beginn des Forschungspraktikums sollen die folgenden Versuche möglichst eigenständig durchgeführt werden. Auch die zeitliche Planung der Versuche werden die Studierenden eigenständig durchführen. Die Studierenden dokumentieren Inhalt, Ergebnisse und Ablauf des Forschungspraktikums, wobei der Schwerpunkt auf der detaillierten Beschreibung der angewandten Forschungsmethoden, der Datenerfassung und den Auswertungen liegen soll.

### **Media:**

Wissenschaftliche Fachartikel, Anleitungen und Dokumentationen werden für die Einarbeitung in die Thematik zur Verfügung gestellt. Für die individuelle Versuchsplanung können Tafel- bzw. Flipchartanschriften zum Einsatz kommen. Die abschließende mündliche Präsentation soll durch geeignete Methoden und Folien (bspw. Powerpoint) begleitet werden.

### **Reading List:**

Wissenschaftliche Fachartikel zur Einarbeitung in Thematik und Methodik werden zur Verfügung gestellt. Eine weiterführende eigenständige Literaturrecherche kann, je nach Thema insbesondere zu Beginn des Forschungspraktikums, erforderlich sein.

### **Responsible for Module:**

Henkel, Marius, Prof. Dr.-Ing. [marius.henkel@tum.de](mailto:marius.henkel@tum.de)



**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Precision Fermentation & Microbial Food Protein (Forschungspraktikum, 10 SWS)

Henkel M [L], Henkel M, Noll P, Treinen C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0217: Research Practical Course Bioinformatics | Forschungspraktikum Bioinformatik

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 180

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In order to monitor the performance, students prepare a project thesis/report (20 pages) with a presentation (30 min).

The students apply their knowledge to current issues and show that they are able to evaluate, interpret and concisely present the results. The overall grade of the module is made up of the presentation and the report (Weighting: presentation 40% and report 60%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Programming skills are of advantage. The course is aimed for students of Biology, Molecular Biotechnology, Bioinformatics, Biochemistry, Chemistry and Biophysics (Master/Bachelor).

#### Content:

Research internship with current topics from the chair for Experimental Bioinformatics. The interns work under the supervision and cooperation of one of the institute's staff and learn special techniques and data analysis from them.

Typical areas include:

- (a) We develop computational methods for Network and Systems Medicine, in particular for de novo endophenotyping, mechanotyping and redefinition of diseases by classifying their mechanistic causes rather than relying on symptoms.
- (b) Computational systems medicine on lipids and metabolism.
- (c) Big Data in Biomedicine development of prediction models and software tools that integrate large heterogeneous data sets (OMICS). The challenges in the field of data protection as well as the explicability and continuity of modelling will be addressed.

d) Explanation of molecular mechanisms behind phenotypes in general and human diseases in particular. Development of integrative bioinformatics methods based on network analysis, machine learning techniques and statistical approaches.

**Intended Learning Outcomes:**

After successfully completing the module, students are able to create experimental solutions for defined biological and technical problems from the field of bioinformatics. The students have a deep understanding of how results should be evaluated in an experimental context and have the methodological skills to do so. In addition, the students should have learned to act independently and to make decisions on their own.

**Teaching and Learning Methods:**

Teaching technique: practical training. Teaching method: practical tasks, mentoring during the practical training, instructional talks. Learning activities: study of lecture material and literature, practical work on computer, preparation of prediction models and Softwaretools.

**Media:**

Computer work, lecture (PowerPoint)

**Reading List:**

Practical instructions, for theoretical background Lecture notes, project-specific literature

**Responsible for Module:**

Küster, Bernhard, Prof. Dr. kuster@tum.de Wilhelm, Mathias, Prof. Dr. rer. nat. mathias.wilhelm@tum.de Pauling, Josch, Ph.D. josch.pauling@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Bioinformatik (Forschungspraktikum, 8 SWS)

Wilhelm M [L], Schröder E, Soleymaniniya A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2561: Research Project Protein Modelling and Drug Design | Forschungspraktikum Protein- und Wirkstoffmodellierung

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 225

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

A protocol is to be prepared for the performance review. The students should practically apply their knowledge to current problems and show that they are able to evaluate, interpret and concisely present the results as well as to master transfer tasks. The overall grade of the module is composed of the practical laboratory activity (80%) and protocol (20%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Lecture "Simulation and modeling of biological macromolecules".

The course is intended for students of biology, molecular biotechnology, bioinformatics, biochemistry, chemistry and biophysics (Master).

#### Content:

Practical application of modeling software from the fields of protein ligand docking, molecular simulation, protein engineering to current problems. Depending on the student's inclination, programming issues can also be addressed.

#### Intended Learning Outcomes:

The students are familiar with the handling and the application range of different programs from the fields of protein ligand docking, molecule simulation and protein engineering and are able to apply them independently for corresponding scientific problems.

**Teaching and Learning Methods:**

Teaching technique: practical training. Teaching method: practical tasks, supervision during the internship, instructional discussions. Learning activities: study of lecture material and literature, practical work on the computer, preparation of protocols.

**Media:**

Internship instructions, for theoretical background lecture notes, project-specific literature

**Reading List:**

General literature recommendations will be given in lectures and project specific literature will be given during the lab.

**Responsible for Module:**

Dr. Di Pizio, Antonella a.dipizio.leibniz-lsb@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum Protein- und Wirkstoffmodellierung (Forschungspraktikum, 10 SWS)

Di Pizio A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2597: Research Project Pharmaceutical Bioprocess Engineering | Forschungspraktikum Pharmazeutische Bioprozesstechnik

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 10	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2619: Research Project: in silico Evolutionary Genetics of Plants and Pathogens | Forschungspraktikum: in silico Evolutionsgenetik von Pflanzen und Pathogenen

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The grade is based on the report by the student who will describe in max. 20 pages the analysis of a genomic dataset or of a mathematical model by means of stochastic simulations. The report consists in the description of methods, statistical analyses and discussion of the results. The report serves as a basic scientific document summarizing the pipeline of analysis, possible pitfalls and bias in the results, as well as a general conclusion about the chosen scientific question.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in bioinformatics and statistics.

#### Content:

Modern evolutionary biology methods and concepts is pervasive in many fields of biology such as medicine, agriculture, plant and animal breeding, or ecology. State of the art scientific project in this field require to integrate sequence data, mathematical theory and computer simulations. This practical course provides an in depth application of these principles. The students will study either genomic datasets or a mathematical model by means of stochastic simulations.

- 1) Content of the NGS / genomic data analysis: introduction to NGS data, type of files, download NGS data from databases, barcoding, trimming, read quality control, perform read-mapping with a reference genome, perform SNP calling, gene annotation, statistical bias in SNP calling, de novo genome assembly: de novo assembly of a simple genome, annotation of assembly.
- 2) Content of the mathematical model analysis: formulation of a mathematical model, coding in R, formulation of the stochastic processes involved, simulations in R, statistical analysis of simulations.



3) Exercise and practice writing a report with critical discussion.

**Intended Learning Outcomes:**

After the course the students are confident in using the classic tools for bioinformatics of NGS data, the Linux operating system, a computer cluster and in performing basic statistics using the software R.

When analyzing genomic data, the students know the different type of data generated by Next Generation Sequencing platforms, they know how to perform all the steps from raw data until obtaining SNP data. They master the analysis of genomic data up to SNP calling, By learning how to use different software, they know how to produce accurate data analysis from NGS sequencing data, are critical of the robustness of the results, and can write a scientific description of the pipeline of analysis.

When performing mathematical modelling and stochastic simulations, the students learn how to develop and to formulate a mathematical model to answer a question in evolutionary biology, and to consider and model the different sources of stochasticity in nature. The students are able to write the model and perform simulations in R and conduct the statistical analysis of the results.

**Teaching and Learning Methods:**

Learning techniques: exercise on computer, practical research project, autonomous work.

Learning activities: reading and summarizing the relevant literature, formulating a question and a path to answer, applying bioinformatics or mathematical tools, generating results and their statistical analysis, writing a report, critical assessment of the work.

**Media:**

Software training: Linux environment, basic command line, statistical software R, SAMtools, Trimmomatic, bwa.

**Reading List:**

Hartl and Clark, Principles of Population Genetics 4th Edition (2007); Hedrick, Genetics Of Populations 4th Edition (2009); Wakeley, Coalescent Theory: An Introduction (2008)

**Responsible for Module:**

Tellier, Aurélien; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Forschungspraktikum: in silico Evolutionsgenetik von Pflanzen und Pathogenen  
(Forschungspraktikum, 10 SWS)

Tellier A [L], Anderson M, Lai Y, Tellier A, Wingen L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ3000: Research Training for Molecular Biotechnology | Forschungspraktikum Molekulare Bioprozesstechnik

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 240

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung erfolgt in Form einer Laborleistung.

Bewertet werden a) die praktische Arbeit (240 h), b) das Protokoll sowie c) ein abschließender Vortrag.

Die Studierenden zeigen damit, dass sie in der Lage sind, die wesentlichen Aspekte ihres Teilprojekts strukturiert und reflektiert darzustellen und das theoretische Wissen auf die praktische Fragestellung anzuwenden.

Die Gewichtung beträgt 1:1:1.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Grundlegendes Verständnis für Verfahrenstechnik, Trenntechnik, Trocknungstechnik; Proteintechnologie (themenabhängig); Grundlegende Erfahrung im Bereich Labor-/Technikumsarbeit; Grundlegende Erfahrung im Bereich Literaturrecherche (Englischkenntnisse)

#### Content:

Die Studierenden arbeiten zusammen mit einem Betreuer/einer Betreuerin (Mitarbeiter(in) der Professur) an dessen/deren wissenschaftlicher Arbeit. Hierbei wird den Studierenden ein einfaches, abgeschlossenes Teilprojekt gestellt, welches sie im Rahmen von experimentellen Arbeiten in Labor und Technikum sowie theoretischen Arbeiten unter direkter Anleitung des Betreuers/der Betreuerin bearbeiten.

Mögliche Themenbereiche (im Rahmen aktueller Forschungsprojekte): (1) Trenntechnik, (2) Trocknungstechnik (3) In-situ Bildgebung (4) Strukturierung von Lebensmitteln

**Intended Learning Outcomes:**

Nach diesem Modul sind die Studierenden in der Lage ein einfaches, abgeschlossenes Teilprojekt eines Forschungsvorhabens, beispielsweise aus den Bereichen Bioprozesstechnik, Trenntechnik, Trocknungstechnik oder Charakterisierung von Biosystemen, zu bearbeiten und ihre Ergebnisse schriftlich und mündlich zu präsentieren.

**Teaching and Learning Methods:**

Experimentelle Arbeiten in Labor und Technikum; Theoretische Berechnungen und Simulationen, Ergebnisauswertung, Ergebnisaufbereitung und literaturbasierte Ergebnisdiskussion; Projektbezogene Literaturrecherche; Erstellung eines Projektberichts; Vorbereitung und Durchführung einer Präsentation

**Media:**

Wissenschaftliche Fachartikel

**Reading List:**

Wissenschaftliche Primärliteratur

**Responsible for Module:**

Först, Petra; Prof. Dr.-Ing. [petra.foerst@tum.de](mailto:petra.foerst@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ9905: Practical Course "Engineering" | Forschungspraktikum "Technik"

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20005: Models in Computational Neuroscience (M.Sc.) | Models in Computational Neuroscience (M.Sc.)

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the module is carried out in the form of a laboratory performance, which consists of the following elements: activity in the laboratory, lab report (~10 pages) with evaluation and discussion and presentation (30 minutes) in a ratio of 3:3:1. In it, the students demonstrate the ability to design models in computational neuroscience, code computer programs, analyze data and visualize data. They also demonstrate the ability to present their data to other computational neuroscientists, and synthesize what they learned in a concise written up record of their work.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Students are expected to have some mathematical knowledge (linear algebra, differential equations) and some programming skills (Matlab, Python or C/C++).

#### Content:

Minimum of 6-8 weeks research project in laboratory with hands on training in the analysis of neuroscience data and the building of network models.

Depending on the aim of the research project, different methods and questions will be in focus. For instance:

- simulating network models in Julia, Python or Matlab
- designing differential equation descriptions of network interactions

- mathematical analysis based on dynamical systems
- image analysis using ImageJ software
- statistical analysis with Julia, Python or Matlab
- dimensionality reduction techniques of high-dimensional data
- extracting model parameters from experimental data
- conceptual discussion and literature searches to understand and propose ideas, results, hypotheses

### **Intended Learning Outcomes:**

Upon successful participation the students are able to:

- Analyze neuroscience data from electrophysiological or calcium imaging recordings
- Build network models of connected excitatory and inhibitory neurons in numerical simulations
- Include synaptic plasticity rules in the network models for the self-organization of network connectivity
- Analyze the output of the networks in terms of activity and connectivity
- Interpret the numerical results to make predictions for experiments
- Work in the laboratory independently

### **Teaching and Learning Methods:**

Students will work in the lab and learn from PhD students.

They will be given detailed instructions and sample numerical code to perform the simulations.

They will read scientific literature to determine new parameters for their models.

They will learn mathematical methods for writing down differential equations, analyzing them using dynamical

systems and visualizing them from PhD students and sample code from related projects.

They will have weekly meetings with their other PhD students and give regular presentations on their progress to get feedback.

They will get regular help with checking their code and analysis.

### **Media:**

### **Reading List:**

### **Responsible for Module:**

Gjorgjieva, Julijana, Prof. Ph.D. [gjorgjieva@tum.de](mailto:gjorgjieva@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Models in Computational Neuroscience (M.Sc.) (Forschungspraktikum, 10 SWS)

Gjorgjieva J, Ferreira Castro A, Festa D, Fritz I, Getz M, Gupta D, Herbert E, Malakasis N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS10050: Research Project Computational Plant Genomics | Research Project Computational Plant Genomics

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 10	<b>Total Hours:</b> 300	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 150

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module assessment consists of a project report (65% of the final grade) supplemented by a presentation (35% of the grade).

The project report should be ~5000 words/ 15-20 pages, including references and figures. In the report, students must demonstrate their ability to present the current state of research, formulate a hypothesis and research question, structure, analyze, and evaluate their research results, and discuss them within a broader scientific context. Students are expected to critically assess the methods they have applied.

The presentation focuses on the students' ability to discuss their project and findings before a critical scientific audience and to place their results within the broader context of the literature provided by the supervisors. Students should present their research results in a 20-minute presentation, followed by a 10-minute discussion, during which they are expected to provide scientifically sound answers.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Solid foundational knowledge in molecular biology and basic knowledge in computational biology.

In addition, for students of the M.Sc. Agricultural Biosciences, MBT and Biotechnology programs: WZ0637: Lab Course Methods for Analysis of Next Generation Sequencing Data or: LS20039: Fundamentals of Computational Data Analysis and Bioinformatics for Plant Transcriptomics and RNA-seq



**Content:**

The following points provide an overview of the topics and methods covered in the research internship. Depending on the individual research questions of the students, some but not all of these topics will be practically addressed.

**1. Practical Work with Linux and High-Performance Computing (HPC) Clusters**

- Application of Linux commands and scripts for efficient analysis of large datasets.
- Use of HPC clusters to perform computationally intensive bioinformatics processes.

**2. Data Preparation, Research, and Quality Control**

- Independent research of relevant sequencing and reference datasets for analysis.
- Application of tools like FastQC and MultiQC to assess the quality of sequencing data.
- Practical trimming of sequencing reads using tools such as Trimmomatic to improve data quality.

**3. Mapping and Alignment of Sequencing Data**

- Use of mapping tools like HISAT2, STAR, or BWA to align (RNA or DNA) sequencing data to plant reference genomes.
- Evaluation of alignment quality using various metrics, such as mapping rate and coverage uniformity.

**4. Phylogenomic Analyses**

- Independent use of tools like OrthoFinder to identify orthologous genes and generate phylogenomic trees.
- Comparison of phylogenetic relationships across different plant varieties and species and interpretation of results.

**5. SNP Calling and Variant Analysis**

- Use of SNP-calling tools like GATK or SAMtools to identify genetic variants in plant data.
- Interpretation and annotation of SNPs to understand their biological relevance.

**6. Gene Expression and Transcriptome Analyses**

- Analysis of RNA sequencing data using tools like HTSeq, featureCounts, or Kallisto to quantify gene expression.
- Application of normalization techniques and conducting differential gene expression analyses with DESeq2.

**7. Functional Enrichment Analyses**

- Performing gene set enrichment analysis to identify biological processes using tools like KEGG and Reactome.
- Analysis and interpretation of biological pathways in plant genomes and transcriptomes.

**8. Development and Application of Bioinformatics Pipelines**

- Independent development and adaptation of bioinformatics workflows for the analysis of plant data.

- Application of specific pipelines for NGS data analysis or phylogenomic studies.

#### 9. Benchmarking of Tools

- Comparison of the performance of various bioinformatics tools in terms of speed, accuracy, and suitability for specific questions.
- Documentation and interpretation of benchmarking results to select optimal tools for future projects.

#### 10. Independent Research Project

- Planning and execution of an individual project in the field of plant research, based on a specific scientific question.
- Application of research strategies to efficiently use scientific literature and databases.

#### 11. Documentation and Presentation of Results

- Structured documentation of conducted analyses and results.
- Presentation of research findings in a scientific context, e.g., through reports or presentations.

#### **Intended Learning Outcomes:**

After successfully completing the module, students will be able to:

- Work confidently with Linux and high-performance computing (HPC) clusters.
- Deepen and apply their existing knowledge of plant genomic data, such as NGS data and phylogenomic analyses.
- Learn and proficiently apply bioinformatics tools and methods for the analysis of genomic data.
- Learn, develop, and independently apply bioinformatics pipelines for specific use cases.
- Apply research strategies to efficiently utilize scientific literature and relevant data sources.
- Independently plan and execute their own project, selecting and applying appropriate analysis tools and methods.
- Critically interpret the results of plant genomic analyses and develop problem-solving strategies.
- Clearly document and present their research findings.

#### **Teaching and Learning Methods:**

Students work on individual research projects in the field of computational plant genomics. Each student is assigned a unique research question, such as the analysis of NGS data or phylogenomic questions and receives close supervision throughout the project. The necessary bioinformatic tools, as well as the use of Linux and HPC clusters, are taught through hands-on, one-on-one instruction.

Students are expected to independently search for relevant datasets and scientific literature to expand their knowledge of plant genomic data. After an initial introduction to tools for sequence analysis, quality control, and data processing, they apply these methods independently to their own datasets.

Regular feedback sessions with the supervisor help refine the research approach and enhance the students' data analysis skills. Through benchmarking bioinformatic tools, students compare

their efficiency and accuracy, gaining a deeper understanding of the tools' performance in practical applications.

As part of the research group, students participate in regular progress meetings where they present their current research status and discuss their findings with the group and are given the opportunity to present current scientific literature. Additionally, they acquire essential skills in scientific documentation, data visualization, and presentation techniques, to best prepare them for a career in research or academia.

**Media:**

In this module, a combination of digital and traditional media formats will be utilized to enhance the learning experience. The selected media forms support interactive learning, hands-on practice, and independent research. These include:

1. Digital presentations and lectures: Visual aids like slides and animations to explain complex concepts in genomics and bioinformatics.
2. Tutorials and how-to guides: Step-by-step instructions on using bioinformatics tools, accessible through the learning platform.
3. Linux and HPC environments: Practical sessions directly on high-performance computing clusters, allowing students to execute data analyses in real time.
4. Virtual collaboration tools (e.g., Slack, GitHub): For project management, code sharing, and communication among students and instructors.
5. Scientific databases and software tools: Students will access online databases (e.g., Ensembl, NCBI) and utilize software such as HISAT2, GATK, and OrthoFinder for genomic data analysis.
6. Documentation platforms (e.g., Jupyter Notebooks): For recording and presenting project progress and results.
7. Online literature resources: Access to scientific journals and research articles through university subscriptions, supporting research strategies and literature reviews.

**Reading List:**

Depending on their topic, students should familiarize themselves with the following concepts and technologies:

- Orthology, Homology, Paralogy
- Differential gene expression analyses
- Gene families and their roles in plants
- Polyploidy and its importance in plant research
- Basic Linux usage, especially command line
- High-performance computing (HPC) skills
- Genome sequencing and sequencing data

Some bibliographic references that will help students prepare for and review the module:

- Plant Pan-Genomes: Bayer, P.E., Golicz, A.A., Scheben, A. et al. Plant pan-genomes are the new reference. *Nat. Plants* 6, 914–920 (2020). <https://doi.org/10.1038/s41477-020-0733-0>

- Plant Pan-Genomes: Schreiber, M., Jayakodi, M., Stein, N. et al. Plant pangenomes for crop improvement, biodiversity and evolution. *Nat Rev Genet* 25, 563–577 (2024). <https://doi.org/10.1038/s41576-024-00691-4>
- Plant Comparative Genomics: Pereira-Santana, A., Gamboa-Tuz, S. D., & Rodríguez-Zapata, L. C. (Eds.). (2022). *Plant comparative genomics. Humana*. <https://doi.org/10.1007/978-1-0716-2429-6>
- Orthofinder: Emms, D.M., Kelly, S. OrthoFinder: phylogenetic orthology inference for comparative genomics. *Genome Biol* 20, 238 (2019). <https://doi.org/10.1186/s13059-019-1832-y>
- Gene expression analyses: <https://master.bioconductor.org/packages/release/workflows/vignettes/rnaseqGene/inst/doc/rnaseqGene.html>
- Gene family analyses (example) Yang, Z., Nie, G., Feng, G. et al. Genome-wide identification, characterization, and expression analysis of the NAC transcription factor family in orchardgrass (*Dactylis glomerata* L.). *BMC Genomics* 22, 178 (2021). <https://doi.org/10.1186/s12864-021-07485-6>

**Responsible for Module:**

Kamal, Nadia, Prof. Dr. rer. nat. [n.kamal@tum.de](mailto:n.kamal@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Research Project: Computational Plant Genomics (Forschungspraktikum, 10 SWS)

Kamal N [L], Kamal N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Theory Oriented Modules | Theorieorientierte Module

### Module Description

#### **CIT5130001: Applied Statistics and Data Analysis (TUM School of Computation, Information and Technology [CIT] and TUM School of Life Sciences [SoLS]) | Applied Statistics and Data Analysis (TUM School of Computation, Information and Technology [CIT] and TUM School of Life Sciences [SoLS])**

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In the 60-minute written exam, students solve applied statistical problems in the life sciences and show proficiency in the R programming language. Solutions require first the identification and classification of the problem and second, application of the appropriate statistical method. Repeat exams will oscillate between campuses Weihenstephan and Garching.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Bachelor's course in statistics from the School of Computation, Information and Technology or School of Life Sciences

#### **Content:**

The course begins with definitions of univariate and multivariate data types, before proceeding to advanced R programs for multivariate data visualization. Statistical association methods for categorical data, first low- and then high-dimensional, are defined and illustrated, followed by analysis of variance methods for comparing population means across finite groups. Fundamental concepts of experimental design are illustrated, along with methods for computing sample size and power of experiments. The course next covers a spectrum of independent multiple regression methods, including linear, logistic, poisson, and survival. The course ends with linear mixed

effects models for continuous correlated longitudinal data comprising multiple observations from independent individuals.

### **Intended Learning Outcomes:**

After successful completion of the module students

- 1) Become experienced in all facets of the R statistical package.
- 2) Apply data handling methods for visualization and communication.
- 3) Select and apply appropriate statistical methods to design and analyze experimental data.
- 4) Apply appropriate hypothesis tests and confidence interval procedures.
- 5) Perform multiple regression for continuous, discrete and binary data.

### **Teaching and Learning Methods:**

In the lectures the concepts are introduced and discussed in case studies. In the exercise classes the students solve problems and case studies on their own using the statistical package R. The problems of the case studies are chosen to provide the students guided, hands-on experience to acquire the necessary skills in the projects.

### **Media:**

Powerpoint slides, R statistical package

### **Reading List:**

<https://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf>

<https://education.rstudio.com/learn/beginner/>

Introduction to statistics and data analysis, 2020, Peck, ISBN: 9781337793612

Statistical computing with R, 2019, Rizzo, ISBN: 9781466553323

The Elements of Statistical Learning, 2001, Hastie, ISBN: 9780387216065

Exploratory Multivariate Analysis by Example Using R, 2017, Husson, ISBN: 9781315301860

Introduction to Regression Modeling, 2006, Abraham, ISBN: 9780534420758

Biostatistics, 2004, van Belle, ISBN: 0471031852

Modelling survival data in medical research, 2003, Collett, ISBN: 1584883251

Applied longitudinal analysis, 2011, Fitzmaurice, ISBN: 9780470380277

### **Responsible for Module:**

Ankerst, Donna; Prof. Ph.D.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Online Exercise Session for Applied Statistics and Data Analysis [CIT5130001] (Übung, 1 SWS)

Ankerst D, Chernova O

Applied Statistics and Data Analysis [CIT5130001] (Vorlesung mit integrierten Übungen, 3 SWS)

Ankerst D, Chernova O

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MW2242: Analysis and Design of Biochemical Networks | Analyse und Design zellulärer Netzwerke

Version of module description: Gültig ab winterterm 2017/18

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The exam will be in an oral form of 45 minutes (individual examination). Besides the calculation of simple problems, also comprehension questions will be posed. The students will calculate sensitivities as well as solutions for control circuits in Laplace space. The exam takes place every semester.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

A requirement for the successful participation is fundamental knowledge in engineering mathematics as well as basics in molecular biology.

#### Content:

The module addresses problems in analysis and design of cellular biochemical reaction networks. The most important tools are: steady state analysis (characteristic curves), sensitivities, stability and time hierarchies. Furthermore, different design principles like integral feedback will be introduced and analysed.

#### Intended Learning Outcomes:

After participating the students are able to calculate and to assess time hierarchies, to determine sensitivities for different types of networks and to calculate solutions for simple control circuits. Furthermore, the students are able to suggest network structures with defined properties for biotechnological applications.

**Teaching and Learning Methods:**

The content of the module will be provided by with power point slides as well with direct sketches on the blackboard.

The slides as well as all notes are provided via Moodle and will be discussed in the exercises.

**Media:**

blackboard, Powerpoint, slides as well as notes

**Reading List:**

A. Kremling: Systems Biology (CRC Press, 2013)

**Responsible for Module:**

Kremling, Andreas; Prof. Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Analyse und Design zellulärer Netzwerke (Übung) (MW1742) (Übung, 2 SWS)

Kremling A [L], Kremling A

Analyse und Design zellulärer Netzwerke (MW1742) (Vorlesung, 2 SWS)

Kremling A [L], Kremling A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### PH1383: Current Topics in Molecular Biophysics | Aktuelle Themen der molekularen Biophysik

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the course of the seminar each student individually prepares a talk on a topic of current research. Based on this talk the learning outcome is tested.

#### Repeat Examination:

#### (Recommended) Prerequisites:

The course is useful for students with specialization "Biophysics" and basic knowledge in the area of biophysics.

#### Content:

Seminar talks by students on current topics in theoretical molecular biophysics.

#### Intended Learning Outcomes:

After successful participation in the module the student can use the basic methods of literature retrieval, condense their knowledge from scientific papers into a presentation and obtain presentation skills.

They have learned about relevant topics in the field theoretical molecular biophysics.

#### Teaching and Learning Methods:

The learning outcomes of this module will be developed through the literature search, the study of literature, the preparation of the presentation, the discussion with the teacher, the talk itself and answering questions about it.

#### Media:

Presentation materials, complementary literature

**Reading List:**

Specialized literature to the individual topics of the seminar talks will be provided; own literature search.

**Responsible for Module:**

Zacharias, Martin; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Seminar zu aktuellen Themen der molekularen Biophysik (Proseminar, 2 SWS)  
Zacharias M

Repetitorium zu Seminar zu aktuellen Themen der molekularen Biophysik (Repetitorium, 2 SWS)  
Zacharias M [L]

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ2599: Analysis of High-Throughput Datasets for Biologists | Analysis of High-Throughput Datasets for Biologists

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Each participant writes a research paper-like report of maximum 10 pages (including figures). To do so, the students receive a set of raw data with corresponding metadata. Based on the competences gained during the lecture and exercise the students should process the raw data, apply various forms of data analyses, e.g., clustering, hypothesis testing, enrichment analysis, Principle component analysis, and perform statistical and biological interpretation of the results. The report has to be submitted within ten days after the course.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in statistics

#### Content:

Lectures will give insight into how biological knowledge can be generated from modern omic technologies (transcriptomics, proteomics, metabolomics) and illustrate different ways of analyzing such data.

Practicals will consist of 1) how to use a programming language to work more powerfully and effectively

2) computer exercises that will enable the participants to apply statistical methods to the analysis of large scale biological data 3) gain knowledge on how to utilize existing biological databases in their research.

#### Intended Learning Outcomes:

Upon successful completion of the module students are familiar with advanced data analysis methodologies and hands-on competence on the latest available tools for the analysis of high

throughput data sets. They have basic knowledge on what information can be found and where, as well as how the information can be accessed/retrieved.

**Teaching and Learning Methods:**

Lecture: Introduction into statistics, application of Python software

Exercise: The theory taught in the lecture is substantiated and trained in the exercise on specific practical examples. This is done partially by each student on their own, partially in small groups of two or three.

**Media:**

Interactive whiteboard (Lecturer is programming on an interactive whiteboard, students mainly on their PC; complemented by blackboard writing and scientific publications (provided by the lecturer).

**Reading List:**

Current publications in statistics and data processing (provided by the lecturer one week before module starts)

**Responsible for Module:**

Bernhard Küster [kuster@tum.de](mailto:kuster@tum.de) The, Matthew, Ph.D. [matthew.the@tum.de](mailto:matthew.the@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Analysis of High-Throughput Datasets for Biologists (Übung, 2 SWS)

Küster B [L], The M

Analysis of High-Throughput Datasets for Biologists (Vorlesung, 2 SWS)

Küster B [L], The M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MW0018: Bioprocesses | Bioprozesse

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die angestrebten Lernergebnisse werden durch Verständnisfragen und Rechenaufgaben schriftlich überprüft (zugelassenes Hilfsmittel: Taschenrechner). Die Prüfungsdauer beträgt 90 Minuten. Kreditpunkte werden für das erfolgreiche Ablegen der Modulprüfung vergeben.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzungen für die erfolgreiche Teilnahme sind Kenntnisse der Grundlagen der Bioverfahrenstechnik.

#### Content:

Diese Lehrveranstaltung gibt einen Überblick über die technische Nutzung biologischer Stoffumwandlungen anhand konkreter Prozessbeispiele. Schwerpunkte sind industrielle biologische Verfahren zur Gewinnung von Wertstoffen. Wesentliche Inhalte sind:  
Bioprozessentwicklung Umweltbiotechnologie Verfahren zur Herstellung von Grundchemikalien Herstellung von Feinchemikalien Proteinherstellung mit Mikroorganismen und mit Gewebezellen Ökonomie biotechnologischer Produktionsprozesse.

#### Intended Learning Outcomes:

Nach der Teilnahme an dieser Modulveranstaltung sind die Studierenden in der Lage, die Entwicklung von Bioprozessen und biotechnologische Produktionsverfahren in der industriellen Anwendung zu verstehen und zu bewerten.

#### Teaching and Learning Methods:

Die Inhalte des Moduls werden in der Vorlesung (2 SWS) mit Hilfe von Powerpoint-Präsentationen theoretisch vermittelt. Wesentliche Inhalte werden wiederholt aufgegriffen und in den Übungen (1

SWS) vertieft. Die Beiträge industrieller Dozenten werden im Anschluss an den Vortrag jeweils intensiv diskutiert.

**Media:**

Die in der Vorlesung verwendeten Folien werden den Studierenden in geeigneter Form rechtzeitig zugänglich gemacht. Übungsaufgaben werden regelmäßig verteilt und in der Regel werden die Musterlösungen eine Woche später ausgegeben und mit den Studierenden diskutiert.

**Reading List:**

Es ist kein Lehrbuch zu allen Inhalten dieses Moduls verfügbar. Als Einführung empfiehlt sich: Horst Chmiehl: Bioprozesstechnik. Elsevier GmbH, München.

**Responsible for Module:**

Weuster-Botz, Dirk; Prof. Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MW0019: Bioreaction Engineering | Bioreaktoren

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die angestrebten Lernergebnisse werden in Form einer 90-minütigen Klausur durch Verständnisfragen und durch Rechenaufgaben zu biologischen Stoffumwandlungen überprüft (zugelassenes Hilfsmittel: Taschenrechner). Eine schriftliche Prüfung wird durchgeführt, um die große Anzahl an Studierenden unter gleichen Rahmenbedingungen prüfen zu können. Zusätzlich hierzu ist die Durchführung von Rechenaufgaben im Rahmen einer Klausur vorteilhaft.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzungen für die erfolgreiche Teilnahme sind Kenntnisse der Grundlagen der Bioverfahrenstechnik.

#### Content:

Diese Lehrveranstaltung soll die ingenieurwissenschaftliche Beschreibung biologischer Stoffumwandlungen (Wachstum, Substrataufnahme und Produktbildung von Mikroorganismen und Zellen) in technischen Systemen vertiefen. Wesentliche Inhalte sind: Modellbioreaktoren (Rührkessel und Strömungsrohr) - Formalkinetische Modelle biologischer Reaktionen - Biologische Reaktionen in Modellbioreaktoren (stationär) - Dynamisches Verhalten von Modellbioreaktoren - Abschätzung biologischer Modellparameter - Stoffflussanalyse - Messung biologischer Modellparameter - Strukturierte kinetische Modelle biologischer Reaktionen - Rührkesselreaktoren - Blasensäulen - Festbett-/Fließbettreaktoren.

#### Intended Learning Outcomes:

Nach der Teilnahme an diesem Modul sind die Studierenden in der Lage, biologische Reaktionen in Modellbioreaktoren (Wachstum, Substrataufnahme und Produktbildung von Mikroorganismen und Zellen) kinetisch zu analysieren und Prozessverläufe zu bewerten. Darüberhinaus sind die

Studierenden in der Lage, das Verhalten der wichtigsten Bioreaktoren im industriellen Maßstab zu verstehen.

**Teaching and Learning Methods:**

Die Themen der Vorlesung werden im Vortrag mit Hilfe von Powerpoint-Präsentationen theoretisch behandelt und die wesentlichen Aspekte werden wiederholt aufgegriffen und in den (zeitlich daran anschließenden) Übungen vertieft. Die Studierenden erhalten hierzu Übungsaufgaben, die in der Regel 1 Woche später vorgerechnet und diskutiert werden. Dies ermöglicht den Studierenden eine Selbstkontrolle der eigenständigen Analyse und Bewertung biologischer Stoffumwandlungsprozesse.

**Media:**

Die in der Vorlesung verwendeten Folien werden den Studierenden in geeigneter Form rechtzeitig zugänglich gemacht. Übungsaufgaben werden regelmäßig verteilt und in der Regel werden die Musterlösungen eine Woche später ausgegeben und mit den Studierenden diskutiert.

**Reading List:**

Es ist aktuell kein Lehrbuch zu allen Inhalten dieses Moduls verfügbar. Als Einführung empfiehlt sich: Horst Chmiehl: Bioprozesstechnik. Elsevier GmbH, München.

**Responsible for Module:**

Weuster-Botz, Dirk; Prof. Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Bioreaktoren (MW 0019) (Vorlesung, 3 SWS)

Weuster-Botz D [L], Weuster-Botz D, Blums K, Caballero Carbon D, Güreli Z, Herzog J, Kremling A, Thurn A, Walla B

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WZ2045: Introduction to Bioinformatics II | Bioinformatik für Biowissenschaften II

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 60.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Teilnahme an Vorlesung und Übung Einführung in die Bioinformatik I

#### Content:

Einführung in grundlegende Konzepte und Methoden in der Bioinformatik (Fortsetzung der Einführung in die Bioinformatik I). Themenschwerpunkte sind u.a.:

- Genvorhersagen
- Grundlagen der Proteinstrukturen
- Grundlagen von Phylogenie und molekularer Evolution
- Grundlagen der Genregulation und der entsprechenden Algorithmen
- Grundlagen metabolischer Netzwerke und ihrer Analyse
- Eigenschaften biologischer Netzwerke
- Einführung Datenbanken und Datenintegration in den Biowissenschaften

#### Intended Learning Outcomes:

Grundlegende Kenntnis wichtiger Konzepte und Methoden der Bioinformatik  
Fähigkeit Ergebnisse ausgewählter bioinformatischer Werkzeuge zu bewerten

#### Teaching and Learning Methods:

Vortrag

**Media:**

**Reading List:**

Understanding Bioinformatics, Marketa Zvelebil, Jeremy O. Baum, Garland. 2007; Bioinformatics, David Mount, 2nd ed, 2004, Cold Spring Harbour Laboratory Press; Bioinformatik Eine Einführung, Arthur M. Lesk, Spektrum Akademischer Verlag (2002)

**Responsible for Module:**

Frischmann, Dimitri; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Bioinformatik f. Biowissenschaften II (Vorlesung, 2 SWS)

Frischmann D [L], Frischmann D

Übung zur Vorlesung Bioinformatik f. Biowissenschaften II (Übung, 2 SWS)

Frischmann D [L], Parr M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ5063: Basics in Programming | Grundlagen des Programmierens

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 135	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The learning outcome is assessed by an examination (120 minutes).

The exam consists of two parts. In the first part, general theoretical basics of programming are tested in writing. The students work on questions regarding the understanding of data structures and the possibilities of influencing the programme flow (control flow). In the second part, they solve programming tasks on the computer using the Python 3.10+ programming language. Competences such as importing, transforming, illustrating and saving, with relevance in a scientific environment, are tested.

The processing time of the theoretical part is set at approx. 30 minutes, the programming task at approx. 90 minutes. This ratio is also reflected in the weighting of the two parts. Thus, the theoretical part accounts for 30% of the grade and the programming task for 70%.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

No previous experience is required.

#### Content:

Das Modul Grundlagen des Programmierens behandelt folgende Themen in Vorlesung und Übungsaufgaben:

- Einteilung der verschiedenen Programmierparadigmen
- Aufbau eines Programms
- Schleifen
- Konditionalsätze
- Kontrollstrukturen

- Aufrufen von Funktionen
- Entwicklung von Funktionen
- Strukturierung von Daten
- Einlesen von Datensätzen
- Verarbeiten von Datensätzen
- Graphische Darstellung von Datensätzen
- Durchsuchen von Datensätzen
- Umgang mit Bibliotheken

**Intended Learning Outcomes:**

After participating in the module courses, students have the ability to develop simple programs and the skill to write them in the Python 3.10+ programming language. These serve as examples for the acquisition of competence in importing, transforming, illustrating and storing data, with relevance in the scientific environment.

**Teaching and Learning Methods:**

In the lecture Fundamentals of Programming, students are taught the theoretical basics by means of a classical lecture. Small program examples are shown within the lecture. The chosen document type, Jupyter Notebook, enables the simultaneous presentation of script, program code and result presentation in one document.

The focus of the module lies in the exercise Fundamentals of Programming, in which the students deepen the learned contents by solving application-related problems on the computer. Here the students create programs in JupyterLab 3+ with Python 3.10+. Programming can take place in group work or alone. For more complex tasks, students present their solutions to fellow students and discuss the approaches together. A collection of tasks is provided. The programs created can be discussed with the lecturers.

**Media:**

Both the presentation and the exercises are made available to the students as Jupyter Notebook. In addition to a "classic" script, Jupyter Notebook offers the possibility to develop and execute additional programme code in this document.

**Reading List:**

Python 3 | The comprehensive manual by Johannes Ernesti, Peter Kaiser | ISBN 978-3-8362-7926-0

<http://openbook.rheinwerk-verlag.de/python/>

Further current literature will be announced at the beginning of the module.

**Responsible for Module:**

Gaßner, Günther, M.Sc. [guenther.gassner@tum.de](mailto:guenther.gassner@tum.de) Schmid, Philip, M.Sc. [philip.schmid@tum.de](mailto:philip.schmid@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Grundlagen des Programmierens (Vorlesung, 3 SWS)

Voigt T [L], Voigt T ( Gaßner G, Schmid P )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS30015: Food Process Engineering | Lebensmittelverfahrenstechnik

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 7	<b>Total Hours:</b> 210	<b>Self-study Hours:</b> 135	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination takes the form of a written exam (120 min.).

The written exam consists of a combination of practice-oriented computational and comprehension tasks on the topics covered.

Assignments include questions related to the processing of foodstuffs on drying technology, structure formation processes, thermodynamic processes and separation technology. Sketching diagrams to explain the underlying physical processes is an essential part of the course. By means of practice-oriented examination tasks, students demonstrate that they can solve complex problems in industrial food process engineering quickly and in a targeted manner. A non-programmable calculator and a self-written collection of formulas (max. 2 handwritten A4 pages) are permitted as aids for the examination.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Food Technology 1 and 2 (for new study regulations); Thermal and Mechanical Process Engineering, Fluid Mechanics, Fundamentals of Chemistry and Physics, Thermodynamics, Fundamentals of Rheology.

#### Content:

Based on the modules Food Technology 1 and 2 as well as General Thermal and Mechanical Process Engineering and Thermodynamics, this module deals with in-depth fundamentals of food process engineering. All topics deal with the interaction of the material components of a complex food matrix with each other or with the basic process engineering operations and their interaction in the process. The focus is on the optimization of deliberately induced or unintentional changes in the conversion of substances from raw materials to modified foodstuffs. The focus in this module is on both traditional and new methods for processing food. These include reaction kinetics, such

as of thermally induced changes, as well as methods of capturing residence time distributions from normal to complex foods. Thermal and mechanical separation techniques for concentration and fractionation of particulate and colloidal materials, are covered in detail. In addition, in-depth knowledge of the cooling as well as freezing process is discussed. In addition, structure formation processes during emulsification and extrusion, which is frequently used in meat substitute products in particular, will be covered.

In the exercise, these topics are deepened and learned by means of exercises.

### **Intended Learning Outcomes:**

After participating in the module course, students are able to understand relationships between material properties and the process engineering treatment of raw materials and to apply them in calculation methods. In doing so, the students gain the ability to solve tasks on the topics of heat and mass transfer in processing operations, reaction kinetics in foodstuffs, residence time behavior in plants, solid-liquid separation and structure formation in foodstuffs and other important issues. Based on this, students will be able to predict and describe complex interactions of material components with the process technology used. The students thus have a sound understanding of the interactions between the material properties and the process engineering processing of the raw materials.

### **Teaching and Learning Methods:**

In the lecture, the theory is explained with the help of media support. Based on this, the exercises will take place in close interaction with the lecturer, whereby the focus here is on an advisory function of the lecturer in the processing of the exercises. The exercises will be handed out at the beginning of the semester and should be prepared and worked on independently by the students. By working independently, students should learn to deal with a complex subject area. Through the advisory function of the lecturer, it should be achieved that students feel confident in their application and thus can apply calculation methods in food process engineering in a targeted manner. Before the exam, a revision course is offered for preparation.

### **Media:**

Lecture with media support and case studies and in close connection with the exercise. Exercise in close interaction with the learners, with a focus on advisory support in dealing with the exercise tasks. The exercises are to be prepared and calculated independently.

### **Reading List:**

H.G. Kessler, Food and Bioprocess Engineering, Verlag A. Kessler, 2002; P. Walstra, Physical Chemistry of Foods, Marcel Dekker, 2003; H. P. Schuchmann, H.Schuchmann, Lebensmittelverfahrenstechnik, WILEY-VCH Verlag, 2005  
Z. Berk, Food Process Engineering and Technology, Third Edition, Elsevier, 2018  
P. J. Fellows: Food Processing technology, CRC press, 2000

### **Responsible for Module:**

Först, Petra; Prof. Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Lebensmittelverfahrenstechnik (Übung, 2 SWS)

Först P [L], Först P, Gruber S, Hilmer M

Lebensmittelverfahrenstechnik (Vorlesung, 3 SWS)

Först P [L], Först P, Gruber S, Hilmer M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### MW1141: Modelling of Cellular Systems | Modellierung zellulärer Systeme

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung wird in Form einer Klausur erbracht. Sie besteht aus Kurzfragen und Rechenaufgaben. Es wird geprüft in wie weit die Studierenden die grundlegenden Konzepte der mathematischen Modellierung und Modellanalyse bei zellulären (biologischen) Systemen verstehen und anwenden können. Es ist eine schriftliche Klausur mit einer Prüfungsdauer von 90 Minuten vorgesehen. Die Klausur wird in jedem Semester angeboten (im WS zeitnah am Beginn). Es sind keine Hilfsmittel zugelassen. Durch eine Studienleistung in Form einer Projektarbeit oder Präsentation kann die Modulnote um 0,3 verbessert werden (APSO, §6(5)).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Voraussetzungen für die erfolgreiche Teilnahme sind mathematische Kenntnisse, wie sie in Bachelorstudiengängen an wissenschaftlichen Hochschulen vermittelt werden.

#### Content:

Das Modul soll die Grundlagen der mathematischen Modellierung, der Analyse und der Simulation von zellulären Systemen vermitteln und vertiefen. Zu den wichtigen Prozessen gehören die Enzym-katalysierten Reaktionen, die Polymerisation von Makromolekülen und die zelluläre Signalübertragung.

Wesentliche Inhalte sind:

- Graphentheoretische Analysen,
- Aufstellen von Bilanzgleichungen für konzentrierte und verteilte Systeme,
- Analyse stöchiometrischer Netzwerke,
- Thermodynamik zellulärer Prozesse,
- Reaktionskinetiken (Enzyme, Polymerisationsprozesse, Signalübertragung),

- Stochastische Systeme

**Intended Learning Outcomes:**

Nach der Teilnahme an diesem Modul sind die Studierenden mit den biologischen und theoretischen Grundlagen von zellulären Systemen vertraut und in der Lage, Bilanzgleichungen für komplexe zelluläre Netzwerke zu erstellen und zu analysieren. Anhand der Modelle sind die Studierenden in der Lage das Verhalten der Netzwerke durch Simulation vorherzusagen und den gesamten biotechnologischen Prozesses zu bewerten (zeitliches Verhalten, Produktausbeuten).

**Teaching and Learning Methods:**

In der Vorlesung werden mathematische Ableitungen und Zusammenhänge an der Tafel mit Hilfe von Powerpoint-Präsentationen aufgezeigt. Wesentliche Aspekte werden dann wiederholt aufgegriffen und in den Übungen vertieft. Die Übungen sollen zum Teil am Rechner/Laptop durchgeführt werden, um komplexere Aufgaben, wie mathematische Modellierungen und/oder Simulationen bearbeiten zu können. Die Lösungsstrategien werden dann gemeinsam mit den Studenten besprochen, um ein vertieftes Verständnis von zellulären Systemen zu entwickeln.

**Media:**

Die in der Vorlesung verwendeten Folien werden den Studierenden in geeigneter Form zugänglich gemacht. Übungsaufgaben werden rechtzeitig verteilt und die Musterlösungen mit den Studierenden diskutiert.

**Reading List:**

Zur Verfügung stehen englischsprachige Lehrbücher, die Teilaspekte des genannten Stoffes abbilden. Zu nennen sind: Nielsen, Villadsen, Liden: Bioreaction Engineering Principles (Kluwer Academic Press, 2003), B. O. Palsson: Systems Biology: Properties of Reconstructed Networks (Cambridge University Press, 2006), Kremling: Systems Biology (CRC Press).

**Responsible for Module:**

Kremling, Andreas; Prof. Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ8128: Methods of Genome Analysis | Methoden der Genomanalyse

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module test involves a graded written exam.

The goal of the written exam (90 minutes) is to assess how well the students understand the basic concepts of genome analysis (like genes, regulatory sequences, operons, alternative splicing, SNPs, microRNAs, pseudogenes, repeats, orthology/paralogy) and how well they are able to reproduce them in limited time. Based on exemplary method calls, interrogation of input and output of methods, as well as the building of possible method pipelines to solve a specific bioinformatics problem, and the interpretation of method results, it is assessed how well the students are able to do bioinformatics analyses on their own, choose appropriate methods suitable to a specific problem and apply these. No electronic devices are allowed except for pocket calculators. Students are asked to write free-text answers to questions, solve algorithmic and logical problems, and to work through a limited number of multiple-choice questions by ticking the right answer.

To pass the module at least the score 4.0 is required.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Suggested pre-requisites for participation is basic knowledge of bioinformatics, for example as taught in the TUM modules „Introduction in Bioinformatics I and II“.

#### Content:

The following topics are core elements of the module:

- Genome structure
- Analysis of DNA sequences
- Gene prediction
- Operon structures

- Alternative splicing
- RNA structure
- microRNAs
- Repeats
- Pseudogenes

### **Intended Learning Outcomes:**

Upon successful completion of the module the students are able to:

- Understand and reflect in-depth important concepts of genome analysis (genes, regulatory sequences, operons, alternative splicing, SNPs, microRNAs, pseudogenes, repeats, orthology/paralogy),
- Practically apply selected methods of genome analysis (e.g. gene prediction, prediction of microRNA binding sites, identification of DNA sequence motifs, prediction of RNA structures).

### **Teaching and Learning Methods:**

The selected teaching approach Lecture course and the selected teaching method Oral talk are especially well suited for imparting basic concepts, methodological approaches as well as typical problems of genome informatics to students with basic knowledge of bioinformatics. In particular the exercise serves as a way to deepen the learning content of the lecture. The students are expected to prepare a scientific publication covering an already discussed topic from the lecture. In the exercise the algorithms and methods used in the publication are discussed. Where possible, the usage of the methods and the analysis of selected case studies from the publication is presented in class. Thus, also the application of the methods is trained. It will be announced before each exercise which scientific publication will be discussed. The students are encouraged to prepare the contents of the paper and familiarize their selves with the methods used. The lecturer discusses the procedures and methods in the exercise, and responds to questions and problems. Where possible, small selected case studies are solved together in the exercise, or are presented by students.

### **Media:**

Scientific publications, presentation of slides, discussions during lectures, materials on the module Web page.

### **Reading List:**

- Genomes 3, T.A. Brown, Garland Science, 2007
- Bioinformatics and Functional Genomics, Jonathan Pevsner, John Wiley, 2003
- Understanding Bioinformatics, M. Zvelebil and J.O.Baum, Garland Science 2008

### **Responsible for Module:**

Frischmann, Dimitrij; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Methoden der Genomanalyse: Vorlesung (Vorlesung, 2 SWS)

Frischmann D [L], Frischmann D

Methoden der Genomanalyse: Übung (Übung, 2 SWS)

Frischmann D [L], Parr M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS30070: Precision Fermentation | Precision Fermentation

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Lernergebnisse werden anhand einer 20-minütigen mündlichen Prüfung bewertet. Hierbei werden die Lehrinhalte der Vorlesung aber auch des Laborpraktikums thematisiert.

Darüber hinaus besteht die Möglichkeit, im Rahmen des Laborpraktikums eine freiwillige Studienleistung als Mid-Term-Leistung gemäß APSO §6 Abs. 5 zu erbringen. Hierfür ist ein Bericht über die praktische Laborübung (ca. 15 Seiten) spätestens 2 Wochen nach dem Praktikum einzureichen. Durch das Bestehen der Studienleistung wird die Modulnote um 0,3 verbessert, wenn dies auf Grund des Gesamteindrucks den Leistungsstand des Studierenden besser kennzeichnet und die Abweichung auf das Bestehen der Prüfung keinen Einfluss hat. Für die Mid-Term-Leistung wird kein Wiederholungstermin angeboten. Im Falle einer Wiederholung der Modulprüfung wird eine bereits erbrachte Mid-Term-Leistung berücksichtigt.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Kenntnis über allgemeine Grundlagen der Biotechnologie sowie ein Interesse an biotechnologischen Prozessen und modernen Fragestellungen der Precision Fermentation.

#### Content:

Der Fokus dieses Moduls liegt auf der Kombination der Anwendung von Technologien des Upstream Processing und der Bioproduktion/Bioprosesstechnik für die Herstellung von biotechnologischen Produkten, hier mit einem Fokus auf Strategien zur Herstellung von Proteinen oder proteinbasierte Produkten. Es werden unter anderem neue proteinhaltige Lebensmitteln (alternative Food Protein, wie bspw. biosynthetische Milch oder Cultivated Meat), pharmazeutisch relevante Proteinen (bspw. therapeutische Enzyme oder Strukturmoleküle für die Gewebezellkultur und regenerative Medizin) und weitere Produkte für Lebensmittel thematisiert.

Vorlesung:

- Entwicklung und Geschichte der industriellen Biotechnologie
- Klassifizierung von Produkten der industriellen, pharmazeutischen und Lebensmittel-Biotechnologie
- Anforderungen an Produktionsorganismen (Stoffwechselwege, molekulare Regulatoren und Induktoren)
- Verschiedene Strategien (mikrobielle Systeme und Verfahrensabläufe) zur Herstellung spezifischer Produkte anhand ausgewählter Beispielprodukte: organische Säuren, Biopharmazeutika, Starterkulturen & Lebensmittel-Biotechnologie, Biopolymere, Enzyme ...
- Strategien zur Ausnutzung natürlicher Regulationsmechanismen für effizientere, zielgerichtete Prozesse
- Konzepte zur Prozessoptimierung mittels modellbasierter Methoden
- zielgerichtete Stammentwicklung (metabolische Optimierung) und gentechnische Methoden für effizienzgesteigerte Prozesse
- neue biotechnologische Produkte mit Hilfe der synthetischen Biologie

Praktikum:

- theoretisch erlernte Methoden und Arbeitsabläufe nach Anleitung in die Praxis umsetzen
- Herstellung eines rekombinanten Proteins in einem Tischbioreaktor (genetisch veränderter Stamm von E. coli)
- Nutzung industrietypische Online-Messverfahren und Analytik, sowie Bewertung des Versuchs in Echtzeit mit dazugehöriger Auswertung
- Aufbau, Probenahme, Analytik und Dokumentation nach gängigen Regeln von den Studierenden mit Hilfestellung geplant und unter Aufsicht selbständig durchgeführt

**Intended Learning Outcomes:**

Der Fokus dieses Moduls liegt auf der Kombination der Anwendung von Technologien des Upstream Processing und der Bioproduktion/Bioprosesstechnik für die Herstellung von biotechnologischen Produkten, hier mit einem Fokus auf Strategien zur Herstellung von Proteinen oder proteinbasierte Produkten. Es werden unter anderem neue proteinhaltige Lebensmitteln (alternative Food Protein, wie bspw. biosynthetische Milch oder Cultivated Meat), pharmazeutisch relevante Proteinen (bspw. therapeutische Enzyme oder Strukturmoleküle für die Gewebezellkultur und regenerative Medizin) und weitere Produkte für Lebensmittel thematisiert.

Vorlesung:

- die Studierenden erlangen vertiefte theoretische Kenntnisse über die Nutzung biologischer, insbesondere mikrobieller Systeme zur Gewinnung verschiedener biotechnologischer Produkte der industriellen, pharmazeutischen und Lebensmittel-Biotechnologie
- die Studierenden können Wege der Biosynthese interessanter Produkte des Primär- bzw. des Sekundärstoffwechsels, von Gärungsprodukten sowie ausgewählter Produkte der synthetischen Biologie erklären und analysieren
- die Studierenden können Strategien zur metabolischen Optimierung und Vorschläge für die Modifikation der natürlichen Regulationsmechanismen zur Überproduktion von Intermediaten oder

Endprodukten mittels molekularbiologischer und bioprozesstechnischer Methoden auswählen und bewerten

- die Studierenden haben Methoden und Prozesse der Cellular Agriculture, der Herstellung biotechnologischer Alternativen zu konventionellen landwirtschaftlichen Produkten kennengelernt

Praktikum:

- die Studierenden können Arbeitsabläufe am Bioreaktor selbstständig planen und die erarbeiteten Arbeitsabläufe durchführen

- die Studierenden verstehen die grundlegenden Funktionen eines Bioreaktors und können dieses Wissen während der praktischen Arbeit anwenden

- die Studierenden können anhand von Fermentationsdaten und Ergebnissen die wesentlichen Kenngrößen bestimmen bzw. berechnen und den Prozessverlauf analysieren

- die Studierenden können auf Basis des Kultivierungsverlaufs Rückschlüsse auf den metabolischen Zustand der Zellen ziehen und den Mechanismus und Ablauf der Induktion der Produktbildung anhand dieser Daten herausarbeiten

- die Studierenden können anhand der Online-Messdaten den Stand der Fermentation analysieren, und über das Wachstumsverhalten der Kultur urteilen

### **Teaching and Learning Methods:**

In der Vorlesung wird mit klassischem Tafelanschrieb und Powerpoint-Folien gearbeitet.

Ergänzend sind die Vorlesungsunterlagen als digitales Skript verfügbar. Neben klassischem

Frontalunterricht werden Methoden zur Aktivierung von Vorwissen und Einbeziehung der

Studierenden verwendet. Hierzu kommen unter anderem Think-pair-share, Inverted Classroom, Brainstorming, One-Minute-Paper und die Erarbeitung von Zusammenfassungen zum Einsatz.

Neben dem Vorlesungsmaterial werden kleine integrierte Übungen zur eigenständigen

Lernkontrolle angeboten, um die Inhalte zu festigen und in typischen Fragestellungen,

Herausforderungen und Praxisanwendungen kennenzulernen.

### **Media:**

Der Dozent präsentiert und erläutert die Inhalte der Vorlesung gestützt durch Folien-Projektionen

und (digitalen) Tafelanschrieb. Im begleitenden moodle-Kurs wird ein Skript zu Verfügung gestellt,

und eine Plattform für Fragen und Interaktion bereitgestellt.

### **Reading List:**

Sahm, H., G. Antranikian, K.-P. Stahmann, and R. Takors, (Hrsg.) 2012. Industrielle Mikrobiologie Springer-Spektrum

Ratledge, C., Kristiansen, B. (Hrsg.) 2006. Basic Biotechnology, 3rd revised edition, Cambridge University Press,

ISBN 978-0-521-54958-5

### **Responsible for Module:**

Henkel, Marius, Prof. Dr.-Ing. marius.henkel@tum.de



**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ5326: Pharmaceutical Technology 2 | Pharmazeutische Technologie 2

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In the 60-minute written module examination, students must answer 15 - 20 questions on the learning outcomes. No aids are required. The examination will include assignment tasks, short free-text tasks, multiple choice questions, tables to be completed and sketches to be explained. For example, students have to assign, design, select or optimize manufacturing processes based on technological case studies. Furthermore, students must suggest suitable dosage forms for therapeutic case studies. In other questions, they must check the suitability of a process for an exemplary objective. Questions on the function and suitability of excipients in and for a given dosage form are also possible.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Successful participation in the module Pharmaceutical Technology and Biopharmacy (LS30032) is strongly recommended in order to understand this module course, as the basics of the technologies covered, dosage forms in general and biopharmacy are required.

#### Content:

This lecture is the second part of the overall Pharmaceutical Technology complex. The first part is in the Bachelor's program and deals with the basic dosage forms and techniques (e.g. tablets, ointments and injections).

As part of the Pharmaceutical Technology 2 module, unique dosage forms not covered in the Pharmaceutical Technology and Biopharmacy 1 lecture are now introduced. For example, pellets, suppositories, ear drops, therapeutic patches, micro- and nanoparticles, drug delivery devices, homeopathics, herbal dosage forms, unique dosage forms for children and others will be discussed. The selection and function of excipients is also covered. Ways of finding and optimizing formulations are presented, as well as the stabilization of formulations and current research topics.

### **Intended Learning Outcomes:**

After attending this module course, students will be able to

- describe all common dosage forms.
- outline the production of all common dosage forms.
- name the quality characteristics of all common dosage forms and check them professionally.
- select excipients for all common dosage forms and explain their function.
- adapt the production and packaging of dosage forms to the properties of the active pharmaceutical ingredient they contain.
- optimize existing manufacturing processes for all common dosage forms with regard to a specific problem.
- suggest suitable routes of administration and dosage forms for specific patient populations, as they are familiar with the interaction between dosage form and body.
- name factors that influence the stability of dosage forms and suggest measures to increase stability.

### **Teaching and Learning Methods:**

The weekly lecture uses PowerPoint as well as blackboard notes and short films. All dosage forms are presented using illustrative material. The learning success is checked weekly with practice questions in OnlineTED. Subsequent discussion of the questions deepens the student's understanding of the topics. In addition, all information and the script are available in a Moodle course. Independent study of the relevant literature is also recommended.

### **Media:**

A digital script for this course is available for download in the Moodle course and is relevant for the exam.

### **Reading List:**

Aulton, Taylor: Aulton's Pharmaceutics  
Bauer, Frömmling, Führer: Lehrbuch der Pharmazeutischen Technologie  
Voigt: Pharmazeutische Technologie  
Herzfeldt, Kreuter: Grundlagen der Arzneiformenlehre  
Herzfeldt: Propädeutik der Arzneiformenlehre  
Weidenauer, Beyer: Arzneiformenlehre kompakt  
Sucker, Fuchs, Speiser: Pharmazeutische Technologie  
Zimmermann: Pharmazeutische Technologie  
Mäder, Weidenauer: Innovative Arzneiformen  
Leuenberger (Hrsg.): Physikalische Pharmazie  
Fiedler: Lexikon der Hilfsstoffe  
Hunnius: Lexikon der Pharmazie

### **Responsible for Module:**

Sönnichsen, Caren, Dr. rer. nat. [carens.oennichsen@tum.de](mailto:carens.oennichsen@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Pharmazeutische Technologie 2 (Vorlesung, 2 SWS)

Sönnichsen C [L], Sönnichsen C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS20052: Scientific Computing for Biological Sciences | Scientific Computing for Biological Sciences

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of writing a report (10-15 pages) about a given project assigned by the lecturer, and giving a presentation on the project (10 minutes), followed by a 5 min discussion. In writing a report about their project the students will be asked to demonstrate their ability to analyze and plot data, interpret the data in the context of the biological problem and critically discuss the shortcomings of their chosen statistical method. They will be tested on their ability to summarise major factors and the conclusion of their results in a clear and concise manner. In the presentation the students will show their ability to present their results to an audience of peers and to stand a discussion about the presented content.

The final grade is an average from the written report (50%) and the presentation (50%).

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

MA9601, MA9602

#### Content:

The content is the workflow within scientific-oriented python programming from loading and plotting data, and learning to program functions in python. The students will learn about the use of variables and functions. They will learn elementary descriptive techniques like bar plots, scatter plots histograms and cumulative histograms. The students will learn to use libraries for statistical inference and apply these libraries to compare distributions and means on selected data sets and for fitting functions to data to detect correlations. Time permitting, the students will apply methods for fourier analysis, convolution, and filtering on selected data sets, as well as tools for dimensionality reduction such as principal component analysis. They will work with noisy biological data and learn how to interpret their results in the context of the data.

### **Intended Learning Outcomes:**

The students will be able to handle biological data sets and are able to apply data analysis methods. The students are able to create plots for both analyzing and presenting data. The students will be able to handle python, a popular programming language, together with numerical and scientific analysis libraries, and are able to find the suitable functions for statistical inference and fitting of functions.

Possible extensions may include deciding when to use fourier analysis, convolution and filtering of data. They may also learn techniques for dimensionality reduction.

### **Teaching and Learning Methods:**

The module is offered as lectures with accompanying practice sessions. In the lectures, the contents will be presented in a talk with demonstrative examples, as well as through discussion with the students. The lectures should animate the students to carry out their own analysis of the themes presented and to independently study the relevant literature. Corresponding to each lecture, practice sessions will be offered, in which exercise sheets and solutions will be available. In this way, students can deepen their understanding of the methods and concepts taught in the lectures and independently check their progress. At the beginning of the module, the practice sessions will be offered under guidance, but during the term the sessions will become more independent, and intensify learning individually as well as in small groups.

### **Media:**

Case studies

### **Reading List:**

### **Responsible for Module:**

Gjorgjieva, Julijana; Prof. Ph.D. [gjorgjieva@tum.de](mailto:gjorgjieva@tum.de)

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Scientific computing for Biological Sciences (VO) (Vorlesung, 2 SWS)  
Gjorgjieva J [L], Fritz I, Getz M

Scientific computing for Biological Sciences (UE) (Übung, 2 SWS)

Gjorgjieva J [L], Getz M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ8119: Systems BioMedicine | Systems BioMedicine

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination takes place within the framework of a project work during the semester and is carried out as a group of 3-4 participants in several phases. These include problem definition, role allocation, idea generation, criteria development, as well as decision-making, project planning and implementation. The project assignment is the development and final presentation of a systems medicine software, with which the students communicate that they have understood concepts of systems medicine and bioinformatics-driven software development. In the final presentation of 40 minutes duration, it is demonstrated that participants can present the subject matter of the elaboration in a clear and understandable manner to the course participants in the given time.

The grade is determined in equal parts by the final presentation and the written evaluation. For the latter, a documentation of the software in the form of an elaboration has to be prepared. This should have a size appropriate to the scope of the software and should not be less than 20 pages. Special attention will be paid to the choice of methodology and the comprehensive use of molecular data in the sense of data-driven systems medicine. For the awarding of grades (individual evaluation), the performance of the team members must be evident, e.g. through the division of the elaboration as well as the presentation.

In the event of an unsuccessful exam, participants will be given a one-time opportunity to make corrections to the software, paper and presentation and to repeat the final presentation.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Bioinformatics I and II, Basics of Molecular Biology and Genetics, Advanced Bioinformatics; Basic programming knowledge in R and / or Python is required.

**Content:**

In this module, we will introduce concepts of systems biology and describe its transition to systems medicine. The focus is on bioinformatic methods and the following topics are presented, among others:

- Availability of and work with OMICS data (e.g. genomics, metagenomics, transcriptomics, epigenomics, proteomics, metabolomics and lipidomics). Goals of precision and personalized medicine.
- Complex diseases (cancer, multiple sclerosis, ...).
- Network medicine
- Cancer genomics and identification of relict mutations
- De novo endophenotyping and patient stratification.
- Drug target and biomarker discovery
- disease subtyping
- drug repositioning
- Privacy-aware machine learning

**Intended Learning Outcomes:**

Upon successful completion of this module, participants will understand systems medicine methods for the analysis of complex diseases and can apply this knowledge in practice.

They can evaluate the use of basic concepts of systems biology and assess the application OMICs technologies for disease-oriented basic research using primary literature. Participants understand the paradigms of personalized and precision medicine and their role in systems medicine. Participants have further understood the basic concepts of genotype-phenotype relation and acquired deeper knowledge of genetic and epigenetic factors contributing to disease development. This knowledge enables the participants in practice to, for instance, select and apply the appropriate methods for stratifying patients with respect to systemic properties of the disease. Finally, participants will gain insights into current progress in the field and learn to apply methods for support in treatment selection as well as to generate hypothesis in support of therapy development based on molecular data.

**Teaching and Learning Methods:**

Lecture, Exercises and project work

Lecture with active participation of the students; tutorial, presentation and discussion of exercises; Group work on various topics with guided implementation of a software tool including its presentation.

Web based learning (Moodle)

**Media:**

PowerPoint presentation, Diskussion in the lecture and in the exercises



**Reading List:**

Key publications from current literature on the role of bioinformatics in systems medicine

**Responsible for Module:**

List, Markus, Prof. Ph.D. markus.list@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Systems BioMedicine (Vorlesung, 2 SWS)

List M [L], List M, Schirmer M, Wilhelm M

Systems BioMedicine (Übung, 3 SWS)

List M [L], Manz Q, Schirmer M, Wilhelm M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Interdisciplinary Qualification | Überfachliche Qualifikation

### Module Description

## ÜFQ: Interdisciplinary Qualifications | Überfachliche Qualifikationen

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The type and scope of the examination depends on the courses offered in the selected module. For each degree program at TUM SoLS, there are different credit limits for inclusion in the curriculum according to the respective valid version of the statutes.

Please refer to the FPSO (statutes) or the student advisory service for more information!

The level of knowledge acquired with the module is assessed with appropriate forms of examination (e.g. written or oral examination, presentation, paper, project).

In the examination, students demonstrate whether they are able to structure the knowledge they have acquired and present the key aspects. They should be able to describe, interpret and meaningfully combine the information they have acquired and transfer it to similar situations.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Type and scope depend on the chosen course.

#### Content:

The elective module area of interdisciplinary qualifications comprises the offerings of the context teaching WTG (formerly Carl von Linde Academy), the Language Centre, and other interdisciplinary modules at TUM and LS for all degree courses at the TUM School of Life Sciences (LS).

The integrated modules aim to provide students with insights into the broadest possible range of further education, interdisciplinary, personality-building, and horizon-expanding events, from which

they can select individually and according to their interests, the content most compatible with their personal and professional goals.

**Intended Learning Outcomes:**

After completing the module, the students can describe, interpret, meaningfully combine, and transfer the acquired information to similar circumstances. They can critically question what they have learned, use it daily, and pass it on to others. (The detailed learning outcomes are in the respective module descriptions).

**Teaching and Learning Methods:**

Type and scope depend on the chosen course.

**Media:**

Type and scope depend on the chosen course.

**Reading List:**

Type and scope depend on the chosen course.

**Responsible for Module:**

Modulverantwortliche sind abhängig vom gewählten Lehrangebot. Module coordinators are dependent on the chosen course.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### LS30026: Good Manufacturing Practice | Good Manufacturing Practice

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulprüfung ist eine schriftliche Klausur und dauert 60 Minuten. In der Prüfung müssen die Studierenden in 25- 30 kurzen Fragen

- Fachbegriffe einordnen können
- in Fallbeispielen die Übereinstimmung mit GMP bewerten
- Inhalte den passenden gesetzlichen Regularien zuordnen
- die gesetzlichen Zusammenhänge der GMP-Regularien wiedergeben
- wichtige Inhalte der behandelten Regularien in eigenen Worten wiedergeben
- Fehler in beispielhaften Dokumenten erkennen.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Um ein bestmögliches Verständnis für diese Modulveranstaltung zu besitzen, empfiehlt sich dringend der Besuch der Modulveranstaltung Qualitätsmanagement und Produktsicherheit. Grundsätzliche Begriffe und Zusammenhänge aus diesem Modul werden nicht wiederholt.

#### Content:

Diese Modulveranstaltung behandelt das Fachgebiet der "Guten Herstellungspraxis" (Good Manufacturing Practice -

GMP). Zunächst wird den Studierenden ein Überblick über die rechtlichen Grundlagen zur Herstellung von

Arzneimitteln im Vergleich zu verwandten Produkten wie Nahrungsergänzungsmitteln, Medizinprodukten und

Lebensmitteln gegeben. Dazu werden die europäischen, deutschen und auszugsweise auch die US-amerikanischen Gesetze und Verordnungen und ihre Inhalte vorgestellt. Vertieft werden die Inhalte des europäischen GMP-Leitfadens für Arzneimittel und Arzneistoffe und die Dokumentation

behandelt. Die GMP-gerechte Dokumentation wird sowohl in der Vorlesung als auch in Arbeitsgruppen vertieft. Weiterer Inhalte dieser Veranstaltung sind Vorgaben und Anforderungen im GMP-Umfeld zu Herstell- und Lagerräumen, Laborkontrollen und Freigabe, Fehlermanagement (CAPA, OOS, Abweichungen, Beanstandungen und Reklamationen), Entwicklung und Qualitätsmanagement. Die Vorkehrungen zur Verhinderung von Arzneimittelfälschungen schließen die Lehrveranstaltung ab.

### **Intended Learning Outcomes:**

Nach der Teilnahme an dieser Modulveranstaltung sind die Studierenden in der Lage

- die grundlegenden gesetzlichen Anforderungen für Arzneimittel von denen für Nahrungsergänzungsmittel, Medizinprodukte und Lebensmittel abzugrenzen
- den Begriff „Good Manufacturing Practice“ zu definieren und die Gesetze, die ihn beschreiben, zu nennen
- - Anforderung von GMP in der Arzneimittel- und Arzneistoffproduktion anzuwenden
- Räume gemäß den GMP-Anforderungen für Arzneimittel und Arzneistoffe zu bewerten
- GMP-gerechte Dokumente korrekt selbst zu erstellen und zu überprüfen
- regulatorische Anforderungen an GMP-gerechte Verpackungen sowie die wesentlichen Elemente der guten Lagerhaltungspraxis anzuwenden
- Abweichungen, Fehler und Störfälle GMP-gerecht zu behandeln (z.B. mittels CAPA-Systemen )
- den GMP-Status von Vertragspartnern in der Arzneimittelprüfung oder -herstellung zu überprüfen
- Maßnahmen zum Verhindern von Arzneimittelfälschungen zu nennen.

### **Teaching and Learning Methods:**

Die Inhalte dieses Moduls werden den Studierenden in einer wöchentlich stattfindenden Vorlesung vermittelt. Im

Vortrag wird sowohl mit Powerpoint als auch mit Tafelanschrieb gearbeitet. Alle Studierenden erstellen in

Kleingruppen GMP-Dokumente zu einem von ihnen bestimmten Thema aus dem Bereich Arzneimittelproduktion, -prüfung und Good Manufacturing Practice. Das selbst erstellte Dokument stellen die Studierenden in der zweiten Semesterhälfte selbst vor und diskutieren das Konzept und die gewählte Form mit den anderen Teilnehmern. Wöchentlich werden die Inhalte der Vorlesung in OnlineTED-Fragen vertieft. Begleitend zur Vorlesung sind etliche Original-Dokumente und das Skript in einem moodle-Kurs verfügbar.

### **Media:**

Für diese Veranstaltung gibt es ein digitales Skript, das zum Download im moodle-Kurs bereitgestellt wird. Außerdem sind die Original-Dokumente im Internet (gesetzl. Richtlinien, etc.) zur Vertiefung sehr sinnvoll.

### **Reading List:**

EU-GMP-Leitfaden im Internet  
ICH Q Richtlinien im Internet

**Responsible for Module:**

Sönnichsen, Caren, Dr. rer. nat. [caren.soennichsen@tum.de](mailto:caren.soennichsen@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### AR17093: Hospital Building I | Krankenhausbau I

Version of module description: Gültig ab winterterm 2012/13

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Oral exam at the end of the semester.

Furthermore there will be a small exercise during the field trip to deepen the knowledge, which could also be a topic during the exam.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

The seminar gives an overview of the four topics in the history of hospital building and also the current situation discussing the "health care super market". Furthermore future challenges like the demographic change, privatization, growing competition and the reduction of costs will be reviewed. By analyzing contemporary case studies different approaches in planning and building of healthcare facilities will be explained.

During the field trip those insights should be deepened.

#### Intended Learning Outcomes:

Nach der erfolgreichen Teilnahme an diesem Modul sind die Studierenden in der Lage, wichtige Begriffe im Themenbereich Krankenhausbau und Bauten des Gesundheitswesens zu definieren sowie grundsätzliche Lösungsmöglichkeiten für diese Bauaufgaben darzustellen. Die Studierenden können die zukünftigen Herausforderungen beschreiben und verschiedene Entwicklungen bewerten.

#### Teaching and Learning Methods:

**Media:**

**Reading List:**

**Responsible for Module:**

Dietz, Birgit; Dr.-Ing.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Im Dialog - Architektur und Medizin (Seminar, 2 SWS)

Dietz B, Böckl A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### CIT6430001: Project Week 1000+ | Projektwoche 1000+

*Team project week 1000+ in small and medium companies  
(KMU & TUM project week 1000+)*

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 40	<b>Self-study Hours:</b> 10	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In a 30 min poster presentation in the team in front of SME employees and with involvement of the examiner the students demonstrate their understanding and correct analysis of the SME`s operational processes and the given problem. The students show the development of at least one problem solving strategy and demonstrate their capability to argue for this approach in the discussion. In the discussion the students also reflect their own competences in the context of possible problems in a company.

The final grade is based on the poster presentation.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

TUM students graduating with a Master's degree have an insufficient understanding of operational processes, industrial culture of companies and knowledge of opportunities where they can apply their skills. 1.000+ enables student teams to familiarize themselves with a real business problem and develop solution strategies with their partner by working together with companies, especially small and medium-sized enterprises (SMEs), during a project week. The small student groups learn about operational processes and can develop an understanding of the partner's problems through interviews and role-playing on topics such as resource limitation, communication, product development and decision-making processes. The project week is reported in the form of a poster and a presentation of the results by the team to the partner. At the end of the project week, the

partner solves the real-life problem and reflects on what has been learnt. The 1,000+ Project Week is aimed at Master's students from all TUM Schools.

**Intended Learning Outcomes:**

- o Understanding of processes and corporate culture
- o Developing expertise in internal processes and innovation processes
- o Developing a solution strategy for the operational problem
- o Interdisciplinary cooperation with Master's students from other TUM Schools

**Teaching and Learning Methods:**

- o Introduction to business management and processes as part of an in-house internship
- o Role play
- o Solution development in an interdisciplinary team through interviews and understanding of internal processes

**Media:**

Whiteboard; Presentation: Poster A0 portrait format (template will be provided)

**Reading List:**

Specified by the company

**Responsible for Module:**

Hayden, Oliver; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwoche 1000+ (Projekt, 2 SWS)

Hayden O [L], Hayden O

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CS0237: Project Week: Practical Enzyme Engineering | Project Week: Practical Enzyme Engineering [P-EnzEng]

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 105	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The results produced in the practical section will be presented in a written report of a maximum of 15 pages. The students will present the topic with a brief introduction, results section and discussion of the results as well as a brief outlook giving a suggestion of further experiments. The student will prove that they have understood the used methods and the rationale of the experiments and can apply this knowledge to plan further studies.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Successful participation in the course "Enzyme engineering" (CS0008 or CS0076)

#### Content:

The module introduces the students to a real-life scientific project of enzyme engineering using state-of-the-art techniques. This includes advanced library cloning methods as well as medium to ultra-high-throughput screening methods. Two libraries will be cloned with different approaches yielding different numbers of variants, which will subsequently be screened with assistance of a robotic liquid handling station as well as a droplet sorting device.

#### Intended Learning Outcomes:

The students will gain insight into state-of-the-art enzyme engineering methods. After the course, they should be able to execute basic experiments with the demonstrated methods. They should be able to process, interpret and present data from large screening projects. Finally, they should have acquired the knowledge to choose a method for library generation based on the available possibilities and needs of the engineering project.

**Teaching and Learning Methods:**

Seminar presentation, active participation in experimental planning, lab-work, demonstration of advanced methods by trained scientists, guided evaluation of screening results

**Media:**

Seminar presentation, screening result files

**Reading List:**

course script and related scientific papers

**Responsible for Module:**

Prof. Volker Sieber

**Courses (Type of course, Weekly hours per semester), Instructor:**

Practical Enzyme Engineering (Praktikum, 4 SWS)

Sieber V [L], Mayer M, Romeis D, Schulz M, Siebert D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED180030: Project Week: Wind Energy in Bavaria - How to impart Knowledge? | Projektwoche: Windenergie in Bayern – Wie Wissen vermitteln?

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> one-time
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulprüfung erfolgt in Form von Aufgaben, Gruppenarbeiten und eines mündlichen Abschlussvortrages und der dazugehörigen Dokumentation.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Empfohlen wird dieses Modul für Studierende am Ende ihres Bachelors bzw. im Master.

#### Content:

- Bedeutung der Windenergie in zukünftigen Energiesystemen und Windpotenziale in Bayern
- Aktuelles Vorgehen bei der Einbindung der Bevölkerung in den Planungsprozess und was hieran verbessert werden könnte
- Auflagen für die Errichtung von Windenergieanlagen und deren Auswirkungen
- Auslegung von Windkraftanlagen für Beispielkommune
- Einbettung von Windenergieanlagen ins Landschaftsbild
- Varianten an Beteiligungsmodellen für die lokale Bevölkerung und Gemeinden
- Auswirkung von Windkraftanlagen auf Umwelt sowie wissenschaftlichen Auseinandersetzung mit Mythen und Fakten rund um Windkraft.

#### Intended Learning Outcomes:

Nach der Teilnahme am Modul sind die Studierenden in der Lage,

- Die Studierenden kennen die Bedeutung der Windenergie für ein zukünftiges nachhaltiges Energiesystem sowie verschiedene Kommunikationsformate bei der Wissensweitergabe an Bürgerinnen und Bürger (Meilenstein M1).

- Die Studierenden verstehen und berücksichtigen gesellschaftliche sowie gesetzliche Rahmenbedingungen (M2).
- Die Studierenden erlernen das Vorgehen regionaler Planungsverbände, erkennen mögliche Raumnutzungskonflikte und Verbesserungspotenzial (M3).
- Die Studierenden untersuchen den aktuellen Stand in Bezug auf ihr Schwerpunktthema und konzipieren Verbesserungsvorschläge (M4).
- Die Studierenden arbeiten gruppenintern eine gemeinsame Abschlusspräsentation aus, präsentieren und verteidigen diese (M5).

### **Teaching and Learning Methods:**

Vor Start der Projektwoche gibt es eine asynchrone Lernphase, während dieser sich die Studierenden im Eigenstudium mit zur Verfügung gestellten Materialien in das Thema einarbeiten. Zudem werden ein bis zwei Präsenztermine vor der Projektwoche abgehalten, um den Ablauf sowie Organisatorisches zu klären.

Die Projektarbeit besteht vor allem aus Gruppenarbeit. Zudem werden zu verschiedenen Themenfelder auch Vorträge von Expertinnen und Experten angeboten, die den Studierenden einen guten Überblick über Vorgehensweisen und Herausforderungen geben. Daraus sollen mögliche Verbesserungen bei der Planung von Windenergieanlagen als auch der kommunalen Wissensvermittlung abgeleitet werden (siehe Projektablauf). Im Rahmen der Projektwoche wird, dass zuvor im Eigenstudium erworbenen Wissen im Austausch mit Experten vertieft und in Gruppen angewandt.

### **Media:**

Vorträge, Eigenstudium, Gruppenarbeit

### **Reading List:**

Miehling\*, Schweiger\*, Wedel, Hanel, Schweiger, Schwermer, Blume, Spliethoff: 100 % erneuerbare Energien für Bayern. Potenziale und Strukturen einer Vollversorgung in den Sektoren Strom, Wärme und Mobilität. Garching bei München. 2021

Erich Hau. Windkraftanlagen. Grundlagen, Technik, Einsatz, Wirtschaftlichkeit. 6., vollständig neu bearbeitete Auflage. 2017

### **Responsible for Module:**

Spliethoff, Hartmut; Prof. Dr.-Ing.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwoche: Windenergie in Bayern – Wie Wissen vermitteln? (Workshop, 4 SWS)

Schweiger B [L], Schweiger B, Ceruti A, Kerschbaum A, Martetschläger L, Nitschmann M, Trentmann L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## LS99999: Modules TUM School of Life Sciences | Module TUM School of Life Sciences

### Module Description

#### IN9017: Entrepreneurship | Existenzgründung

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Bachelor	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

With a scientific elaboration (5 - 10 pages) the students prove that they understand the structure and the logic of the business plan and are able to develop a business idea and to use the results and contributions of the discussions for this development. In the final presentation (20 min.) the students show that they are able to present the business idea in a compact and conclusive way.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

keine

#### Content:

1. Corporation Law
2. Financing
3. Intellectual Property /Patents
4. Tax Law
5. Marketing and Sales
6. Business Plan Preparation

#### Intended Learning Outcomes:

After participation, the students will know the essential principles of setting up a company and will be familiar with the basics of creating a business plan. They can develop a (real or fictitious) business idea with the help of the business plan until it is ready to be founded. They are able to

explain the business idea and the central aspects of the business plan to an audience in a compact and understandable way.

**Teaching and Learning Methods:**

First, the basic topics are presented by the lecturers and discussed in the seminar. Thereafter, the participants develop their own business ideas in groups. These ideas are discussed in the group with the lecturers and presented and discussed in a further development step in the plenum. At the final presentation, external experts will also be present and discuss the result.

**Media:**

Presentation with slides

**Reading List:**

Handbook Business Plan Creation of the Munich Business Plan Competition

**Responsible for Module:**

Gerndt, Hans Michael; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Seminar - Existenzgründung (IN9017) (Seminar, 2 SWS)

Gerndt H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WI001161: Basic Principles of Corporate Management | Grundlagen der Unternehmensführung

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 120

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Grading is based on a written exam (120 min.), a non-programmable pocket calculator is allowed. Questions of the exam which are similar to the discussed case studies allow students to demonstrate their ability to analyze and evaluate basic aspects of corporate management. Moreover tasks on arithmetics and theory are used to check whether students can deduct and quantify different aspects of employees# motivation and adapt them on issues related to entrepreneurial business. An examination retake is offered at the end of the following term. Given a very low number of participants the exam can be replaced by an oral exam with requirements on the same level.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

The module gives an overview on the below mentioned aspects of corporate management:

- basic principles of corporate management
- theories of corporate management: new institutional economics
- system of corporate management: leadership levels, leadership process
- normative corporate management: company values, targets, culture, and mission, code of conduct
- strategic corporate management: value-oriented management, strategies
- corporate planning and control
- Ethical aspects of Corporate Management
- corporate management and motivation

- characteristics of family-owned companies

**Intended Learning Outcomes:**

After attending the module students are able to analyze and evaluate basic principles of corporate management. They can deduct recommendations and develop company-specific decisions in management. Furthermore students know how to assess pros and cons regarding the applicability and impacts on corporate management. Students learn to estimate the challenges of companies regarding the motivation of their employees and how these challenges can be structured and evaluated to develop tailored solutions. After successful participation students are able to assess specifications of family-owned firms compared to public companies and evaluate potential measures of the company-specific management.

**Teaching and Learning Methods:**

The module consists of a lecture and an integrated tutorial. Knowledge transfer is guaranteed by lecture and presentation as well as by small case studies and arithmetic examples. Students are encouraged to study literature and analyze the issues of the topics. The tutorial provides a deeper knowledge of the theoretical concepts presented during the lecture, on the other hand reference examples and case studies are carried out. Furthermore potential applications are demonstrated how to implement theoretical concepts in practice on the background of empirical scientific studies. Additionally students learn how to apply the acquired knowledge e.g. by using case studies.

**Media:**

Presentations, charts, exercises, case examples

**Reading List:**

- Coenenberg, A.D. und R. Salfeld (2007): Wertorientierte Unternehmensführung, 2. Auflage
- Dillerup, R. und R. Stoi (2010): Unternehmensführung, 3. Auflage
- Lazear, E.P. und M. Gibbs: Personnel Economics in Practice (2008)
- Milgrom, P.; Roberts, J. (1992): Economics, Organization & Management
- Kräkel, M. (2010): Organisation und Management, 4. Auflage

**Responsible for Module:**

Mohnen, Alwine; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ3234: Life Sciences & Society. An Introduction | Lebenswissenschaften & Gesellschaft. Eine Einführung

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b> Bachelor	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Regelmäßige Anwesenheit und aktive Teilnahme am Seminar, Lektüre und Vorbereitung der Basisliteratur, Gestaltung von kleineren Inputelementen für das Seminar (Kurzreferat/ Sitzungsmoderation)

Schriftliche Abschlussarbeit (Hausarbeit)

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

keine

#### Content:

Welche Rolle spielen die Lebenswissenschaften in der heutigen Gesellschaft? Wie sind sie Teil unserer modernen, hochtechnisierten "Wissensgesellschaften"? Lebenswissenschaftliches Wissen und neue Biotechnologien verändern Gesellschaft auf vielfältige Weise, in der Medizin und der Landwirtschaft, aber auch in Bereichen wie Energie und Umwelt. Neue molekulare Perspektiven verändern, wie wir über Körper, Krankheit, Gesundheit, Umwelt und Ökosysteme nachdenken. Diese neuen Blickwinkel und technologischen Möglichkeiten sind oft von großen gesellschaftlichen und ökonomischen Hoffnungen begleitet, aber auch von kontroversen Debatten in der Gesellschaft, die nach den Risiken und Konsequenzen neuen lebenswissenschaftlichen Wissens fragen, wie etwa im Bereich der Stammzellforschung, der synthetischen Biologie oder der agrarischen Biotechnologie. Politische Debatten spielen wiederum eine große Rolle für die Ebene der Forschungsförderung und bei der Regulation neuer Technologien. Lebenswissenschaftliche Forschung ist somit auf vielen Ebenen in gesellschaftliche und politische Diskurse und Strukturen eingebettet. Das interdisziplinäre Forschungsfeld der Wissenschaft- und Technikforschung

beschäftigt sich mit diesem vielfältigen Verhältnis zwischen Wissenschaft, Technik und Gesellschaft. Anhand von Fallstudien aus dem Bereich der Lebenswissenschaften werden wir in diesem Kurs lernen, wie dieses Verhältnis kritisch beleuchtet und analysiert werden kann. Ziel ist, ein Verständnis dafür zu entwickeln, wie Wissenschaft und Technik in die Gesellschaft eingebettet ist und welche Rolle im Spezifischen die Lebenswissenschaften in unserer heutigen Gesellschaft spielen.

### **Intended Learning Outcomes:**

Nach erfolgreichem Absolvieren des Moduls erwerben Studierende die Fähigkeit sich zu Themen an der Schnittstelle von Lebenswissenschaften und Gesellschaft kompetent zu positionieren, indem sie verschiedene gesellschaftliche und wissenschaftliche Positionen zu diesen Themen kritisch reflektieren, sowie eigene Einschätzungen artikulieren können. Studierende erwerben in diesem Sinne im Laufe der Lehrveranstaltung die Kompetenzen 1) Themen an der Schnittstelle von Lebenswissenschaften und Gesellschaft zu identifizieren; 2) Wissenschaftliche Text, die entlang von Fallstudien in die Beziehung von (Lebens)Wissenschaften und Gesellschaft beschreiben, zu lesen, zu diskutieren und die Kernargumente zu verstehen; 3) Eigenständig aktuelle Debatten in Gesellschaft, Medien und Politik zu Lebenswissenschaften und Gesellschaft zu recherchieren; 4) Die erworbenen Analysefähigkeiten auf diese aktuellen gesellschaftlichen Debatten anzuwenden und die Beziehung zwischen Lebenswissenschaften und Gesellschaft im Seminar zu reflektieren und zu diskutieren.

### **Teaching and Learning Methods:**

Lektürearbeit; angeleitete Gruppenarbeiten zur Diskussion und Vertiefung des Textverständnisses und zur Entwicklung eigener Fragen; Diskussion im Plenum; Inputelemente von Seiten der Studierenden wie Kurzreferate oder Sitzungsmoderation; eigenständige Recherchen zu Themen im Kontext der Lehrveranstaltung; schriftliche Hausarbeit als Abschluss der Lehrveranstaltung.

### **Media:**

PowerPoint, Moodle, Flipchart, Film(ausschnitte), Reader

### **Reading List:**

Beispiele (im Kurs werden Auszüge/Kapitel gelesen) Beck, Stefan; Niewöhner, Jörg; Sörensen, Estrid (2012): Science and Technology Studies. Eine sozialanthropologische Einführung. Bielefeld: transcript.

Collins, Harry & Pinch, Trevor (2000): Der Golem der Technologie: Wie unsere Wissenschaft die Wirklichkeit konstruiert. Berlin: Berlin Verlag.

Edwards, Paul (2010): A Vast Machine Computer Models, Climate Data, and the Politics of Global Warming. Cambridge, MA: MIT Press.

Reardon, Jenny (2005): Race to the Finish: Identity and Governance in an Age of Genomics. Princeton: Princeton University Press.

Thompson, Charis (2013): Good Science: The Ethical Choreography of Stem Cell Research. Cambridge, MA: MIT Press.

**Responsible for Module:**

Prof. Dr. Ruth Müller

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### BV400016: Scientific Paper Writing | Selbständig wissenschaftlich Arbeiten

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students have to submit a scientific paper which will be assessed based on a number of standard criteria for a scientific paper. The students demonstrate with their papers that they have gained deeper knowledge of the specific requirements of a scientific paper, including structure, appropriate presentation of information and discussion as well as the related formalities. The students are able to develop a topic for their papers and formulate the problem statement, objectives and research questions. Furthermore, the students are able to develop a conceptual frame and present as well as analyze information and formulate conclusions. Finally, the students are able to meet the formalities of a scientific paper including proper quotations, layout and language.

Note in view of the limitations on university operations as a result of the CoViD19 pandemic: If the basic conditions (hygiene, physical distance rules, etc.) for a classroom-based examination cannot be met, the planned form of examination can be changed to a written or oral online examination in accordance with §13a APSO. The decision about this change will be announced as soon as possible, but at least 14 days before the date of the examination by the examiner after consultation with the board of examiners of the respective study program.

#### Repeat Examination:

#### (Recommended) Prerequisites:

none

#### Content:

1. Introduction into what constitutes a scientific paper and what not. How does a scientific paper differ from a technical or consultancy paper?
2. search ing and selecting literature.

3. Technical writing skills – structure and elements of an abstract, summary, position paper, essay
4. Formulating key problem statement and objectives for a research paper
5. Reading, understanding and reviewing research papers
6. Technical writing – macro-writing, outlining
7. Referencing and citing literature using referencing software
8. Technical writing – micro-writing and technical English
9. Technical writing - Use of frameworks in research papers
10. Executing Constructive peer reviews
11. Revising and improving papers

**Intended Learning Outcomes:**

At the end of the module the students understand the main steps to prepare, write, revise and review a scientific paper. More specifically, students are able to formulate a relevant problem statement, research objective and key method for a scientific paper and design an outline for such a paper. Furthermore, the students are able to write a scientific paper by presenting and following a clear line of argument, discussion and conclusions. The students are also able to identify scientifically valid sources of information and provide references in an given reference style using a reference software . Finally, the students are able to conduct collaborative work in an academic environment.

**Teaching and Learning Methods:**

The instruction is through participatory lectures, exercises and feedback to papers. Teaching method includes presentation and group discussion which help students to understand how to do a scientific research.

**Media:**

Presentations followed by discussion.

**Reading List:**

The module works with a background script in which different aspects of scientific paper writing are addressed.

**Responsible for Module:**

Walter T. de Vries wt.de-vries@tum.de

**Courses (Type of course, Weekly hours per semester), Instructor:**

Scientific Paper Writing (Vorlesung, 1 SWS)

de Vries W [L], de Vries W ( Bendzko T )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CIT3640001: Sanitätsausbildung | Sanitätsausbildung

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Erreichen der Lernergebnisse wird in einer benoteten, schriftlichen Prüfung ohne Hilfsmittel mit einem Umfang von 60 min geprüft. Die schriftliche Prüfung macht 40% der Abschlussnote aus. Voraussetzung für die Teilnahme an der schriftlichen Abschlussprüfung ist die erfolgreiche Absolvierung praktischer Leistungskontrollen zur Patientenversorgung sowie zur Reanimation im Kursverlauf, diese gehen mit jeweils 30% in die Abschlussnote ein.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Vorliegen eines Nachweises über einen aktuellen Erste-Hilfe-Kurs.

#### Content:

Vitalfunktionen, Erkrankungen der Atmung und des Herzkreislaufsystems, Einführung in Aufbau und Funktion des Bewegungsapparates, Versorgung von Wunden und anderen Verletzungen, Versorgung von Sportverletzungen, Erkennen und Versorgen weiterer Erkrankungen (z.B. Herzinfarkt, Schlaganfall, temperaturbedingte Erkrankungen), Reanimation, Rechtliche Rahmenbedingungen im Sanitätsdienst, Vorgehen und Einsatztaktik in der Patientenversorgung

#### Intended Learning Outcomes:

Nach der Teilnahme an dem Modul sind Studierende in der Lage, Notfallpatienten eigenständig zu versorgen. Hierzu notwendiges Wissen über Notfallbilder, Anatomie, Vitalfunktionen und eingesetztes Material kann wiedergegeben werden.

#### Teaching and Learning Methods:

Die Theorieinhalte des Moduls werden überwiegend im Unterrichtsgespräch unter Zuhilfenahme von PowerPoint-Präsentationen und Verschriftlichung an der Tafel erarbeitet, gegebenenfalls



finden auch Gruppenarbeiten statt. Die praktischen Fähigkeiten werden in Übungen sowie Fallbeispielen gefestigt. Kontinuierliche Wissensstandüberprüfungen finden in Form von Moodle-Quizzes statt.

**Media:**

Präsentationen (PowerPoint), Tafel, Fallbeispiele, Moodle-Quiz

**Reading List:**

ausgewählte Gesetzestexte, Videos und Fachartikel (Empfehlungen werden in der Veranstaltung genannt)

**Responsible for Module:**

Hayden, Oliver; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Kurs zum/zur Fachsanitäter\*in (Vorlesung mit integrierten Übungen, 4 SWS)

Göppl M [L], Pawlik F, Klüpfel J, Budeus M, Göppl M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED0038: Technology, Economy, Society | Technik, Wirtschaft und Gesellschaft

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The assessment consists of a written assignment (7800-8200 characters) which is due at the end of the semester. Students interpret research literature with respect to sociotechnical problems to analyze the development of technology in social, economic, and political contexts.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

The course does not require any special prior knowledge.

#### Content:

In this course, an approach to the political, economic, social and cultural dimensions of technology development is acquired. Selected historical and current examples will be analyzed to see how technical artifacts, processes and services emerge. Under which social conditions, in which economic situations and political contexts does technology emerge? How is it discussed, implemented, changed or discarded?

#### Intended Learning Outcomes:

Students will be able to identify examples of the historical dimensions of processes of technification and to understand the emergence and use of technical offerings in their concrete historical context.

#### Teaching and Learning Methods:

Lecture, self-study, case studies, writing of smaller thematic papers.

**Media:**

electronic lecture notes, presentations

**Reading List:**

- Nelly Oudshoorn and Trevor Pinch (Eds.), How Users Matter. The Co-Construction of Users and Technology. Cambridge, Mass. 2005.
- Gernot Rieder, Judith Simon and Pak-Hang Wong, Mapping the Stony Road Towards Trustworthy AI, in: Pelillo, Marcello and Scantamburlo, Teresa (Eds.), Machines We Trust: Perspectives on Dependable AI. Cambridge, Mass. 2021, <http://dx.doi.org/10.2139/ssrn.3717451> .
- Philip Scranton, Urgency, Uncertainty, and Innovation: Building Jet Engines in Postwar America, in: Management & Organizational History, 2006, 1:2, 127-157, <https://doi.org/10.1177/1744935906064096>.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED0179: Technology, Nature and Society | Technik, Natur und Gesellschaft

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Bachelor	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): semesterbegleitende Online-Aufgaben.

Studienleistungen - Besuch der Vorlesung im Umfang von 2 SWS (2 SWS = 1 CP); - Lektüre von Texten (30 h = 1 CP); - Bearbeitung der drei Onlineaufgaben (30 h = 1 CP) Das Semester begleitend werden drei schriftliche Aufgaben zu Teilabschnitten des Vorlesungsinhaltes gestellt, die individuell zu bearbeiten sind. Die Aufgabenstellung erfolgt online. Bearbeitungszeit ist jeweils 7 Tage. Die Ergebnisse der Online-Aufgaben werden über TUMonline bekannt gegeben. Die Prüfungsnote wird aus den Ergebnissen der drei Online-Aufgaben gebildet. Eine Wiederholung in Form einer mündlichen Prüfung ist möglich; Voraussetzung hierfür ist die vorangehende Beteiligung an den Online-Aufgaben. Bei Nichtbestehen der Nachprüfung ist das gesamte Modul zu wiederholen.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

keine

#### Content:

Wir leben in einer Zeit, in der die Technik nicht mehr als abgegrenztes Subsystem, sondern vielmehr als Superstruktur der Gesellschaft und des Lebens erfahren wird, die all ihre Existenz- und Erscheinungsformen durchdringt. Noch unlängst vorherrschende Vorstellungen von einer strikten Trennung zwischen Technik und Natur bzw. zwischen Technischem und Lebendigen sind obsolet geworden. Eine Vielzahl von Lebensprozessen läuft technisch vermittelt ab (Geburt, Tod, Bewegung, Ernährung usw.) und Entwicklungen wie die der Gentechnik zeugen davon, dass die Natur selbst in einen Zustand der technischen Reproduzierbarkeit überführt worden ist. In der

Vorlesung wird die Erosion der Grenzen zwischen Technik, Natur und Gesellschaft aufgezeigt und über ihre Konsequenzen für die Spielräume menschlichen Handelns nachgedacht.

**Intended Learning Outcomes:**

TN sind in der Lage, unsere Vorstellungen von Technik und Natur als kulturelle Konstrukte zu analysieren, mit denen wir vor allem Aussagen über den Zustand unserer Gesellschaft und unser Selbstverständnis machen. Sie können darstellen, wie sich unsere Naturvorstellungen im Zuge des Übergangs zur prinzipiell nicht-nachhaltigen Wirtschafts- und Lebensweise der Moderne verändert haben.

**Teaching and Learning Methods:**

Vorlesung, Selbststudium, Schreiben von kleineren thematischen Abhandlungen

**Media:**

elektronische Skripten, Präsentationen

**Reading List:**

Radkau, Joachim, Natur und Macht. Eine Weltgeschichte der Umwelt, München 2002,  
Sieferle, Rolf Peter, Rückblick auf die Natur. Eine Geschichte des Menschen und seiner Umwelt, München 1997,  
Bayerl, Günter, Prolegomenon der Großen Industrie. Der technisch-ökonomische Blick auf die Natur im 18. Jahrhundert, in: Werner Abelshauser (Hg.), Umweltgeschichte. Umweltverträgliches Wirtschaften in historischer Perspektive; acht Beiträge, Göttingen 1994, S. 29-56 pp.

**Responsible for Module:**

Zetti, Daniela; Prof. Dr.sc. ETH Zürich

**Courses (Type of course, Weekly hours per semester), Instructor:**

Technik, Natur und Gesellschaft (Vorlesung, 2 SWS)

Reichenberger A ( Goricki-Eickel T )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **MGT001443: Project Week 2024/25: Conflicts in Mining Critical Materials: Compromising in Sustainability Strategies | Project Week 2024/25: Conflicts in Mining Critical Materials: Compromising in Sustainability Strategies**

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> one-time
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

To complete the course, students shall form groups representing different stakeholders and play their roles in the game set up in the class; then, make a presentation (50% of the grade) and write a group report (50% of the grade):

- showing their understanding of sustainability with respect to mining;
- their learning on costs, benefits, and challenges faced by a given stakeholder groups;
- conflicts and ways to find a compromise when it comes to mining strategies;
- importance of mining and its fair development.

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

none

#### **Content:**

The course will consist of three parts, which allows for a type of experiment in how exposure to mining practices influences decision making. The first set of sessions will serve to introduce the topic and record “unexperience” and “noncollaborative” perspectives and decision choices on the mining problems presented. Next, students will be exposed actual mining practices, examine the conflicts (standing or past) onsite in visits to open-pit mines in Germany or Austria, and shall form their own views and opinions on the real-world challenges associated with sustainability in mining. Finally, the students return to the stakeholder roles to review their sustainability goals and weights assigned to them, negotiation strategies and impact oriented behavior.

### **Intended Learning Outcomes:**

The module targets students of all backgrounds interested in understanding decision-making processes, challenges associated with choices, and divergence in perspectives on the sustainability goals, in particular, in extraction of critical metals and minerals. The course will explain environmental and societal costs of mining, alongside economic benefits, in the context of the increased demand for metals and materials brought about by decarbonisation goals. Participants will learn about different approaches for addressing the intricate challenges faced by German and global mining industries striving to provide critical resources.

### **Teaching and Learning Methods:**

Students will engage in role-playing exercises to learn the perspectives of three major stakeholder groups, (1) affected communities, (2) upstream producers, i.e. mining operators, and (3) downstream industrial consumers, e.g., automotive companies. They will use the interactive multiobjective optimization (iMO) tool, we prototyped, to test their decisions exploring interest alignments and stakeholder conflicts, fostering deeper understanding of the multifaceted issues surrounding the extraction and consumption of critical materials.

### **Media:**

### **Reading List:**

1. Yakovleva, N., & Nickless, E. (Eds.). (2022). Routledge Handbook of the Extractive Industries and Sustainable Development. Abingdon, UK: Routledge.
2. Hatcher, P., & Grégoire, E. R. (2022). Governance of extractive industries. In Handbook on Governance and Development (pp. 294-307). Edward Elgar Publishing.
3. Veiga, M. M., & Marshall, B. (2018). The extractive industries and society.
4. Veraart, F., Smits, J. P., & van der Vleuten, E. Extractive Industries and Society.

### **Responsible for Module:**

Ikonnikova, Svetlana; Prof. Ph.D.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Project Week 2024/25: Conflicts in Mining Critical Materials: Compromising in Sustainability Strategies (MGT001443) (Seminar, 4 SWS)

Ikonnikova S, Li G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **MHP00002: Project Week: Sensors and Wearables for Automated Detection of Nutrition, Physical Activity, and Sleep | Project Week: Sensors and Wearables for Automated Detection of Nutrition, Physical Activity, and Sleep**

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 80	<b>Contact Hours:</b> 40

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

research paper

After completion of the project week, students will submit an extended research abstract (1,500 words excluding references, including one figure or table) summarizing their small-scale pilot study. Consistent with open science principles, students will also make their (anonymized) raw data, statistical analyses, and code available.

The abstract will be graded and counts for 100% of the final grade of this module.

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Student should have

- Interest in learning about cutting-edge methods for the assessment of diet, PA, and sleep
- Basic knowledge of research methods and study design
- Basic knowledge of data manipulation and statistical analysis using Microsoft Excel, R, Python, and/or MATLAB.

#### **Content:**

The project week will consist of theoretical and practical parts. Theoretical input will comprise of brief introductions to nutrition, physical activity, and sleep, their role for health and well-being, and an overview of traditional assessment methods and their limitations. Furthermore, an overview of sensors and wearables used for the automatic detection and assessment of these concepts will be provided, followed by a detailed introduction to the modalities available for the project as well as use-cases and future outlooks from a variety of fields, including:



- Sleep-wake detection using wrist-worn sensors
- Principles of sleep scoring using EEG
- Holistic health monitoring including physical activity, exercise, stress, sleep and recovery
- Export and analysis of raw and aggregated data for remote participant monitoring
- From wearable sensors to visual signals - using video data for PA detection
- Wearable sensors in telemedicine
- Use of sensors in neurodegenerative diseases

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able to

- Understand the relevance of diet, PA, and sleep for human health and well-being
- Understand the challenges of traditional assessment methods
- Provide an overview of different sensors and wearables used to assess the concepts
- Comprehend the limitations of the different approaches
- Use different sensors and wearables to automatically detect EB, PA, and sleep
- Integrate and analyze data collected with different modalities.

### **Teaching and Learning Methods:**

The project week will consist of theoretical and practical parts, which will be delivered asynchronously (video lectures, text materials via Moodle) and synchronously (Zoom and in person).

Planning and completion of a group project are the core elements of the project week.

### **Media:**

PowerPoint, Zoom, Moodle, video lectures, scientific articles

### **Reading List:**

- Bell BM, Alam R, Alshurafa N, Thomaz E, Mondol AS, de la Haye K, et al. Automatic, wearable-based, in-field eating detection approaches for public health research: a scoping review. *Npj Digit Med.* 2020 Dec;3(1):38.
- Wang L, Allman-Farinelli M, Yang JA, Taylor JC, Gemming L, Hekler E, et al. Enhancing Nutrition Care Through Real-Time, Sensor-Based Capture of Eating Occasions: A Scoping Review. *Front Nutr.* 2022 May 2;9:852984.
- Hassannejad H, Matrella G, Ciampolini P, De Munari I, Mordonini M, Cagnoni S. Automatic diet monitoring: a review of computer vision and wearable sensor-based methods. *Int J Food Sci Nutr.* 2017 Aug 18;68(6):656–70.

### **Responsible for Module:**

Köhler, Karsten; Prof. Dr. rer. nat.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwochen: Sensors and Wearables for Automated Detection of Nutrition, Physical Activity, and Sleep (Übung, 3 SWS)

Biller A, Höchsmann C, Köhler K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **MHP00008: Project Week: Sustainable Group Travels in Winter for Children and Adolescents | Projektwoche: Nachhaltige Gruppenreisen für Kinder und Jugendliche im Winter**

*Solutions for dealing with snow uncertainty using multi-stakeholder processes*

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Presentation (20 minutes):

In a poster presentation, students demonstrate that they can plan and organize group trips for children and young people in winter in a sustainable way against the background of multi-stakeholder processes. In addition to problem-solving skills in the direction of sustainable development, students demonstrate that they can present the solution they have developed to an audience convincingly and in a logical sequence. The work is carried out in a group of four people; the design of the poster (30%) and the presentation (70%) are assessed; each student makes individual contributions to the poster and the presentation (5 minutes per person).

In accordance with LPO I §36 and §38, the module corresponds to the admission requirement "Participation in a winter sports week" in the Didactics of Primary School course and the Didactics of Secondary School course. In order to achieve the credit for the state examination, either the module MHP00008 (Project week: Sustainable group trips for children and young people in winter) or the module SG702030 (Onboarding Week) must be completed.

#### **Repeat Examination:**

Next semester / End of Semester

#### **(Recommended) Prerequisites:**

none

To apply for the module, students must send their application (a PDF via e-mail) to [studentoffice.lehramt.sto@mh.tum.de](mailto:studentoffice.lehramt.sto@mh.tum.de) (by October 13, 2024).

The application should consist of a CV and a letter of motivation (no more than one page) explaining the reasons for participating in the seminar and the contributions the applicant can make to the project (based on personal background and study program).

### **Content:**

- Presentation of the initial situation and challenges
  - Interdisciplinary lectures in the context of eLearning, offers from representatives from several TUM departments and guest speakers
  - Formation of teams to solve the Grand Societal Sustainable Development
  - Challenges as part of group trips by children and young people in winter during the project week
  - Brainstorming (World Café) and structuring (mind mapping)
- 
- The needs of nature, travelers (here: children and young people) as well as the local community and tourism providers are determined against the background of climate change, the SDGs and the resulting consequences for the mountain world in winter
  - Group trips are designed in such a way that local and regional travel ventures are fulfilling, sustainable, exercise- and health-promoting and experience-oriented for participants (here: children and young people)
  - Interactions with local stakeholders strengthen the multi-perspective approach: tourism association, lift operators, hunting association, accommodation

In accordance with LPO I §36 and §38, the module corresponds to the admission requirement "Participation in a winter sports week" in the Didactics of Primary School course and the Didactics of Secondary School course. In order to achieve the credit for the state examination, either the module MHP00008 (Project week: Sustainable group trips for children and young people in winter) or the module SG702030 (Onboarding Week) must be completed.

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able to

- classify different scenarios such as given snow reliability, partial snow reliability or lack of snow reliability when planning and organizing group trips in winter
- analyze existing local structures (e.g. infrastructure, tourism concepts)
- evaluate the prevailing framework conditions as a whole
- develop group trips in winter in a way that promotes sustainability against the backdrop of the Sustainable Development Goals (SDGs)
- create local trips that are just as fulfilling for the participants (here: children and young people) as trips with guaranteed snow
- to design sport and exercise concepts and experiences that are situational, sustainable and regional/location-specific
- - communicate with the various stakeholders.

### **Teaching and Learning Methods:**

The module consists of two seminars, one of which serves as preparation for the block course and the other consists of its implementation. Learning and teaching methods for preparation: studying the literature, summarizing the current state of the literature, presentation of findings and critical reflection (each in partner work). Teaching and learning methods of the block course: Relevant material research, working on problems and finding solutions, cooperation with partners from practice and science, application of World Café and mind mapping, action-oriented testing of selected teaching concepts and their pedagogical-didactic classification.

### **Media:**

Presentations, case descriptions and solutions.

### **Reading List:**

- Corleis, F. (2000). Die Bedeutung von Naturerlebnissen in der Schule: Naturerlebnispädagogik. Ziel, Lüneburg.
- Deutscher Alpenverein (Hsg.). (2015). Klimawandel im Alpenraum. Deutscher Alpenverein, München.
- Eweje, G., Sajjad, A., Nath, S. D., & Kobayashi, K. (2021). Multi-stakeholder partnerships: A catalyst to achieve sustainable development goals. *Marketing Intelligence & Planning*, 39, 186-212.
- Lorch, J. (1995). Trendsportarten in den Alpen. Konflikte, rechtliche Reglementierungen, Lösungen. Cibra Kleine Schriften, Vaduz.
- MacDonald, A., Clarke, A., & Huang, L. (2022). Multi-stakeholder partnerships for sustainability: Designing decision-making processes for partnership capacity. In *Business and the ethical implications of technology* (pp. 103-120). Cham: Springer Nature.
- Müller, H.-H. (2003). Schulsport im Winter. Zur Bedeutung und Gestaltung wintersportlicher Aktivitäten in der Schule. Dissertation, Universität Regensburg, Regensburg.
- Rolland, C. G., Zoglowek, H. (2000). Friluftsliv in Norwegen. *Sportpädagogik*, 4, 22-24.
- Steiger R. (2013). Auswirkungen des Klimawandels auf Skigebiete im bayerischen Alpenraum. Salzwasser Verlag, Innsbruck.
- Theis R.; Lange A. (Hsg.) (2018). Das große Limpert-Buch des Wintersports, Limpert, Wiebelsheim.
- Wahl, W.; Dewald, W., u.a. (2001). Alpine Erlebnispädagogik. Jugend des Deutschen Alpenvereins, München.

### **Responsible for Module:**

Froschmeier, Thomas; Dr. phil.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Multi-Stakeholder Prozesse gestalten: Wintertourismus in Oberaudorf (Seminar, 2 SWS)  
Danner S, Froschmeier T, Konieczny K, Königstorfer J, Olufemi C, Plank T, Thomann A, Wayand M

Grundlagen nachhaltigen Reisens im Winter (Seminar, 1 SWS)

MHP00008: Project Week: Sustainable Group Travels in Winter for Children and Adolescents | Projektwoche:  
Nachhaltige Gruppenreisen für Kinder und Jugendliche im Winter

Froschmeier T, Konieczny K, Königstorfer J, Olufemi C, Plank T, Thomann A, Wayand M  
For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT10081: Project Weeks: Communicating Curiosity - A Science Outreach Pop-Up Exhibition | Projektwochen: Neugier vermitteln - Eine Pop-Up-Ausstellung zur Wissenschaftskommunikation [SOPE]

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 75

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students will be assessed based on a written assignment to be handed in after the end of the project (min 1000 words). This assignment should summarize the class discussions, group work, challenges and progress for each day of the course, and contain a section at the end where students reflect on the project after its conclusion and develop ideas for related future projects. With the assignment, students demonstrate their ability to engage critically and creatively with the research encountered during the class, chronicle their experience with the project and discuss its aims, development and outcome, and assess their own role and contributions to the exhibition.

#### Repeat Examination:

#### (Recommended) Prerequisites:

English language fluency

#### Content:

"Communicating Curiosity - A Science Outreach Pop-Up Exhibition" is a project week aimed at fostering scientific curiosity within the community. Students will collaborate to design, plan and execute an engaging pop-up exhibition centered around the theme of curiosity in science. The exhibition will feature interactive displays, hands-on activities, and informative presentations. As part of the course, students will (1) decide on the contents of the exhibition and the formats for presenting them in an accessible and engaging way, (2) actually implement the components of the exhibit, (3) plan the event logistics, (4) present the exhibition in public spaces in Munich and present to and interact with visitors, and (5) reflect their role in the project as well as potential future projects. The project week consists of 8 days of preparation across the span of 4 weeks in February and March 2025, 1 day of putting on the pop-up exhibition, and 1 day of summarizing and

reflecting on the experience. Students are expected to be present for the full day (9.30-17.30) on the following dates: 27.2., 28.2., 6.3., 7.3., 13.3., 14.3., 20.3., 21.3., 22.3., 27.3.

**Intended Learning Outcomes:**

At the end of the module, students will have designed and implemented a mobile exhibition on the topic of curiosity. They will have gained practical experience in project management and teamwork, honed their skills in planning and executing an event, and applied their creativity, leadership and problem-solving abilities. As the aim of the module is to put together a science outreach event, students will have learned how to engage and connect with the local community and communicate research findings in an accessible way, by which they will also have gained experience in public speaking and presentation.

**Teaching and Learning Methods:**

Powerpoint lecture presentations, educational videos, student presentations, group work

**Media:**

Powerpoint lecture presentations, Moodle for interaction with the group and sharing materials, interactive demonstrations (computer & tablet), various media for the exhibition (to be decided by the students)

**Reading List:**

**Responsible for Module:**

Schlingloff-Nemecz, Laura; M.A.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwoche: Communicating Curiosity – A Science Outreach Pop-Up Exhibition (Projekt, 5 SWS)  
Schlingloff-Nemecz L [L], Schlingloff-Nemecz L, Ruggeri A, Serko D, Bonalumi F  
For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SOT10082: Project Weeks: Data Design Studio for AI-Powered EdTech | Projektwochen: Data Design Studio for AI-Powered EdTech [DDS]

*Data Design Studio for AI-Powered EdTech*

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 85	<b>Contact Hours:</b> 35

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Work on a project to develop their own tangible educational learning opportunities to support STEM+C outcomes, applying agile development process. They will present their results in the seminar.

Presentation duration: 15-20 min

The examination will open discussions and reflections about learning processes and its possible implementations in real world scenarios.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Students of all schools and subjects

#### Content:

Would you like to become an educational technology researcher? Are you interested in educational technology design? Are you dreaming of building educational technology? To get started, you will need knowledge about how data flows in and out of educational technology and may influence and capture human behavior and learning. Integrating data-oriented thinking is not trivial. "Data Design Studio" will provide a dive into the world of data-driven thinking. This Project Weeks course is an intensive, student-centered, and project-oriented learning experience of a scaffolded process for data collection design in the context of AI-powered EdTech. This project-based course targets all TUM students interested in AI-powered EdTech at any level (Bachelor, Master, PhD) and any school. Participating students will have the opportunity to select a real educational problem and to design and implement data flows for AI-powered EdTech that could tackle this problem.

Participants will work independently with special instructional materials and instructor feedback to support their learning process at different stages of their projects.

**Intended Learning Outcomes:**

By engaging with specific learning cases that describe real-world educational problems, participants in this course will investigate how educational tools align with learning theories that describe the intended effects of technology on learners. By engaging with a selection of data collection tools (e.g., video, sensors, audio), participants will familiarize themselves with primary data sources and their limitations for generating knowledge about teaching and learning. The participants will engage in the process of designing and critiquing data flows for educational technologies through a hands-on experience with data collection tools. Participants will explore how various data types and mixed methods templates can produce insights into the design of a data flow in educational technology.

**Teaching and Learning Methods:**

The approach is participatory, balancing input and instructor support to build conceptual and practical skills required for building or evaluating educational technologies. The students will be required to read 1-2 readings supplementing main objectives of the course.

**Media:**

Presentations

**Reading List:**

Will be announced in Moodle

**Responsible for Module:**

Prof. Dr. Oleksandra Poquet (sasha.poquet@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

ProjectWeeks: Data Design Studio for AI-Powered EdTech (Vorlesung, 2 SWS)

Graf L

ProjectWeeks: Data Design Studio for AI-Powered EdTech (Seminar, 2 SWS)

Keune A, Hurtado Melo C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT10083: Project Weeks: Decision Education | Projektwochen: Decision Education [Decision Education]

*How can we improve decision making competence among university students?*

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 70	<b>Contact Hours:</b> 50

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

This course will be graded on a pass/fail basis. The evaluation of this course will be based on the preparation of a portfolio. Part 1 - Sustained and active in-class participation with includes: completing exercises, in-class individual and group activities, and individual presentations. Part 2 - Group Project: in groups of 3/4, students will create and present to the class a curriculum for a program in Decision Education where the target group are students in their expertise domain. Students will then upload their project as well as an individual report reflecting on the activity for evaluation.

#### Repeat Examination:

#### (Recommended) Prerequisites:

English language fluency

#### Content:

Each of the five days of the project week will be centered around one theme, which will be first introduced in the morning interactive lecture, followed by activities, group work and presentations. The topics explored will be:

1. Introduction to the biases of decision making and the way in which they are empirically studied - introduction and brief historical overview of the field of decision making as investigated in evolutionary psychology, behavioural economics, social psychology, and computational cognitive science
2. Decision-making as a teachable skill – introduces the program of Decision Education and the toolbox for improving decision making

3. Communicating risk and uncertainty to make better medical and economic decisions - this day will explore how experts should information be presented to others by professionals so that they can make the best possible decisions, focusing on risk communication, which is the domain where most empirical data are available
4. Making decisions in an online world: who can we trust? – this day will explore social decision making biases, and their consequences on partner choice, as well as wider political decision making, with a focus on online environments
5. Decision education in the classroom and in society – this class will focus on decision making in the context of education, but also on how governments are using insights from decision-making for designing policy

### **Intended Learning Outcomes:**

At the end of the project week, students will be able to:

1. To reflect on the limitations and potential biases of our own decision-making processes and outcomes.
2. To brainstorm about we could overcome these biases and limitations, that is, how can we improve decision-making competence among university students.
3. To discuss how a program for Decision Education could look like, that is able to empower students with the skills and dispositions essential to be able to learn actively, independently, and efficiently, make sound inferences, and take informed decisions.

### **Teaching and Learning Methods:**

The project week will include a combination of:

- Interactive lectures, aimed to give participants a shared background on the state-of- the-art on the topic of Judgment and Decision Making
- Hands on questionnaires and games, aimed to offer participants an opportunity to reflect on what their strengths, limitations and biases in decision making may be.
- These activities will constitute the starting point of a series of group brainstorming sessions, where students will be prompted to share their experience and opinions, and to discuss limitations and biases to improve decision-making competence among university students. They will discuss the topics that such program should cover, its content structure, as well as the alternative delivery methods that could be used (e.g., university course, self-paced app, series of one-day workshops).
- The results of these brainstorming sessions will be shared with the entire group of participants in the form of short PowerPoint presentations, followed by a plenary discussion.
- As a final outcome of the project, participants will take part in a small group project (consisting in designing a programme in Decision Education) and present their work in front of the class.

### **Media:**

Power Point presentations; video materials; online materials (e.g. <https://alliancefordecisioneducation.org/> and <https://www.decisioneducation.org/>); exercise sheets; custom surveys; interactive visualizations; books

**Reading List:**

Mercier, H. (2020). Not born yesterday: The science of who we trust and what we believe. Princeton University Press.

Hertwig, R., Pleskac, T. J., Pachur, T., & Center for Adaptive Rationality. (2019). Taming uncertainty. The MIT Press.

<https://doi.org/10.7551/mitpress/11114.001.0001>

Thaler, R. H., & Sunstein, C. R. (2008). Nudge: Improving decisions about health, wealth, and happiness. Yale University Press.

Caplan, B. (2007). The myth of the rational voter: Why democracies choose bad policies. Princeton University Press.

**Responsible for Module:**

Ruggeri, Azzurra; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwochen: Decision Education (Projekt, 4 SWS)

Ruggeri A [L], Ruggeri A ( Stanciu O )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT10084: Design Challenge: Addressing the Climate Crisis Through Gaming Simulation | Design Challenge: Addressing the Climate Crisis Through Gaming Simulation

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 160	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 70

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Schriftliche Beschreibung und Material zum eigenen Spielprototyp. Mündliche Abschlusspräsentation des erarbeiteten Prototyps. Die Modulprüfung ist benotet.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Keine

#### Content:

Das übergeordnete Ziel dieses Designchallenge-Projektes ist die Entwicklung eines interaktiven und attraktiven Planspiels zur Klimakrise, das speziell darauf ausgerichtet ist, Jugendliche und junge Erwachsene zu engagieren und zu motivieren.

- Interdisziplinäre Zusammenarbeit in heterogenen Teams
- Entwicklung eines interaktiven Planspiels zur Klimakrise
- Gestaltung lernwirksamer und motivierender Lernumgebungen
- Umsetzung wesentlicher Erkenntnisse relevanter Forschungszweige in das Planspieldesign
- Zielgruppenspezifische Ansprache von Jugendlichen und jungen Erwachsenen
- Einsatzmöglichkeiten des Planspiels in Schule und Hochschule
- Identifikation und Integration nachhaltiger Handlungsoptionen
- Erstellung eines spielbaren Prototyps
- Input und Unterstützung von Expertinnen und Experten aus verschiedenen Bereichen
- Pädagogisch-psychologische Lehr-Lernforschung
- Gamedesign zu Nachhaltigkeitsthemen
- Gestaltung innovativer demokratischer Prozesse

- Anwendung von Design Thinking Methoden
- Nutzung technischer Tools und Software im Gamedesign
- Sicherstellung der Praxistauglichkeit des Designs für den schulischen Kontext
- Skalierbarkeit und Verbreitung des Planspiels als ready-to-use Produkt
- Erweiterung von Wissen und Kompetenzen der Teilnehmenden in interdisziplinären Bereichen
- Entwicklung kreativer und innovativer Lösungen für Klimabildungsprojekte
- Effektive Kommunikation von Ideen und Ergebnissen an verschiedene Zielgruppen

**Intended Learning Outcomes:**

1. Verständnis komplexer Zusammenhänge und Herausforderungen der Klimakrise sowie Entwicklung nachhaltiger Handlungsoptionen.
2. Verständnis relevanter Modelle und Befunde der pädagogisch-psychologischen Lehr-Lernforschung und des lernwirksamen Gamedesigns.
3. Anwendung von Methoden des Design Thinkings zur Entwicklung innovativer Planspiel-Prototypen.
4. Fähigkeit, effektiv in heterogenen, interdisziplinären Teams zusammenzuarbeiten, um gemeinsam Prototypen zu entwickeln.
5. Effektive Kommunikation von Ideen und Ergebnissen der Projekte an Fachleute, Lehrkräfte und Schüler/Schülerinnen.

**Teaching and Learning Methods:**

Designchallenge, Projektarbeit, Gruppenarbeit, Vorträge, Recherchen, Vorbereiten und Durchführen von Präsentation, Reflexionssessions, Selbststudium, Onlinekurse;

**Media:**

**Reading List:**

**Responsible for Module:**

Knogler, Maximilian; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Design Challenge: Addressing the Climate Crisis through Gaming Simulation (Projekt, 4 SWS)

Knogler M [L], Knogler M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT60300: Kontextlehre WTG (former Carl von Linde-Akademie) | Kontextlehre WTG (ehem. Carl von Linde-Akademie)**

**SOT60301: Science & Technology | Wissenschaft & Technik**

**SOT603011: 1 Credit Modules | 1 Credit Module**

**Module Description**

**CLA10349: Tech-Histories Alive | Tech-Histories Alive**

Version of module description: Gültig ab winterterm 2002/03

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 23	<b>Contact Hours:</b> 7

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Die Studierenden nehmen an dem Workshop „Oral History“ und dem Vorstellungsvortrag teil und verfassen entweder einen schriftlichen Bericht (1000 Wörter, unbenotet), indem sie die Inhalte des Vortrags wiedergeben und reflektieren, oder entwickeln ein Interviewkonzept, das anlässlich des Vorstellungsvortrags zur Anwendung gelangt.

**Repeat Examination:**

**(Recommended) Prerequisites:**

**Content:**

An der TU München werden seit 2007 herausragende Wissenschaftlerinnen und Wissenschaftler, die sich auch nach ihrem aktiven Dienst in besonderem Maße in Forschung und Lehre oder für die Universität im Ganzen engagieren, mit dem Ehrentitel TUM Emeriti of Excellence ausgezeichnet. Die hochkarätig besetzten Vorträge bieten Studierenden und Graduierten die Möglichkeit, an der reichhaltigen Forschungs- und Lehrerfahrung unserer Emeriti und Emeritae of Excellence teilzuhaben.



**Intended Learning Outcomes:**

Die Teilnehmer verfügen über Erfahrung, wissenschaftlichen Vorträgen (auch außerhalb ihrer Fachrichtung) zu folgen und die zentralen Thesen zu identifizieren. Sie sind in der Lage, sich in der Öffentlichkeit dem akademischen Rahmen gemäß zu artikulieren, persönliche Informationsdefizite durch Rückfragen zu schließen, Verbindungen zu eigenen Wissensbeständen herzustellen und Ergänzungen oder Einwände zur Sprache zu bringen.

**Teaching and Learning Methods:**

Vortragsreihe

**Media:**

**Reading List:**

**Responsible for Module:**

Prof. Dr. Daniela Zetti

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603012: 2 Credits Modules | 2 Credits Module****Module Description****CLA20201: Complex Systems | Komplexe Systeme**

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Die Studierenden zeigen in einer Präsentation zu Modellierungskonzepten oder fachspezifischen Anwendungen, dass sie die Grundbegriffe der Theorie komplexer Systeme verstehen und bei der Vermittlung fächerübergreifender Methoden adäquat anwenden können.

**Repeat Examination:****(Recommended) Prerequisites:****Content:**

Die Themen Komplexität und Komplexe Systeme sind ein hochaktuelles Forschungsgebiet in Natur-, Ingenieur-, Wirtschafts- und Sozialwissenschaften. Komplexe dynamische Systeme (z.B. Materialien, Strömungen, Wetter, Organismen, Populationen, Märkte, Gesellschaften) bestehen aus vielen Elementen (z.B. Moleküle, Zellen, Menschen), aus deren Wechselwirkungen neue Ordnungen und Strukturen, aber auch Instabilität und Chaos entstehen.

Können wir aus Chaostheorien, aus der Entstehung von Ordnung und Selbstorganisation in der Natur lernen, unsere technischen und sozialen Systeme zu steuern? Wo sind grundlegende Unterschiede in der Dynamik von Natur und Gesellschaft? Welche Konsequenzen ergeben sich für unser Handeln?

1. Grundbegriffe der Systemtheorie
2. Modellierung dynamischer Systeme in Natur-, Technik- und Sozialwissenschaften (Themenfelder: Evolution, Geist und Gehirn, Wirtschaft und Gesellschaft)
3. Philosophische Implikationen in Wissenschaftstheorie und Ethik

**Intended Learning Outcomes:**

Die Teilnehmer sind in der Lage Grundlagen der fachübergreifenden Systemforschung zu reproduzieren und anhand exemplarischer Themenfelder der Modellierung dynamischer Systeme in Natur-, Technik- und Sozialwissenschaften darzustellen. Insbesondere können sie ihre Erfahrungen in der interdisziplinären Vermittlung und Transformation fachspezifischen Wissens ausführen.

**Teaching and Learning Methods:**

Vorlesung, Referate, Selbststudium

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20704: Thinking, Perceiving, and Knowing | Denken, Erkennen und Wissen

Version of module description: Gültig ab winterterm 2010/11

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 37	<b>Contact Hours:</b> 23

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einer Modulprüfung in Form eines Vortrags (Präsentation) abgeschlossen. Im Vortrag dokumentieren die Studierenden, dass sie zentrale Grundprobleme der Erkenntnistheorie verstanden haben und veranschaulichen können (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Das Seminar vermittelt einen historisch-systematischen Überblick der europäischen Klassiker der Erkenntnistheorie. Zentrale Fragen und Problemstellung der Erkenntnistheorie von der Neuzeit bis zur Gegenwart werden erarbeitet, zur Diskussion gestellt und bzgl. ihrer Relevanz für gegenwärtige Positionen in Wissenschaft und Gesellschaft eingeordnet.

Themenbereiche:

- neuzeitliche Erkenntnismodelle
- historisch-systematischer Überblick: Empirismus, Rationalismus, Idealismus, linguistic turn, pragmatic turn und naturalisierte Erkenntnismodelle

#### Intended Learning Outcomes:

Die Teilnehmer besitzen Grundkenntnisse über exemplarische Problemfelder der Erkenntnistheorie und verstehen Grundprobleme des Erkennens. Sie sind in der Lage, deren Relevanz für moderne Erkenntnis- und Wissenschaftskonzepte sowie für die Gesellschaft argumentativ einzuordnen.

**Teaching and Learning Methods:**

Vorlesung, textbasiertes Seminar, Referate, Gruppenarbeit, Diskussion, Selbststudium insbes.  
Lektüre / Erarbeitung von Texten

**Media:**

Skripte / Reader, Thesenpapiere, Tafelbilder, Power-Point

**Reading List:**

**Responsible for Module:**

PD Dr. Jörg Wernecke

**Courses (Type of course, Weekly hours per semester), Instructor:**

PD Dr. Jörg Wernecke

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21106: Emergence and Complex Systems | Emergenz und komplexe Systeme

Version of module description: Gültig ab winterterm 2009/10

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer Präsentation stellen die Studierenden Konzepte von Emergenz dar und wenden diese auf Beispiele an (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

"More is different: das Ganze ist nicht mehr, sondern etwas Anderes als die Summe seiner Teile" (der Physiker und Nobelpreisträger Philip W. Anderson).

In den Natur- und Ingenieurwissenschaften und der Informatik wird der Emergenzbegriff vielfach, aber oft in ganz unterschiedlicher Weise verwendet. Dieses Seminar will zum besseren Verständnis und der kompetenten, nichttrivialen Verwendung dieses facettenreichen Begriffs beitragen. Auf Basis neuerer Publikationen soll die Geschichte des Emergenzbegriffs herausgearbeitet werden sowie philosophische und naturwissenschaftliche Perspektiven dargestellt werden. Das Ziel ist die kritische Sicht auf diesen so schillernden Begriff, denn „Emergence, largely ignored just thirty years ago, has become one of the liveliest areas of research in both philosophy and science" (M. Bedeau 2008).

Das Seminar gibt eine Übersicht über den Stand der Diskussion zum Emergenzbegriff und zu Emergenztheorien. Aktuelle Beispiele aus den Einzelwissenschaften legen die Basis, sich mit diesem Begriff eigenständig auseinanderzusetzen und neue Einsichten zu gewinnen.

**Intended Learning Outcomes:**

Nach der Teilnahme sind die Studierenden in der Lage emergente Phänomene auf Basis aktueller Theorien zu analysieren. Durch den interdisziplinären Ansatz können die Studierenden über Fachbereichsgrenzen hinaus relevante Fragen diskutieren.

**Teaching and Learning Methods:**

Textlektüre, Gruppenarbeit, Präsentation und Diskussion

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Sabine Thürmel

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21115: Philosophy of Human-Machine Interaction | Philosophie der Mensch-Maschine-Beziehung

Version of module description: Gültig ab winterterm 2014/15

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden bereiten eine Präsentation vor (Prüfungsleistung), in welcher sie aufzeigen, dass sie die unterschiedlichen Formen der Mensch-Maschine-Interaktion verstehen.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Wie können die Interaktionen zwischen Menschen und Maschinen aussehen, wenn Letztere nicht bloße, allein vom Menschen zu steuernde Automaten sind? Welche Interaktionsformen sind – derzeit und in Zukunft – denkbar, möglich und erstrebenswert?

Zentrale Leitfragen des Seminars sind u.a.: Wie kommunizieren und interagieren Mensch und Computer/Maschine? Welche Grade und Modelle von Automatisierung, Kooperation und Autonomie menschlicher und technischer Agenten sind praktisch relevant, welche erkenntnistheoretisch begründbar, welche ergonomisch zu präferieren? Wie wird das Beziehungsgefüge von Mensch und Maschine ethisch bewertet, wie rechtlich normiert?

#### Intended Learning Outcomes:

Nach erfolgreicher Teilnahme am Seminar sind die Studierenden in der Lage, unterschiedliche Formen der Mensch-Maschine-Interaktion zu verstehen. Insbesondere können sie den derzeitig zu beobachtenden Übergang von der Automatisierung zur Mensch-Maschine-Kooperation aus unterschiedlichen Perspektiven (z.B. ergonomisch, epistemologisch, ethisch) analysieren.



**Teaching and Learning Methods:**

Vergleichende Textanalyse und Textinterpretation, wissenschafts- und erkenntnistheoretische sowie ethische Analyse und Bewertung (methodische Elemente: Sprach- und Begriffsanalyse, Hermeneutik/Logik; problem-oriented learning)

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

LLMs and Human Language Use - Philosophical Questions Concerning Contemporary AI  
(Seminar, 2 SWS)  
Durt C

Mensch, Maschine und Interaktion (Subversive und konstruktive Beziehungen zwischen Mensch und Maschine) (Seminar, 1,5 SWS)

Tremmel S, Slanitz A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21314: Introduction to Philosophical Thinking | Einführung ins philosophische Denken

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird in Form eines Referats (Textvorbereitung) oder eines Protokolls als Nachweis für ein problemorientiertes Textverständnis abgeschlossen. Voraussetzung für den Leistungsnachweis ist das Bearbeiten einer vorbereitenden Lektüre und Mitarbeit in Gruppenübungen und Diskussionen.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Was ist Philosophie? Wie denken Philosophen? Wie argumentieren sie in ihren Texten? Wie kann man diese besser verstehen? Mittels der gemeinsamen Lektüre eines klassischen oder mehrerer Primärtexte zu einem Thema erhalten die TeilnehmerInnen einen Einblick in Probleme und Methoden der Philosophie, ihrer Bedeutung und Grenzen. Insbesondere in den Blick genommen werden dabei Probleme der modernen Natur- und Ingenieurwissenschaften wie:

- Wie ist sicheres Wissen möglich?
- Was ist Natur?
- Wo beginnt Leben?
- Wie können wir gerecht handeln?
- Wann sind wir frei?

#### Intended Learning Outcomes:

Nach der erfolgreichen Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage

- eine erste Antwort auf die Frage nach der Philosophie zu geben.

- verschiedene Herangehensweisen zur Erschließung eines philosophischen Textes zu gebrauchen und insbesondere ein Exzerpt des Textes anzufertigen und entsprechende Thesen aufzustellen (Problematisieren, nicht Nacherzählen)
- einen Bezug zu aktuellen Problemen der technisierten Wissensgesellschaften herzustellen.

**Teaching and Learning Methods:**

Seminar, Referate (Textvorbereitung) oder Protokolle, gemeinsame Lektüre und Textarbeit, Diskussionen, Selbststudium und insbesondere eigenständige Erarbeitung eines Themas, Gruppenarbeit, JiTT, Blended Learning

**Media:**

Tafelbilder, Präsentationen, Handouts, Moodlekurs

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Philosophische Argumente – eine Einführung in das philosophische Denken (Seminar, 1,5 SWS)

Ott M ( Pereira Beloch L )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603013: 3 Credits Modules | 3 Credits Module

### Module Description

## CLA30202: Mind - Brain - Machine | Geist - Gehirn - Maschine

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

Smarte Maschinen und lernfähige Programme bestimmen die Infrastruktur und steuern die immer komplexer werdenden Abläufe in unserer technisierten Welt. Ingenieure interessieren sich für Wahrnehmung, Denken und Bewusstsein, um Roboter mit Fähigkeiten der Selbstorganisation auszustatten. Damit werden uralte Menschheitsfragen nach Geist, Seele und Bewusstsein berührt, welche die Philosophie seit ihren Anfängen beschäftigen.

Wo stehen wir heute im Brennpunkt von Neurophilosophie, Informatik und Robotik? Wie verstehen die Kognitionswissenschaften (Cognitive Science) Intelligenz und Bewusstsein? Und welche Konsequenzen haben diese Konzepte für die Anwendung, beispielsweise bei der Analyse von Entscheidungsprozessen Human-centered Design?

#### Intended Learning Outcomes:

Die Studierenden verfügen nach erfolgreicher Teilnahme über

- ein breites Verständnis von Konzepten des Geistes in verschiedenen Disziplinen wie Linguistik, Psychologie, Neurowissenschaften, Philosophie, Informatik und Anthropologie

- ein detailliertes Wissen über mindestens ein Beispiel für die Anwendung von Konzepten des Geistes, z. B. in Bezug auf die kognitiven Prozesse, die dem Nutzerverhalten im Rahmen des human-centered Design zugrunde liegen
- die Fähigkeit, akademisches Fachwissen durch den Einsatz verschiedener Präsentationstechniken zu vermitteln

**Teaching and Learning Methods:**

**Media:**

**Reading List:**

**Responsible for Module:**

Slanitz, Alfred; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA30210: Philosophy of Technology | Technikphilosophie

Version of module description: Gültig ab summerterm 2010

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Im Rahmen einer Präsentation (30 min.) zeigen die Studierenden, dass sie in der Lage sind, auf Grundlage eines Textes ein technikphilosophisches Problem zu identifizieren und mit Bezug zum eigenen Fach sowie zu aktuellen Kontexten zu diskutieren (Prüfungsleistung 1). Durch Rekapitulationen (Zusammenfassung von Präsentation und Diskussionen) zeigen die Studierenden, dass sie Diskussionen nachvollziehen und dazu beitragen können (Prüfungsleistung 2).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

Technikphilosophie fragt nach dem, was Technik ist, wie technische Gebilde entstehen können und welche Folgen deren Verwendung hat. Das Modul bietet eine Einführung in folgende Themenfelder:

1. Mensch - Technik - Natur
2. Wissenschaft und Technik
3. Kultur der Technik
4. Technik und Ethik

#### Intended Learning Outcomes:

Die Teilnehmer sind in der Lage, philosophische Probleme der Technik zu verstehen und einen Text insbesondere auf den implizierten Technikbegriff hin zu analysieren. Zudem verfügen sie über Erfahrungen in der interdisziplinären Vermittlung und Reflexion fachspezifischen Wissens. Sie

sind zudem in der Lage an Diskussionen zu technikphilosophischen Problemen in mündlicher und schriftlicher Form beizutragen und wesentliche Punkte darzustellen.

**Teaching and Learning Methods:**

Textbasiertes Seminar, Referate, Diskussionen, Gruppenarbeit, Selbststudium insbes. Lektüre/ Erarbeitung von Texten, Online-Forum

**Media:**

**Reading List:**

**Responsible for Module:**

Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

Technikphilosophie - Texte zur Einführung (Seminar, 2 SWS)

Slanitz A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA31214: Classics of Natural Philosophy | Klassiker der Naturphilosophie

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit zwei Teilprüfungen abgeschlossen: 1) einem Referat (Textvorbereitung) oder Protokoll als Nachweis für problemorientiertes Textverständnis sowie 2) einem Essay (1000-1500 Wörter), in dem die Studierenden Aspekte des in den Natur- und Ingenieurwissenschaften vorausgesetzten Naturbegriffs analysieren

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Lektüre eines klassischen Werkes oder mehrerer klassischer Texte beziehungsweise Textausschnitte zur Naturphilosophie.

Die Naturwissenschaften untersuchen in einem Zusammenspiel von Empirie und Modell den Gegenstand Natur, den sie – in der Regel mehr oder weniger unreflektiert – voraussetzen. Die Naturphilosophie versucht darüber hinausgehend die Bedingungen der Möglichkeit sowie die Voraussetzungen für die Konstituierung dieses Untersuchungsgegenstandes aufzuhellen.

#### Intended Learning Outcomes:

Nach der erfolgreichen Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage

- mindestens eine naturphilosophische Position in ausgewählten Aspekten darzustellen.
- wesentliche naturphilosophische Aussagen eines naturphilosophischen Textes zu identifizieren.
- Beziehungen zu heutigen wissenschafts- oder technikphilosophischen Problemen herzustellen.



- Teilaspekte des in den Natur- und Ingenieurwissenschaften jeweils vorausgesetzten Naturbegriffs aus einer bestimmten naturphilosophischen Perspektive zu charakterisieren

**Teaching and Learning Methods:**

Seminar, Referate (Textvorbereitung) oder Protokolle, gemeinsame Lektüre und Textarbeit, Diskussionen, Selbststudium (insbesondere eigenständige Erarbeitung eines Themas, Gruppenarbeit)

**Media:**

Tafelbilder, Präsentationen, Handouts, Moodlekurs

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Klassiker der Naturphilosophie - für Ingenieur- und Naturwissenschaftler (Seminar)

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED0038: Technology, Economy, Society | Technik, Wirtschaft und Gesellschaft

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The assessment consists of a written assignment (7800-8200 characters) which is due at the end of the semester. Students interpret research literature with respect to sociotechnical problems to analyze the development of technology in social, economic, and political contexts.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

The course does not require any special prior knowledge.

#### Content:

In this course, an approach to the political, economic, social and cultural dimensions of technology development is acquired. Selected historical and current examples will be analyzed to see how technical artifacts, processes and services emerge. Under which social conditions, in which economic situations and political contexts does technology emerge? How is it discussed, implemented, changed or discarded?

#### Intended Learning Outcomes:

Students will be able to identify examples of the historical dimensions of processes of technification and to understand the emergence and use of technical offerings in their concrete historical context.

#### Teaching and Learning Methods:

Lecture, self-study, case studies, writing of smaller thematic papers.

**Media:**

electronic lecture notes, presentations

**Reading List:**

- Nelly Oudshoorn and Trevor Pinch (Eds.), How Users Matter. The Co-Construction of Users and Technology. Cambridge, Mass. 2005.
- Gernot Rieder, Judith Simon and Pak-Hang Wong, Mapping the Stony Road Towards Trustworthy AI, in: Pelillo, Marcello and Scantamburlo, Teresa (Eds.), Machines We Trust: Perspectives on Dependable AI. Cambridge, Mass. 2021, <http://dx.doi.org/10.2139/ssrn.3717451> .
- Philip Scranton, Urgency, Uncertainty, and Innovation: Building Jet Engines in Postwar America, in: Management & Organizational History, 2006, 1:2, 127-157, <https://doi.org/10.1177/1744935906064096>.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED00472: History of Technology in Modern Times I | Geschichte der Technik in der Moderne I

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 30.

Besuch der Vorlesung im Umfang von 2 SWS (2 SWS = 1 CP); Lektüre von Texten (30 h = 1 CP); mündliche Prüfung mit Vorbereitung des Vertiefungsthemas (30 h = 1 CP)

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

keine

#### Content:

In vier Teilen zu je einem Semester werden in dieser Vorlesung die wichtigsten Entwicklungen in der Geschichte der Technik von der Frühgeschichte bis in die Gegenwart in chronologischer Reihenfolge behandelt. Dieser Zyklus bietet sowohl unentbehrliches Grundlagenwissen wie auch eine theoretische und methodische Einführung in die Grundprobleme des Faches Technikgeschichte. Die Vorlesungen als Zyklus können auch einzeln besucht werden: Geschichte der Technik in Antiquität und Mittelalter/in der Frühen Neuzeit/in der Moderne I/in der Moderne II.

#### Intended Learning Outcomes:

Die Teilnehmer erhalten einen Überblick zur Geschichte der Technik im Kontext der allgemeinen historischen Entwicklung. Sie sind in der Lage, Informationen und Quellen eigenständig aufzubereiten und zu bewerten. Sie können komplexe Sachverhalte und Argumentationen systematisch analysieren sowie klar und strukturiert vermitteln. Insbesondere entwickeln sie die Fähigkeit, fachspezifisches Wissen in übergreifende Zusammenhänge zu integrieren und interdisziplinär zu vermitteln.

**Teaching and Learning Methods:**

Vermittlung der Vorlesung mit multimedialer Unterstützung, elektronischem Skript und Literaturhinweisen zur Vertiefung

**Media:**

Skripte/Reader, Power-Point, Literatur zur Lektüre

**Reading List:**

Wird von Semester zu Semester aktualisiert bereit gestellt.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### ED00473: History of Technology in Modern Times II | Geschichte der Technik in der Moderne II

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Prüfungsdauer (in min.): 30.

Besuch der Vorlesung im Umfang von 2 SWS (2 SWS = 1 CP); Lektüre von Texten (30 h = 1 CP); mündliche Prüfung mit Vorbereitung des Vertiefungsthemas (30 h = 1 CP)

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

keine

#### Content:

In vier Teilen zu je einem Semester werden in dieser Vorlesung die wichtigsten Entwicklungen in der Geschichte der Technik von der Frühgeschichte bis in die Gegenwart in chronologischer Reihenfolge behandelt. Dieser Zyklus bietet sowohl unentbehrliches Grundlagenwissen wie auch eine theoretische und methodische Einführung in die Grundprobleme des Faches Technikgeschichte. Die Vorlesungen als Zyklus können auch einzeln besucht werden: Geschichte der Technik in Antiquität und Mittelalter/in der Frühen Neuzeit/in der Moderne I/in der Moderne II.

#### Intended Learning Outcomes:

Die Teilnehmer erhalten einen Überblick zur Geschichte der Technik im Kontext der allgemeinen historischen Entwicklung. Sie sind in der Lage, Informationen und Quellen eigenständig aufzubereiten und zu bewerten. Sie können komplexe Sachverhalte und Argumentationen systematisch analysieren sowie klar und strukturiert vermitteln. Insbesondere entwickeln sie die Fähigkeit, fachspezifisches Wissen in übergreifende Zusammenhänge zu integrieren und interdisziplinär zu vermitteln.

**Teaching and Learning Methods:**

Vermittlung der Vorlesung mit multimedialer Unterstützung, elektronischem Skript und Literaturhinweisen zur Vertiefung

**Media:**

Skripte/Reader, Power-Point, Literatur zur Lektüre

**Reading List:**

Wird von Semester zu Semester aktualisiert bereit gestellt.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Geschichte der Technik in der Moderne II: das 20. Jahrhundert (Vorlesung, 2 SWS)

Reichenberger A ( Goricki-Eickel T )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603015: 5 Credits Modules | 5 Credits Module****Module Description****ED0141: Logic | Logik**

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Prüfungsdauer (in min.): 90.

Das Modul wird mit einer Modulprüfung in Form einer Klausur abgeschlossen. Um die Lernziele zu erreichen, ist neben theoretischem Input und Eigenstudium auch aktive Mitarbeit im Rahmen der Lehrveranstaltung notwendig. Deshalb werden Mid-Term-Leistungen angeboten, die - als Anreiz für die Studierenden - zu einer Verbesserung der Bewertung der Modulprüfung führen können. Mögliche Mid-Term-Leistungen sind: Referat, Gespräch, Protokoll/Rekapitulation, Essay, Mitarbeit in der Präsenzzeit und in Online-Foren, Übungs-/Hausaufgaben. Art und Umfang der vorgesehenen Mid-Term-Leistungen werden in der Beschreibung der Lehrveranstaltung veröffentlicht. Die Mid-Term-Leistungen werden nicht benotet. Werden die Mid-Term-Leistungen vollständig erbracht, verbessert sich die Modulnote um 0,3, wenn dies auf Grund des Gesamteindrucks den Leistungsstand des Studierenden besser kennzeichnet und die Abweichung auf das Bestehen der Prüfung keinen Einfluss hat. Bestandene Mid-Term-Leistungen werden bei der Wiederholung einer nicht bestandenen Modulprüfung berücksichtigt.

**Repeat Examination:**

End of Semester

**(Recommended) Prerequisites:**

keine

**Content:**

Die Logik untersucht Fragen wie: Was ist ein korrektes Argument? Was ist ein zulässiger Schluss? Was ist ein Beweis? Was ist eine formale Sprache? Was ist eine Struktur? Was ist eine Theorie und ein Modell einer Theorie? Was kann ein formales System leisten und was nicht? Was kann



algorithmisch berechnet werden und was nicht? Was sind die Grundlagen der Mathematik und der Informatik?

Das Modul bietet eine allgemeine Einführung in die Logik, die diesen Fragen exemplarisch nachgeht.

**Intended Learning Outcomes:**

Die Teilnehmer sind in der Lage, grundlegende Begriffe der Logik und ihre formale mathematische Darstellung zu verstehen. Sie können zwischen Syntax und Semantik unterscheiden und diese Konzepte in Problemanalysen anwenden. Sie haben ein vertieftes Verständnis von Argumentieren und Modellieren erworben und können dadurch allgemein komplexe Sachverhalte besser analysieren und darstellen.

**Teaching and Learning Methods:**

Vorlesung, Gruppenarbeit, Selbststudium, Übungen

**Media:**

Skripte/Reader, Thesenpapiere, Tafelbilder

**Reading List:**

**Responsible for Module:**

Oliver Deiser (deiser@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Propositional and First-Order Predicate Logic (Lecture) (Vorlesung, 2 SWS)  
Centrone S

Propositional and First-Order Predicate Logic (Exercise) (Übung, 2 SWS)  
Centrone S ( Anishchenko M )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603016: 6 Credits Modules | 6 Credits Module****Module Description****SOT56307: Philosophy of Artificial Intelligence: Key Readings | Philosophie der Künstlichen Intelligenz: Schlüsseltexte**

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In an oral examination (30 minutes), students will demonstrate their ability to interpret philosophical texts on AI topics and discuss their approaches in relation to current debates.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:****Content:**

Can machines learn and think? How do AI systems differ from human thought, speech, and action? How is AI changing knowledge and science? What are the ethical risks? And how should the basic assumptions of AI research and development be considered? Assigned courses address AI-related topics from a variety of philosophical perspectives, including logic, philosophy of language, philosophy of mind, knowledge, and science, philosophical anthropology and ethics.

**Intended Learning Outcomes:**

Students are able to,

- understand texts on philosophical issues in the context of artificial intelligence
- identify and exemplify philosophical concepts relevant to AI phenomena
- apply philosophical concepts to discuss current AI phenomena (selected examples).

**Teaching and Learning Methods:**

Seminar: readings and discussions of texts including teaching on historical and philosophical contexts and discussions to argue their relevance for current debates.

**Media:**

Online Reader

**Reading List:**

Margaret A. Boden (Ed.): The Philosophy of Artificial Intelligence, Oxford 1990

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Philosophy of Artificial Intelligence. Classical Readings in the Phenomenology of AI (Seminar, 3 SWS)

Centrone S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT56401: Applied Philosophy of Quantum Theory | Applied Philosophy of Quantum Theory

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module exam consists of a written test (90 minutes) in which the students show their ability to outline certain key aspects of quantum physics and to explain how quantum computability can overcome certain challenges of classical computability in certain applications.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

Quantum Theory is an essential part of our modern life and future. Since the growing amount of data poses difficulties for classical computability, questions arise about the possibility for quantum computability to overcome these challenges.

In this course, we will not only learn about quantum theory and its prospects but also solve concrete tasks with both classical and quantum computability methods.

#### Intended Learning Outcomes:

This module is organized around a set of conceptual questions presented by quantum physics and AI. By the end of the course, students will be able to explain certain key aspects of quantum physics, such as wave-particle duality, measurement, and entanglement, as well as the relation between quantic and classical computability and some application of quantum formalism to machine learning. They will be aware of the deep relationship between quantum physics and philosophical analysis and will have developed core philosophical skills.

**Teaching and Learning Methods:**

Lecture with integrated exercises. The course will be interactive: during the lectures, short assignments will be given that students can complete from their own computers. Weekly readings will be made available online.

**Media:**

Online lectures, Readings on Moodle

**Reading List:**

- 1) M.A. Nielsen, I.L. Chuang, Quantum Computation and Quantum Information. Cambridge University Press (9th Edition, 2010).
- 2) R. Giuntini, A.C. Granda Arango, H. Freytes, F.H. Holik, G. Sergioli (2023). Multi-class classification based on quantum state discrimination. FUZZY SETS AND SYSTEMS, 467-108509. ISSN: 1872-6801, Elsevier.
- 3) G. Sergioli, C. Militello, L. Rundo, L. Minafra, F. Torrisi, G. Russo, K.L. Chow, R. Giuntini (2021). A quantum-inspired classifier for clonogenic assay evaluations. SCIENTIFIC REPORTS 11-2830, ISSN 2405-2322, Nature.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT60302: Media & the Public | Medien & Öffentlichkeit

### SOT603021: 1 Credit Modules | 1 Credit Module

#### Module Description

### CLA10029: Writer's Lab | Writer's Lab

Version of module description: Gültig ab winterterm 2012/13

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 22	<b>Contact Hours:</b> 8

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden zeigen in einer Textprobe (3-5 Seiten) für das online Lektorat, dass sie korrekte Zitiersysteme, Literaturnachweise und Argumentationsstrukturen umsetzen können (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Ob wissenschaftliche Ausarbeitung, Exposé, oder Artikel in einer Fachzeitschrift: Schreibkompetenz ist ein Erfolgsfaktor. Die erste Sitzung des Workshops führt an das Schreiben und Strukturieren wissenschaftlicher Texte heran. In der Zeit bis zur zweiten Sitzung steht Ihnen die Referentin für ein Feedback zu individuellen Texten per E-Mail zur Verfügung. Die abschließende Sitzung dient dazu, allgemein wiederkehrende Problematiken zu besprechen sowie Tipps zum Sprachstil und Layout zu vermitteln.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage

- Zitiersysteme zu unterscheiden und Literaturnachweise im eigenen Text formal richtig aufzuschreiben
- unterschiedliche wissenschaftliche Argumentationsstrukturen anzuwenden
- wissenschaftliche Sprache hinsichtlich Stil und Lesbarkeit zu optimieren

- sich in kleinen Gruppen Feedback auf die eigenen Texte zu geben

**Teaching and Learning Methods:**

Dozentenvortrag, praktische Textübungen, individuelles Online-Lektorat

**Media:**

**Reading List:**

Schneider, W. (2010). Deutsch für junge Profis – wie man gut und lebendig schreibt, Berlin: Rowohlt.

Kruse, O. (2007). Keine Angst vorm leeren Blatt. Ohne Schreibblockaden durchs Studium, Frankfurt/New York: Campus.

Esselborn-Krumbiegel, H. (2002). Von der Idee zum Text. Eine Anleitung zum wissenschaftlichen Schreiben, Paderborn u. a.: Schöningh.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Writer's Lab - Scriptorium (Workshop, ,5 SWS)

Uecker K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10269: Communication and Personality | Kommunikation und Persönlichkeit

Version of module description: Gültig ab summerterm 2011

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studierende zeigen die Bereitschaft, konkrete eigene fragliche Kommunikationssituationen einzubringen und gegebenenfalls zu inszenieren (Studienleistung). In einer Klausur zeigen die Studierenden, dass sie die verschiedenen Voraussetzungen für gelungene Kommunikation verstehen und bestimmte Kommunikationsmuster unterscheiden können (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

„Man kann nicht nicht kommunizieren“ (P. Watzlawick) – Kommunikation ist also keine Kompetenz neben anderen, Kommunikation geschieht immer. In ihr kommt unsere Persönlichkeit zum Ausdruck und die unterschiedlichen Weisen, wie wir mit Menschen und auch Dingen in Beziehung stehen. Kommunikation und Beziehungsgestaltung sind zentrale Faktoren für die persönliche Lebensqualität und sie entscheiden wesentlich über den Erfolg und die Zufriedenheit in beruflichen Belangen.

Der Workshop bietet zum einen grundlegende und praxisnahe Einsichten der Kommunikationspsychologie, zum anderen ermöglicht er ein vertieftes Verständnis der eigenen Persönlichkeit in der Dynamik von Beziehungen und in Arbeitsstrukturen.

#### Intended Learning Outcomes:

Nach erfolgreicher Teilnahme an diesem Modul sind die Studierenden in der Lage:

- Kommunikation in ihrer Vielschichtigkeit zu verstehen
- zentrale Aspekte gelingender Beziehung und klärender Kommunikationsgestaltung anzuwenden



- eigene Kommunikationsmuster zu identifizieren
- das Entwicklungspotenzial im eigenen Kommunikationsverhalten zu erfassen und umzusetzen.

**Teaching and Learning Methods:**

Präsentation und Diskussion

Erlebnisaktivierende Inszenierung von Kommunikationssituationen

Supervisorisches Coaching zur Klärung von Fragen aus eigenen Kommunikationssituationen der TeilnehmerInnen

Feedback im Rahmen der Gruppe.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Standing, Voice and Communication - für Frauen (Ausgestattet mit Ausstrahlung und einer Stimme, die trägt) (Workshop, 1 SWS)

Herrmann A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10348: Become Successful Through Writing | Schreiben Sie sich erfolgreich

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 8	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einem Textentwurf zeigen die Studierenden, dass sie einen Text so aufbauen, strukturieren und formulieren können, dass er seinen Zweck erfüllt. Die Studierenden sind in der Lage zeitnah und selbstständig einen adequaten Text zu verfassen.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Eine klar strukturierte E-Mail, ein spannendes Protokoll, eine brillant formulierte wissenschaftliche Veröffentlichung. Mit souveränen Texten überzeugen Sie Professoren, Dozenten und Kollegen. Ein guter Schreibstil unterstützt Sie bei Ihrer späteren beruflichen Karriere. In diesem Workshop lernen Sie kurz schreiben, verständlich schreiben, strukturiert schreiben, schnell schreiben. Alles, worauf es beim Schreiben ankommt, ganz gleich für wen oder in welcher Situation Sie einen schriftlichen Text verfassen. Schreiben ist ein Handwerk, das auch Sie in diesen zwei Workshop-Tagen erlernen können. Ziel ist es, dass Sie mit Freude und Spaß formulieren, dann werden Sie auch Ihre Leser für sich gewinnen.

Bitte bringen Sie zu der Veranstaltung Ihr eigenes Notebook mit.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage, einen Text flüssig zu verfassen. Sie wissen, wie sie einen Text aufbauen und formulieren. Wie sie ihre Leser am besten erreichen und

für die Inhalte interessieren. Ganz gleich ob es sich um einen wissenschaftlichen Text, eine E-Mail, ein Protokoll oder ein Bewerbungsschreiben handelt.

**Teaching and Learning Methods:**

**Media:**

**Reading List:**

**Responsible for Module:**

Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10412: Technical Writing (Engineer Your Text!) | Technical Writing (Engineer Your Text!)

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

For their coursework (=immanent examination), students may choose between writing a short persuasive essay or a proposal (max. 1000 words); alternatively, they may compile a scientific abstract for a (hypothetical) paper (max. 250 words) or their thesis (max. 500 words). It is particularly important that students show sensitivity for different audiences and demonstrate their developed knowledge about argumentational structures in the chosen assignment.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Students require adequate English skills (intermediate to post-intermediate).

#### Content:

Fuel your studies by the alternative energy of this workshop. Maximize your skills to write. Increase your writing efficiency. Use sustainable strategies and quality tools. Learn to write TUM (Technical, Understandable, Manageable) documents.

This course will focus on the fundamentals of text manufacturing: materials, processes, designs, assembly methods, quality management, and performance monitoring.

#### Intended Learning Outcomes:

By the end of the course, you are expected to be able to

- identify the role of psychological factors in writing and reading.
- recognize the needs of different audiences.
- show sensitivity to usability demands.
- analyze technical documents and locate features of best-practice writing.

- organize and manage your own writing.

**Teaching and Learning Methods:**

The workshop uses a constructivist approach to document analysis and text production based on recent academic literacy research. Cooperative learning methods like discussions, small group work, peer review, some direct instruction, and the independent work of the students ensure the diversity of knowledge transfer.

**Media:**

Flipcharts, exercise portfolio, Moodle

**Reading List:**

Gopen, G. D. and Swan, J. A. (1990). The science of scientific writing. *American Scientist*, 78:57-63. Please access this article in advance at: <http://www.americanscientist.org/issues/feature/the-science-of-scientific-writing>

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Engineer Your Text! (Technical Writing for People Who Want More) (Workshop, 1 SWS)

Balazs A

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### CLA10626: Communicating Science | Wissenschaft in der Öffentlichkeit

Version of module description: Gültig ab winterterm 2002/03

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulprüfung besteht aus einem Essay, in dem die Studierenden die ein Beispielthema aus Wissenschaft und Technik zieguppen- und mediengerecht darstellen und erklären.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Zeitung, Internet oder Science Center: Es gibt viele Gesichter der Kommunikation zwischen Wissenschaft und Öffentlichkeit. Welche konkreten Möglichkeiten der Vermittlung gibt es?

Welche Herausforderungen stellen sich in der Kommunikation zwischen Wissenschaft, Medien, Politik und Öffentlichkeit? Wie beschreiben Sie ihre wissenschaftliche Arbeit verständlich? Wie lassen sich komplexe Sachverhalte interessant aufbereiten? Wie wird die gesellschaftliche Relevanz wissenschaftlicher Themen dargestellt?

#### Intended Learning Outcomes:

Nach der erfolgreichen Teilnahme an dem Modul sind die Studierenden in der Lage, wichtige Aspekte der Wissenschaftskommunikation zu erkennen und deren Probleme zu analysieren. Zudem sind die Studierenden in der Lage Möglichkeiten zur Vermittlung von Wissenschaft und Öffentlichkeit zu diskutieren bzw. zu erklären.

#### Teaching and Learning Methods:

Vortrag, Präsentation, Übungen, Gruppenarbeit

**Media:**

**Reading List:**

M.-D. Weitze, W. M. Heckl: Wissenschaftskommunikation - Schlüsselideen, Akteure, Fallbeispiele. Springer-Verlag, 2016.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Wissenschaft kommunizieren (Verständliche Texte, kontroverse Dialoge und mehr) (Workshop, 1 SWS)

Weitze M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA11123: How to Produce Your Own Videos | Videos selber machen

Version of module description: Gültig ab winterterm 2014/15

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden erstellen ein Filmkonzept und zeigen erlernte Fähigkeiten im drehen und schneiden von Filmsequenzen, welche schließlich zu einem Video fertiggestellt werden (Prüfungsleistung, unbenotet).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Auf YouTube werden jede Minute mehr als 100 Stunden Videomaterial hochgeladen. Auch auf klassischen Websites finden sich immer mehr Bewegtbildinhalte. Dank günstiger Consumer- und Handy-Kameras, frei zugänglicher Schnitt-Software und leistungsstarker Computer und Datenleitungen wird es immer einfacher, Videos herzustellen und zu veröffentlichen. Videos sind zu einem etablierten und zeitgemäßen Kommunikationsmittel geworden.

Wie können sich angehende Wissenschaftler diesen Trend zunutze machen? Wie gelingt es, wissenschaftliche Arbeit mit Hilfe von Videos anschaulich darzustellen? Wie kann man seine Botschaft möglichst einfach visualisieren?

Im Workshop werden die grundlegenden Anforderungen an ein erfolgreiches Video definiert: von der Idee zum Konzept, vom Dreh zum Schnitt. An konkreten Projekten erarbeiten die Studierenden ihre eigenen Filme. Der Schwerpunkt liegt dabei auf der inhaltlichen Gestaltung. Es ist den Studierenden freigestellt, welche Kamera und welches Schnittprogramm sie nutzen.

Bitte bringen Sie eine Digitalkamera oder ein Smartphone mit Videofunktion mit.



**Intended Learning Outcomes:**

Nach der Teilnahme sind die Studierenden in der Lage, ein gutes von einem schlechten Video zu unterscheiden. Sie können die Bereiche Konzeptionierung, Kamera und Schnitt anwenden und wissen, wie ein erfolgreiches Video entwickelt wird. Darüberhinaus sind sie in der Lage selbst ein Video zu erstellen, welches professionellen Kriterien an Inhalt, Visualisierung und Sprache folgt.

**Teaching and Learning Methods:**

Erster Tag: Einführung, Vorstellung und Diskussion ausgewählter Video-Beispiele, Praxisübungen mit der Kamera, Erarbeitung von konkreten Video-Projekten

Zweiter Tag: Vorstellung und Analyse der erstellten Konzepte und Videos

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Videos selber machen (Wie Sie mit Bewegtbild sich und Ihre Inhalte besser verkaufen können)  
(Workshop, 1 SWS)

Fuchs M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603022: 2 Credits Modules | 2 Credits Module

### Module Description

## CLA20267: Communication and Presentation | Kommunikation und Präsentation

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

In Präsentationssequenzen (15-20 Min.) zeigen die Studierenden, dass sie in der Lage sind die erarbeiteten Aspekte überzeugender Kommunikation und Präsentation anzuwenden.

### Repeat Examination:

### (Recommended) Prerequisites:

### Content:

Kommunikation meint in der Regel die dialogische Kommunikation. Gemeinsam werden förderliche und hinderliche Verhaltens- und Kommunikationsweisen anhand der folgenden Inhalte erarbeitet:

- Grundlagen der Kommunikation
- Konstruktives Feedback
- Effektive und zielgerichtete Gesprächsführung

Mit ausgewählten Übungen haben Sie Gelegenheit Ihre Kommunikationskompetenz zu erproben und zu entwickeln.

### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage kompetenter zu kommunizieren und wirkungsvoller zu präsentieren. Sie kennen zudem die Inhalte für überzeugende Präsentationsfähigkeit:

- Aspekte der verbalen und nonverbalen Kommunikation

- Aufbau einer Präsentation
- Visualisierung der Inhalte
- Aktivierung der Zuhörer

In gezielten Präsentationssequenzen bekommen Sie die Möglichkeit, Ihre Souveränität und Überzeugungskraft konkret zu trainieren und von der Gruppe Feedback zu erhalten.

**Teaching and Learning Methods:**

Ausarbeitung der Präsentationsinhalte (Kurzpräsentation), Präsentationstraining mit Medieneinsatz im Plenum, Einzelarbeit, Gruppenarbeit, Trainerinput, Feedback (mündlich und schriftlich).

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Rhetoric and Argumentation. An Academic Talking Lab (Workshop, 1,5 SWS)

Martinez Gómez J

Kommunikation und Präsentation - Innenstadt (Workshop, 1,5 SWS)

Zeus R ( Brea R, Rummeld-Rodenbach M )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT62301: Project: Science, Art and Society - New Ways of Communicating Knowledge | Projekt: Wissenschaft, Kunst, Öffentlichkeit - Neue Formen der Wissensvermittlung

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In mündlicher und schriftlicher Projektarbeit (z. B. Projektskizzen und Konzeptpräsentationen, schriftliche Pitches) zeigen die Studierenden, dass sie in der Lage sind, komplexe wissenschaftliche Inhalte verständlich, anschaulich und zielgruppenorientiert zu vermitteln und (gestalterisch) umzusetzen, unterschiedliche Realisierungsformate hinsichtlich ihrer konkreten Tauglichkeit für ein spezifisches Thema zu bewerten und ein Konzept für die Umsetzung eines Formats hinsichtlich seiner Zielsetzung, Methoden und seiner Machbarkeit darzustellen.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

Komplexe wissenschaftliche Inhalte spannend und verständlich an die Öffentlichkeit zu vermitteln, ist wichtiger denn je. Lernorte wie das BIOTOPIA Lab im Botanischen Garten München oder das Design Museum Die neue Sammlung geben Raum für den interdisziplinären Austausch: Mit verschiedenen Bildungs- und Vermittlungsangeboten wie Erlebnispfad, Workshop, digitalen Programmen wie Lab@Home, Podcast, Citizen Science, Science Slams und anderen Veranstaltungen mit hoher Interaktivität bieten sie die Möglichkeit, Wissen neu und anders zu kommunizieren, innovative Bildungsformate zu entwickeln und dabei Interesse für die MINT-Fächer zu wecken.

### **Intended Learning Outcomes:**

Nach der Teilnahme haben die Studierenden ihre praktischen Kenntnisse in der Wissensvermittlung erweitert und neue methodische sowie kommunikative Kompetenzen erworben. Insbesondere sind sie in der Lage, komplexe wissenschaftliche Inhalte anschaulich, verständlich und zielgruppenadäquat zu vermitteln, unterschiedliche Formate der Wissensvermittlung an der Schnittstelle zu Kunst und Design hinsichtlich ihrer konkreten Tauglichkeit für ein spezifisches Thema zu bewerten und ein Konzept für die praktische Umsetzung eines Formats hinsichtlich seiner Zielsetzung, seiner Methoden und der nötigen Ressourcen professionell darzustellen.

### **Teaching and Learning Methods:**

Der Kurs ermöglicht es Studierenden aus unterschiedlichen Fachdisziplinen, gemeinsam mit Expertinnen und Experten innovative Formate für die Wissensvermittlung und Bildungsarbeit zu entwickeln. Dabei werden im Kurs unterschiedliche Formate der Wissenschaftskommunikation erarbeitet durch:

- interdisziplinäre Projekt- und Gruppenarbeit,
- anwendungsorientierte und praxisnahe Erarbeiten von Ideen und Konzepten zur innovativen Wissenschaftsvermittlung/Wissenstransfer in die Gesellschaft,
- zielorientierte Entwicklung von Prototypen bzw. Vorführ-/Experimententwicklung,
- erfahrungsbasiertes Lernen und Challenge Based Learning,
- Experimentieren und Präsentieren,
- Erlernen von agilen Arbeitsmethoden,
- Feedback aus der Gruppe und durch Mentorate,
- Evaluation

Im Kick-Off Meeting werden die Themen zu den Einzelprojekten vergeben.

### **Media:**

Expert:inneninput, Präsentationen, Teamwork, Projektarbeit

### **Reading List:**

Ed Yong: The best American Science and Nature Writing, 2021

Reinventing the Museum: Relevance, Inclusion, and Global Responsibilities, 2023

Nicholas Thomas: The return of curiosity: what museums are good for in the 21 century, 2016

Marc-Denis Weitze, Wolfgang M. Heckl: Wissenschaftskommunikation - Schlüsselideen, Akteure, Fallbeispiele, 2016

Neil McGregor: Eine Geschichte der Welt in 100 Objekten, 2015

Wolfgang Heckl: Die Welt der Technik in 100 Objekten, 2022

ZEIT-Edition: Bibliothek des Wissens, Faszinierende Wissenschaft, leidenschaftlich erzählt

**Responsible for Module:**

Slanitz, Alfred; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Pop-up Show, DIY Lab, Infogame, Wissens-Dating: Gestalte neue Formen der Wissensvermittlung für das Science Communication Lab im Deutschen Museum! (Workshop, 2 SWS)

Rehwagen U, Passola i Lizandra E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603023: 3 Credits Modules | 3 Credits Module****Module Description****MCTS0036: Moderation (RESET) | Moderation (RESET)***How to guarantee efficient group discussions and moderation*

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 68	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Students must submit a research paper (2000 to 3000 words) in which they demonstrate that they have gained a deeper understanding of successful moderation. They do so by analysing a case or reflecting their own and other's communication patterns and behaviour in group discussions and moderation situations. In the paper, students demonstrate that they have acquired a greater awareness for communication challenges and barriers with different stakeholders, as well as an empathic and also assertive communication attitude. Furthermore, they show that they are able to apply effective communication techniques for the creation and maintenance of respectful and results-oriented group discussions, and also to learn from experience and - if necessary or advisable - to modify critical group communication patterns.

**Repeat Examination:**

Next semester

**(Recommended) Prerequisites:**

This Skills module is aimed at students currently enrolled in the M.A. program 'Responsibility in Science, Engineering and Technology'. Students from other English-language MA programs can apply to join the respective course provided there is sufficient space available.

**Content:**

It is a major challenge to communicate effectively with and to different stakeholders within the STS/RRRI context (in project meetings, planning processes or field activities), especially when targeting the change of paradigms and behaviour. Involving different stakeholders such as fellow researchers and partners but also decision makers, entrepreneurs, and civil society in productive, interactive inter- and transdisciplinary meetings is a challenge and requires an informed and skilled

intervention of the moderator. Relevant concepts for these interventions will be discussed and necessary skills will be trained.

**Intended Learning Outcomes:**

This module is dedicated to the challenges of successful communication in multi-stakeholder environments. Participants will acquire the following skills needed to support and moderate meetings and discussions (involving 3-20 participants) effectively and guarantee consistent outcomes:

- awareness for communication challenges and barriers with different stakeholders
- empathic and at the same time assertive communication attitude in moderation situations
- application of effective moderation techniques (e.g. active listening, rephrasing, question techniques, establishing rapport)
- ability to use these techniques for the creation and maintenance of respectful and result-oriented group discussions
- ability to learn from experience and - if necessary or advisable - to modify critical group communication patterns

**Teaching and Learning Methods:**

Lectures to transfer knowledge about moderation and mediation; interactive exercises and simulations (role plays) to train group communication and moderation techniques

**Media:**

Whiteboard, flip chart, exercise sheets, exercises, role plays, films

**Reading List:**

MOORE, Ch. (2014). The Negotiating Process - Practical Strategies for Resolving Conflict.- 4th revised Edition; Jossey-Bass Publishers. San Francisco, CA, USA.

FISHER, R. & Ury, W. (2012). Getting To Yes: Negotiating Agreement Without Giving In. 3rd revised Edition (1st Ed. 1983). Penguin Books. New York, NY, USA.

SCHULZ v. THUN, F. (2004) Seven Tools for Clear Communication: The Hamburg Approach in English Language; Arbeitsgruppe Beratung und Training, Fachbereich Psychologie; 69 p.

**Responsible for Module:**

Bauer, Victoria; M.A.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Facilitation Skills for Transdisciplinary Work Processes (Workshop, 1,5 SWS)

Schmitt S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### CLA32400: Media, Science, Technology: Digital Museum Project | Medien, Wissenschaft, Technik: Digitales Museumsprojekt

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In oral and written project work (including for example project sketches and presentations, written pitches and learning diaries) students show that they are able to evaluate their experiences of applied project management skills, to analyse different digital offers for a certain prototype, and to connect theoretical knowledge to real world settings.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

The project course offers the opportunity to discuss how science communication in museums takes place digitally and virtually, especially via formats that break with traditional ways of communication - for example podcasts, social media, augmented reality and gamification. As part of the course the students will develop small prototypes in interdisciplinary groups, supported by provided information (e.g. about science communication) as well as feedback from the course instructors.

#### Intended Learning Outcomes:

At the end of the module students are able to evaluate their practical firsthand experiences of applied project management skills in the context of digital formats of science communication. Students are able to compare and analyse different digital offers in informal learning situations in terms of their generic learning outcomes and draw conclusions for their own prototypes. On the basis of current science communication theory students illustrate their ability to think out of the box and connect theoretical knowledge to real world settings. Additionally, they will apply methods from design thinking approaches to practical task solving as well as plan and structure their workload

in their respective interdisciplinary groups. Students will gain a deeper understanding of the importance of feedback loops and self-reflective routines.

**Teaching and Learning Methods:**

Students are provided with relevant information and material for working in project teams and also for self-reflection in the context of digital formats of science communication. Additional support is provided through individual feedback sessions. Students present their project results in final presentations at the end of the course.

**Media:**

Formats are specified at the beginning of the course.

**Reading List:**

A reading list is provided at the beginning of the course.

**Responsible for Module:**

Slanitz, Alfred; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MCTS0053: Intercultural Communication | Intercultural Communication

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students give a 15-minute presentation, in which they demonstrate their knowledge of key intercultural communication concepts in a clear and concise manner, and their comprehension of how culture and other factors influence and shape communication. Furthermore, they show their ability to analyze intercultural encounters, communication styles and critical incidents and that they are familiar with strategies and techniques to improve communication. After the presentation, the examiner/lecturer and the audience have 10 minutes to pose questions on the topic of the presentation, which the examinees are expected to answer knowledgeably and concisely.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This Skills module is aimed at students currently enrolled in the M.A. program 'Responsibility in Science, Engineering and Technology'. Students from other English-language MA programs can apply to join the respective course provided there is sufficient space available.

#### Content:

In today's global and increasingly interdisciplinary environment, the success of ventures in almost any field requires an understanding of intercultural communication and cooperation. This module provides students with key concepts of intercultural communication and insights into how people from different backgrounds interact with each other. Based on the assumption that communication situations in international business and research settings are influenced by various factors including national, organizational and professional cultures, new media and technologies as well as the communicators' personalities, students learn to analyze and understand these factors. Furthermore, they develop greater self-awareness of their own cultural behavior and communication style and acquire strategies and techniques to improve their communication skills.

### **Intended Learning Outcomes:**

Upon successful completion of the module, students:

- have knowledge of key concepts in Intercultural Communication Theory
- understand how culture and other factors influence and shape communication
- are able to analyze and evaluate intercultural encounters and critical incidents
- can analyze different communication styles
- have greater self-awareness of their own cultural behavior and communication style
- are familiar with strategies and techniques to improve their communication skills

### **Teaching and Learning Methods:**

Classroom activities are tailored to the topics of the respective course and include lectures, reading activities, in-class discussions of key texts, talks and case studies, group work, simulation activities, communication exercises and student presentations. Students are expected to read and analyze key literature and case studies in order to familiarize themselves with fundamental concepts in Intercultural Communication Theory. Furthermore, they engage in discussions, simulation activities and communication exercises in order to understand how culture and other factors influence and shape communication, to analyze and evaluate intercultural encounters, and to learn about and apply strategies and techniques to improve their communication skills. Giving a presentation trains students to present their findings in a clear and concise manner.

### **Media:**

Texts, case studies, slide presentations, videos and audio tracks, flipchart/whiteboard, worksheets, Moodle

### **Reading List:**

A reading list will be provided at the beginning of the semester.

### **Responsible for Module:**

Bauer, Victoria; M.A.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Interpersonal Business Communication Skills (Workshop, 2 SWS)

Crail T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603024: 4 Credits Modules | 4 Credits Module

### Module Description

## ED0312: Science and Technology Communication (for Lectureship) | Wissenschafts- und Technikkommunikation (für Lehramt)

Version of module description: Gültig ab winterterm 2014/15

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 83	<b>Contact Hours:</b> 37

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

Die Modulprüfung erfolgt in der Form einer wissenschaftlichen Ausarbeitung (Essay), einschließlich eines mündlichen Vortrags, in der die Studierenden das Verständnis von Problemen und Möglichkeiten der Wissenschafts- und Technikkommunikation und die Fähigkeit zur Anwendung von Techniken für eine zielgruppengerechte Kommunikation unter Beweis stellen.

### Repeat Examination:

### (Recommended) Prerequisites:

keine

### Content:

Zeitung, Internet oder Science Center: Es gibt viele Gesichter der Kommunikation zwischen Wissenschaft und Öffentlichkeit. Immer mehr Wissenschaftler stellen sich auch dem „Dialog auf dem Marktplatz“. Welche Möglichkeiten der Vermittlung gibt es? Welche Herausforderungen stellen sich in der Kommunikation zwischen Wissenschaft, Medien, Politik und Öffentlichkeit? Wie kann ich als Wissenschaftler meine eigene Arbeit verständlich beschreiben? Wie lassen sich komplexe Sachverhalte interessant aufbereiten? Wie wird die gesellschaftliche Relevanz wissenschaftlicher Themen dargestellt?

### Intended Learning Outcomes:

Nach der Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage, Probleme und Möglichkeiten der Wissenschafts- und Technikkommunikation zu verstehen und Techniken für eine effektive Kommunikation anzuwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus Vortrag und Präsentationen des Dozenten, Einzel- und Gruppenarbeit zu praktischen Beispielen, Referaten zu historischen, didaktischen und sozialwissenschaftlichen Perspektiven. Aktive Teilnahme an den Lehrveranstaltungen.

**Media:**

PowerPoint, Filmausschnitte, Übungsaufgaben, Skriptum

**Reading List:**

Winfried Göpfert (Herausgeber): Wissenschafts-Journalismus: Ein Handbuch für Ausbildung und Praxis. Econ-Verlag, 2006.

Carsten Könneker: Wissenschaft kommunizieren, Wiley-VCH 2012.

Marc-Denis Weitze, Wolfgang Heckl: Wissenschaftskommunikation - Schlüsselideen, Akteure, Fallbeispiele, Springer 2015.

**Responsible for Module:**

Heckl, Wolfgang; Prof. Dr. rer. nat. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Wissenschaftskommunikation im Deutschen Museum: Texte im Museum (Seminar, 2 SWS)

Heckl W [L], Weitze M

Wissenschaftskommunikation im Deutschen Museum: Texte im Museum (Seminar, 2 SWS)

Heckl W [L], Weitze M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT60303: Politics & Business | Politik & Wirtschaft****SOT603031: 1 Credit Modules | 1 Credit Module****Module Description****CLA10226: Meaningful Project Management | Meaningful Project Management**

Version of module description: Gültig ab winterterm 2002/03

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

After completion of the course students are able to come up with strategies for solving an existing problem and convert these strategies into a specific project. Students end the course with the formulation of a project proposal or logical framework. (ECTS:1)

**Repeat Examination:****(Recommended) Prerequisites:**

none

**Content:**

Project management and social responsibility are key issues in companies today. This course combines both topics.

Strategies for solving an existing problem are developed and converted into a specific project. The methodology of the course is based on the Impact Chain and Logical Framework approaches – tools used for the successful development and realisation of projects. These tools cover many central project management aspects ranging from the goals and individual activities of a project to budget planning and project evaluation. Relevant steps are explained by way of good-practice examples and expanded upon in the students' own project ideas. The thematic framework of the course revolves around issues of global responsibility: How can project managers in technical fields implement projects without exploiting people at home or abroad?

### **Intended Learning Outcomes:**

After completing the course, students are able to

- plan projects professionally
  - implement the main features of successful project management
  - reflect on working in teams
  - effectively work on achieving the planned results as well as the desired impact
  - use different project management tools
- ... whilst taking into account relevant global issues.

### **Teaching and Learning Methods:**

In a two-day block workshop students apply and reflect on the logic of project development. The methods are interactive.

The shorter version of the course (group 1) ends with a two-hour webinar held about one month after the block workshop. In this webinar, the results are evaluated and expanded upon.

In the longer version of the course (group 2), the acquired methods and tools are applied.

Webinars help students with the implementation. In a final evaluation workshop, experiences and results are reviewed and discussed.

### **Media:**

### **Reading List:**

Initiative Cookbook: <http://www.mitost.org/en/about-us/mitost-editions/initiative-cookbook.html>

Project Management Methods: [http://competendo.net/en/Project\\_Development](http://competendo.net/en/Project_Development)

A Guide to the Project Management Body of Knowledge (PMBOK Guide). 2014

Patzak, Rattey, Projektmanagement: Leitfaden zum Management von Projekten, Projektportfolios und projektorientierten Unternehmen. 2014

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).



## Module Description

### CLA10445: Approaches to Negotiation | Verhandlungsführung

Version of module description: Gültig ab winterterm 2012/13

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studierende analysieren und bewerten in einem (unbenoteten) Bericht im Umfang von 1000 - 1500 Worten ihre eigenen Verhandlungsstrategien.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Erfolgreich verhandeln heißt, das zu erreichen, was in einer bestimmten Situation möglich ist. Ob es um das Gehalt im neuen Job, den Preis für einen Gebrauchtwagen oder das gemeinsame Urlaubsziel mit dem Partner geht. Oft sind wir ratlos, wenn der Verhandlungspartner geschickt ausweicht, eisern auf seiner Position beharrt oder uns einfach klare und überzeugende Argumente fehlen.

Im Workshop werden u.a. folgende Themen behandelt:

- sieben Phasen einer Verhandlung
- Hart in der Sache – Weich zur Person: Harvard Prinzipien der Verhandlung
- überzeugend argumentieren
- Chancen und Risiken unterschiedlicher Verhandlungsstrategien
- Verhandlungstaktiken
- Verhandlungsethik

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage

- ihren eigenen Gesprächsführungsstil zu reflektieren

- ihr Verhandlungsgeschick durch systematisches Vorgehen, die Berücksichtigung weicher Faktoren und den routinierten Einsatz von Gesprächstechniken zu verbessern.

**Teaching and Learning Methods:**

Verhandlungsübungen nach Bedarf der Teilnehmer/innen, Trainerinputs mit hohem Visualisierungsanteil, Kleingruppenarbeit, Verhandlungsübungen mit konkreten Rollenvorgaben, Soziometrie, Aktivierungsübungen, Analyse von Filmszenen.

**Media:**

Flipchart, Pinwand, Moderationsmaterial, Aufgabenblätter, DVD, Beamer, Fotoprotokoll; Skript

**Reading List:**

Das Harvard-Konzept, Roger Fisher; Verhandeln nach Drehbuch; Agnes Kunkel

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Verhandlungsführung (Verhandeln nach Drehbuch) (Workshop, 1 SWS)

Strohmeyer U

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10450: When Engineers Become Managers | Wenn aus Ingenieuren Manager werden

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 18	<b>Contact Hours:</b> 12

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Im Rahmen einer Fallstudie (3-5 Seiten) oder durch das Vorbereiten einer Präsentation (10-15 Min.) beschreiben die Studierenden, welche komplexen Problemstellungen im Management zu erwarten sind, und stellen hierzu Lösungsvorschläge vor (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

In den Ingenieur-Disziplinen gibt es für die meisten Aufgabenstellungen erprobte Theorien, Näherungsverfahren und Simulationsansätze. Im Management ist dies anders. Es gibt keine geschlossene, umfassende Theorie; allenfalls Ansätze für isolierte, begrenzte Themenbereiche. In dem Workshop werden bewährte Methoden und Instrumente für Standardsituationen vorgestellt, zusammen mit neuen, bisher nicht veröffentlichten Ansätzen zur Geschäftsoptimierung (Winning Business Models). Besonderen Raum nehmen die Themen Soft Skills und Veränderung ein. In diesem Zusammenhang wird ein neues Charakterstruktur-Ebenen Modell vorgestellt. Ausgewählte Themen werden in Arbeitsgruppen vertieft, die Ergebnisse werden von den Teilnehmern vorgetragen.

#### Intended Learning Outcomes:

Nach erfolgreicher Teilnahme am Seminar sind die Studierenden in der Lage Antworten auf zwei relevante Fragen zu geben:

- was erwartet mich in der Managementpraxis?
- welche Instrumente kann ich für die Lösung typischer Managementprobleme einsetzen?

**Teaching and Learning Methods:**

Vortrag; offener Dialog; Gruppenarbeit; Präsentation; Erfahrungsberichte von Dozenten und Teilnehmern

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Wenn aus Ingenieuren Manager werden (Workshop, ,5 SWS)

Rüll H, Schrems A ( Rummeld-Rodenbach M )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10524: The Asian Challenge | Herausforderung Asien

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer schriftlichen Hausarbeit analysieren die Studierenden exemplarisch historische, kulturelle, soziale und politische Aspekte der dynamischen wirtschaftlichen Entwicklung einer Region.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Trotz Weltwirtschaftskrise – Asien boomt! Kein anderer Kontinent dieser Welt wird als so zukunftssträchtig gewertet wie die Region zwischen Indus und der Bucht von Tokio. Dabei werden die Vielfältigkeit des Kontinents sowie seine Risiken und Chancen oft kaum beachtet. Verallgemeinerungen überlagern zudem die teils völlig unterschiedlichen Lebenswelten im Denken, Handeln und Kommunizieren.

Dieser Kurs beleuchtet die wirtschaftliche Dynamik der Region und verbindet sie mit historischen, kulturellen und politischen Grundlagen. Demographische Entwicklungen sowie Prognosen und Trends runden das Bild ab. Einzelne Länderstudien führender Mächte des Kontinents (Japan, China, Indien) sollen darüber hinaus den Einblick in die Vielfältigkeit des Kontinents vertiefen. Unter Berücksichtigung internationaler und globaler Aspekte der Weltwirtschaft wird eine abschließende Gesamtbetrachtung der Rolle Asiens in der weltwirtschaftlichen Entwicklung vorgenommen, die den Teilnehmern auch Rückschlüsse auf die eigene europäische Entwicklung ermöglichen sollen.

#### Intended Learning Outcomes:

Nach der Veranstaltung sind die Teilnehmer in der Lage die Bedeutung der wirtschaftlichen Dynamik der Region zu erfassen sowie deren Entwicklung mit historischen, kulturellen und

politischen Aspekten zu verbinden. Die Kenntnis über demographische Entwicklungen sowie Prognosen und Trends ergänzt das Bild.

**Teaching and Learning Methods:**

Präsentationen, Gruppenarbeit, Diskussionsrunden, Länderstudien als Fallstudien

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Herausforderung Asien – ein Kontinent im Aufbruch (Workshop, 1 SWS)

Niemann I

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10555: Communication and Facilitation in Project Teams | Communication and Facilitation in Project Teams

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 22	<b>Contact Hours:</b> 8

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students will write a short exam which proves that they understand various aspects of project management and are able to handle team conflicts successfully. Furthermore they are able to apply communication and facilitation skills (exam achievement).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Students require adequate English skills to achieve the expected level of participation.

#### Content:

Team roles and team development stages (team development clock, team triangle)  
How to create a good and well-structured work environment and enhance collaboration  
Motivating a team with constructive feedback  
How to handle conflicts successfully  
Creative problem solving tools

#### Intended Learning Outcomes:

Here you will gain new insights into your own role within your team and gain appreciation of other roles that may appear during conflicts. By learning better ways of looking at team dynamics you will improve your ability to create a good and well-structured work environment and enhance team collaboration. After completing this workshop you will have an expanded set of useful communication and facilitation skills that will enable you to build good work relationships and deal with conflicts in a constructive manner.

**Teaching and Learning Methods:**

Trainer input, demonstrations, exercises, role-playing games, group discussions, feedback, etc. Each participant is encouraged to explore his/her style and thus expand their individual set of communication, dialogue facilitation and project team collaboration skills.

**Media:**

**Reading List:**

Belbin RM (1993) Team Roles At Work. Butterworth-Heinemann, Oxford

Hanlan M (2004) High-Performance Teams – How to Make Them Work. Praeger, Westport CT.

Pentland A (2012) The New Science of Building Great Teams. In: Harvard Business Review 04:2012.

Waters K (2012) All About Agile: Agile Management Made Easy! CreateSpace Independent Publishing Platform.

West MA (1990) The Social Psychology of Innovation in Groups. In: MA West, JL Farr (Eds) Innovation and Creativity at Work. Wiley, Chichester.

Yukl GA (2013) Leadership in Organizations. 8th ed. Pearson Education, Harlow.

"

**Responsible for Module:**

Monika Thiel

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### CLA11108: Leadership | Führung übernehmen

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer Präsentation analysieren die Studierenden die grundlegenden Konzepte/Methoden und Aufgaben der Personalführung (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Führung kann gelernt werden - sofern die Bereitschaft für diese Aufgabe besteht. Hierzu gehört Selbstreflexion, die Übernahme von Verantwortung und ein Verständnis über die grundlegenden Konzepte und Methoden der Personalführung.

#### Inhalte

- Management und Führung
- Wirksamkeit nachhaltiger Führung
- Führungs-Kompetenzen
- Leistungs-Pyramide
- Aufgaben einer Führungskraft
- Diversity, Interkulturelle Führung
- Kommunikation und Feedback
- Recruiting und Bewerbungsgespräche
- Situative Führung
- Persönlicher Entwicklungsplan

**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme an diesem Workshop sind die Studierenden in der Lage die Wirksamkeit nachhaltiger Führung in Bezug auf die Leistungs-Pyramide zu veranschaulichen. Weiterhin identifizieren sie sich mit den erlernten Führungs-Kompetenzen und können je nach Situation den angemessenen Führungsstil demonstrieren und auch im Bereich der interkulturellen Führung angemessen reagieren.

**Teaching and Learning Methods:**

Praxisnahe Übungen zur Führungsübernahme, Diskussion

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA11317: Interdisciplinary Lecture Series Environment: Politics and Society | Ringvorlesung Umwelt: Politik und Gesellschaft

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

A successful accomplishment of 9 academic performances is mandatory for the examination! The examination consists of a short PowerPoint presentation at the end of the semester. The presentation can be created alone or in groups of two. Everyone has to speak one minute. The examination is ungraded.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

The lecture series Umwelt (environment) is an interdisciplinary, public lecture organised by the Environmental Department of the Studentische Vertretung (Student Representatives) of the TU Munich. Experts speak e.g. on technical environmental protection, health, consumer and climate protection. In the summer semester, it offers students the opportunity to learn about the political and social dimensions of current ecological topics and research results at a scientific level.

The lecture series Umwelt (environment) is offered in the winter semester in the module CLA11200 Ringvorlesung Umwelt: Ökologie und Technik (Lecture series on the environment: ecology and technology). It is only possible to gain given credits twice for the lecture series within each study program.

#### Intended Learning Outcomes:

Students are able to follow expert presentations on political and social dimensions of environmental problems and identify core theses and central facts.

**Teaching and Learning Methods:**

Lectures, presentations, discussions

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Out of Sight, Out of Mind? A Journey into the World's Hidden Realities (Ringvorlesung) (Vorlesung mit integrierten Übungen, 1,5 SWS)

Nogueira de Carvalho M, Pahl A, Recknagel F, Slanitz A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603032: 2 Credits Modules | 2 Credits Module

### Module Description

## CLA21019: Understanding Politics 2 | Politik verstehen 2

Version of module description: Gültig ab winterterm 2002/03

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

Die Studierenden stellen in einer Präsentation (20-30 Min.) die Struktur und Intention eines politisch-philosophischen Textes dar, identifizieren dessen ideengeschichtlichen Hintergrund und versuchen die Argumente kritisch zu hinterfragen sowie Bezüge zu aktuellen Diskursen herzustellen (Prüfungsleistung).

### Repeat Examination:

### (Recommended) Prerequisites:

### Content:

Die Seminare thematisieren politische Selbstverständnisse und Legitimationen politischer Herrschaft.

- Mythen des Politischen
- Utopien
- Politik und Moral

Mit der kritischen Reflexion dieser Formen politischen 'Denkens' und ihrer ideengeschichtlichen Bezüge stellt sich zugleich die Frage nach den Grenzen eines nur wissenschaftlich definierten Verständnisses von Politik.

### Intended Learning Outcomes:

Die Studierenden sind nach der Teilnahme in der Lage die Struktur und Intention politisch-philosophischer Texte zu verstehen, unterschiedliche Positionen und deren ideengeschichtlichen

Hintergrund zu identifizieren, sowie Argumente kritisch zu analysieren und Bezüge zu aktuellen Diskursen herzustellen.

**Teaching and Learning Methods:**

Referate, Diskussion, Dozierendeninput, Gruppenarbeit

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21102: 1914-1918: Science. Technology. War. | 1914-1918: Wissenschaft. Technik. Krieg

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einer Modulprüfung in Form einer Präsentation abgeschlossen. Durch das abschließende Referat soll nachgewiesen werden, dass die Studierenden in der Lage sind historische Studien zum Verhältnis von Wissenschaft und Krieg zu vergleichen und zu diskutieren.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

keine

#### Content:

Der Ausbau kriegswichtiger Forschung seit dem 1. Weltkrieg prägte ganz entscheidend die Entwicklung der modernen Wissenschaft im 20. Jahrhundert. Die Arbeit für Militär und Rüstungsindustrie erschloss der Forschung immense Ressourcen. Es etablierten sich neue Großforschungseinrichtungen. Zugleich mussten sich Forschende aber auch mit der Politisierung der Wissenschaft ebenso auseinandersetzen wie mit den ethischen Dilemmata. Die Atombombe wurde nach 1945 zum Symbol für die verlorene Unschuld der Naturforschung im 20. Jh. und stieß eine kritische Diskussion in der Wissenschaft an. Die aktuell diskutierte Zivilklausel, mit der sich Universitäten verpflichten, keine Rüstungsforschung zu betreiben, zeigt, dass der militärisch-wissenschaftliche Komplex bis heute umstritten ist.

Die Seminarteilnehmer\*innen erarbeiten sich einen Überblick über zentrale Entwicklungen des Verhältnisses von Wissenschaft und Krieg im 20. Jh. An ausgewählten historischen Beispielen diskutieren sie Bedingungen, Handlungsspielräume und Konsequenzen für die Forschung und das wissenschaftliche Selbstverständnis.

**Intended Learning Outcomes:**

Nach der erfolgreichen Teilnahme an diesem Modul sind die Studierenden in der Lage die Komplexität von Wissenschaft und Technik unter Berücksichtigung von politischen und gesellschaftlichen Aspekten zu erläutern. Darüberhinaus können die Studierenden anhand der erlernten Erkenntnisse und den Vermittlungstechniken Argumente vertreten und Fakten beschreiben.

**Teaching and Learning Methods:**

Grundlage des Seminars ist die Lektüre und Diskussion historischer Studien zum Verhältnis von Wissenschaft und Krieg. Dabei können einzelne Forschende, technische Objekte oder spezifische rüstungsrelevante Forschungsfelder im Mittelpunkt stehen. Die Präsentationen und Essays der Teilnehmer\*innen werden gemeinsam diskutiert und anschließend kommentiert.

**Media:**

**Reading List:**

Hachtmann, Rüdiger: "Rauher Krieg" und "friedliche Forschung"? Zur Militarisierung der Wissenschaften und zur Verwissenschaftlichung des Krieges im 19. und 20. Jahrhundert, in: Mit Feder und Schwert. Militär und Wissenschaft - Wissenschaftler und Krieg, hg. von Matthias Berg, Jens Thiel und Peter Th. Walther, Stuttgart 2009, S. 25-55.

**Responsible for Module:**

Désirée Schauz

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### CLA21114: Perspectives of Technology Assessment | Perspektiven der Technikfolgenabschätzung

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einem Essay zeigen die Studierenden ihr Verständnis über die verschiedenen Dimensionen der Technikfolgenabschätzung (Prüfungsleistungen).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Innovation ist nicht ohne Risiko zu haben. Technikfolgenabschätzung (TA) versucht eine antizipierende Erkundung und Bewertung möglicher unerwünschter Technikfolgen. Was sind nun die Formen, Möglichkeiten, aber auch Grenzen von TA?

Diese Lehrveranstaltung vermittelt einen grundlegenden Einblick in die Geschichte, Ansprüche, Leistungen und Grenzen dieses umfassenden und ambitionierten Ansatzes. Dabei soll erstens auf die Etablierung von Technikfolgenabschätzung als Beratung für das Parlament eingegangen werden. Technikfolgenabschätzung versucht eine wissenschaftliche Analyse von komplexen Prozessen des Innovierens mit der Absicht, politische Entscheidungsprozesse zu beraten. Jedoch haben sich die Bedingungen politischen Entscheidens verändert, etwa dass die Laien eine größere Bedeutung zugesprochen bekommen. Wie spiegelt sich dieser Wandel von der Politik- zur Gesellschaftsberatung in der TA? Zweitens sollen deshalb die unterschiedlichen Verfahren der Technikfolgenabschätzung behandelt werden. Es gibt in der Zwischenzeit ein breites Spektrum, was der Vielfalt der beteiligten Disziplinen wie der sozialen Beteiligung geschuldet ist. Drittens werden schließlich die spezifischen wissenschaftlichen und sozialen Herausforderungen

behandelt, die mit diesem Projekt der TA einhergehen. Was sind die Risiken und Nebenwirkungen von TA selbst? Denn keine Innovation ohne Risiko - das gilt auch für die TA.

**Intended Learning Outcomes:**

Nach dem Besuch der Lehrveranstaltung sind Studierende in der Lage, Technikfolgenabschätzung (TA) zu beschreiben und verschiedene Formen von TA zu klassifizieren. Sie haben gelernt, diese verschiedenen Formen von TA kontextspezifisch zu veranschaulichen. Sie haben ein Grundverständnis von der besonderen Projektform von TA-Projekten entwickelt und verstehen die spezifische Berichtsform von TA-Studien. Die Studierenden können Problemstellungen für TA-Studien erklären. Sie sind in der Lage die gegenwärtigen Herausforderungen, die sich TA stellen, zu beschreiben und mittels der veränderten aktuellen Anforderungen an Expertise für politische Entscheidungsprozesse, zu demonstrieren.

**Teaching and Learning Methods:**

Die Lehrveranstaltung nutzt die Formate des Vortrags, der Arbeit in Kleingruppen und Kurzreferate.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Perspektiven der Technikfolgenabschätzung (Workshop, 1 SWS)

Bösch S, Brea R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT62303: History and Remembrance | Geschichte und Erinnerung

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 36	<b>Contact Hours:</b> 24

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is completed with a presentation (10-15 minutes, for group presentations 10 minutes longer for each additional participant) in which the students demonstrate that they can classify historical events politically, assess their individual, social and political consequences and discuss how to deal with them collectively.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

The seminar provides insights into different aspects of the connection between history and the present:

- Historical-political: source-based thematic introduction to political, economic and social contexts of historical events (e.g. totalitarianism of National Socialism).
- Historical-biographical: classification of life stories and statements by contemporary witnesses (e.g. of prisoners and their fate).
- Present: discussion of the collective confrontation with historical events (e.g. culture of remembrance - in the Federal Republic of Germany with its own history of persecution and totalitarianism).

Thematic focuses are totalitarianism and human rights, persecution and extermination, marginalization and discrimination, tolerance and civil courage.

#### Intended Learning Outcomes:

Students are able to identify the political-social contexts of specific historical events, classify individual biographies and statements by contemporary witnesses in relation to the events and

their contexts and critically discuss aspects of the culture of remembrance and collective coming to terms with the past.

**Teaching and Learning Methods:**

Lecture, guided tour, film analysis, presentations, discussions, group work, self-study, especially reading, processing of source material

**Media:**

Lecture, reader, exhibitions, historical sources incl. film and photo material

**Reading List:**

Bundeszentrale für politische Bildung: Dossier: Geschichte und Erinnerung, online: <https://www.bpb.de/themen/erinnerung/geschichte-und-erinnerung/>

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Discrimination, Persecution and Extinction: Dachau Concentration Camp in History & Present (Seminar, 1,5 SWS)

Raith F, Wernecke J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT62401: Intercultural Encounters | Interkulturelle Begegnungen

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination takes the form of an individual learning portfolio of 900-1200 words, including self-reflection on one's learning path. In terms of content, the portfolio refers to the experiences gained during the intercultural workshops, participation in three cultural events, and collaboration on an intercultural group project. Students demonstrate their ability to independently contextualize situations they have experienced in a culturally sensitive way and to deal critically with stereotyping. In addition, personal thought structures and action patterns are examined and (re)categorized in the learning portfolio.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Good English language skills (level B2)

#### Content:

Does the "international" necessarily entail differences? Let's experience fantastic diversity and still discover amazing similarities!

In our interactive learning environment, we focus on sensitivity in order to encounter each other beyond stereotypes in a curious and authentic way. German and international students collaborate in interactive workshops, experience exciting cultural events together, and work together in intercultural group projects. These practical experiences not only enable students to become aware of cultural differences but also encourage them to reflect on them. This allows you to create lasting connections and build common ground.

Find out how to strengthen your intercultural sensitivity and constructively work together in diverse teams. "Come Together!" is more than just a course - it is an invitation to come together, a space to celebrate diversity. "Come Together!", discover what we have in common, and create a world in which cultural differences are seen as an enrichment.

What questions do we deal with in this course?

- How can we face the hidden challenges of global living/intercultural encounters?
- How does person-centered interaction work?
- How may I apply diversity sensitization to my everyday life?
- How do people build trust in work environments?
- How do unconscious biases and stereotypes influence our perception and behavior?
- How can I deal with and contextualize irritating situations in intercultural settings?
- What are crucial skills regarding intercultural teamwork, and how do we develop them?
- How would I give and receive feedback well?

### **Intended Learning Outcomes:**

After participation, students will be able to:

- identify cultural standards.
- recognize the dangers of stereotyping in an intercultural context.
- deal more constructively with cultural differences and possible conflict situations.

In addition, participants will increase their ability to work in diverse teams towards a common goal, to use cultural events as an opportunity for individual dialog, and to develop a diversity-sensitive attitude.

### **Teaching and Learning Methods:**

In workshops, students learn to identify and reflect on cultural standards in everyday life through short presentations and interactive tasks (e.g. working on case studies, simulations, group work, peer feedback). They are also becoming aware of the dangers of stereotyping and of the potential for conflict in intercultural contexts.

By participating in cultural events in self-organized small groups lasting 3 times 2 hours, students can experience different ways of behaving, perceiving, and thinking outside of the intercultural workshops in order to experience diversity and a change of perspective in a realistic way.

In addition, the events serve to promote networking among the program participants and with the region. Therefore, the events must offer a communicative atmosphere in which the participants can interact with each other and learn new things about Munich, Bavaria, or Germany at once.

Examples of suitable events could be specialty tastings, themed hikes, international cooking, interactive theater or museum visits, Bavarian dance evenings, etc. The cultural events should serve as an incentive to discover the region's diversity and the similarities between the participants.

A group project including a presentation (10-12 min) and feedback gives the participants the opportunity to gain practical experience in working together in a diverse team and to reflect together on a specific topic. Mentoring is offered for each group in different phases of the project work.

Individual learning experiences are documented and reflected on in the learning portfolio (examination), both in relation to the cultural events and the group project, as well as other personal experiences and situational approaches.

In addition to the classroom course, online materials are provided for in-depth self-study.

### **Media:**

Presentations, readers, moderation material, videos, online meetings

### **Reading List:**

The following list contains texts relevant to the topic and methodology of the module that participants can use for in-depth study:

Belbin M.R. (1991): Management Teams: Why they succeed or fail.

Belbin M.R. (1993): Team Roles at Work.

Brinkmann, Ursula/ van Weerdenburg, Oscar (2014): Intercultural Readiness. Four competences for working across cultures.

Fengler, Jörg (2004): Feedback geben. Strategien und Übungen.

Gardenswartz, Lee/ Rowe, Anita (2010): Managing Diversity. A Complete Desk Reference & Planning Guide.

Morgan, Nick (2018): Can you hear me? How to connect with people in a virtual world.

Motschnig, Renate/ Nykl Ladislav (2009): Konstruktive Kommunikation. Sich und andere verstehen durch personenzentrierte Interaktion.

Schmitz, Lena (2015): Nationalkultur versus Berufskultur. Eine Kritik der Kulturtheorie und Methodik Hofstedes.

Shaules, Joseph (2007): Deep Culture. The Hidden Challenges of Global Living.

Stone, Douglas/ Heen, Sheila (2015): Thanks for the Feedback. The Science and the Art of Receiving Feedback Well.

Trisch, Oliver (2013): Der Anti-Bias Ansatz. Beiträge zur Theoretischen Fundierung und Professionalisierung der Praxis.

### **Responsible for Module:**

Slanitz, Alfred; Dr. phil.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Come Together! - Inter/Cultural Practice for Locals, Foreigners and World Inhabitants (Workshop, 2 SWS)

Eberhard M, Schliep H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603033: 3 Credits Modules | 3 Credits Module

### Module Description

## CLA31900: Lecture Series Environment - TUM | Vortragsreihe Umwelt - TUM

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 67	<b>Contact Hours:</b> 23

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

The examination consists of a poster created in a group of 2-3 people connecting topics from at least two lectures. In order to collect material for the poster, participants have to organize themselves in discussion groups with 5-6 people.

Each discussion group will split into two groups for the poster. At the end of the semester the poster has to be presented. Every member of the poster group has to speak one minute, The grade will consist of the poster and its presentation.

Mandatory requirements for the examination

For the 3-ECTS course a successful accomplishment of 16 academic performances is mandatory for the examination!

### Repeat Examination:

Next semester

### (Recommended) Prerequisites:

### Content:

The systematic integration of education for sustainable development at the university is an extremely complex challenge that can only be addressed through a plural and multi-perspective approach. Within the framework of the UNESCO World Programme of Action "Bildung für Nachhaltige Entwicklung" (BNE; =Education for Sustainable Development), the interdisciplinary lecture series Umwelt - TUM takes place at the TUM Campus Garching, which deals with changing topics in the field of environmental sustainability.



It is organized by the newly founded branch of the environmental department AStA TUM at the Garching campus to promote sustainability awareness at TUM and to offer interested students the opportunity to deal with the topic in more detail.

**Intended Learning Outcomes:**

After successful participation in this module, students are able to understand lectures at a high scientific level and reproduce central statements. Students are able to comprehend analyses of sustainable development and are familiar with formulating their own positions and justifying them in discussions. Furthermore, they know where they can explore the topic of sustainability in more detail on campus, whether in the form of course offerings, internships, projects or thesis.

**Teaching and Learning Methods:**

It consists of six lectures and an organizational meeting at the beginning. Each lecture includes two 40-minute presentations, a 15-minute break and a subsequent 45-minute discussion with the speakers, which is realized in cooperation with the Zentrum for Schlüsselkompetenzen (Center for Key Competencies) of the Faculty of Mechanical Engineering.

The lectures and presentation slides will be uploaded to the online learning platform Moodle.

As homework, students will prepare a short report of the lectures and the discussion session. In addition, introductory and further literature will be addressed to enhance more detailed discussions of the lectures.

**Media:**

**Reading List:**

**Responsible for Module:**

Dr. phil. Alfred Slanitz (WTG@MCTS)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Out of Sight, Out of Mind? A Journey into the World's Hidden Realities (Ringvorlesung) (Vorlesung mit integrierten Übungen, 1,5 SWS)

Nogueira de Carvalho M, Pahl A, Recknagel F, Slanitz A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA90331: TUMInspiration - Student Projects | TUMInspiriert - Studentische Projekte

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 70	<b>Contact Hours:</b> 20

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In Form einer Projektarbeit sollen die Studierenden nachweisen, dass sie ein gewähltes Projekt selbstständig konzipieren, bearbeiten und umsetzen können. In einer anschließenden Präsentation des Projekts und einem schriftlichen Projektbericht (Prüfungsleistung) weisen die Studierenden nach, dass sie ihr Projekt verständlich, präzise und überzeugend darlegen können.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

keine

#### Content:

Übergeordnete Inhalte:

- Grundlagen der Projektorganisation
- Grundlagen der Projektplanung,-durchführung und kritischen Evaluation
- Grundprinzipien der Kommunikation und der Führung und Motivation eines Teams.

Die spezifischen Inhalte hängen vom gewählten Projekt ab.

Mögliche Projektthemen sind beispielsweise:

- Organisation (Vorbereitung, Dokumentation, Nachbereitung) einer Veranstaltung
- Vorbereitung und Leitung eines Themenarbeitskreises
- Organisation einer themenspezifischen Schulung für Studies
- Organisation einer Veranstaltung
- themenspezifische Recherchen und Aufbereitung von Inhalten

### **Intended Learning Outcomes:**

Nach der Teilnahme an dem Modul

- kennen die Studierenden die Grundprinzipien der Organisation von Projekten und sind befähigt, diese anzuwenden, indem sie kleine Projekte mit Unterstützung durch eine/n MentorIn effektiv organisieren und durchführen.
- können die Studierenden Projektmanagement-Abläufe kritisch reflektieren und evaluieren.
- kennen die Studierenden die Grundprinzipien der Führung und Motivation von Teams und können sie anwenden.

### **Teaching and Learning Methods:**

Das Modul besteht aus einer Kickoff-Veranstaltung, drei einführenden Workshops, einer Phase der eigenständigen Projektplanung, -durchführung und -dokumentation und einer abschließenden Präsentation und Diskussion des Projektes

Die Kickoff-Veranstaltung führt in das Modul ein, klärt organisatorische Fragen und unterstützt bei der ersten Projektplanung.

In den Workshops werden die Grundlagen von Designthinking (6h) Kommunikation und Teamführung (3h) und Projektmanagement (8h) durch kurze Präsentationen vermittelt, insbesondere auf Basis von Einzel- und Gruppenarbeitsphasen gemeinsam erarbeitet.

Kern des Moduls ist darauf aufbauend die möglichst eigenständige Durchführung eines Projektes. Mündliche Zwischenberichte bezüglich des Standes der Projektdurchführung dienen dabei der Kontrolle des Projektfortschritts. Zugleich stehen der/ die MentorIn und die MitarbeiterInnen der betreffenden Fachschaft bzw. des AStAs sowie gegebenenfalls des WTG Studienbüros den Studierenden in diesem Rahmen in Einzelgesprächen und Gruppendiskussionen mit Feedback und Hinweisen zur Seite.

Die Studierenden sollen im Rahmen ihres konkreten Projektes angeregt werden

- auftretende Probleme möglichst eigenständig zu bearbeiten und zu lösen.
- die eigene Arbeit konstruktiv zu kritisieren.
- die konstruktive Kritik der Betreuenden produktiv umzusetzen.

Im Rahmen der konkreten Projekte

- recherchieren die Studierenden relevante Literatur bzw. Materialien.
- verfassen die Studierenden eine Projektskizze inklusive Zeitplan im Umfang von etwa zwei DIN A 4-Seiten. Die

Skizze muss zum Bestehen des Moduls spätestens zwei Wochen nach der Teilnahme am Workshop

Projektmanagement beim WTG Studienbüro eingereicht werden.

- verfassen die Studierenden einen Projektbericht im Umfang von etwa fünf DIN A 4 Seiten, der den Charakter eines Lernportfolios haben soll.

- bereiten die Studierenden eine Projektpräsentation vor und führen diese durch.

**Media:**

Flipchart, Pinnwände, PowerPoint, Skripten

**Reading List:**

Allhoff, D.-W. & Allhoff, W. (2010). Rhetorik & Kommunikation. Ein Lehr- und Übungsbuch. München: Reinhardt.

Schulz von Thun, F. (2011). Miteinander reden 1-3. Störungen und Klärungen. Stile, Werte und Persönlichkeitsentwicklung. Das "Innere Team" und situationsgerechte Kommunikation. Reinbek: rororo.

Olfert, K. (2008). Kompakt-Training Projektmanagement. o.O.: Kiehl.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

TUMInspiriert - Studentische Projekte (Projektmanagement und Teamkommunikation in der Praxis) (Workshop, 1,5 SWS)

Kopp-Gebauer B [L], Hörtlackner R, Kopp-Gebauer B, Recknagel F, Schlesinger M, Slanitz A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### MCTS0049: Meaningful Project Management | Meaningful Project Management

Version of module description: Gültig ab summerterm 2018

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students write a project report (3000 to 4000 words) in which they show their ability to identify the phases of a project, to plan a project in compliance with international standards, to achieve project results effectively and on time, and to reflect upon the challenges of international team work. In a 20-minute presentation, students demonstrate their ability to present project results to an audience in a clear and structured manner. The grade is weighted as follows: report 75%, presentation 25%. A student's contribution to group work which is to be assessed must be clearly identifiable and gradable.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

Professional project management is vital for the success of companies today. It is not only important to comply with international standards and effectively use professional project management tools but also to be aware of intercultural as well as ethical and social challenges. In this module, strategies for solving an existing problem are developed and converted into a specific project. The methodology of the course is based on the professional tools used for the successful development and realisation of projects.

#### Intended Learning Outcomes:

After completing the module, students are able to

- identify the phases of a project (initiation, definition, role allocation, brainstorming, decision-making, implementation, presentation, written assessment)

- plan projects in accordance with international standards by taking into account key issues (goals, activities, budget planning, evaluation) and using professional project management tools
- undertake tasks in an international team and reflect upon international team work
- effectively work on achieving the planned results as well as the desired impact
- implement projects on time
- present project results to an audience

**Teaching and Learning Methods:**

Students develop a project proposal in an international group using professional and established project management tools. This enables them to identify the phases of a project, and to plan a project in compliance with international standards. Principles of successful project management are analysed, applied and assessed in good-practice examples and student projects, which helps students work more effectively on achieving planned results on time. Working in an international group of students allows them to reflect on issues of international team work.

**Media:**

Slides, whiteboard, exercise sheets, flipcharts, videos, webinars

**Reading List:**

A Guide to the Project Management Body of Knowledge (PMBOK Guide) 2014.

**Responsible for Module:**

Bauer, Victoria; M.A.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603035: 5 Credits Modules | 5 Credits Module****Module Description****SOT55304: The Future of Data Governance | The Future of Data Governance**

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

120 minutes written test at the end of the semester, in which students demonstrate that they are able to reflect on the learnings and apply the basic knowledge of data law and governance as well as the legal methods associated with it, and understand the impact of specific regulatory choices and link them to key concepts of constitutional magnitude.

**Repeat Examination:**

End of Semester

**(Recommended) Prerequisites:**

No prior knowledge expected

**Content:**

The course provides a comprehensive overview over important aspects of data governance and data law.

The aim is to train students in socially responsible use of data and thus, provide them with a good understanding of the most important areas of data law. Data law includes not only the particularly important area of data protection law, but also IT security law, the emerging law of data sharing, data access and open data law. Today, data protection law has become an important and indispensable prerequisite for activities in organizations. Particularly in business, the GDPR has become a "boardroom issue" due to the relatively high fines, which can be as high as 4% of annual turnover for a data protection breach, so basic knowledge in this field is of great benefit. Likewise, IT security law is enjoying growing importance. However, modern data law goes much further than these areas. Especially in the public sector, but also in the area of research data, there are increasingly far-reaching transparency obligations and obligations to publish. Data sharing

infrastructures are also under legislative discussion, particularly as a result of the Data Governance Act. In addition, there is an intensive discussion about data access obligations.

### **Intended Learning Outcomes:**

Upon successful completion of this module, students are able to:

- identify basic terms and important aspects of data law and data governance.
- understand specific regulatory choices and their intended and unintended impacts
- reflect on the respective choices made in a legal argument and link it to important concepts of constitutional magnitude
- develop problem awareness and the ability to express themselves.
- acquire basic impressions of law and legal methods that can also be of use to them in other contexts and that are very profitable for graduates of TUM in higher employment. However, this knowledge is to be woven into the course in such a way that students discuss central questions such as interpretation or the European theory of legal sources where they are relevant. In this way, the basic educational mandate is also fulfilled, which does justice to the guiding principle of independent-thinking human-centered engineering.

### **Teaching and Learning Methods:**

The course is structured in two phases that interconnect and support each other. One part of the course will consist of a lecture where the students will have the chance to familiarize themselves with all the important theoretical concepts and information within the fields of data governance and regulation.

The second part of the course consists of a reoccurring tutorial. In this part of the lecture, the knowledge acquired in the lecture will be enhanced and deepened in an interactive way. The students will work on real-life cases related to the topics of the class.

- In-class discussions, including mini moot courts (small argumentative exercises with preconceived roles) and case studies of specific artefacts, will train students to display and discuss a legal issue, help to develop and argue for a solution, and to provide them with jurisprudential reflection skills
- Online videos help them to prepare for classes

### **Media:**

input by lectures, case studies, in-class discussions, moot courts, online videos

### **Reading List:**

Streinz, Thomas, *The Evolution of European Data Law* (January 18, 2021).

Paul Craig and Gráinne de Búrca (eds), *The Evolution of EU Law* (OUP, 3rd edn 2021), 902-936, Available at SSRN: <https://ssrn.com/abstract=3762971> or <http://dx.doi.org/10.2139/ssrn.3762971>

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**



For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT60304: Ethical & Social Issues | Ethik & Soziales

## SOT603041: 1 Credit Modules | 1 Credit Module

### Module Description

## CLA10234: Human Rights Today | Menschenrechte in der Gegenwart

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

Studierende bereiten ein Referat (10-15 min.) vor, in dem sie ein Problem gegenwärtiger Konzeption der Menschenrechte aufgreifen und im Seminar erläutern.

### Repeat Examination:

### (Recommended) Prerequisites:

### Content:

Ontologische, historische und politische Perspektiven der westlichen Menschenrechte.

Historische und rechtliche Entwicklung der Menschenrechte.

Menschenrechte in der deutschen Geschichte als kumulative Problemlösung für konfessionelle und weltanschauliche Konflikte.

Epochaler Wettkampf zwischen westlichen individualistischen Menschenrechten und theologisch fundierten kollektiven Rechten des islamischen Kulturkreises.

Menschenrechtspolitik als außenpolitisches Instrument der westlichen Staaten.

Problem der Legitimität der humanitären Intervention.

Marx` Kritik an den Menschenrechten.

Mischverhältnisse zwischen westlichen Menschenrechten und anderen autochtonen Rechtskulturen.

**Intended Learning Outcomes:**

Nach der Teilnahme sind die Studierenden in der Lage, die Menschenwürde als Fundament der Menschenrechte zu verstehen und von den historischen Ursprüngen der Menschenrechte zu unterscheiden. Sie sind ferner in der Lage, die verschiedenen Aspekte der „Humanitären Intervention“, der „Responsibility to Protect“ in Verbindung mit der Globalisierung und deren Auswirkungen zu erkennen. Die Teilnehmer sind befähigt, Menschenrechtsverletzungen wahrzunehmen und deren Ursachen zu verstehen sowie Reformvorschläge.

**Teaching and Learning Methods:**

Diskussion, Referat

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Die Wahrung der Menschenrechte angesichts der Schwächung der internationalen Ordnung durch Kriege und Terrorismus (Workshop, 1 SWS)

Nusser K, Pereira Beloch L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10563: What Holds Society Together? | Was hält eine Gesellschaft zusammen?

Version of module description: Gültig ab summerterm 2010

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einem Referat stellen die Studierenden exemplarisch das Verhältnis zwischen Mensch und Gesellschaft vor und identifizieren hierzu die potentiellen Konflikte (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Ziel des Workshops ist es herauszufinden, wie vor dem Hintergrund eines tendenziell konfliktären Verhältnisses zwischen Mensch und Mitmensch eine konsensuale Basis geschaffen werden kann. Zunächst werden die natürlichen Voraussetzungen der Menschen für ein Leben in Gemeinschaft geklärt (anthropologischer Zugang). Im Anschluss sind die dynamischen Prozesse, Spannungsverhältnisse, Ambivalenzen in einer Gesellschaft herauszuarbeiten (z.B. Rivalisieren – Kooperieren, Nähe – Distanz, Inklusion – Exklusion, Eigenes – Fremdes, Intimität - Öffentlichkeit). Aktuelle Themen wie kultureller Narzissmus und Einfluss der Neuen Medien auf Interaktion und Gesellschaft werden genauso miteinbezogen wie Fragen nach der Schaffung bzw. Bedeutung von Gegenseitigkeitsverhältnissen wie Dialogizität, Vertrauen, Solidarität, Engagement und Anerkennung.

Antworten dazu liefern Sozialphilosophie, Sozialanthropologie und Sozialethik.

Skripten und Literaturangaben werden im Workshop ausgegeben.

**Intended Learning Outcomes:**

Die Studierenden sind nach Teilnahme am Workshop in der Lage, Wechselwirkungen von Individuum und Gesellschaft zu erkennen, Ambivalenzen und Widersprüche des menschlichen Sozialverhaltens zu identifizieren sowie dynamische Prozesse der Formation gesellschaftlicher Gruppen zu verstehen.

**Teaching and Learning Methods:**

Vortrag, Texterschließung, Gruppenarbeit, Diskussion, Videobeitrag

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Andreas Belwe

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA11313: Conflict Management and Conducting Discussions | Konfliktmanagement und Gesprächsführung

Version of module description: Gültig ab summerterm 2015

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 8	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden dokumentieren in einem Bericht in Form einer schriftlichen Selbstreflexion (3-5 Seiten) ihr Verständnis des eigenen Konfliktverhaltens in schwierigen Gruppensituationen.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

Wenn Menschen intensiv zusammenarbeiten, ergeben sich immer wieder Situationen, die sie als kontrovers, Stress auslösend und unproduktiv erleben. Durch das Aufeinandertreffen gegensätzlicher Interessen, Verhaltensweisen oder Einstellungen entstehen häufig Auseinandersetzungen, die es den Beteiligten erschweren, die eigentlichen Aufgaben zu erledigen und die angestrebten Ziele und Ergebnisse zu erreichen. Konflikte bergen jedoch auch viele positive Chancen und Veränderungspotenziale.

Der Workshop soll die Teilnehmenden sensibilisieren, Streitsituationen frühzeitig zu erkennen und eine konstruktive Haltung zur Situation einzunehmen. Sie lernen, Distanzfähigkeit zu entwickeln, wo sie selbst in Konflikte verwickelt sind, und ein Gespür für Verhandlungsgeschick entwickeln, wo sie als neutrale Dritte zwischen Kontrahenten vermitteln können. Der Workshop soll schließlich Strategien und (Gesprächs-)Techniken vermitteln, mit denen die Teilnehmenden Konflikte konstruktiv deeskalieren und den nachgelagerten Prozess gezielt steuern und strukturieren können.

**Intended Learning Outcomes:**

Nach der Teilnahme sind die Studierenden in der Lage das persönliche Konfliktverhalten zu verstehen, Konflikte zu erkennen, zu bearbeiten und zu lösen. Die Studierenden kennen die Eskalationsstufen im Konfliktverlauf, wissen, wie sie schwierige Situation ansprechen und zwischen Konfliktparteien moderieren.

**Teaching and Learning Methods:**

Durch theoretischen Input erfahren die Studierenden unterschiedliche Konfliktdefinitionen, die diese im Anschluss praktisch anhand von Rollenspielen und Fallarbeiten in Kleingruppen sowie im Plenum üben können

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Kritische Kommunikationssituationen einfach lösen (Workshop, 1,5 SWS)

Hörtlackner R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603042: 2 Credits Modules | 2 Credit Module

### Module Description

## CLA20230: Ethics and Responsibility | Ethik und Verantwortung

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

In einem Referat (1500-2000 Wörter) oder einer Präsentation (15-20 Min.) stellen die Studierenden eine Methode ethischer Urteilsbildung für mögliche Konfliktszenarien in den Problemfeldern Wissenschaft und Technik vor (Prüfungsleistung).

### Repeat Examination:

### (Recommended) Prerequisites:

### Content:

Wir treffen täglich Entscheidungen. Dabei spielen Fakten eine große Rolle, oft aber auch das sogenannte Bauchgefühl. In gesellschaftlichen Debatten um brisante Anwendungen von Wissenschaft und Technik kommt viel darauf an, beides voneinander zu unterscheiden und vor allem gute Gründe pro oder contra zu finden. Ethik leitet dazu an, mit Konflikten verantwortlich umzugehen. Aber welche Art von „Wissen“ wird dabei eingesetzt? Wie verhalten sich Recht und Ethik zueinander? Und wie lässt sich über angewandte Ethik sprechen, ohne Moral zu predigen?

### Intended Learning Outcomes:

Die Studierenden sind in der Lage mithilfe einer Methode ethischer Urteilsbildung exemplarische Konfliktszenarien auf den Problemfeldern von Wissenschaft und Technik zu beschreiben und abzuschätzen. Nach der Teilnahme am Seminar sind sie in der Lage, ethische Argumente im Hinblick auf ihre Geltungsansprüche zu unterscheiden und verantwortliche Handlungsoptionen



in verständlicher und zugleich anwendungsnaher Sprache für ein ethisches Gutachten reflektiert aufzubereiten.

**Teaching and Learning Methods:**

Präsentation, Referat, Diskussion, Textanalyse

**Media:**

**Reading List:**

Fritz Allhoff, What Are Applied Ethics? [http://files.allhoff.org/research/What\\_Are\\_Applied\\_Ethics.pdf](http://files.allhoff.org/research/What_Are_Applied_Ethics.pdf)

Lee Archie, John G. Archie, Introduction to Ethical Studies An Open Source Reader, <https://philosophy.lander.edu/ethics/ethicsbook.pdf>

John Deigh, An Introduction to Ethics, <http://dx.doi.org/10.1017/CBO9780511750519.002>

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20420: Integration of Technology into Society | Integration of Technology into Society

Version of module description: Gültig ab summerterm 2012

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 39	<b>Contact Hours:</b> 21

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung besteht aus einer Präsentation (25-35 min) mit anschließender Diskussion, in der die Studierenden ein Problem aus dem behandelten Themenbereich anhand wissenschaftlicher Konzepte beschreiben und sich an einer Diskussion über mögliche Konsequenzen beteiligen.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Angesichts des rasanten Fortschritts in Digitalisierung, Robotik oder Biotechnologie stellt sich mehr denn je die Frage, wie Technologien unser Erleben, Denken und Handeln verändern und Grenzen verschieben. Wie beeinflussen Maschinenlernen und Big Data unser Verständnis von Privatheit? Inwiefern berühren Pränataldiagnostik und synthetische Biologie unsere tradierten sozialen Normen und Werte? Wer trägt Verantwortung für autonome Systeme? Und wie dürfen wir uns ihnen gegenüber verhalten?

Anhand von aktuellen Technologien werden soziale, politische, rechtliche und ethische Probleme identifiziert, mittels sozial- und geisteswissenschaftlicher Konzepte reflektiert und Positionen aktueller Debatten diskutiert.

#### Intended Learning Outcomes:

Die Teilnehmer sind in der Lage, exemplarisch soziale, politische, rechtliche oder ethische Probleme der gesellschaftlichen Integration von Technologien mittels sozial- oder

geisteswissenschaftlicher Konzepte zu beschreiben und Argumente zur Bewertung möglicher Konsequenzen zu formulieren.

**Teaching and Learning Methods:**

Dozenteninput, Präsentationen, Diskussionen, eigenständige Lektüre

**Media:**

**Reading List:**

**Responsible for Module:**

Dr. Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

Moderne Gesellschaften im Zeitalter der Digitalisierung (Seminar, 2 SWS)

Altmann K [L], Altmann K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20542: Media Ethics | Medienethik

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In a (group) presentation (18-22 minutes plus discussion) and responses to other presentations, the students demonstrate their capability to collaborate on complex topics, gain insights from philosophical texts, apply them to case studies, and understand the implied ethical issues and conflicts.

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Digital technology is always getting more complex and more interwoven with the human lifeworld. The problems of understanding media – i.e. the nature and implications of digital technology – are expressed in radically different and often contradictory conceptions. The module examines the major conceptions of digital technology/media and the respective ethical consequences they imply. A particular emphasis is on the changes technology brings to the perception, action, and thinking of individuals and their social relations. Using selected examples, not only concepts for understanding (digital) media and models of ethical argumentation are presented, but also options for evaluating and dealing with ethical conflicts are discussed.

#### Intended Learning Outcomes:

Upon successful completion of this module, students will be able to:

- describe the prevalent and often implicitly presupposed conceptions of digital technology
- explain the ethical issues entailed by the respective conception
- read, analyze, and understand philosophical texts
- apply the conceptions to concrete case studies

- identify the specific ethical conflicts between these conceptions
- present and discuss academic papers on this complex interdisciplinary topic

**Teaching and Learning Methods:**

Methods include conceptual analysis, hermeneutic work with texts, class discussions, group work, and presentations.

**Media:**

Online reader

**Reading List:**

Coeckelbergh, Mark, and David J. Gunkel. 2023. "ChatGPT: Deconstructing the Debate and Moving It Forward." *AI & SOCIETY*, June. <https://doi.org/10.1007/s00146-023-01710-4>.

Crane, Tim. 2021. "The AI Ethics Hoax." *IAI TV - Changing How the World Thinks*. March 3, 2021. <https://iai.tv/articles/the-ai-ethics-hoax-auid-1762>.

Durt, Christoph. 2023. "The Digital Transformation of Human Orientation: An Inquiry into the Dawn of a New Era (Winner of the \$10.000 Essay Prize)."

Esposito, Elena. 2022. *Artificial Communication: How Algorithms Produce Social Intelligence*. Strong Ideas Series. Cambridge, Massachusetts: The MIT Press.

Verbeek, Peter-Paul, and Robert P. Crease. 2005. *What Things Do: Philosophical Reflections on Technology, Agency, and Design*. 2. printing. University Park, Pa: Pennsylvania State Univ. Press.

**Responsible for Module:**

Slanitz, Alfred; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

AI Ethics (Seminar, 2 SWS)

Durt C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20705: Diversity and Conflict Management | Diversität und Konfliktmanagement

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden verfassen einen Essay im Umfang von 1000 - 1500 Worten. Im Rahmen des Essays zeigen sie, dass sie Konflikte theoretisch einordnen und Methoden zur Konfliktlösung anwenden können (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Das Seminar erläutert theoretisch die Rolle von Diversität in Konflikten und die Chancen und Risiken, die sich daraus ergeben. Es wird sich dabei mit den Hintergründen von Konflikten und deren systematischen Kategorisierung als auch mit Lösungsansätzen und Konfliktstrategien beschäftigen. Theoretische Modelle werden anhand eigener Beispiele praktisch greifbar gemacht.

#### Intended Learning Outcomes:

Nach der Teilnahme am Workshop sind die Studierenden in der Lage, die Chancen von Diversität in einer Gruppe zu erkennen und sie konstruktiv in ihre Arbeit zu integrieren. Sie können Konflikte theoretisch einordnen und kennen praktische Methoden welche zur gelungenen Konfliktlösung führen. Zudem sind sie in der Lage diese Methoden im späteren Arbeitsleben einzusetzen. Die Studierenden können ihr eigenes Konfliktverhalten reflektieren und gegebenenfalls verschiedene Schemata als Analysebehelfe einsetzen.

**Teaching and Learning Methods:**

Die Teilnehmer/innen werden an praktischen, teils auch eigenen Beispielen und mit partizipativen Methoden ihren eigenen sozio-kulturellen Hintergrund reflektieren, Konfliktmanagement erfahren und die praktische Erfahrung in theoretische Hintergründe einbetten.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Diversität und Konfliktmanagement (Streiten über Unterschiede, Unterschiede im Streiten)  
(Workshop, 1,5 SWS)

Haberl M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20910: Gender Competence as Core Qualification | Genderkompetenz als Schlüsselqualifikation

Version of module description: Gültig ab winterterm 2010/11

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer schriftlichen Ausarbeitung von 5 Seiten zeigen die Studierenden anhand von aktuellen Fragestellungen, zu Themen wie Frauenquote, Vereinbarkeit und Rollenveränderung von Eltern, wie (veränderbare) Geschlechterrollen unsere Wirklichkeit prägen und wie sich durch einen konstruktiven und reflektierten Umgang damit auch persönliche Möglichkeiten erweitern lassen (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

An der Hochschule sind die Anforderungen und Ansprüche in den letzten Jahren stark gestiegen. Einhergehend mit den Veränderungen der Hochschule haben sich auch die Rollenanforderungen an ihre Mitglieder gewandelt. Auch Männer- und Frauenbilder sind in einem stetigen Veränderungsprozess. Geschlechterrollen beeinflussen unser alltägliches Verhalten und unsere Wahrnehmung. Hier setzt der Workshop an:

Welche Geschlechterrollen und Vorbilder prägen heute unsere Wirklichkeit? Welchen Einfluss haben andere Kulturen auf unser Verhalten? Und wie können wir mit den bestehenden Geschlechterrollen konstruktiv umgehen und unsere persönlichen Möglichkeiten erweitern? Wo treffe ich in meinem Umfeld auf genderspezifische Handlungs-Muster und -Strukturen?

#### Intended Learning Outcomes:

Nach der erfolgreichen Teilnahme an diesem Workshop sind die Studierenden in der Lage darzustellen, welche Geschlechterrollen und Vorbilder unsere Wirklichkeit prägen. Weiterhin



können die Studierenden veranschaulichen wie sie mit den bestehenden Geschlechterrollen - nicht nur - in ihrem Umfeld konstruktiv umgehen.

**Teaching and Learning Methods:**

Das Seminar beinhaltet theoretische Inputs, Gruppenarbeit, Rollenspiele und kollegiales Feedback.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Genderkompetenz als Schlüsselqualifikation (Ein interaktives Lernprojekt) (Workshop, 1 SWS)  
Fänderl W, Quindeau A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21005: Introduction to Diversity Management | Einführung in Diversity Management

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer Kurzpräsentation und einer schriftlichen Ausarbeitung zeigen die Studierenden die Bedeutung von Diversity in Organisationen auf. Sie reflektieren welche Möglichkeiten und Herausforderungen durch Diversity Management geschaffen werden können (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Diversity Management und Diversity Kompetenz sind für Organisationen zu zentralen und notwendigen Aufgaben geworden.

Die Etablierung einer Wertschätzungskultur, Chancengleichheit und die Förderung kreativer und innovativer Lösungsansätze sind wesentliche Ziele des Diversity Managements: Wie kann ich mit der passenden Kombination von Vielfalt das Optimum für ein Projekt oder eine Veranstaltung herausholen? Der gelungene Umgang mit Diversity hängt nicht nur von persönlichen Fähigkeiten und Handlungsoptionen ab, sondern auch von der Kompetenz sich auf Unterschiedlichkeiten eines Teams, wie ethnische Herkunft, Hautfarbe, sexuelle Identität, Alter, Geschlecht, Religion und Behinderung einzustellen. Auch institutionelle Voraussetzungen (AGBs und Rechtsrahmen, kulturell-religiöse Vorgaben, Willkommenskultur etc.) wirken sich darauf aus.

Folgende Themen werden behandelt:

- Diversity-Management-Theorie
- Beispiele für Rahmenbedingungen an Universitäten, Unternehmen und Institutionen in unterschiedlichen Ländern

- Reflexion eigener Vielfalt, Kooperations- und Abgrenzungsmechanismen
- Gemeinsame Erstellung eines TUM Diversity Magazins mit Artikeln zu Theorie und Praxis von Diversity Kompetenz in Wirtschaft und Wissenschaft.

**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme am Workshop verstehen die Studierenden die Grundlagen des Diversity Managements und sind für das Thema sensibilisiert. Sie können demonstrieren wie man Diversity in Organisationen schafft und sie können persönliche Stereotypen erkennen. Die Studierenden lernen die praktische Recherche und daraus resultierend die Veröffentlichung eigener Artikel.

**Teaching and Learning Methods:**

Anhand von theoretischen Inputs, Übungen und Gruppenarbeit wird in die Thematik des Diversity Management eingeführt.

Reader und ergänzende Literatur; Rollenspiel; Erfahrungsaustausch, Diskussion und Reflexion; kollegiales Feedback.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Project Week: Hackathon - Hacking TUM for Diversity! (Seminar, 2 SWS)

Clare A, Güner C, Lammar D

Diversity Kompetenz (Ein interaktives Lernprojekt) (Workshop, 1 SWS)

Fänderl W, Quindeau A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21601: Ethics and Responsibility II | Ethik und Verantwortung II

Version of module description: Gültig ab summerterm 2016

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einem Referat abgeschlossen (30min), in dem die Studierenden zentrale Argumente zu einem ethischen Problem erörtern und in der Diskussion eine eigene Position vertreten.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Fortgeschrittene Studierende.

Erfolgreiche Teilnahme an einer einführenden Ethikveranstaltung.

#### Content:

Vertiefende Behandlung von Themen aus den Bereichen Umweltethik, Wissenschaftsethik, Technikethik, Medizinethik oder Informations-/Medienethik in philosophischer Perspektive unter Berücksichtigung aktueller Forschungsfelder.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage die wichtigsten Argumente eines Bereichs der Angewandten Ethik zu verstehen und in andere Kontexte zu übertragen. Sie kennen den aktuellen Stand der Diskussion und können eine eigene Position in Diskussionen vertreten.

#### Teaching and Learning Methods:

Textanalyse, Webplattform, Diskussion, Präsentation

#### Media:

**Reading List:**

Wird im Rahmen der Veranstaltung zur Verfügung gestellt

**Responsible for Module:**

Dr. Eva Sandmann

**Courses (Type of course, Weekly hours per semester), Instructor:**

Ethics of Responsibility: Current Areas of Application (Seminar, 2 SWS)

Wernecke J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603043: 3 Credits Modules | 3 Credit Module

### Module Description

## CLA30230: Ethics and Responsibility | Ethik und Verantwortung

Version of module description: Gültig ab winterterm 2010/11

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

Das Modul wird mit einer wissenschaftlichen Ausarbeitung in Form eines Essays (4000-5000 Zeichen) abgeschlossen. In diesem dokumentieren die Studierenden, dass sie ethische Argumente differenziert zuordnen und i.S. von Handlungspositionen konzeptionell umsetzen, sowie sprachlich verständlich darstellen können.

In Vorbereitung der schriftl. Ausarbeitung zeigen die Studierenden in einem Referat (25-35 min), dass sie in der Lage sind, eine Methode ethischer Urteilsbildung für mögliche Konfliktszenarien in den Problemfeldern Wissenschaft und Technik darstellen können (Gewichtung 7:3).

### Repeat Examination:

Next semester

### (Recommended) Prerequisites:

### Content:

Wir treffen täglich Entscheidungen. Dabei spielen Fakten eine große Rolle, oft aber auch das sogenannte Bauchgefühl. In gesellschaftlichen Debatten um brisante Anwendungen von Wissenschaft und Technik kommt viel darauf an, beides voneinander zu unterscheiden und vor allem gute Gründe pro oder contra zu finden. Ethik leitet dazu an, mit Konflikten verantwortlich umzugehen. Aber welche Art von „Wissen“ wird dabei eingesetzt? Wie verhalten sich Recht und Ethik zueinander? Und wie lässt sich über angewandte Ethik sprechen, ohne Moral zu predigen?

### Intended Learning Outcomes:

Die Studierenden sind in der Lage mithilfe einer Methode ethischer Urteilsbildung exemplarische Konfliktszenarien auf den Problemfeldern von Wissenschaft und Technik zu beschreiben und

abzuschätzen. Nach der Teilnahme am Seminar sind sie in der Lage, ethische Argumente im Hinblick auf ihre Geltungsansprüche zu unterscheiden und verantwortliche Handlungsoptionen in verständlicher und zugleich anwendungsnaher Sprache für ein ethisches Gutachten reflektiert aufzubereiten.

**Teaching and Learning Methods:**

Präsentation, Referat, Diskussion, Textanalyse

**Media:**

**Reading List:**

Fritz Allhoff, What Are Applied Ethics? [http://files.allhoff.org/research/What\\_Are\\_Applied\\_Ethics.pdf](http://files.allhoff.org/research/What_Are_Applied_Ethics.pdf)

Lee Archie, John G. Archie, Introduction to Ethical Studies An Open Source Reader, <https://philosophy.lander.edu/ethics/ethicsbook.pdf>

John Deigh, An Introduction to Ethics, <http://dx.doi.org/10.1017/CBO9780511750519.002>

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA30420: Integration of Technology into Society | Integration of Technology into Society

Version of module description: Gültig ab winterterm 2014/15

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 69	<b>Contact Hours:</b> 21

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

Angesichts des rasanten Fortschritts in Digitalisierung, Robotik oder Biotechnologie stellt sich mehr denn je die Frage, wie Technologien unser Erleben, Denken und Handeln verändern und Grenzen verschieben. Wie beeinflussen Maschinenlernen und Big Data unser Verständnis von Privatheit? Inwiefern berühren Pränataldiagnostik und synthetische Biologie unsere tradierten sozialen Normen und Werte? Wer trägt Verantwortung für autonome Systeme? Und wie dürfen wir uns ihnen gegenüber verhalten?

Anhand von aktuellen Technologien werden soziale, politische, rechtliche und ethische Probleme identifiziert, mittels sozial- und geisteswissenschaftlicher Konzepte reflektiert und Positionen aktueller Debatten diskutiert.

#### Intended Learning Outcomes:

Die Teilnehmer sind in der Lage, exemplarisch soziale, politische, rechtliche oder ethische Probleme der gesellschaftlichen Integration von Technologien zu identifizieren, mittels sozial- oder geisteswissenschaftlicher Konzepte zu analysieren und für eine Position hinsichtlich möglicher Konsequenzen zu argumentieren.



**Teaching and Learning Methods:**

Dozenteninput, Präsentationen, Diskussionen, eigenständige Lektüre

**Media:**

**Reading List:**

**Responsible for Module:**

Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

MA-Spezielle Soziologie: Soziologie der Krise (Seminar, 2 SWS)

Beck S, Schönbauer S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA31601: Ethics and Responsibility II | Ethik und Verantwortung II

Version of module description: Gültig ab summerterm 2018

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einer Modulprüfung in Form eines Essays (1000-1500 Wörter) abgeschlossen, in dem die Studierenden dokumentieren, dass sie die wichtigsten Argumente eines Bereichs der angewandten Ethik verstanden haben und auf ein aktuelles Forschungsfeld übertragen können. Im Sinne einer Vorbereitung zur Modulprüfung erstellen die Studierenden eine Präsentation (Umfang 25-35 Min.), in der ein Anwendungsfeld und dessen ethische Bewertung erarbeitet und vorgestellt wird.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Fortgeschrittene Studierende.

Erfolgreiche Teilnahme an einer einführenden Ethikveranstaltung.

#### Content:

Vertiefte Behandlung von Themen aus den Bereichen Umweltethik, Wissenschaftsethik, Technikethik, Medizinethik oder Informations-/Medienethik in philosophischer Perspektive unter Berücksichtigung aktueller Forschungsfelder.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage die wichtigsten Argumente eines Bereichs der Angewandten Ethik zu verstehen und in andere Kontexte zu übertragen. Sie kennen den aktuellen Stand der Diskussion und können eine eigene Position schriftlich formulieren und argumentativ begründen.

#### Teaching and Learning Methods:

Textanalyse, Webplattform, Diskussion, Präsentation, Referat

**Media:**

**Reading List:**

**Responsible for Module:**

Dr. rer nat. Eva Sandmann

**Courses (Type of course, Weekly hours per semester), Instructor:**

Ethics of Responsibility: Current Areas of Application (Seminar, 2 SWS)

Wernecke J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT53200: Responsibility in the Engineering Profession | Verantwortung im Ingenieurberuf

*Applied Ethics for Engineers*

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a presentation (15 - 20 minutes) and an essay (1000 - 1200 words) in which the students demonstrate their analytical-argumentative abilities:

- to identify different conflicting goals of their profession, which are elaborated in the course, with regard to functional, social-normative and ethical implications and classify them critically argumentatively;
- to classify and apply different models of responsibility ethics taught in the seminar with regard to diverse applications (case studies);
- to present an analysis and application of different models of responsibility ethics taught in the course by means of examples from the field of activity;
- to present and discuss their results in a concise analytical-argumentative form.

The work must be accompanied by a graded presentation (15 - 20 minutes). The weighting of the marks is 70% for the essay and 30% for the presentation.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

No knowledge.

#### Content:

The module introduces students to the following topics:

General issues of normative and applied ethics;

Responsibility in the professional field of civil and environmental engineering;

Recognising, classifying and evaluating professional, social-normative and ethical conflicts of objectives;

models and methods of responsible problem-solving competence;  
Implementation of technical solutions (models): stakeholders, social acceptance, sustainability goals (in terms of normative guard rails, responsible communication and implementation).

**Intended Learning Outcomes:**

On successful completion of this module students will be:

- familiar with basic social normative and ethical challenges in the field of engineers' activities;
- understand the most important topics and issues in the field of ethics of responsibility;
- are able to analyse, classify and assess activity-related conflicts of objectives;
- are able to analyse and to discuss critically models of responsible problem-solving competence with regard to the implementation of technical solution strategies.

**Teaching and Learning Methods:**

The module introduces students to the following topics:

General issues of normative and applied ethics;

Responsibility in the professional field of civil and environmental engineering;

Recognising, classifying and evaluating professional, social-normative and ethical conflicts of objectives;

models and methods of responsible problem-solving competence;

Implementation of technical solutions (models): stakeholders, social acceptance, sustainability goals (in terms of normative guard rails, responsible communication and implementation).

**Media:**

Literature, reader, presentation and discussion

**Reading List:**

**Responsible for Module:**

Jörg Wernecke

**Courses (Type of course, Weekly hours per semester), Instructor:**

Responsibility in the Engineering Profession. Applied Ethics for Engineers (Seminar, 2 SWS)

Wernecke J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT63201: Game Jam. Reflecting Science, Technology and Society through Game Design | Game Jam. Wissenschaft, Technologie und Gesellschaft durch Spieldesign reflektieren

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In a group presentation (30 min, with clearly noticeable individual contributions) of a game concept students show how to transform socially relevant issues into game situations that encourage reflection about science, technology and society.

#### Repeat Examination:

#### (Recommended) Prerequisites:

The course offers an interdisciplinary setting in which the participants develop their own game prototype (no programming required) — it is therefore aimed at all students, e.g. from Science, Engineering, Social Sciences and Humanities.

#### Content:

The interactive and narrative character of video games can be turned into a useful tool to present the complexity of ethical and societal aspects of science and technology topics. In the development process of a game concept, the game designer has to decide on game mechanics and storytelling techniques, making her/him reflect on how to present the ethical and societal issues of a topic. This is a productive process, because various aspects of game design correspond to different dimensions of ethical and societal issues, e.g. the integration of different options the player can choose from (decision-making), the constellation of involved people and their interactions (storytelling) as well as the setting of the (societal) context (worldbuilding).

### **Intended Learning Outcomes:**

Upon successful completion of this module students are able to identify societal dimensions of science and technology topics as well as to transfer complex relationships in appealing mechanics, narratives and activities to generate productive offers for reflection and discussion.

They have intensive experience with target oriented project work in multidisciplinary teams, facilitating the exchange and communication between a multitude of different tasks, competencies and positions.

Furthermore the participants are able to present their work-in-progress in a concise way as well as to give and receive feedback in a professional manner.

### **Teaching and Learning Methods:**

The students will be introduced to the social science-perspective on a selection of STEM (Science, Technology, Engineering, Mathematics) topics as well as the creative potential of video games for reflection, e.g. worldbuilding, storytelling and decision-making. Based on readings and inputs of experts and supported by mentors, the students develop a game concept addressing a STEM topic while enabling the creative potential of games to integrate societal and ethical aspects. The final concept is presented in the course and discussed by all participants.

### **Media:**

### **Reading List:**

### **Responsible for Module:**

Slanitz, Alfred; Dr. phil.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

A Different Kind of Game Jam! Reflecting Science, Technology and Society through Game Design (Workshop, 2 SWS)

Valdes Stauber C, Hajek K, Sultan A, Tsiroukis F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603045: 5 Credits Modules | 5 Credits Module

### Module Description

## SOT65201: Developing a Game Prototype. Reflecting Science, Technology and Society through Game Design | Entwicklung eines Game Prototypen. Wissenschaft, Technologie und Gesellschaft durch Spieldesign reflektieren

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 5	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

In a project work students show how to transform socially relevant issues into game situations that encourage reflection about science, technology and society. The students will present the game concept (30 min, with clearly noticeable individual contributions) and create a prototype (paper based or digital) incl. all necessary instructions for use (weighting 1:1). With the implementation, the students show their ability to take the perspective of the recipients in order to motivate them for advanced reflection on the respective topic. Criteria for the evaluation are accessibility, attractiveness, immersion, target group fit, complexity of the issues, diversity of perspectives. To convey project results adequately, additional assignments (e.g. prototype presentation, project report, prototype pitch, grant application, contest submission) will be announced at the beginning of the course.

### Repeat Examination:

### (Recommended) Prerequisites:

The course offers an interdisciplinary setting in which the participants develop their own game prototype (no programming required) — it is therefore aimed at all students, e.g. from Science, Engineering, Social Sciences and Humanities.

### Content:

The interactive and narrative character of video games can be turned into a useful tool to present the complexity of ethical and societal aspects of science and technology topics. In the development



process of a game concept, the game designer has to decide on game mechanics and storytelling techniques, making her/him reflect on how to present the ethical and societal issues of a topic. This is a productive process, because various aspects of game design correspond to different dimensions of ethical and societal issues, e.g. the integration of different options the player can choose from (decision-making), the constellation of involved people and their interactions (storytelling) as well as the setting of the (societal) context (worldbuilding).

### **Intended Learning Outcomes:**

Upon successful completion of this module students are able to identify societal dimensions of science and technology topics as well as to transfer complex relationships in appealing mechanics, narratives and activities to generate productive offers for reflection and discussion.

They have intensive experience with target oriented project work in multidisciplinary teams, facilitating the exchange and communication between a multitude of different tasks, competencies and positions.

Furthermore the participants are able to present their work-in-progress in a concise way as well as to give and receive feedback in a professional manner.

In addition, they are able to take into account the needs and abilities of users/recipients when communicating challenging topics.

### **Teaching and Learning Methods:**

The students will be introduced to the social science-perspective on a selection of STEM (Science, Technology, Engineering, Mathematics) topics as well as the creative potential of video games for reflection, e.g. worldbuilding, storytelling and decision-making. Based on readings and inputs of experts and supported by mentors, the students develop a game concept addressing a STEM topic while enabling the creative potential of games to integrate societal and ethical aspects. The final concept, which is presented in the course and discussed by all participants, is implemented in a game prototype to enable a contribution to a competition or an exhibition (with certain specifications).

### **Media:**

### **Reading List:**

### **Responsible for Module:**

Slanitz, Alfred; Dr. phil.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

A Different Kind of Game Jam! Reflecting Science, Technology and Society through Game Design (Workshop, 2 SWS)

Valdes Stauber C, Hajek K, Sultan A, Tsiroukis F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT60305: Arts & Culture | Kunst & Kultur

### SOT603051: 1 Credit Modules | 1 Credit Module

#### Module Description

### CLA11207: Understanding Art 1: Art Reception in front of Originals in Museums in Munich | Kunst verstehen 1: Kunstrezeption vor Originalen in Münchner Museen

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung wird in Form eines Referats (20-30 Minuten) erbracht, in dem die Studierenden ein Kunstwerk beschreiben, analysieren und interpretieren.

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

Die Seminare thematisieren zentrale Positionen und/oder herausragende Werke im weiten Spektrum von Kunst und Design.

Mögliche Themen und Fragen:

Wie verändert sich das Industrie-, Fahrzeug- oder IT- Design im 20. Jahrhundert? Wie unterscheiden sich Selbstportraits der Renaissance von heutigen Selfies? Brauchen wir Kunst im öffentlichen Raum? Was bedeutet "Slow-Art" oder "phänomenologische Methode"?

Über den kulturhistorischen Kontext hinaus werden exemplarisch aktuelle kulturpolitische sowie kunst- und designtheoretische Diskurse berücksichtigt.

**Intended Learning Outcomes:**

Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, ein Kunstwerk oder Designobjekt verständlich zu beschreiben und nachvollziehbar zu interpretieren. Darüber hinaus kennen sie Beispiele von kulturhistorischen Einordnungen.

**Teaching and Learning Methods:**

Beschreibung und Interpretation von Originalen. Diskussion in Münchner Museen und im öffentlichen Raum.

**Media:**

Seminar, Referate, Eigenstudium, Besuch von Ausstellungen

**Reading List:**

**Responsible for Module:**

Slanitz, Alfred; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Selfie im Pelzrock? Portraits aus fünf Jahrhunderten (Seminar, 1 SWS)

Glardon C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT603052: 2 Credits Modules | 2 Credits Module

### Module Description

#### CLA20552: Self-Written, Newly Read - A Literary Writers' Lab | Selbst geschrieben, neu gelesen - Eine literarische Schreibwerkstatt

Version of module description: Gültig ab winterterm 2002/03

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kritisches Lesen von sämtlichen Texten wird vorausgesetzt. Studierende stellen eigene literarische Texte in geschützter Öffentlichkeit vor und erhalten kreatives Feedback (unbenotete Studienleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Wer sieht, wer spricht in einem literarischen Text? Die grundlegenden Fragen sind immer einfach, im Leben wie in der Literatur. Doch wer sie genauer prüft, wird erkennen, dass mit diesen Fragen – nach der Perspektive, der Figur und der Sprache – die zentralen ästhetischen wie technischen Grundlagen eines jeden Textes gemeint sind. Sie eröffnen die Welt einer Geschichte und begrenzen ihre Möglichkeiten. Daher soll anhand dieser Themen das Handwerk des Schreibens in Lektüren wie praktischen Übungen erprobt werden.

#### Intended Learning Outcomes:

Eigene literarische Texte werden in einer geschützten Öffentlichkeit vorgestellt. Die Studierenden trauen sich selbst Schreibübungen auszuprobieren um ihre eigenen Stärken und Schwächen klar zu erkennen. Am Ende sind die Studierenden in der Lage aus literarische Lektüren und aus diversen praktischen Übungen Impulse für ihre eigene Ausdrucksfähigkeit und den bewussten Umgang mit sprachlichen Mitteln zu holen.

**Teaching and Learning Methods:**

Lesen, Übungen zum Kreativen Schreiben, Verfassen literarischer Texte, Textkritik

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Poetik und Philosophie der Freundschaft. Eine Denk- und Schreibwerkstatt (Seminar, 1,5 SWS)  
Ammereller E, Lange K

Beginnen. Eine literarische Schreibwerkstatt (Workshop, 1,5 SWS)

Raich T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20701: Art in Motion. Training for Excellence | Art in Motion. Training for Excellence

Version of module description: Gültig ab summerterm 2016

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The students are actively taking part in the colloquium (Studienleistung). Furthermore they present a poster through which they show how creative strategies are more effective than simply repeating learning matter (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

T4X – Success for musicians, dancers, actors, and athletes hinges on their training practices.

Current research in motor learning, music psychology and related disciplines proves that creative strategies are often more effective than mere repetition.

This symposium runs for two days at the University of Music and Performing Arts Munich, during which training methods beyond tradition and superstition are considered. With science, sense and soul this symposium aims to further define pathways to excellence.

#### Intended Learning Outcomes:

After attending the main lecturers, workshops and poster session of the symposium, participants know about 21st century research training methods. They are able to apply new theories of how learning takes place, what strategies lead to effective practice, and how they can stay motivated to acquire additional skills.

**Teaching and Learning Methods:**

Lectures, discussions

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Adina Mornell

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21212: Visual Design for a Knowledge Society | Visuelle Gestaltung für die Wissensgesellschaft

Version of module description: Gültig ab summerterm 2013

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung wird in Form einer Übungsleistung erbracht. In dieser soll nachgewiesen werden, dass die Grundlagen der visuellen Darstellung auf Einzel- und Mehrbildfolgen umgesetzt und daraus narrative Strukturen erkannt und erstellt werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Workshop geht es um visuelle Narration als umfangreiches Medium um wissenschaftliche Inhalte zu kommunizieren. Ein Verständnis für diese Erzählmethode wird erarbeitet um selbst bildsprachliche Geschichten erstellen zu können.

Anhand von einfachen, praktischen Übungen zur Einstellung auf das Thema beginnt der Workshop. Anschließend fokussieren wir uns auf einen theoretischen Block, in welchem sowohl gestalterische Grundlagen, verschiedene Erzähltheorien als auch beispielhafte KünstlerInnen und Werke besprochen werden.

Im weiteren Ablauf wird ein an die vorangegangene Stunde angelehntes Thema in ein bis maximal vier Panels festgehalten. Dabei kann es sich um eine bloße Zusammenfassung, eine assoziative Fortführung oder eine anknüpfende Erzählung handeln.

Dabei ist freigestellt, ob es sich beispielsweise um eine rein inhaltliche Zusammenfassung oder eine anknüpfende Erzählung handelt, auch eher assoziative Fortführungen sind dabei legitim.



**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme an diesem Modul sind die Studierenden in der Lage die Schnittstelle von Wissenschaft, Technik und Gesellschaft anhand von visueller Darstellung verständlich zu transferieren. Sie können die Grundlagen der Visual Literacy illustrieren und präsentieren. Darüber hinaus sind sie befähigt narrative Erzählstrukturen zu verstehen und zu skizzieren.

**Teaching and Learning Methods:**

Neben Vorlesungs- und Vortragsteilen zur Aneignung visuell-narrativen Grundwissens, soll vor allem auch die Vermittlung praktischer Kenntnisse im Vordergrund des Kurses stehen. Zu zeichnerischen Übungen im Kurs, mit denen Gestaltungsgrundlagen geübt werden, kommen Einzel- und Gruppenhausaufgaben, welche die Anwendung besprochener Theorien erproben, um im Anschluss gemeinsam besprochen zu werden.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Making Comics (Visuelle Erzählungen zur inhaltsorientierten Kommunikation erstellen) (Workshop, 1,5 SWS)

Wendland D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21901: Roles. Clichés. Visions. Science and Technology in the View of Literature and Theater | Rollen. Klischees. Visionen. Wissenschaft und Technik im Blick von Literatur und Theater

Version of module description: Gültig ab summerterm 2018

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer mündlichen Präsentation (inkl. Diskussion) zeigen die Studierenden, dass sie in der Lage sind, einen literarischen Text, Dramenausschnitt, eine Theaterszene oder Filmsequenz im Hinblick auf mögliche Rollen und Visionen von Wissenschaft und Technik zu interpretieren und über ihr Selbstverständnis als Wissenschaftlerin oder Ingenieur sowie die Bedeutung von Wissenschaft und Technik zu reflektieren (70 % der Prüfungsleistung). Zudem zeigen die TeilnehmerInnen, dass sie die in der Veranstaltung ausgehängten Texte verstehen und die dazu gestellten Aufgaben bearbeiten können (30% der Prüfungsleistung).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

Welche Rolle spielen Forscher und Erfinder in der Literatur? Welche Klischees und Visionen zu Wissenschaft und Technik werden auf Theaterbühnen und in Kinofilmen vermittelt? Und was hat das alles mit mir als Wissenschaftlerin oder Ingenieur zu tun?

Literarische Werke thematisieren seit jeher Wissenschaft und Technik, menschliches Entdecken und Erfinden. Sie reflektieren dabei nicht nur über das Handeln des Menschen und sein Verhältnis zur Natur, sondern nehmen Meinungen, Klischees und Stimmungen des Zeitgeistes wahr, ja entwerfen darüber hinaus zukünftige Handlungsmöglichkeiten und Lebensformen. Die Beschäftigung mit Prosa und Drama, mit Erzählungen, Inszenierungen und Verfilmungen bietet so die Möglichkeit, sich mit den eigenen Einstellungen zu Rollen in und von Wissenschaft und

Technik auseinanderzusetzen, über Visionen kreativ neue Handlungsmöglichkeiten zu erkunden oder bestehende Spielräume kritisch zu hinterfragen.

Die Lehrveranstaltungen führen in literarische Werke ein, erproben deren Interpretation mittels wissenschaftlicher und pädagogischer Methoden, fördern den Austausch in multidisziplinär zusammengesetzten Gruppen und ermutigen zur orientierenden Selbstreflexion. Die aktive Teilnahme am aktuellen Kulturbetrieb (Aufführungen, Ausstellungen, Lesungen etc.) ist neben der Interpretation von Texten und Filmen ein wesentliches Element der Kurse, die die Bereitschaft zur aktiven Teilnahme voraussetzen. Somit wird die Teilnahme an gesellschaftlich relevanten Diskursen über den universitären Kontext hinaus ermöglicht.

**Intended Learning Outcomes:**

Die Studierenden sind nach Absolvieren des Moduls in der Lage, literarische Texte, Theaterstücke und/oder Filmausschnitte im Hinblick auf mögliche Rollen und Visionen von Wissenschaft und Technik im historischen und zeitgenössischen Kontext zu verstehen. Sie kennen Methoden zur Analyse literarischer Werke und können diese anwenden. Darüber hinaus sind sie in der Lage, anhand literarischer Werke über ihr eigenes Selbstverständnis als zukünftige Wissenschaftlerin oder Ingenieur sowie die Bedeutung von Wissenschaft und Technik in der Gesellschaft zu reflektieren.

**Teaching and Learning Methods:**

Impulsreferate, Interpretation von Texten, Analyse von Theaterstücken und Filmen, Besuch von Ausstellungen, Aufführungen und Lesungen, Gruppenarbeit, Gruppendiskussionen, Selbständige Lektüre

**Media:**

**Reading List:**

**Responsible for Module:**

Dr. phil. Alfred Slanitz (WTG@MCTS)

**Courses (Type of course, Weekly hours per semester), Instructor:**

From "New Atlantis" to "Blade Runner" - Utopias and Dystopias in Culture, Literature and Film (Workshop, 1,5 SWS)

Fricke S

Jules Verne: Zukunft zwischen Science und Fiction (Workshop, 1,5 SWS)

Lughofer I

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA90211: Art and Politics | Kunst und Politik

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden zeigen in einer Präsentation (20 min.) oder einem Essay (1500 Wörter), dass sie wissenschaftliche Literatur über die sozialen und politischen Bedingungen und Folgen künstlerischen Schaffens verstehen und anhand konkreter Werke veranschaulichen können.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

Kunst entsteht nicht im leeren Raum. Wie reagieren Kunstschaaffende – bewusst oder unbewusst - auf politische Ereignisse? Lassen sich gesellschaftliche Bedingungen in ihren Werken erkennen? Und wie beeinflussen einzelne Kunstwerke die gesamte Kultur?

Im Modul lernen Studierende anhand von Beispielen aus der Musik, Literatur oder bildenden Kunst, wie Kunst und Gesellschaft sich wechselseitig beeinflussen, wie höchst kreative Menschen in ihrem Schaffen Stellung nehmen und wie sich ihre Produkte auf die Situation des Menschen auswirken.

#### Intended Learning Outcomes:

Die Studierenden sind in der Lage, Bedingungen und Folgen künstlerischen Schaffens exemplarisch zu verstehen und in Werken der Musik, Literatur und bildenden Kunst zu identifizieren. Sie können Beispiele mittels wissenschaftlicher Literatur selbständig erarbeiten und die Ergebnisse mündlich oder schriftlich vermitteln.

**Teaching and Learning Methods:**

Seminar. Vorbereitende Lektüre, Referate, Bildbetrachtungen/Textinterpretationen/Werkanalysen, Exkursionen in Ausstellungen und Konzerte

**Media:**

**Reading List:**

**Responsible for Module:**

Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

Gustav Mahler: Musik und Philosophie (Seminar, 1,5 SWS)

Mayer F, Wernecke J

MK: Campus - "Aktivismus und Kunst". Workshops im Theater (Workshop, 1,5 SWS)

Valdes Stauber C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT62403: Project Week: Creative Mind Change. A Creativity Workshop | Projektwoche: Creative Mind Change. Eine Kreativitätswerkstatt

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einer Prüfungsleistung in Form eines lehrveranstaltungsorientierten Lerntagesbuches (1000 – 1200 Wörter) abgeschlossen. Im Lerntagebuch zeigen die Studierenden durch die reflexive Beschreibung ihrer persönlichen Aneignung der Lehrinhalte des Workshops, dass sie in der Lage sind, künstlerische Methoden einzusetzen, um bisher latente Zusammenhänge und Lösungswege zu erkennen. Insbesondere gehen sie darauf ein, welche kreativen Methoden ihr persönlichen Denkmuster (mind set) in welcher Weise erweitert haben.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Keine Voraussetzungen.

#### Content:

Der Workshop eröffnet Erfahrungsräume

- die Grenzen des eigenen Denkens und Handelns zu überwinden
- Potentiale des eigenen Bewusstseins zu entdecken
- Kreativität als Potenzierung von sinnhaften Verknüpfungen zu schaffen.
- Potential für Coping-Strategien hinsichtlich innovativer Erkenntnisse, Verfahren sowie Produkte etc. zu entdecken.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage ...

- die eigenen kreativen Potentiale zu erkennen,
- die Abhängigkeiten von bisherigen Erfahrungs- und Denkmustern zu verstehen

- die erworbenen künstlerischen bzw. kreativen Methoden anzuwenden, um komplexe Phänomene abzubilden und hieraus konkrete Handlungsoptionen zu entwickeln.
- Coping Strategien hinsichtlich (scheinbar) divergenter Themen, Begriffe, Vorstellungen, Handlungsmodelle und Produkte zu entwickeln.

**Teaching and Learning Methods:**

Fünf ganztägige Workshops führen mit Experteninput und Diskussionen in Aspekte künstlerischen Arbeitens ein. In Kooperation mit der Kunstakademie Bad Reichenhall vermitteln drei Dozierende den Teilnehmenden unterschiedliche kreative Praktiken (Werkstattcharakter vor Ort an der TUM), die praktisch erprobt (künstlerische Medien), theoretisch in Diskussion und Vortrag vermittelt und in Form von Gruppenarbeit und Präsentation vertieft werden. Inhalt und Ziel des Projekts: Anwendung der erworbenen Kenntnisse auf KI-Modelle wie etwa DALL-2, um Möglichkeiten und Grenzen neuer Kreativitätspotentiale in der Kommunikation von Technologie und genuin humaner Kreativität auszuloten. Die Prüfungsleistung wird in Form eines Lerntagebuches (unterstützt durch Literaturvorgaben) in Form einer verschriftlichen Reflexion abschließend dokumentiert.

**Media:**

Vortrag, Skripte, Reader, Gestaltungsmaterial (Farben etc.), Technikmedien (u.a. Foto, Video).

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwoche: Creative Mind Change. Eine Kreativitätswerkstatt (Workshop, 3 SWS)

Wernecke J [L], Passola i Lizandra E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603053: 3 Credits Modules | 3 Credits Module****Module Description****CLA30257: Big Band | Big Band**

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Studierende zeigen, dass sie ihre eigenen Gestaltungsideen einbringen und im Ensemble gemeinsam musizieren können (Studienleistung). In einer mündlichen Prüfung werden vor allem Fähigkeiten wie Blattlesen und Intonation getestet (Prüfungsteilleistung 50%), theoretische Kenntnisse werden zusätzlich in einer schriftlichen Klausur vertieft unter Beweis gestellt (Prüfungsteilleistung 50%). Die Gesamtnote setzt sich aus der gleichwertigen Evaluation dieser drei Elemente zusammen.

**Repeat Examination:****(Recommended) Prerequisites:**

Musikinteressierte Studierende mit ausgeprägter Spielerfahrung

**Content:**

In diesem Workshop liegt der Schwerpunkt in der aktiven musikalischen Erarbeitung verschiedener Arrangements, die für die klassische Jazz-Orchester-Besetzung geschrieben sind, d.h. fünf Saxophone, vier Posaunen, vier Trompeten, Rhythmusgruppe (Klavier, Bass, Schlagzeug). Bei der Auswahl des Notenmaterials wird nach Möglichkeit jede Stilrichtung berücksichtigt.

**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme sind die Studierenden in der Lage ein besonderes Augenmerk auf das bewusste (!) Zusammenspiel und die gemeinsame Gestaltung zu legen. D.h. sie können im Satzspiel eine gemeinsame Phrasierung, Intonation, Dynamik, Artikulation sowie einzelne rhythmische Details anwenden.



**Teaching and Learning Methods:**

In den Methoden kommen unter anderem Elemente der Körperperkussion sowie die gesangliche Umsetzung von Melodiephrasen zur Anwendung. Im Wechselspiel der verschiedenen Sätze werden kompositorische und harmonische Strukturen erläutert und erlebt. Besonders gefördert wird bei jedem Teilnehmer die Kompetenz, gleichzeitig verschiedene Anforderungen zu bewältigen, hier im Besonderen ein gesundes Gleichgewicht zu erreichen aus Aktion (Blattspiel, Notenlesen) und Reaktion (Hörvermögen und daraus resultierendes Einfühlungsvermögen in den Gesamtklang).

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Big Band (Workshop, 2 SWS)

Muskini K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA30258: Jazz Project | Jazzprojekt

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In einer schriftlichen und mündlichen Prüfung wird geprüft inwieweit die Teilnehmer die Grundkenntnisse der Harmonielehre, Vorspielen oder Vorsingen verschiedener rhythmischer Phrasen, einfache Gehörbildung (Bestimmen verschiedener Intervalle und Akkorde), Vorspiel eines Themas mit anschließender Improvisation beherrschen. (Gewichtung: 1:1:1:1)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Grundwissen in Harmonielehre und etwas Spielerfahrung

#### Content:

Erarbeitung mehrerer Musikstücke

#### Intended Learning Outcomes:

Die Studierenden sind in der Lage, Grundlagen der Harmonielehre, Rhythmik, Gehörbildung und Improvisation anzuwenden.

#### Teaching and Learning Methods:

Neben den klassischen Methoden aus der Musikpädagogik werden auch Instrumente aus dem Improvisationstheater genutzt. Dadurch wird die Kompetenz der Teilnehmer bei der persönlichen Interpretation von Themen als auch bei der solistischen Improvisation über verschiedene Akkordfolgen gefördert und die nötige Routine angebahnt.

#### Media:

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Jazzprojekt (Workshop, 2 SWS)

Muskini K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA31212: Visual Design for a Knowledge Society | Visuelle Gestaltung für die Wissensgesellschaft

Version of module description: Gültig ab summerterm 2014

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Modulprüfung besteht aus Hausaufgaben, einer Kurzpräsentation der erstellten visuellen Darstellungen und einer Projektvorstellung. Darin wird nachgewiesen, dass die Grundlagen der Visual Literacy angewendet und analysiert werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Workshop geht es um visuelle Narration als umfangreiches Medium um wissenschaftliche Inhalte zu kommunizieren. Ein Verständnis für diese Kommunikationsmethode wird erarbeitet um dann selbst bildsprachliche Darstellungen entwickeln zu können.

Anhand von einfachen, praktischen Übungen zur Einstellung auf das Thema beginnt der Workshop. Anschließend fokussieren wir uns auf einen theoretischen Block, in welchem sowohl gestalterische Grundlagen, verschiedene Erzähltheorien als auch beispielhafte KünstlerInnen und Werke besprochen werden.

Im weiteren Ablauf wird ein an die vorangegangene Stunde angelehntes Thema in ein bis maximal vier Panels festgehalten. Dabei kann es sich um eine bloße Zusammenfassung, eine assoziative Fortführung oder eine anknüpfende Erzählung handeln.

Dabei ist freigestellt, ob es sich beispielsweise um eine bloße inhaltliche Zusammenfassung oder eine anknüpfende Erzählung handelt, auch eher assoziative Fortführungen sind dabei legitim.

**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme an diesem Modul sind die Studierenden in der Lage die Schnittstelle von Wissenschaft, Technik und Gesellschaft anhand von visueller Darstellung zu ermitteln und zu adaptieren. Sie können die Grundlagen der Visual Literacy analysieren und definieren. Darüber hinaus sind sie befähigt narrative Erzählstrukturen zu skizzieren und zu bewerten.

**Teaching and Learning Methods:**

Neben Vorlesungs- und Vortragsteilen zur Aneignung visuell-narrativen Grundwissens, soll vor allem auch die Vermittlung praktischer Kenntnisse im Vordergrund des Kurses stehen. Zu zeichnerischen Übungen im Kurs, mit denen Gestaltungsgrundlagen geübt werden, kommen Einzel- und Gruppenhausaufgaben, welche die Anwendung besprochener Theorien erproben, um im Anschluss gemeinsam besprochen zu werden.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Grafikdesign Werkstatt: Typen, Formen & Raster oder „Das Plakat“ (Workshop, 1,5 SWS)  
Wendland D

Making Comics (Visuelle Erzählungen zur inhaltsorientierten Kommunikation erstellen) (Workshop, 1,5 SWS)  
Wendland D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT63402: Utopias and Dystopias in Culture, Literature and Film | Utopien und Dystopien in Kultur, Literatur und Film

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 68	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination takes place in the form of various exercises:

1. By answering questions on the given texts during the classes students show their ability to understand fictional texts in relation to a given subject area (graded, 20%).
2. In a short presentation (8-12 minutes) on a self-chosen topic students prove that they can analyze fictional media according to specific criteria and methods (graded, 30%).
3. By creating and presenting (8-12 minutes) a poster in group work on a self-developed utopian/dystopian society as well as a short individual elaboration (900-1000 words) on one aspect students show that they are able to take up core issues of current discourses and reflect on them in fictional transfer (graded, 50%).
4. By creating a draft for a fictional media (eg. storyline for a film) in group work the students prove their ability to communicate their ideas about relevant issues in different ways (not graded).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

What would an ideal society look like? What political order and what laws would this utopian state have to be based on? And when does a utopia become a dystopia?

In this interdisciplinary seminar we will look at various fictional utopian texts and discuss real-world concepts and attempts to create ideal societies. In addition to different utopias, we will also look at the representation of dystopias in different media (novels, films, computer games) and examine the role of science and technology in both genres. Additionally, participants will work in groups to design their own utopian and dystopian societies and stories.

**Intended Learning Outcomes:**

Students can evaluate the relevance of read literary texts from different eras, watch films and other media relevant to for the topic and analyze them according to previously discussed criteria and methods. They are able to research current discourses on the topic of the course and critically analyse them . to articulate a comprehensible position regarding core issues of a discourse. Students also learn how to can create and present various media to communicate their positions in different ways an (e.g. academic poster, storyline).

**Teaching and Learning Methods:**

- Independent reading and watching of texts/films
- Analysis of these texts/films using methods discussed in class
- Group discussions
- Group work
- Controversial topics can be discussed in the form of debates

**Media:**

Texts, films, video games, slides, posters

**Reading List:**

Orwell, George: 1984, Penguin Essentials, 2016, ISBN: 9780141036144

**Responsible for Module:**

Slanitz, Alfred; Dr. phil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

From "New Atlantis" to "Blade Runner" - Utopias and Dystopias in Culture, Literature and Film (Workshop, 1,5 SWS)

Fricke S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WZ0812: Cultural Competence: Choir and Orchestra | Kulturelle Kompetenz: Chor- und Orchester

Version of module description: Gültig ab summerterm 2010

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In Form einer Präsentation referieren die Teilnehmer und Teilnehmerinnen über ein gemeinsam mit den Dozierenden festgelegtes Thema aus dem Bereich Musik.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Vorspiel oder Vorsingen zu Beginn des Semesters

#### Content:

Nach einem Vorsingen oder Vorspiel zu Beginn des Semesters, welches über die Teilnahme entscheidet, wird in regelmäßigen gemeinsamen Proben ein Konzertprogramm erarbeitet, welches am Ende des Semesters in einem oder mehreren Konzerten öffentlich dargeboten wird.

#### Intended Learning Outcomes:

Am Ende der Lehrveranstaltung sind die Teilnehmer und Teilnehmerinnen in der Lage, bei der Aufführung der einstudierten Werke eine hervorragende und hochkonzentrierte musikalische Darbietung zu erbringen. Zudem können sie ein musikalisches Thema verständlich, präzise und überzeugend darlegen.

#### Teaching and Learning Methods:

Gemeinsame Proben

#### Media:



**Reading List:**

**Responsible for Module:**

Mayer, Felix; Prof. Mag.art.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chor am Campus Weihenstephan (Workshop, 2 SWS)

Hör S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SOT60306: Methods & Approaches | Methoden & Verfahren

## SOT603061: 1 Credit Modules | 1 Credit Module

### Module Description

## CLA10509: Creative Problem Solving | Creative Problem Solving

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

Mündlicher oder schriftlicher Bericht (10 min. bzw. 700-1000 Wörter) über die Anwendung mindestens einer Kreativitätstechnik.

Die Berichte zeigen, dass Studierenden die reflektierende Beschreibung der Technik, ihrer konkreten Anwendung, der Bewertung der Ideen sowie der tatsächlichen Umsetzung verstanden haben.

### Repeat Examination:

End of Semester

### (Recommended) Prerequisites:

### Content:

Unterschiedliche professionelle Techniken für einfallsreiche Problemlösungen werden theoretisch besprochen und als Einzel- und Gruppenaufgaben praktisch ausprobiert. Impulsreferate beschäftigen sich u. a. mit dem kreativen Prozess, dem individuell optimalen Setting sowie dem Umgang mit schöpferischen Denkblockaden. Reflektionen helfen, Schritt für Schritt bewusst und mutig neue Wege zu gehen.

Dadurch wächst das Vertrauen in das eigene kreative Potential, das in Übungen praktisch eingesetzt wird.

Die Kurse vermitteln Methoden, um Herausforderungen in Studium, Beruf und Alltag effektiv und zielorientiert zu meistern.

**Intended Learning Outcomes:**

Nach der Teilnahme an der Veranstaltung sind die Studierenden in der Lage,

- Methoden und Techniken zur kreativen Arbeit für einzelne Personen, im Zweierteam und in der Gruppe anzuwenden und
- Ideen systematisch zu bewerten.

Darüber hinaus können die TeilnehmerInnen ihr kreatives Potential und ihr individuelles, optimales Setting für kreative Impulse anwenden.

**Teaching and Learning Methods:**

Impulsreferate, praktische Übungen, Einzel-, Partner- und Gruppenarbeiten, Reflexionen

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Abenteuer Kreativität. Methoden zur Ideenfindung und Problemlösung (Workshop, 1 SWS)

Lughofer I

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA10512: Getting More Effective - on My Own and in a Team | Effektiver werden - allein und im Team

Version of module description: Gültig ab summerterm 2011

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 23	<b>Contact Hours:</b> 7

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Im Rahmen einer Präsentation zeigen die Studierenden auf wie man in bestimmten Situationen die Effektivität des Einzelnen und des Teams steigern kann (Prüfungsleistung).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Wie lange und wie hart man arbeitet, sind keine Erfolgskriterien. Nur Ergebnisse zählen; Ergebnisse in Bezug auf ein gesetztes Ziel.

Der Workshop – bestehend aus drei Teilen – führt die Teilnehmerinnen und Teilnehmer in verschiedene vom Dozenten während seiner langjährigen Industrietätigkeit erprobte Methoden zur Steigerung der Effektivität ein.

Er gliedert sich wie folgt:

- Grundsätzliche Betrachtungen u.a. "effektiv" versus "effizient", "dringlich" versus "wichtig", "Stoppuhr" versus "Kompass"
- Situationsanalyse
- Rollen und Effektivitätsbereiche
- Zielfindung
- (Projekt-)Planung
- Zeitmanagement
- Arbeitsgruppe und Team (u.a. Motivation, Kommunikation, Lernen von Spitzenteams)

- Kontinuierliche Verbesserung

**Intended Learning Outcomes:**

Nach Abschluss sind die TeilnehmerInnen in der Lage,

- ihre Situation methodisch zu analysieren
- ihre jeweiligen "Effektivitätsbereiche" festzulegen
- sich "richtige" Ziele zu setzen und planerisch anzugehen
- die knappe Ressource Zeit besser zu managen
- sich in ein Team erfolgreich einzubringen, ggf. ein solches zu leiten
- Schwachstellen im Team zu erkennen

**Teaching and Learning Methods:**

Interaktive Erarbeitung des Stoffs (Teilnehmerunterlagen werden vorher ausgeteilt)

Vertiefung in Gruppenarbeiten, jeweils mit Präsentation

Erprobung der besprochenen Methoden in den Folgetagen, Erfahrungsaustausch beim nächsten Termin

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA90142: Self-Competence - Intensive Course | Selbstkompetenz - intensiv

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 12	<b>Contact Hours:</b> 18

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung besteht aus einem Bericht in Form einer schriftlichen Selbstreflexion (3-4 Seiten), in welchem zu den Themen des Kurses Stellung genommen und die diesbezügliche persönliche Entwicklung (Veränderung im Lern- und Arbeitsverhalten) nachgezeichnet wird.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Das persönliche Anliegen, ein bestimmtes Verhalten verändern zu wollen, um mehr Erfolg in Prüfungen und im Studium zu erzielen.

#### Content:

Selbstkompetenz meint die Bereitschaft, Anforderungen im Studium zu reflektieren, mit Schwierigkeiten gelassen umzugehen und eigene Begabungen zu entdecken. Immer, wenn unsere Verhaltensweisen für das Erreichen eines Ziels nicht mehr hilfreich sind, müssen wir neue Wege finden. Unsere Workshops bieten Studierenden die Möglichkeit, eigenes Verhalten zu reflektieren und neue Strategien zu entwickeln.

Das Modul "Selbstkompetenz - intensiv" dient grundsätzlich der Verbesserung der eigenen Lern- und Arbeitsfähigkeit. Folgende Themen werden innerhalb des Moduls vermittelt:

- Ziele entwickeln und erreichen
- Aktivierung eigener Ressourcen
- Umgang mit Stress und Emotionen
- Umgang mit Ängsten und Blockaden
- Zukunfts-Visionen aufbauen und Motivation stärken
- Mit der eigenen Energie haushalten

**Intended Learning Outcomes:**

Nach der Teilnahme an einem Kurs aus diesem Modul sind die Studierenden in der Lage, ihr eigenes Lern- und Arbeitsverhalten zu analysieren und zu verstehen, welches Verhalten zu Misserfolgen führt. Darauf aufbauend können sie eigene Lösungsansätze für ein erfolgreicherer Arbeiten entwickeln, das Leistung und Gesundheit gleichermaßen im Blick behält.

**Teaching and Learning Methods:**

Gruppenarbeit, Selbstreflexion, Theorie-Inputs

**Media:**

**Reading List:**

**Responsible for Module:**

Vierthaler, Barbara; Dipl.-Päd. (Univ.)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Stressreduktion durch Achtsamkeit - Entspannung erleben und innere Stärke entwickeln  
(Workshop, 1,5 SWS)

Burkhardt S

Zeit- und Selbstmanagement. Erreichen Sie Ihre Ziele mit Freude! (Workshop, 1,5 SWS)

Firmhofer A

Schluss mit dem Aufschieben (Online-Kurs) (Workshop, 1,5 SWS)

Kronenberger U

Perfektionismus im Studium. Den eigenen Leistungsdruck loslassen. (Workshop, 1,5 SWS)

Mader S

Selbstwahrnehmung, Improvisation und Körpersprache: Raus aus dem Kopf, rein in den Körper!

(Workshop, 1,5 SWS)

Molin V

Confident Presentations. Combining Science and Experience into Optimal Performance

(Workshop, 1,5 SWS)

Mornell A

Ressourcentraining: Eigene Stärken erkennen und wirkungsvoll einsetzen (Workshop, 1,5 SWS)

Mühlich E

Erfolgreich durchs Studium. Selbstkompetenzen für den Lernalltag (Online-Kurs) (Workshop, 1,5 SWS)

Roßmanith M ( Rummeld-Rodenbach M )

Mein innerer Kompass – Wie Werte meine Ziele und Träume stärken (Workshop, 1,5 SWS)

Schnack Q

Lernhacks. Zum eigenen Lernstil finden und smarter studieren (Workshop, 1,5 SWS)

Zeus R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## SOT603062: 2 Credits Modules | 2 Credits Module

### Module Description

#### CLA20221: Acting under Ignorance | Handeln trotz Nichtwissen

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 45	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung wird in Form einer Präsentation (25-30 min, einzeln oder in 2er-Teams) erbracht, in der die Studierenden Formen der Zukunftsforschung oder der Vorausschau anhand eines Beispiels diskutieren oder Konzepte der Zukunftsforschung vorstellen, einordnen und bewerten.

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

Zukunft betrifft jeden von uns. Aber was wissen wir von der Zukunft? Was kann man überhaupt wissen? Wie kann man zukünftige Situationen beeinflussen? Um Zukunft zu gestalten, müssen Unwägbarkeiten und Nichtwissen bewältigt werden.

Zunächst werden die Teilnehmer/innen mit einem geisteswissenschaftlichen / philosophischen Blick auf das Zukunftsthema vertraut gemacht – wie geht man also mit dem Paradox um: handeln und entscheiden zu müssen ohne über (ausreichendes) Zukunftswissen zu verfügen?

Darüber hinaus vermitteln Experten aus Wissenschaft und Industrie Praxiswissen im Spannungsfeld Zukunft und zum Umgang mit Zukunftswissen, Unsicherheit und Nichtwissen. Abschließend werden aus den vermittelten Beispielen und den vorgestellten Konzepten Verfahrensregeln und Anleitungen für das Handeln von Individuen im Alltag und Institutionen/ Unternehmen unter Bedingungen der Ungewissheit und des Nichtwissens abgeleitet.

**Intended Learning Outcomes:**

Nach der Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage:

- Verschiedene Wissensformen zu erfassen und deren Wert zu diskutieren
- Verschiedene Formen von Zukunftswissen zu differenzieren, in der Praxis zu identifizieren und in verschiedenen Kontexten anzuwenden
- Regeln zur Orientierung und für das Handeln trotz Ungewissheit zu nennen.

**Teaching and Learning Methods:**

Dozenteninput, Präsentationen, Diskussionen, eigenständige Lektüre.

**Media:**

nach den technischen Möglichkeiten: Texte, Präsentationen, Videos, Prototypen ...

**Reading List:**

Carleton et al (2013): Playbook for strategic foresight and innovation. (available at: <http://www.innovation.io/playbook> )

Pillkahn (2007): Trends und Szenarien als Werkzeuge der Strategieentwicklung. Publicis Verlag.  
Wengenroth (Hrsg.), Grenzen des Wissens - Wissen um Grenzen, Velbrück Wissenschaft 2012

**Responsible for Module:**

Dr. Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

Theorie und Praxis der Zukunftsforschung (Workshop, 1 SWS)

Pillkahn U

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### CLA20710: Global Diversity Training | Global Diversity Training

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students will deal with their own cultural background in a short group presentation and deeply reflect on the learning outcomes of the workshop in a learning summary (100% of grade).

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

Collaboration in international teams is becoming a crucial everyday part of working environments. It brings numerous benefits, but can also lead to misunderstandings, confusions and conflicts that can hinder productivity.

The aim of the training is to prepare participants for teamwork from an intercultural perspective and especially to reflect the influence of diversity on the team process in international teams. To achieve this goal, we will work with science-based models, short lectures and numerous exercises with a strong focus on the relevance for your professional and daily life.

#### Intended Learning Outcomes:

After this workshop you will be able to individually deal with our own cultural background and its impact on intercultural collaboration

- Analyze the role and tasks of team leaders in an intercultural context.
- Develop strategies for case studies in international teams.
- be able to analyze situations of your professional life in an international team.

**Teaching and Learning Methods:**

The workshop will be a mix of input, case studies, discussions and group work.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Global Diversity (Successful in International Teams) (Workshop, 1,5 SWS)

Eberhard M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA20817: Psychometric Diagnostics: The Human in Numbers | Psychometrische Diagnostik: Der Mensch in Zahlen

Version of module description: Gültig ab winterterm 2012/13

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einer Modulprüfung in Form einer mündlichen Prüfung abgeschlossen. Um die Lernziele zu erreichen, ist neben theoretischem Input und Eigenstudium auch aktive Mitarbeit im Rahmen der Lehrveranstaltung notwendig. Deshalb werden Mid-Term-Leistungen angeboten, die - als Anreiz für die Studierenden - zu einer Verbesserung der Bewertung der Modulprüfung führen können. Art und Umfang der vorgesehenen Mid-Term-Leistungen werden in der Beschreibung der Lehrveranstaltung veröffentlicht.

Alle Einzelleistungen werden benotet. Die Gesamtnote der Mid-Term-Leistungen ergibt sich aus den nach Workload gewichteten Einzelleistungen. Ist diese besser als die Note der Modulprüfung, wird die Gesamtnote aus dem gewichteten Mittel der Modulprüfung und der Mid-Term-Leistungen errechnet. Die Gesamtnote der Mid-Term-Leistungen wird bei der Wiederholung einer nicht bestandenen Modulprüfung berücksichtigt.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

keine

#### Content:

Das Diagnostizieren von Problemen ist allgegenwärtig! Wie kann ich einen Einstellungs-, Persönlichkeits-, Befindlichkeits- oder Fähigkeitstest entwickeln? Wie lassen sich unbeobachtete Typologien untersuchen? Welche Rolle können mathematisch-statistische Modelle für mentale Prozesse im Menschen spielen?

Patient in einer psychologischen Untersuchung: Feststellung des Krankheitsbildes und Bestimmung effektiver Behandlungsmaßnahmen. Schuler in einer Schulklasse: Feststellung

der Stärken und Schwächen in einem Wissensbereich und Bestimmung effektiver Bildungsmaßnahmen. Ziel ist jeweils die Erstellung eines differenzierten Profils des Individuums bzgl. der interessierenden Charakteristika: verschiedene Dispositionen der Patienten anormales Verhalten zu zeigen bzw. verschiedene Problemlösestrategien der Schuler.

Diese Veranstaltung führt in die Latent-Class-Analyse ein. Andererseits wird die Item-Response-Theorie kurz vorgestellt und die Grundannahmen der Latent-Trait-Modelle behandelt. Erweiternd dazu wird auf die Grundlagen der Wissensraumtheorie eingegangen, bevor zuletzt noch Ansätze der Cognitive-Diagnosis-Modelle thematisiert werden. Eine historische und wissenschaftstheoretische Einordnung der Konzepte in der Veranstaltung und das Philosophische Werkstattgespräch runden den Einblick ab.

**Intended Learning Outcomes:**

Psychometrische Denkweisen und den Umgang mit latenten Variablen kennenlernen. Multivariate diagnostische Testverfahren und Messmodelle verstehen. Multivariate kategoriale Datensätze mittels psychometrischer Modellierungsansätze analysieren.

**Teaching and Learning Methods:**

Diskussion, Gruppenarbeit, Übungsaufgaben, Selbststudium insbesondere Lektüre/Erarbeitung von Texten, Recherche

**Media:**

Präsentationen, Skripte/Reader, Tafel, Power-Point/Folien/Beamer, Overheadprojektor, weiterführende Literatur zur Lektüre, Anschauungsmaterial, Computer/Software

**Reading List:**

- Dayton, C.M. (1998). Latent Class Scaling Analysis. Thousand Oaks, CA: Sage.
- Falmagne, J.-Cl., & Doignon, J.-P. (2011). Learning Spaces. Berlin: Springer.
- McCutcheon, A.L. (1987). Latent Class Analysis. Newbury Park, CA: Sage.
- Rost, J. (2004). Lehrbuch Testtheorie Testkonstruktion. Bern: Hans Huber.
- Rupp, A.A., Templin, J.L., & Henson, R.A. (2010). Diagnostic Measurement: Theory, Methods, and Applications. New York: Guilford Press.
- Steyer, R., & Eid, M. (2001). Messen und Testen. Berlin: Springer.

**Responsible for Module:**

Ali Ünlü (ali.uenlue@tum.de)

**Courses (Type of course, Weekly hours per semester), Instructor:**

Psychometrische Diagnostik: Der Mensch in Zahlen (Seminar, 2 SWS)

Ünlü A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### CLA21023: Passing Exams in Relaxed Mode | Entspannt Prüfungen bestehen

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 36	<b>Contact Hours:</b> 24

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung besteht aus einem Bericht in Form einer schriftlichen Selbstreflexion (3-4 Seiten), in welchem zu den Themen des Kurses Stellung genommen und die diesbezügliche persönliche Entwicklung nachgezeichnet wird.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Die Teilnehmenden bringen ein persönliches Anliegen zur Verbesserung ihrer Prüfungsvorbereitung und ihrer Prüfungserfolge mit.

#### Content:

Stellen Sie sich vor, morgen ist eine wichtige Prüfung – und Sie kommen locker durch. Obwohl Prüfungen Ihnen immer Stress und schlaflose Nächte bereiten.

Wir helfen Ihnen, die für Sie richtige Prüfungs-Strategie zu finden. Sie erfahren, wie Sie sich nach neuesten wissenschaftlichen Erkenntnissen am besten vorbereiten und wie Sie im entscheidenden Moment entspannen und Ihr Wissen präzise und umfassend wiedergeben können. Mit modernen Coaching-Techniken verwandeln wir Ihre eigenen Zweifel in eine Erfolgsstory. Dieser dreitägige Coaching-Workshop richtet sich an Studierende, die sich mehr Gelassenheit in Prüfungssituationen wünschen und ihr Studium mit gutem Erfolg abschließen wollen.

#### Intended Learning Outcomes:

Ziel des Moduls ist, den eigenen Umgang mit Prüfungssituationen zu reflektieren, unterschiedliche Techniken für die Vorbereitung und das Bestehen von Prüfungen zu kennen, mit belastenden

Prüfungssituationen souverän umgehen zu können und die eigene Prüfungsvorbereitung zielführend und termingerecht zu gestalten.

**Teaching and Learning Methods:**

Input und Vortrag, Gruppenarbeit, Selbstreflexion und Einzelarbeit

**Media:**

**Reading List:**

Baumeister/Thierney/Neubauer: Die Macht der Disziplin, 2012

Engelbrecht Sigrid: Ich müsste wollte sollte, 2011

Grüning Christian: Garantiert erfolgreich lernen, 2009

Metzig/Schuster: Prüfungsangst und Lampenfieber, 2009

Mortan/Mortan: Bestanden wird im Kopf, 2009

Hafner/Kronenberger: Entspannt Prüfungen bestehen, 2015

**Responsible for Module:**

Vierthaler, Barbara; Dipl.-Päd. (Univ.)

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### CLA21213: Individual Change Management | Individual Change Management

Version of module description: Gültig ab winterterm 2010/11

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 38	<b>Contact Hours:</b> 22

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Studierenden bearbeiten eine schriftliche Fallstudie, in der sie ihr Verständnis der verschiedenen Aspekte des Individual Change Management wiedergeben (Prüfungsleistung).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Die Studierenden sind bereit sich mit persönlichen Veränderungsprozessen und dem eigenen Rollenverständnis auseinanderzusetzen.

#### Content:

Individual Change Management (ICM) betrifft alle Herausforderungen zu der Frage, wie man Veränderungen – welcher Art auch immer – im eigenen Lebens- und Karriereplan integrieren und bei Bedarf gut meistern kann. ICM plant dabei die Veränderungsprozesse, führt den Wandel durch und stabilisiert und kontrolliert die Veränderungen.

Leben und Karriere will einerseits zwar geplant werden, Veränderungen im Privat- oder Erwerbsleben müssen andererseits aber auch bedacht sein. Damit eigene Lebens- und Karriereentwürfe umgesetzt werden können, müssen (Lebens)Ziele stets überprüft, gegebenenfalls korrigiert oder neu gesucht werden. Hier setzt der Workshop an.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage

- zwischen Chancen und Gefahren bei (persönlichen) Veränderungsprozessen zu differenzieren
- das eigene Rollenverständnis zu reflektieren

- durch die Definition persönlicher Meilensteinen und die Wahrnehmung und Mobilisierung von (inneren) Ressourcen Veränderungen strukturiert anzugehen und umzusetzen.

**Teaching and Learning Methods:**

Jede Themeneinheit bewegt sich zwischen Selbsterfahrung, Information und Reflexion:  
Biographiearbeit; Interaktions-, Entspannungs-, Imaginationsübungen; Kreativarbeit; Coping bzw. Resilienzförderung (NLP) und Ressourcenaktivierung; Kollegiale Beratung (ZRM).

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Individual Change Management (Persönliche Veränderungsprozesse initiieren und erfolgreich gestalten) (Workshop, 1 SWS)

Kölbl C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SOT603063: 3 Credits Modules | 3 Credits Module****Module Description****CLA30221: Acting under Ignorance | Handeln trotz Nichtwissen**

Version of module description: Gültig ab winterterm 2013/14

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 75	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Die Prüfungsleistung wird in Form einer Seminararbeit inklusive einer vorbereitenden Präsentation (25-30 min, einzeln oder in 2er-Teams) erbracht, in der die Studierenden Formen der Zukunftsforschung, der Vorausschau anhand eines Beispiels diskutieren oder Konzepte der Zukunftsforschung vorstellen, einordnen und bewerten. In der Seminararbeit (2500-3000 Wörter) stellen die Studierenden ein Konzept der Zukunftsforschung anhand eines Beispiels dar und diskutieren seine Praktikabilität für Handlungen unter Bedingungen der Ungewissheit.

**Repeat Examination:****(Recommended) Prerequisites:****Content:**

Zukunft betrifft jeden von uns. Aber was wissen wir von der Zukunft? Was kann man überhaupt wissen? Wie kann man zukünftige Situationen beeinflussen? Um Zukunft zu gestalten, müssen Unwägbarkeiten und Nichtwissen bewältigt werden.

Zunächst werden die Teilnehmer/innen mit einem geisteswissenschaftlichen / philosophischen Blick auf das Zukunftsthema vertraut gemacht – wie geht man also mit dem Paradox um: handeln und entscheiden zu müssen ohne über (ausreichendes) Zukunftswissen zu verfügen?

Darüber hinaus vermitteln Experten aus Wissenschaft und Industrie Praxiswissen im Spannungsfeld Zukunft und zum Umgang mit Zukunftswissen, Unsicherheit und Nichtwissen.

Abschließend werden aus den vermittelten Beispielen und den vorgestellten Konzepten Verfahrensregeln und Anleitungen für das Handeln von Individuen im Alltag und Institutionen/ Unternehmen unter Bedingungen der Ungewissheit und des Nichtwissens abgeleitet.

**Intended Learning Outcomes:**

Nach der Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage:

- Verschiedene Formen von Zukunftsaussagen zu erfassen und deren Wert zu diskutieren
- Verschiedene Formen von Zukunftswissen zu differenzieren, in der Praxis zu identifizieren und in verschiedenen Kontexten anzuwenden
- Regeln zur Orientierung und für das Handeln trotz Ungewissheit zu nennen
- Konzepte der Zukunftsforschung hinsichtlich ihrer Bedeutung für die Praxis zu diskutieren

**Teaching and Learning Methods:**

Dozenteninput, Präsentationen, Diskussionen, eigenständige Lektüre.

**Media:**

nach den technischen Möglichkeiten: Texte, Präsentationen, Videos, Prototypen ...

**Reading List:**

Carleton et al (2013): Playbook for strategic foresight and innovation. (available at: <http://www.innovation.io/playbook> )

Pillkahn (2007): Trends und Szenarien als Werkzeuge der Strategieentwicklung. Publicis Verlag.

Wengenroth (Hrsg.), Grenzen des Wissens - Wissen um Grenzen, Velbrück Wissenschaft 2012

**Responsible for Module:**

Dr. Fred Slanitz

**Courses (Type of course, Weekly hours per semester), Instructor:**

Theorie und Praxis der Zukunftsforschung (Workshop, 1 SWS)

Pillkahn U

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT62403: Project Week: Creative Mind Change. A Creativity Workshop | Projektwoche: Creative Mind Change. Eine Kreativitätswerkstatt

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Das Modul wird mit einer Prüfungsleistung in Form eines lehrveranstaltungsorientierten Lerntagesbuches (1000 – 1200 Wörter) abgeschlossen. Im Lerntagebuch zeigen die Studierenden durch die reflexive Beschreibung ihrer persönlichen Aneignung der Lehrinhalte des Workshops, dass sie in der Lage sind, künstlerische Methoden einzusetzen, um bisher latente Zusammenhänge und Lösungswege zu erkennen. Insbesondere gehen sie darauf ein, welche kreativen Methoden ihr persönlichen Denkmuster (mind set) in welcher Weise erweitert haben.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Keine Voraussetzungen.

#### Content:

Der Workshop eröffnet Erfahrungsräume

- die Grenzen des eigenen Denkens und Handelns zu überwinden
- Potentiale des eigenen Bewusstseins zu entdecken
- Kreativität als Potenzierung von sinnhaften Verknüpfungen zu schaffen.
- Potential für Coping-Strategien hinsichtlich innovativer Erkenntnisse, Verfahren sowie Produkte etc. zu entdecken.

#### Intended Learning Outcomes:

Nach der Teilnahme sind die Studierenden in der Lage ...

- die eigenen kreativen Potentiale zu erkennen,
- die Abhängigkeiten von bisherigen Erfahrungs- und Denkmustern zu verstehen

- die erworbenen künstlerischen bzw. kreativen Methoden anzuwenden, um komplexe Phänomene abzubilden und hieraus konkrete Handlungsoptionen zu entwickeln.
- Coping Strategien hinsichtlich (scheinbar) divergenter Themen, Begriffe, Vorstellungen, Handlungsmodelle und Produkte zu entwickeln.

**Teaching and Learning Methods:**

Fünf ganztägige Workshops führen mit Experteninput und Diskussionen in Aspekte künstlerischen Arbeitens ein. In Kooperation mit der Kunstakademie Bad Reichenhall vermitteln drei Dozierende den Teilnehmenden unterschiedliche kreative Praktiken (Werkstattcharakter vor Ort an der TUM), die praktisch erprobt (künstlerische Medien), theoretisch in Diskussion und Vortrag vermittelt und in Form von Gruppenarbeit und Präsentation vertieft werden. Inhalt und Ziel des Projekts: Anwendung der erworbenen Kenntnisse auf KI-Modelle wie etwa DALL-2, um Möglichkeiten und Grenzen neuer Kreativitätspotentiale in der Kommunikation von Technologie und genuin humaner Kreativität auszuloten. Die Prüfungsleistung wird in Form eines Lerntagebuches (unterstützt durch Literaturvorgaben) in Form einer verschriftlichen Reflexion abschließend dokumentiert.

**Media:**

Vortrag, Skripte, Reader, Gestaltungsmaterial (Farben etc.), Technikmedien (u.a. Foto, Video).

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Projektwoche: Creative Mind Change. Eine Kreativitätswerkstatt (Workshop, 3 SWS)

Wernecke J [L], Passola i Lizandra E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT86089: Project Week: AI, Society, and Governance | Project Week: AI, Society, and Governance

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination is a project work with a final presentation (30 minutes).

Students will work on a research project at the intersection of AI, society, and governance. They can choose from 5 different topics. (1) Bias identification with LLMs, where you'll explore how AI systems can be used to detect biases in various contexts; (2) Toxicity identification with LLMs, focusing on the application of AI in recognizing harmful or offensive content; (3) Identification of biases in LLMs; (4) Advice-giving and persuasion, with sub-options to explore either medical or political applications of AI in influencing decision-making; and (5) An independent topic of your choice, to be discussed and approved by your instructor. The project involves designing an AI tool, which is then presented and evaluated in a final presentation.

With the project work, students demonstrate their ability to analyze the impact of artificial intelligence on society, using a social science framework and they evaluate the ethical implications and methodological challenges of AI-driven research in social sciences. Furthermore, they show they can apply AI tools and solve complex problems.

With their presentation, students demonstrate that they are able to present their results in a technically correct and understandable way and discuss them with an expert audience.

The project work will be presented at the end of the module. It will be evaluated based on the demonstrated competence to design an AI tool (50%), the quality of the delivery (40%), and the quality of the discussion with the audience (10%).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Familiarity with interacting with APIs (using Python or R). LLM-specific experience is not required.

### **Content:**

The module will cover two main themes: first, it explores how social science disciplines can adopt and benefit from AI tools for research, analysis, and problem-solving; and second, the course explores the impacts of generative AI on society and economy, including methods for measuring and evaluating these impacts.

The primary objective is to introduce students to the intersection of Artificial Intelligence, society, and governance from a social scientific perspective. Students will evaluate how AI is transforming society and the economy and explore how AI tools can be used in social science. Students will conduct critical evaluations of AI companies' principles and learn techniques for auditing Large Language Models through adversarial testing or red teaming exercises. Throughout the module, we will emphasize the development of interdisciplinary understanding and critical thinking skills regarding the complex interplay between AI, society, and politics.

### **Intended Learning Outcomes:**

Upon successful completion of this module, students are able to: 1) Analyze the impact of artificial intelligence on society, economy, and governance using social science frameworks; 2) Evaluate the ethical implications and methodological challenges of AI-driven research in social sciences; 3) Apply AI tools to conduct social science research and solve complex problems.

### **Teaching and Learning Methods:**

The module consists of a seminar to accompany the project work. Coding tutorials will be provided, and students will work in groups to creatively propose projects where LLMs are applied to address social problems, or to advance a social scientific problem.

### **Media:**

PowerPoint, ChatBots

### **Reading List:**

Vykopal, I., Pikuliak, M., Srba, I., Moro, R., Macko, D., & Bielikova, M. (2023). Disinformation capabilities of large language models. *\*arXiv preprint arXiv:2311.08838\**.

Kaddour, J., Harris, J., Mozes, M., Bradley, H., Raileanu, R., & McHardy, R. (2023). Challenges and applications of large language models. *\*arXiv preprint arXiv:2307.10169\**.

Velez, Y. R., & Liu, P. (2024). Confronting Core Issues: A Critical Assessment of Attitude Polarization Using Tailored Experiments. *\*American Political Science Review\**, 1-18.

Costello, T. H., Pennycook, G., & Rand, D. G. (2024). Durably reducing conspiracy beliefs through dialogues with AI. *\*Science\**, *\*385\*(6714)*, eadq1814.

Augenstein, I., Baldwin, T., Cha, M., Chakraborty, T., Ciampaglia, G. L., Corney, D., ... & Zagni, G. (2024). Factuality challenges in the era of large language models and opportunities for fact-checking. *\*Nature Machine Intelligence\**, 1-12.



Narayanan, A., & Kapoor, S. Model alignment protects against accidental harms, not intentional ones

**Responsible for Module:**

Jan Zilinsky

**Courses (Type of course, Weekly hours per semester), Instructor:**

(SOT86089) AI, Society, and Governance (Project Week) (Seminar, 2 SWS)

Zilinsky J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SOT87318: Project Week: AI Ethics Research & Creative Science Communication | Project Week: AI Ethics Research & Creative Science Communication

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination is a presentation (approximately 60 minutes, including discussion). The performance is achieved in the form of a (group) presentation and a submission of the presentation (in digital form and as a handout). At the start of the module, students will receive sample questions related to AI ethics research and creative science communication, from which they can choose for their final (group) presentation. Sample questions are, for example: To what extent do AI systems support or hinder ethical decision-making? What is the role of ChatGPT in providing moral guidance? What system requirements are essential for the responsible development and use of pertinent AI systems? How can research-based theater support such scientific inquiries? What other creative ways of science communication exist? By presenting their results, the students prove that they can deal intensively with the topic of AI systems and their effects to understand the fundamentals of research-based theater and construct the influence of AI on human ethical decision-making. Furthermore, they show their ability to analyze problems comprehensively and develop artistic scientific communication solutions. With the submission of the presentation, the students demonstrated their ability to present the results visually in a structured and understandable way and use them to support their statements.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

### **Content:**

With the rise and public accessibility of AI-enabled decision-support systems, individuals outsource increasingly more of their decisions, even those that carry ethical dimensions. Whether addressing healthcare distribution challenges or providing moral guidance in personal matters, certain AI systems – intentionally designed for this purpose or not – appear willing to offer their advice. Given this trend and the fundamental role of ethical decision-making in shaping morale, it is important to investigate the impact of pertinent AI systems on human ethical decision-making and subsequent societal outcomes.

To better understand and proactively shape how AI systems affect ethical decision-making, it is crucial to involve affected stakeholders in pertinent scientific inquiry and technological development. Opening up scientific debates beyond academic silos requires innovative methods and creating spaces for collaboration between civil society and scientists. In this endeavor, arts – an important reference for social knowledge and inclusion – can become a key enabler to facilitate human-centric, participatory discussions around AI design.

Therefore, this module will focus on the following two questions:

- How can AI systems impede or support humans' ethical decision-making? What system requirements are crucial for its responsible development and use?
- How can research-based theater effectively engage a broader audience in the inquiry of this investigation?

Students will learn about basics in moral psychology, ethics and its relation to AI. The module will also delve into qualitative research methods and innovative science communication techniques, particularly through research-based theater.

### **Intended Learning Outcomes:**

After this module, students will be able to:

- Understand the fundamentals of research-based theater
- Explain basics in moral psychology, ethics and their relation to AI and intelligent decision-support systems
- Construct the influence of AI on human ethical decision-making
- Conduct qualitative data collection and analysis
- Develop artistic solutions of science communication

### **Teaching and Learning Methods:**

The module consists of a seminar. The contents of the seminar are conveyed through lectures and PowerPoint presentations. Students should be encouraged to study the key literature and critically engage with the content of the topics. Students will engage in group tasks (e.g., case studies) and discussions during the seminar sessions.

### **Media:**

Power Point

### Reading List:

The following research - amongst others - will be covered in the module:

- Belliveau, G., & Nichols, J. (2017). Audience responses to Contact! Unload: A Canadian research-based play about returning military veterans. *Cogent Arts & Humanities*, 4(1), 1351704.
- Crabtree, B.F. & W. L. Miller. 1992. A template approach to text analysis: Developing and using codebooks. *Doing Qualitative Research*. B. F. Crabtree and W. L. Miller. Newbury Park, CA, Sage Publications:93-109.
- Klincewicz, M. (2016). Artificial intelligence as a means to moral enhancement. *Studies in Logic, Grammar and Rhetoric*, 48(1 (61)).
- Krügel, S., Ostermaier, A., & Uhl, M. (2023). ChatGPT's inconsistent moral advice influences users' judgment. *Scientific Reports*, 13(1), 4569.
- Lea, G. W. (2012). Approaches to developing research-based theatre. *Youth Theatre Journal*, 26(1), 61-72.
- Luria, M., Oden Choi, J., Karp, R. G., Zimmerman, J., & Forlizzi, J. (2020, July). Robotic Futures: Learning about Personally-Owned Agents through Performance. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference* (pp. 165-177).
- Poszler, F., & Lange, B. (2024). The impact of intelligent decision-support systems on humans' ethical decision-making: A systematic literature review and an integrated framework. *Technological Forecasting and Social Change*, 204, 123403.
- Silverman, D. (2015). *Interpreting qualitative data*. Sage.

### Responsible for Module:

Prof. Lütge Dr. Franziska Poszler

### Courses (Type of course, Weekly hours per semester), Instructor:

(SOT87318) AI Ethics Research & Creative Science Communication (Projekt Week) (Seminar, 2 SWS)

Lütge C, Poszler-Krauskopf F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SZ0003: Modules TUM Language Center | Module TUM Sprachenzentrum

### SZ0003-01: Arabic | Arabisch

#### Module Description

### SZ0118: Arabic A1.1 | Arabisch A1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und werden in Form von kompetenz- und handlungsorientierten Portfolioaufgaben (Hilfsmittel erlaubt) sowie einem Abschlusstest abgehalten. Die Form und Bedingungen des Abschlusstests können je nach Abhaltungsformat der jeweiligen LV variieren (Online/Präsenz; mit/ohne Hilfsmittel) und werden rechtzeitig bekannt gegeben.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei: In diesem Falle beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Modul werden neben der Einübung des arabischen Schrift- und Lautsystems Grundkenntnisse des Arabischen vermittelt, die es den Studierenden ermöglichen, sich in

alltäglichen Grundsituationen - z.B. beim sich Begrüßen, beim Einkaufen, im Restaurant, und im öffentlichen Verkehr etc. - trotz geringer Sprachkenntnisse zurechtzufinden. Sie lernen/üben grundlegendes Vokabular zu Themen wie Gesundheit, Familie, Beruf, einfache Fragen zur Person/zur Familie zu stellen und zu beantworten, Zahlen und Uhrzeiten zu verstehen und zu benutzen und in einfach strukturierten Hauptsätzen Alltägliches zu berichten. Entsprechende grammatikalische Themen werden behandelt. Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 des GER. Der/Die Studierende erlangt Grundkenntnisse in Arabisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung interkultureller und landeskundlicher Aspekte. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

Nach Abschluss dieses Moduls kann der/die Studierende alltägliche Ausdrücke und sehr einfache Sätze verwenden, die auf die Befriedigung konkreter Bedürfnisse des alltäglichen Bedarfs zielen: Er/Sie kann sich und andere vorstellen und Fragen zu ihrer Person stellen und auf Fragen dieser Art Antwort geben, in einfacher Weise Tagesabläufe beschreiben und einfache schriftliche Mitteilungen zur Person machen. Er/Sie ist in der Lage, Wünsche zu kommunizieren, wenn die Gesprächspartner deutlich und langsam sprechen und bereit sind zu helfen.

Sowohl im schriftlichen als auch im mündlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der A1.1-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch wird in der LV bekannt gegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Arabisch A1.1 (Seminar, 2 SWS)

Aboelgoud E, Köpfler I

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0119: Arabic A1.2 | Arabisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und werden in Form von kompetenz- und handlungsorientierten Portfolioaufgaben (Hilfsmittel erlaubt) sowie einem Abschlusstest abgehalten. Die Form und Bedingungen des Abschlusstests können je nach Abhaltungsformat der jeweiligen LV variieren (Online/Präsenz; mit/ohne Hilfsmittel) und werden rechtzeitig bekannt gegeben.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei: In diesem Falle beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Prüfung A1.1 bzw. gesicherte Kenntnisse der Stufe A1.1

#### Content:

In diesem Modul lernen die Studierenden Wortschatz und Alltagssituationen zum sich Begrüßen, beim Einkaufen, im Restaurant etc. Sie lernen/üben grundlegendes Vokabular zu Themen wie Gesundheit, Familie, Beruf, einfache Fragen zur Person/zur Familie zu stellen und zu beantworten, Zahlen und Uhrzeiten zu verstehen und zu benutzen und in einfach strukturierten Hauptsätzen Alltägliches zu berichten. Entsprechende grammatikalische Themen werden behandelt. Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten.



**Intended Learning Outcomes:**

Nach der Teilnahme an der Modulveranstaltung A1.2 sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und sehr einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Er/Sie kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Der/Die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind, zu helfen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch wird im Kurs bekannt gegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Arabisch A1.2 (Seminar, 2 SWS)

Köpfler I

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0120: Arabic A2.1 | Arabisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und werden in Form von kompetenz- und handlungsorientierten Portfolioaufgaben (Hilfsmittel erlaubt) sowie einem Abschlusstest abgehalten. Die Form und Bedingungen des Abschlusstests können je nach Abhaltungsformat der jeweiligen LV variieren (Online/Präsenz; mit/ohne Hilfsmittel) und werden rechtzeitig bekannt gegeben.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei: In diesem Falle beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Prüfung A1.2 bzw. gesicherte Kenntnisse der Stufe A1.2

#### Content:

In diesem Modul werden Grundkenntnisse in Arabisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Situationen zurechtzufinden, z.B. auf Reisen, beim Arzt, auf dem Markt, unter Kollegen, Freunden und Nachbarn. Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Sie lernen/üben grundlegendes Vokabular/ Ausdrucksmöglichkeiten zu Themen wie Ausbildung, Beruf, Gesundheit, Wohnen und Reisen.

Sie lernen/üben, einfach strukturierte Haupt- und Nebensätze zu benutzen und entsprechende grammatikalische Themen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2.1 des GER. Der/Die Studierende erlangt Grundkenntnisse in Arabisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung interkultureller und landeskundlicher Aspekte. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen. Nach Abschluss dieses Moduls kann er/sie im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte. Er/Sie kann beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation beschreiben. Der/die Studierende kann längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Material wird im Unterricht bekannt gegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Arabisch A2.1 (Seminar, 2 SWS)

Aboelgoud E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0121: Arabic A2.2 | Arabisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und werden in Form von kompetenz- und handlungsorientierten Portfolioaufgaben (Hilfsmittel erlaubt) sowie einem Abschlusstest abgehalten. Die Form und Bedingungen des Abschlusstests können je nach Abhaltungsformat der jeweiligen LV variieren (Online/Präsenz; mit/ohne Hilfsmittel) und werden rechtzeitig bekannt gegeben.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei: In diesem Falle beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Prüfung A2.1 bzw. gesicherte Kenntnisse der Stufe A2.1

#### Content:

In diesem Modul werden Grundkenntnisse in Arabisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Situationen zurechtzufinden, z.B. auf Reisen, Beim Einkaufen, auf dem Markt, unter Kollegen, Freunden und Nachbarn. Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Sie lernen/üben grundlegendes Vokabular/ Ausdrucksmöglichkeiten zu Themen wie Ausbildung, Beruf, Gesundheit, Wohnen und Reisen,

Geschäftsleben etc. Sie lernen/üben, einfach strukturierte Haupt- und Nebensätze zu benutzen und entsprechende grammatikalische Themen wie Präsens, Imperativ und Vetitiv.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2.2 des GER. Der/Die Studierende erlangt Grundkenntnisse in Arabisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung interkultureller und landeskundlicher Aspekte. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen. Nach Abschluss dieses Moduls kann er/sie im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte. Er/Sie kann beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation beschreiben. Der/die Studierende kann längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Material wird im Unterricht bekanntgegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0123: Arabic Communication A1 | Arabisch Kommunikation A1

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 1	<b>Total Hours:</b> 45	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse (hier: mündliche Kommunikationsfähigkeiten) überprüft. Format: Audiodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A1

#### Content:

In diesem Modul steht die mündliche Kommunikation in der Fremdsprache Arabisch im Vordergrund. Es werden Kenntnisse vermittelt, die es den Studierenden ermöglichen, im einfachen Kontext, d. h. in verschiedenen alltäglichen Situationen und zu Themen von allgemeinem Interesse zusammenhängend und verständlich zu kommunizieren. Dabei wird ein Spektrum an Vokabular, Redewendungen und Dialogmustern erarbeitet; interkulturelle und landeskundliche Aspekte berücksichtigt; Schwerpunkte der Grammatik gemäß der Niveaustufe wiederholt bzw. vertieft und gefestigt. Die aktive Mitarbeit der Studierenden wird erwartet und gefördert.

#### Intended Learning Outcomes:

Nach Abschluss des Moduls können die Studierenden entsprechend der Niveaustufe A1 sich an leichteren Gesprächen im Alltag beteiligen, einfach und zusammenhängend in alltäglichen Kommunikationssituationen verstehbar reagieren, sofern sie in klarer Standardsprache vorgetragen werden und die Thematik vertraut ist.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Sprechübungen; Einzel-Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenem Material.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Arabisch A1 - Kommunikation (Seminar, 1 SWS)

Aboelgoud E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-02: Chinese | Chinesisch****Module Description****SZ0209: Chinese A1.1 | Chinesisch A1.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

Interesse an der chinesischen Sprache und Kultur ist empfehlenswert

**Content:**

Dieses Modul umfasst die Einführung in die chinesische Phonetik, elementare Vokabeln und Grammatik sowie die Einführung in die chinesischen Schriftzeichen. Mitgeteilt werden die Besonderheit der vier Töne im Hochchinesischen, der Aufbau der Schriftzeichen und die elementare Grammatikstruktur. Alltägliche Begrüßungsformen, Basisredewendungen und einfache Satzglieder sind Bestandteile dieses Moduls.



**Intended Learning Outcomes:**

Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, einen Überblick über die chinesische Sprache zu gewinnen. Sie haben auch den Grundwortschatz in chinesischen Schriftzeichen erworben.

**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit. Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Hör-, Lese- und Sprechübungen. Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch wird in der LV bekanntgegeben,  
Vom Kursleiter selbst erstellte Materialien/Übungen

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chinesisch A1.1 (Seminar, 2 SWS)

Kralle J, Lee M, Shih-Skalden Y, Zhou H

Blockkurs Chinesisch A1.1 (Seminar, 2 SWS)

Wang Z

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0210: Chinese A1.2 | Chinesisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur A1.1 oder gleichwertige Vorkenntnisse

#### Content:

In diesem Modul werden die Kenntnisse über die Fragepartikeln, Eigenschaftswörter und Zahleneingaben vermittelt. Mit den Kommunikations-möglichkeiten zu den Alltagssituationen wird das Gelernte realitätsnah erprobt.

#### Intended Learning Outcomes:

Die Studierenden sind nach dem Abschluss des Moduls in der Lage, weitere Verben zu beherrschen, verschiedene Fragepartikeln, Eigenschaftswörter und Zahleneingaben anzuwenden. Sie können sich an leichteren Gespräche im Alltag, der A1.2-Stufe entsprechend, beteiligen.

**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Audio-CD, multimedial gestützte Lehr- und Lernmaterialien

**Reading List:**

Lehrbuch wird in der Veranstaltung bekanntgegeben,  
Vom Kursleiter selbst erstellte Materialien/Übungen

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chinesisch A1.2 (Seminar, 2 SWS)

Lee M, Zhou H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0211: Chinese A2.1 | Chinesisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestanden Abschlussklausur A1.2 oder gleichwertige Vorkenntnisse

#### Content:

Der Schwerpunkt dieses Moduls liegt in der Verfeinerung der Sprachkenntnisse. Kombination von verschiedenen Satzelementen wie Orts- und Zeitangaben sowie Äußerung von persönlichen Meinungen werden in diesem Modul erarbeitet.

#### Intended Learning Outcomes:

Die Studierenden sind nach der Teilnahme an der Modulveranstaltung in der Lage, genauere Aussagen zu machen und komplexere Äußerungen zu formulieren.

#### Teaching and Learning Methods:

Einzelarbeit, Partnerarbeit, Gruppenarbeit

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Audio-CD und multimedial gestützte Lehr- und Lernmaterialien

**Reading List:**

wird in der Veranstaltung bekanntgegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chinesisch A2.1 (Seminar, 2 SWS)

Kralle J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0212: Chinese A2.2 | Chinesisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Abschlussklausur A2.1 oder gleichwertige Vorkenntnisse

#### Content:

In diesem Modul werden komplexere Satzstrukturen erarbeitet. Die Studierenden erlernen weitere Vokabeln. Die Satzteile werden durch Einbindung modaler Erläuterungen zu Subjekt, Prädikat und Objekt in den Aussagesätzen erweitert.

Die Studierenden beschäftigen sich mit Themen, die relevant für die chinesische Kultur, ihre Sitten und Gebräuche sind.

#### Intended Learning Outcomes:

Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, ihre Meinungen in längerer, durchdachter und fein strukturierter Form zu formulieren. Sie können längere Sätze analysieren.

**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit, Referate

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Audio-CD und multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch wird in der Veranstaltung bekanntgegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chinesisch A2.2 (Seminar, 2 SWS)

Kralle J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0213: Chinese B1.1 | Chinesisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestanden Abschlussklausur A2.2 oder gleichwertige Vorkenntnisse

#### Content:

In diesem Modul erlernen die Studierenden komplexere Grammatikstrukturen. Sie lesen komplexe Texte über spezielle Themen, Landeskunde und Kultur. Die Übungen umfassen Textanalyse und Satzumformulierung.

#### Intended Learning Outcomes:

Die Studierenden können nach Abschluss komplexe Satzstrukturen verwenden und die richtige Wortwahl treffen. Sie sind in der Lage, über spezielle Themen zu referieren. Sie erreichen das Niveau von HSK 3 (standardisierte chinesische Sprachprüfung).



**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit, Referate

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Audio-CD und multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch wird in der Veranstaltung bekanntgegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0214: Chinese B1.2 | Chinesisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur B1.1 oder gleichwertige Vorkenntnisse

#### Content:

In diesem Modul werden weitere Kenntnisse über komplexe Grammatikstrukturen, Textanalyse und Landeskunde vermittelt. Die Studierenden besprechen spezielle Themen und erarbeiten sie in Form von schriftlicher Arbeit und verbaler Präsentation. Sie diskutieren in Gruppen über aktuelle Themen in chinesischer Sprache, z.B. Studentenleben in Deutschland, Auslandsstudium in China, Reisebericht, Buchpräsentation, besondere Erlebnisse usw.

#### Intended Learning Outcomes:

Die Studierende erlangen die notwendigen Kenntnisse, um komplexe Satzstrukturen zu verwenden. Sie sind in der Lage, schwierigere Texte zu analysieren, zusammenfassen und sie verbal ausdrücken. Sie erreichen das Niveau von HSK 4 (standardisierte chinesische

Sprachprüfung). Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit, Referate. Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Audio-CD, multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch wird in der Veranstaltung bekanntgegeben

Vom Kursleiter selbst angefertigte Übungen, Auszüge aus kopierbaren Lehrmaterialien, Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0217: Chinese B2.1 | Chinesisch B2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Klausur beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird in Form von Präsenzprüfungen oder (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur B1.2 oder gleichwertige Vorkenntnisse

#### Content:

In dieser Modulveranstaltung werden Kenntnisse über schwierige Grammatikstrukturen, fachspezifische Begriffe und Themen vermittelt. Dabei werden historische, landeskundliche und interkulturelle Aspekte Chinas und Deutschlands berücksichtigt. Die Termini werden durch mündliche und schriftliche Übungen erworben.

#### Intended Learning Outcomes:

Die Studierenden erlangen Kenntnisse in der Fremdsprache Chinesisch auf standardsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Sie sind sicher im allgemeinen Gespräch und können über fachspezifische Themen diskutieren. Zudem sind sie in der Lage, einige chinesische Sprichwörter zu beherrschen. Das Modul

ermöglicht ihnen, den Unterschied zwischen deutscher und chinesischer Kultur zu erkennen und darüber hinaus in chinesischer Sprache präziser zu formulieren.

**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit, Referate.

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Online-Materialien, Zeitungsartikel, Kurzfilme

**Reading List:**

Lehrbuch wird in der Veranstaltung bekanntgegeben

Vom Kursleiter selbst angefertigte Übungsmaterialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0219: Chinese A2.1 - Communication at Work | Chinesisch A2.1 - Kommunikation am Arbeitsplatz

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0220: Chinese B2.1 - Chinese in Science | Chinesisch B2.1 - Wissenschaftliches Chinesisch

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsaufgaben beinhalten Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird entweder in Form von einer Präsenzprüfung oder Portfolioprfungsaufgaben abgehalten. Hilfsmittel sind erlaubt.

Die mündliche Reaktionsfähigkeit wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen und/oder in Form einer Audio-/Videodatei überprüft. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur B1.2 oder Ergebnis Einstufungstest B2.1

#### Content:

Der Wissenschaftliches Chinesisch-Kurs hat den Schwierigkeitsgrad B2.1 nach dem Gemeinsamen Europäischen Referenzrahmen für Sprachen (GER). In diesem Modul werden Sprachkenntnisse, die in Stufe B1.2 erworben wurden, vertieft. Kenntnisse über schwierige Grammatikstrukturen, fachspezifische Begriffe und Themen werden vermittelt, die es den Studierenden ermöglichen, sich in einem chinesischsprachigen Studium mit einem gewissen Fachsprachenniveau zu orientieren.

Zudem lernen sie weitere 300 Vokabeln und deren Funktionen im Satzbau sowie Erweiterungen von Satzteilen. Die Studierenden machen Übungen zur Textanalyse und Satzumformulierung. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Chinesisch



effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Schließlich nehmen sie an einer Projektarbeit teil und halten eine Präsentation auf Chinesisch.

**Intended Learning Outcomes:**

Nach der Teilnahme an dem Modul sind die Studierenden in der Lage, sich einfach und zusammenhängend über ihre eigenen Studienfächer und allgemeinen wissenschaftliche Themen zu äußern und sind in der Lage, auf einfache Art zu diskutieren, zu bewerten, zu erklären usw. Das Modul ermöglicht ihnen darüber hinaus, ihre Diskussionsbeiträge präziser zu formulieren. Sie sind in der Lage, ca. 300 Wörter (chinesische Schriftzeichen) für Studium zu verstehen und zu verwenden.

**Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit, Referate.

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Online-Materialien, Zeitungsartikel, Kurzfilme

**Reading List:**

Lehrbuch wird in der Veranstaltung bekanntgegeben

Vom Modul-Leiter\*innen selbst angefertigte Übungsmaterialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0221: Chinese A2.2 - Communication at Work | Chinesisch A2.2 - Kommunikation am Arbeitsplatz

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsaufgaben beinhalten Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird entweder in Form von einer Präsenzprüfung oder Portfolioprfungsaufgaben abgehalten. Hilfsmittel sind erlaubt.

Die mündliche Reaktionsfähigkeit wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen und/oder in Form einer Audio-/Videodatei überprüft. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur Chinesisch A2.1 oder A2.1 Berufskommunikation oder gleichwertige Vorkenntnisse

#### Content:

In diesem Modul werden berufliche Situationen simuliert wie z.B. im Team kommunizieren/ Teamarbeit, Visum beantragen, Dienstreise planen, E-Mails schreiben, Telefonate führen, Meetings und Geschäftsessen organisieren bzw. durchführen und einfache Konzepte verfassen. Die Studierenden erarbeiten ein Spektrum an berufsbezogenem Vokabular, Redewendungen und Dialogmustern und benutzen Diskursmuster eines Meetings wie z.B. Vor- und Nachteile angeben,

Vorschläge machen, Höflichkeitsfloskeln am Arbeitsplatz verwenden, Lösungen anbieten und widersprechen.

Eine Kombination von verschiedenen Satzelementen wie Orts- und Zeitangaben sowie Äußerung von persönlichen Meinungen wird in diesem Modul erarbeitet. Kenntnisse des Chinesischen werden vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Bürosituationen zurechtzufinden.

Zudem lernen sie weitere 200 Vokabeln und deren Funktionen im Satzbau sowie die Modifikation von Satzteilen. Außerdem werden Teile der chinesischen Kultur und chinesische Gewohnheiten in der Berufskommunikation erläutert.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Chinesisch eigenverantwortlich und effektiv zu gestalten.

Die Studierenden üben Teamkompetenz durch kooperatives Handeln.

#### **Intended Learning Outcomes:**

Nach der Teilnahme an dem Modul sind die Teilnehmer in der Lage, die gelernte Grammatik anzuwenden und sich an leichteren Gesprächen im Alltag und im Büro zu beteiligen.

Die Studierenden sind nach der Teilnahme an der Modulveranstaltung in der Lage, genauere Aussagen zu machen und komplexere Äußerungen zu formulieren.

Die Teilnehmer werden auch in der Lage, sein auf einer digitalen Lernplattform Kommentare zu schreiben, einfache Fragen zu stellen und kurze SMS-Konversationen auf Mandarin-Chinesisch zu führen.

#### **Teaching and Learning Methods:**

Einzelarbeit, Partnerarbeit, Gruppenarbeit

Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

#### **Media:**

Lehrbuch, Übungsblätter, Audio-CD und multimedial gestützte Lehr- und Lernmaterialien

#### **Reading List:**

wird in der Veranstaltung bekanntgegeben

#### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chinesisch A2.2 - Kommunikation am Arbeitsplatz (Seminar, 2 SWS)

Zhou H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0222: Cantonese A1.1 | Kantonesisch A1.1

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsaufgaben beinhalten Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird entweder in Form von einer Präsenzprüfung oder Portfolioprüfungsaufgaben abgehalten.

Hilfsmittel sind erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Die Teilnehmer sollten vor allem Interesse an der kantonesischen Sprache und Kultur mitbringen. Vorkenntnisse im Chinesischen oder im Umgang mit chinesischen Schriftzeichen sind von Vorteil, jedoch nicht zwingend erforderlich.

#### Content:

In dem Kurs wird zunächst eine kurze Einführung in die Geschichte und Kultur der kantonesischen Sprache geboten. Nachdem die Teilnehmenden dann ein erstes Verständnis für die Phonologie und Tonregeln des Kantonesischen entwickelt haben, werden thematisch geordnete Vokabeln und Grammatikstrukturen präsentiert.

Die Sitzungen selbst konzentrieren sich auf die gesprochene Sprache und das Führen von einfachen Gesprächen im Alltag. Die behandelten Themen sind sorgfältig ausgewählt und spiegeln Alltagssituationen wider. Zum Beispiel Begrüßungen, Selbstvorstellung, Zahlen, Zeitangaben, Einkaufen, Hobbys, Essenbestellungen in Restaurants und das Erfragen von Wegbeschreibungen. Darüber hinaus bietet der Kurs zahlreiche Übungen und Wiederholungen, um den Teilnehmenden zu helfen, die Vokabeln rasch zu erlernen und die Ausdrücke aktiv anzuwenden.

**Intended Learning Outcomes:**

Nach erfolgreich abgeschlossenem Modul sind die Teilnehmer und Teilnehmerinnen in der Lage, den grundlegenden Wortschatz und die Grammatik des modernen Kantonesisch zu vermitteln, und ihre Studien selbständig fortzusetzen. Durch eine Einführung in die kantonesischen Schriftzeichen und Ausspracheregeln erhalten die Studenten auch ein besseres Verständnis für die Entwicklung der chinesischen Sprachen.

**Teaching and Learning Methods:**

Einzelarbeit zum individuellen sowie Partner- und Gruppenarbeit zum kommunikativen und handlungsorientierten Erarbeiten der Inhalte; Referate können gehalten werden. Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Online-Materialien, Zeitungsartikel, Kurzfilme

**Reading List:**

Vom Kursleiter selbst angefertigte Übungsmaterialien. Weitere Lehrmaterialien/Lehrbuch werden in der LV bekanntgegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Kantonesisch A1.1 (Seminar, 2 SWS)

Cai J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0224: Chinese B2.2 - Chinese in Business | Chinesisch B2.2 - Wirtschaftschinesisch

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsaufgaben beinhalten Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion in Schriftzeichen/Pinyin und wird entweder in Form von einer Präsenzprüfung oder Portfolioprfungsaufgaben abgehalten.

Hilfsmittel sind erlaubt.

Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. In diesem Fall beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe B2.1, Wirtschaftschinesisch 1 oder vergleichbare Kenntnisse. Die Teilnehmer sollen Interesse an dem Thema und Fachbereich Wirtschaft mitbringen.

#### Content:

Der Kurs Wirtschaftschinesisch 2 hat den Schwierigkeitsgrad B2.2 nach dem Gemeinsamen Europäischen Referenzrahmen für Sprachen (GER).

In dieser LV werden Kenntnisse über schwierige Grammatikstrukturen, fachspezifische Begriffe und Themen vermittelt. Sprachkenntnisse in Mandarin-Chinesisch werden erarbeitet, die es den Studierenden ermöglichen, sich in der Arbeit, zu Themen wie das Marketing, das Käuferverhalten,

die Finanzverwaltung, die Finanzabrechnung, sowie unterschiedliche Firmenkulturen selbständig in der Zielsprache zu verständigen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Chinesisch effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

**Intended Learning Outcomes:**

Nach der Teilnahme an dieser Veranstaltung sind die Studierenden in der Lage, sicher an allgemeinen Gesprächen teilzunehmen, über spezielle Themen zu diskutieren und Präsentationen zu Themen wie Marketingstrategien und Unternehmenskulturen zu halten.

Die Studierenden sind außerdem in der Lage, mündlich und schriftlich einfach und zusammenhängend über Erfahrungen und Ereignisse zu berichten. Sie können etwa 250 chinesische Wörter des Wirtschaftsvokabulars für die Berufskommunikation verstehen und anwenden.

Darüber hinaus kennen sie etwa 10 bekannte chinesische Marken und Unternehmen und verfügen über grundlegende Kenntnisse im Umgang mit aktuellen chinesischen Apps.

**Teaching and Learning Methods:**

Einzelarbeit zum individuellen sowie Partner- und Gruppenarbeit zum kommunikativen und handlungsorientierten Erarbeiten der Inhalte; Referate können gehalten werden. Hausaufgaben zur Vor- und Nachbearbeitung sind freiwillig und fördern die Beherrschung der Zielsprache.

**Media:**

Lehrbuch, Übungsblätter, Online-Materialien, Zeitungsartikel, Kurzfilme

**Reading List:**

Vom Kursleiter selbst angefertigte Übungsmaterialien. Weitere Lehrmaterialien/Lehrbuch werden in der LV bekanntgegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Chinesisch B2.2 - Wirtschaftschinesisch (Seminar, 2 SWS)

Shih-Skalden Y

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0225: Chinese - China Digital | Chinesisch - China Digital

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 1	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-03: German as a Foreign Language | Deutsch als Fremdsprache****Module Description****SZ0303: German as a Foreign Language A2.1 | Deutsch als Fremdsprache A2.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Aids are permitted.

The examination performances are designed in their entirety to test the use of vocabulary and grammar, reading and/or listening comprehension, and free text production.

Oral communication skills will be tested via the use of appropriate idioms in written dialogue examples and/or in the form of an audio/video file. For this purpose, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

assured knowledge of level A1.2; placement test with result A2.1

**Content:**

This module teaches basic knowledge of German as a Foreign Language, taking into account intercultural and cultural aspects of the country, enabling students to cope in simple, routine situations, e.g. when traveling, at the doctor's, looking for an apartment, in the department store, among colleagues, friends and neighbors.

They will learn/practice vocabulary/expressions on topics such as study and training, work, housing, media, and travel. They learn/practice using basic main and subordinate clauses (e.g. dass, weil, und, denn, etc.), reporting in the past tense (modal verbs) and perfect tense, the use

of the comparative and superlative forms, and the declension of the adjective. They review and expand the use of prepositions in the accusative and dative.

### **Intended Learning Outcomes:**

The module is oriented towards level A2 of the CEFR.

After completing this module, students will be able to understand and use simple sentences, phrases and idiomatic expressions in conversations on an extended range of familiar topics, such as basic information on everyday topics or topics relevant to studies or work, including cultural aspects of the country.

They can, for example, describe themselves and other people, personal living situation, state of health, leisure activities and basic work-related situations.

Students can understand longer texts and letters on familiar topics using common but simple everyday or work-related language and containing predictable information. They can write short, informative texts or messages on basic situations in everyday life and study.

### **Teaching and Learning Methods:**

The module consists of a seminar in which students study the learning content with targeted listening, reading, writing and speaking exercises. The communicative and action-oriented approach is implemented by combining these exercises in individual, partner and group exercises. Online material for controlled self-study of basic grammatical phenomena and communication patterns is provided to deepen and intensify the content taught during the course. Voluntary homework (for preparation and revision) consolidates what has been learned.

### **Media:**

Textbook; multimedia-supported teaching and learning material, also online.

### **Reading List:**

Textbook: will be announced in the course

### **Responsible for Module:**

#### **Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A2.1 (Seminar, 4 SWS)

Comparato G, Dechant S, Detcheva-Knippelmeyer I, Feistle C, Grigorieva A, Hanke C, Kostial M, Kummer-Rock A, Lebling-Gemaljevic J, Mielert A, Schlüter J, Schmidt-Bender S, Sohlbach M, Stiebeler H

Blockkurs Deutsch als Fremdsprache A2.1 (Seminar, 4 SWS)

Hanke C, Hoff L, Koch K, Kostial M

Deutsch als Fremdsprache A2.1 - EuroTeQ (Seminar, 4 SWS)

Lechle K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ03031: Intensive Course German as a Foreign Language A2.1 | Blockkurs Deutsch als Fremdsprache A2.1

Version of module description: Gültig ab winterterm 2015/16

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

1 final exam 90 min. (100%) - no learning aids permitted

The midterm exam is intended to monitor students' learning progress and reduce the amount of material covered in the final exam. Written exams will assess students level of acquisition of the learning outcomes specified in the module description. Specifically, exam questions focus on the usage of vocabulary and grammar, as well as reading comprehension and text production. Listening comprehension is tested by posing questions based on audio samples to which students respond in writing.

Verbal skills are evaluated using appropriate prompts from sample print dialogs.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Firm knowledge of level A1.2; placement test with the achievement A2.1

#### Content:

In this module, students acquire basic knowledge of the German language, including intercultural and regional aspects, that will enable them to express themselves in everyday situations, such as traveling, at the doctor's office, searching for an apartment, in a department store, among colleagues, friends or neighbors.

Students learn and practice basic vocabulary and expressions on topics such as education, profession, health and traveling. Students learn and practice using simply structured main and subordinate clauses (that, because, and, than, etc.), employing the preterit (modal verbs) and perfect, as well as the comparative, the superlative and the declination of the adjective. They reinforce and expand the usage of the prepositions in the accusative and dative case.

Students learn strategies for successful verbal and written communication despite minimal language skills. Opportunities will be made available for effective, self-motivated, independent learning. Students acquire teamwork skills through collaborative work in multinational mixed groups.

**Intended Learning Outcomes:**

The module is based on level A2 of GER.

Upon completion of this module, students are able to understand and use simple sentences and expressions in conversations on a broad spectrum of familiar topics. These conversations are based on basic information concerning everyday life and subjects relevant to studying or working, including sociocultural aspects of German-speaking countries.

For example, students are able to describe themselves and other people, their living situation, state of health, leisure time activities and job situation.

Students are able to understand longer texts and letters about familiar topics that include foreseeable information and are written in simple language about everyday life or job related topics. Students are able to compose short, informative texts or notifications about basic situations in everyday life or situations related to studying.

**Teaching and Learning Methods:**

The module consists of a seminar covering material appropriate to desired learning outcomes and encompassing relevant listening, reading, writing and speaking exercises. These exercises may take the form of individual, partner or group work, implementing a communicative and activity-oriented approach. Students have the opportunity to deepen basic knowledge conveyed in the seminar through independent study and work, using specified (online) materials covering fundamental grammar and communication patterns of the foreign language.

Voluntary homework (preparation and follow-up work) reinforces classroom and structured learning.

**Media:**

Textbook; multimedia-based teaching and learning materials (black board, overheads, exercise sheets, image, film, etc.) also online

**Reading List:**

to be announced in the Class

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Deutsch als Fremdsprache A2.1 (Seminar, 4 SWS)

Hanke C, Hoff L, Koch K, Kostial M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0304: German as a Foreign Language A2.2 | Deutsch als Fremdsprache A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A2.1; Einstufungstest mit Ergebnis A2.2

#### Content:

In diesem Modul werden Grundkenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich in einfachen, routinemäßigen Situationen zurechtzufinden, z.B. auf Reisen, beim Arzt, auf Wohnungssuche, im Kaufhaus, unter Kollegen, Freunden und Nachbarn.

Sie wiederholen und ergänzen grundlegendes Vokabular /Ausdrucksmöglichkeiten zu Themen wie Ausbildung, Beruf, Wohnen, Freizeit und Mobilität. Sie lernen/üben ein erweitertes Spektrum an Haupt- und Nebensätzen (z.B. indirekte Frage, temporaler Nebensatz) sowie den Konjunktiv II zu benutzen und sie wiederholen bzw. erweitern den Gebrauch der Präpositionen.



Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und zu gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte.

Sie können beispielsweise sich und andere Personen, die persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation im Präsens oder Perfekt beschreiben. Sie können Vorschläge machen und reagieren, Informationen austauschen und Ratschläge geben.

Die Studierenden können längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Sie sind in der Lage kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A2.2 (Seminar, 4 SWS)

Dechant S, Detcheva-Knippelmeyer I, Hanke C, Hartkopf D, Knirsch M, Kovacs O, Kummer-Rock A, Schneider S, Steidten R, Thiessen E, Zendath I

Blockkurs Deutsch als Fremdsprache A2.2 (Seminar, 4 SWS)

Hanke C, Schneider S, Steidten R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ03041: Intensive Course German as a Foreign Language A2.2 | Blockkurs Deutsch als Fremdsprache A2.2

Version of module description: Gültig ab winterterm 2015/16

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 120	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

1 final exam 90 min. (100%) - no learning aids permitted

The midterm exam is intended to monitor students' learning progress and reduce the amount of material covered in the final exam. Written exams will assess students level of acquisition of the learning outcomes specified in the module description. Specifically, exam questions focus on the usage of vocabulary and grammar, as well as reading comprehension and text production. Listening comprehension is tested by posing questions based on audio samples to which students respond in writing.

Verbal skills are evaluated using appropriate prompts from sample print dialogs.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Firm knowledge of level A2.1; placement test with the achievement A2.2

#### Content:

In this module, students acquire basic knowledge of the German language, including intercultural and regional aspects, that will enable them to express themselves in everyday situations, such as traveling, at the doctor's office, searching for an apartment, in a department store, among colleagues, friends or neighbors.

Students reinforce and augment basic vocabulary and expressions on topics such as education, profession, living and traveling. Students learn and practice classifying and using an extended spectrum of main and subordinate clauses (final clause, indirect questions, temporal subordinate clause, causal sentence). They also learn to employ the preterit (modals verbs) and perfect and will repeat and expand the usage of the prepositions and the declination of the adjective.

Students learn strategies for successful verbal and written communication despite minimal language skills. Opportunities will be made available for effective, self-motivated, independent learning. Students acquire teamwork skills through collaborative work in multinational mixed groups.

### **Intended Learning Outcomes:**

The module is based on level A2 of GER.

Upon completion of this module, students are able to understand and use simple sentences and expressions in conversations on a broad spectrum of familiar topics. These conversations are based on basic information concerning everyday life and subjects relevant to studying or working, including sociocultural aspects of German-speaking countries.

For example, students are able to describe themselves and other people, their living situation, state of health, leisure time activities and job situation. Students are able to communicate in various situations, for example, when searching for an apartment, traveling or on holiday, and are able to report about their experiences in simple standard language.

Students are able to understand longer texts and letters about familiar topics that include foreseeable information and are written in simple language about everyday life or job related topics. Students are able to compose short, informative texts or notifications about basic situations in everyday life or situations related to studying.

### **Teaching and Learning Methods:**

The module consists of a seminar covering material appropriate to desired learning outcomes and encompassing relevant listening, reading, writing and speaking exercises. These exercises may take the form of individual, partner or group work, implementing a communicative and activity-oriented approach. Students have the opportunity to deepen basic knowledge conveyed in the seminar through independent study and work, using specified (online) materials covering fundamental grammar and communication patterns of the foreign language.

Voluntary homework (preparation and follow-up work) reinforces classroom and structured learning.

### **Media:**

Textbook; multimedia-based teaching and learning materials (black board, overheads, exercise sheets, image, film, etc.) also online

### **Reading List:**

Textbook (to be announced in class)

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Deutsch als Fremdsprache A2.2 (Seminar, 4 SWS)

Hanke C, Schneider S, Steidten R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ03042: Intensive Course German as a Foreign Language A2.2: Guided Self-Study | Blockkurs Deutsch als Fremdsprache A2.2: Guided Self-Study

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 4	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A2.1; Einstufungstest mit Ergebnis A2.2

#### Content:

In dieser LV werden Grundkenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich in einfachen, routinemäßigen Situationen zurechtzufinden, z.B. auf Reisen, beim Arzt, auf Wohnungssuche, im Kaufhaus, unter Kollegen, Freunden und Nachbarn.

Sie wiederholen und ergänzen grundlegendes Vokabular /Ausdrucksmöglichkeiten zu Themen wie Ausbildung, Beruf, Wohnen, Freizeit und Mobilität.

Sie lernen/üben ein erweitertes Spektrum an Haupt- und Nebensätzen (z. B. indirekte Frage, temporaler Nebensatz) sowie den Konjunktiv II zu benutzen und sie wiederholen bzw. erweitern den Gebrauch der Adjektivdeklination und der Präpositionen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 des GER. Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte.

Sie können beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und die berufliche Situation im Präsens und Perfekt beschreiben. Sie können Vorschläge machen und reagieren, Informationen austauschen und Ratschläge geben.

Die Studierenden können längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Sie sind in der Lage kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium zu verfassen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte von den Studierenden im Selbststudium erarbeitet werden. Es werden Materialien zu Hör-Lese- und Schreibfertigkeiten sowie zum Verständnis grammatischer Strukturen auf der Moodle-Plattform bereitgestellt, auf der Lerninhalte auch in Partner- und Gruppenarbeit erarbeitet werden können. Der Lernprozess wird fortlaufend online moderiert und durch regelmäßiges online-Feedback unterstützt. E-Tests ermöglichen die punktuelle Überprüfung der Lernfortschritte. Präsenztermine dienen der Sicherung des Erarbeiteten und dessen Anwendung beim Sprechen in Partner- und Gruppenarbeit.

### **Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Ergänzende Literatur wird im Kurs bekannt gegeben.

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0314: German as a Foreign Language B2+C1: Communication at Work: German for Internship and Job | Deutsch als Fremdsprache B2+C1: Kommunikation am Arbeitsplatz: Deutsch für Praktikum und Beruf**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 1	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

gesicherte Deutschkenntnisse der Stufe B2.1, Einstufungsergebnis B2.2

gesicherte Deutschkenntnisse der Stufe C.1.1, Einstufungsergebnis C.1.1

#### **Content:**

Im Modul B2 werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglicht, im beruflichen Kontext aktiv und annähernd flüssig zu kommunizieren.

Die Studierenden verfassen E-Mails, simulieren Telefonate, Meetings und Small Talk sowie andere relevante Kommunikationssituationen.

Sie setzen Strategien und angemessenen Wortschatz ein, die effizientes Sprechen und Hören unterstützen.

Zusätzlich vertiefen sie ihre Kenntnisse zu Diskursmustern eines Meetings wie z.B. Vor- und Nachteile angeben, Vorschläge machen, Lösungen anbieten, widersprechen, vergleichen.

Im Modul C1 werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglicht, im beruflichen Kontext aktiv und flüssig zu kommunizieren.

Die Studierenden verfassen E-Mails, simulieren Telefonate, Meetings und Small Talk sowie andere relevante Kommunikationssituationen.

Sie setzen Strategien und differenzierten Wortschatz ein, die effizientes Sprechen und Hören unterstützen.

Zusätzlich vertiefen sie ihre Kenntnisse zu Diskursmustern eines Meetings wie z.B. Vor- und Nachteile angeben, Vorschläge machen, Lösungen anbieten, widersprechen, vergleichen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2 des GER. Im Anschluss an die Teilnahme an die Modulveranstaltungen können die Studierenden auf formelle und informelle Kommunikationssituationen im Büroalltag mündlich spontan und zusammenhängend und schriftlich angemessen und in jeder Hinsicht verstehbar reagieren.

Sie sind in der Lage, anhand realitätsnaher Szenarien einem Meeting bzw. Telefonat in einer Firma zu folgen, sowie die wichtigen Punkte zu protokollieren und bei Bedarf nachzufragen.

Sie können annähernd flüssig argumentieren und auf die Argumente anderer eingehen, sofern sie in der Standardsprache vorgetragen werden.

Die Studierenden können formelle und informelle Redewendungen in E-Mails unterscheiden und je nach Situation ihren Stil anpassen.

Das Modul orientiert sich am Niveau C1 des GER. Im Anschluss an die Teilnahme an die Modulveranstaltungen können die Studierenden auf formelle und informelle Kommunikationssituationen im Büroalltag mündlich spontan und zusammenhängend und schriftlich kompetent reagieren.

Sie sind in der Lage, anhand realitätsnaher Szenarien einem Meeting bzw. Telefonat in einer Firma zu folgen, sowie die wichtigen Punkte strukturiert zu protokollieren und bei Bedarf gezielt nachzufragen.

Sie können flüssig argumentieren, auf die Argumente anderer eingehen und sie gegebenenfalls widerlegen.

Die Studierenden können formelle und informelle Redewendungen in E-Mails in differenzierter Weise einschätzen und je nach Situation ihren Stil anpassen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und



handlungsorientiert erarbeitet werden. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Deutsch als Fremdsprache B2+C1 - Kommunikation am Arbeitsplatz - Deutsch für Praktikum und Beruf (Seminar, 2 SWS)

Schmidt-Bender S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0321: German as a Foreign Language A1.1 plus A1.2 | Deutsch als Fremdsprache A1.1 plus A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 8	<b>Total Hours:</b> 270	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Modul werden Grundkenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich trotz geringer Sprachkenntnisse z.B. beim Einkaufen, im Restaurant, im öffentlichen Verkehr etc. zurechtzufinden.

Sie lernen/üben grundlegendes Vokabular zu Themen wie Familie, Beruf, Freizeit, Einkaufen, Wohnen, Reisen und Gesundheit, einfache Gespräche in alltäglichen Situationen zu führen und in Hauptsätzen Alltägliches im Präsens und Perfekt zu berichten, unter Verwendung von Nomen,

Verben, Pronomen und Possessivartikeln, Modalverben, Imperativ und grundlegender lokaler und temporaler Präpositionen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage alltägliche Ausdrücke und einfache Sätze zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen:

Sie können einfache Fragen in alltäglichen Situationen stellen und beantworten, Tagesabläufe in Vergangenheit und Gegenwart beschreiben und einfache schriftliche Mitteilungen zur Person machen, Verabredungen treffen und in grundlegenden alltäglichen Situationen beispielsweise beim Einkauf oder im Restaurant ihre Wünsche erfolgreich kommunizieren, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A1.1 plus A1.2 (Seminar, 6 SWS)

Nierhoff-King B, Schlömer A, Schlüter J, Steidten R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0322: German as a Foreign Language A2.1 plus A2.2 | Deutsch als Fremdsprache A2.1 plus A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 8	<b>Total Hours:</b> 270	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A1.2; Einstufungstest mit Ergebnis A2.1

#### Content:

In diesem Modul werden Grundkenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich in einfachen, routinemäßigen Situationen zurechtzufinden, z.B. auf Reisen, beim Arzt, auf Wohnungssuche, im Kaufhaus, unter Kollegen, Freunden und Nachbarn.

Sie lernen/üben grundlegendes Vokabular/Ausdrucksmöglichkeiten zu Themen wie Ausbildung, Beruf, Gesundheit und Reisen. Sie lernen/üben ein erweitertes Spektrum an Haupt- und Nebensätzen zu klassifizieren und zu benutzen (Finalsatz, Infinitivsatz, indirekte Frage, temporaler Nebensatz, Kausalsatz), im Präteritum, Perfekt und Plusquamperfekt zu berichten, den Gebrauch

des Komparativ und des Superlativ, die Deklination des Adjektivs (im Nominativ, Akkusativ und Dativ) und Sie wiederholen und erweitern den Gebrauch der Präpositionen im Akkusativ und Dativ. Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 des GER. Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte.

Sie können beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation beschreiben. Sie können sich bei der Wohnungssuche und in wesentlichen Situationen im Urlaub oder auf Reisen verständigen und von daraus resultierenden Erfahrungen und Erlebnissen in einfacher Standardsprache berichten. Die Studierenden können längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Sie sind in der Lage kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium zu verfassen.

### **Teaching and Learning Methods:**

Die LV besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A2.1 plus A2.2 (Seminar, 6 SWS)

Reulein C, Schlüter J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0323: German as a Foreign Language B1.1 plus B1.2 | Deutsch als Fremdsprache B1.1 plus B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 8	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A2.2; Einstufungstest mit Ergebnis B1.1

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Film, Musik, Sport etc. selbständig und sicher in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiv zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

Die Studierenden erarbeiten ein erweitertes Spektrum an Vokabular, Redewendungen und Dialogmustern, erfassen und benutzen ein grundlegendes Repertoire an logischen Haupt- und Nebensatz-Strukturen (z.B. Temporalsatz, Kausalsatz, Infinitiv-Satz, Finalsatz, Konsekutivsatz, Relativsatz). Sie erarbeiten den Gebrauch reflexiver Verben sowie den Gebrauch von Verben und Nomen mit Präpositionalergänzung. Sie lernen/üben die Funktion und den Gebrauch des Konjunktiv II, des Futur I und des Passiv. Sie wiederholen und ergänzen elementare Aspekte der Grammatik wie den Gebrauch der Zeiten, der Präpositionen, der Deklination des Adjektivs und der Komparation.

Die Studierenden beschäftigen sich mit kulturspezifischen Besonderheiten, beispielsweise in Bezug auf Feste und Gebräuche, Ausbildungssysteme, Berufswelt, Lebensformen und Freizeitverhalten und gewinnen Einblicke in die zeitgenössischen Kulturszene Deutschlands. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage sich in den meisten Situationen, denen man in Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher zu verständigen. Sie können Aspekte des schulischen und beruflichen Werdegangs referieren, Pläne, Wünsche und Hoffnungen äußern, Einladungen aussprechen, annehmen oder ablehnen, Ratschläge und Anweisungen erteilen, Meinungen äußern und argumentieren.

Sie können wesentliche Inhalte in einfachen, authentischen Sachtexten, Fernseh- oder Radiosendungen und literarischen Texten verstehen und wiedergeben und sich spontan an Gesprächen zu Themen von allgemeinem Interesse beteiligen. Sie können einfache formelle Briefe und längere persönliche Briefe verfassen und von persönlichen Erfahrungen berichten. Sie können strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Anhand vorgegebener Kriterien und Kommunikationsmuster werden Grundlagen des Referierens und des Diskutierens zu alltäglichen Themen vermittelt.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online



**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B1.1 plus B1.2 (Seminar, 6 SWS)

Hartkopf D, Heiligensetzer M, Kraut-Schindlbeck S, Niehaus B, Stoephasius J, Zerfass A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0324: German for Bachelor's Students - Informatics: Understanding and Writing Scientific Texts | Deutsch im Bachelorstudium - Informatik: Wissenschaftliche Texte verstehen und schreiben**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Deutschkenntnisse Niveau C1

(TestDaf Stufe 4, DSH Stufe 2 oder Feststellungsprüfung Studienkolleg)

#### **Content:**

Die Studierenden erarbeiten relevante Fachlexik sowie Strategien im Umgang mit unbekanntem Fachwortschatz. Sie üben fachspezifische Nomen-Verbverbindungen und die Bildung von Komposita. Sie analysieren Strukturen, die in Fachtexten und fachlicher Kommunikation häufig auftreten wie z.B. Nominalisierungen, Partizipialkonstruktionen und komplexe Satzstrukturen. Die Studierenden üben das schnelle Lesen, Verstehen und Bearbeiten von Klausuraufgaben und Vorlesungsfolien. Sie üben das Sprechen und Schreiben über fachliche Inhalte und beschäftigen sich mit studienrelevanten Sprachhandlungen (beschreiben, nachfragen, Folien schreiben,

präsentieren u.ä). Grundlage der Erarbeitung der genannten Lerninhalte sind authentische Texte wie Vorlesungsunterlagen und Klausurbeispiele.

**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme an dem Modul haben Bachelorstudierende der Fächer Informatik, Wirtschaftsinformatik und Informatik: Games Engineering ihre Kenntnisse in Deutsch als Fremdsprache in Bezug auf fachsprachlich relevante Mittel erweitert. Sie können authentischen Lesetexten wichtige Informationen in der für das Fachstudium erforderlichen Geschwindigkeit entnehmen und diese in Form von Notizen festhalten. Sie sind in der Lage, Aufgaben in Klausuren angemessen zu bearbeiten. Sie können fachliche Inhalte unter Verwendung relevanten Fachwortschatzes in klarer und strukturierter Form präsentieren und sind dabei auch in der Lage, komplexe Satzstrukturen anzuwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Übungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Eine fachbezogene Präsentation zu Studieninhalten des ersten Semesters im Rahmen der Lehrveranstaltung ist obligatorisch. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch im Bachelorstudium C1 - Informatik - Wissenschaftliche Texte verstehen und schreiben (SZ0324) (Seminar, 2 SWS)

Bauer-Hutz B

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0325: German for Master's Students: Electrical and Computer Engineering (EI) | Deutsch im Masterstudium: Elektrotechnik und Informationstechnik (EI)**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Deutschkenntnisse Niveau C1

#### **Content:**

In diesem Modul wird relevante Fachlexik hinsichtlich des Faches Elektrotechnik und Informationstechnik sowie seiner Grundlagenwissenschaften erarbeitet. Es werden Kenntnisse vermittelt, die es den Studierenden ermöglichen, unbekanntem Fachwortschatz eigenständig zu entschlüsseln. Die Studierenden analysieren Strukturen, die in Fachtexten und fachlicher Kommunikation häufig auftreten. Sie verwenden Strategien, die effizientes Hören und Lesen im Fach unterstützen. Die Studierenden verbalisieren fachliche Inhalte und beschäftigen sich mit relevanten Diskursmustern im Fach (beschreiben, erklären, nachfragen, ...). Grundlage der Erarbeitung der genannten Lerninhalte sind in erster Linie authentische Fachtexte.

**Intended Learning Outcomes:**

Im Anschluss an die Teilnahme an die Modulveranstaltungen können die Studierenden relevanten Fachwortschatz verwenden und dabei auch komplexe Satzstrukturen produzieren. Sie können authentischen Lese- und Hörtexten wichtige Informationen in der für das Fachstudium erforderlichen Schnelligkeit entnehmen und diese in Form von Notizen festhalten. Sie können darüber hinaus die erarbeiteten Strategien hinsichtlich ihrer Relevanz für verschiedene Verwendungssituationen einschätzen. Sie verfügen über sprachliche Mittel, die erfolgreiche Kommunikation innerhalb der Lehrveranstaltungen und im weiteren Sinne im Rahmen des Studiums (z.B. in Arbeits- und Lerngruppen) sowie Kommunikation über das Fach ermöglichen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Die Studierenden analysieren dabei auch Strategien und vergleichen und evaluieren diese. Die Teilnehmenden erstellen online Glossare. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrwerk: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch im Masterstudium C1 - Elektrotechnik und Informationstechnik (EI) (Seminar, 2 SWS)  
Gröbl J, Hartkopf D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0328: German for Studying - Informatics: Writing, Presenting and Discussing Scientific Texts | Deutsch im Studium - Informatik: Schreiben, Präsentieren und Diskutieren im Fach**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Deutschkenntnisse Niveau C1

(TestDaf Stufe 4, DSH Stufe 2 oder Feststellungsprüfung Studienkolleg)

#### **Content:**

Bachelorstudierende der Fächer Informatik, Wirtschaftsinformatik und Informatik: Games Engineering und bei vorhandenen Kapazitäten auch Masterstudierende der Fakultät Informatik vertiefen in diesem Modul schriftlich wie mündlich die Anwendung relevanten Fachwortschatzes. Sie analysieren Fachtexte im Hinblick auf Wortschatz und Darstellungskonventionen und entwickeln Strategien im Erfassen unterschiedlicher Textsorten. Sie überprüfen Möglichkeiten des überzeugenden Präsentierens wissenschaftlicher Fragestellungen und Forschungsergebnisse in einem Fachvortrag oder einem Fachaufsatz.

**Intended Learning Outcomes:**

Nach erfolgreicher Teilnahme an dem Modul können die Studierenden ihre Kenntnisse in Deutsch als Fremdsprache in Bezug auf fachsprachlich relevante Mittel sowohl mündlich als auch schriftlich sicherer und präziser verwenden. Sie können innerhalb des eigenen Faches Zusammenhänge und Forschungsergebnisse kompetent darstellen. Sie können einen Fachvortrag weitgehend fehlerfrei halten und Forschungsergebnisse in flüssigem Deutsch zur Diskussion stellen. Die Studierenden sind in der Lage, komplexe Zusammenhänge im Fach strukturiert zu diskutieren. Sie können fachliche Texte schlüssig und weitgehend fehlerfrei verfassen und dabei auch schriftlich eine überzeugende Argumentation entwickeln.

**Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Übungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Eine fachbezogene Präsentation zu aktuellen Studieninhalten der Teilnehmenden nach deren Wünschen und Bedürfnissen ist obligatorisch. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0330: German for Engineers B2 | Deutsch für Ingenieur/innen B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Deutschkenntnisse Niveau B2/gesicherte Deutschkenntnisse der Stufe B1.2

#### Content:

Das Modul orientiert sich am Niveau B2 des GER. In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden in ingenieurwissenschaftlichen Fächern ermöglichen, in Studium und Beruf aktiv und annähernd flüssig über Themen ihres Fachgebietes zu kommunizieren. Die Studierenden erarbeiten die Anwendung eines allgemeinen technischen Fachwortschatzes sowie einen differenzierteren Wortschatz zu einem Thema im eigenen Fach. Sie verwenden Strategien, die effizientes Hören und Lesen unterstützen, vertiefen ihre Kenntnisse zu grundlegenden fachsprachlichen Strukturen und Diskursmustern (wie z.B. Funktionen beschreiben, Vor- und Nachteile angeben, vergleichen). Die Studierenden präsentieren Gegenstände ihres Faches, erweitern ihr Wissen durch gezieltes Nachfragen und diskutieren über Fachthemen.



**Intended Learning Outcomes:**

Im Anschluss an das Modul können die Studierenden relevanten Fachwortschatz verwenden und Zusammenhänge des eigenen Faches und Interessengebietes selbstständig und nachvollziehbar darstellen. Sie sind in der Lage, Fachpräsentationen zu folgen, sofern sie gut vorgetragen sind, und nach Bedarf das eigene Wissen durch gezieltes Nachfragen zu erweitern. Sie können annähernd flüssig argumentieren und auf die Argumente anderer eingehen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Eine fachbezogene Präsentation zu Studieninhalten im Rahmen der Lehrveranstaltung ist obligatorisch. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrwerk: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch für Ingenieur/innen B2 (Seminar, 2 SWS)

Endraß E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0331: German for Engineers C1 | Deutsch für Ingenieur/innen C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Deutschkenntnisse Niveau C1/gesicherte Deutschkenntnisse der Stufe B2.2

#### Content:

Das Modul orientiert sich am Niveau C1 des GER. In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es den Studierenden ermöglichen, in Studium und Beruf flüssig über ingenieurwissenschaftliche Themen des eigenen und eines fremden Fach- und Interessengebiets zu kommunizieren. Die Studierenden erarbeiten einen umfangreichen und differenzierten Wortschatz zu einem breiten Spektrum an technischen Themen. Sie verwenden Strategien, die effizientes Hören und Lesen im Fach unterstützen, vertiefen ihre Kenntnisse zu relevanten Strukturen wie z.B. zum Nominalstil und erweitern ihr Repertoire an fachsprachlichen Diskursmustern (z.B. Ursachen und Wirkungen beschreiben, definieren etc.). Im Seminar präsentieren sie einen komplexen Gegenstand ihres Faches und diskutieren aktuelle Themen mit ingenieurwissenschaftlichem Bezug.

**Intended Learning Outcomes:**

Im Anschluss an das Modul können die Studierenden relevanten Fachwortschatz kompetent verwenden und dabei auch komplexe Satzstrukturen produzieren. Sie können authentischen Lese- und Hörtexten wichtige Informationen in der für Studium und Beruf erforderlichen Schnelligkeit entnehmen. Sie verfügen über sprachliche Mittel, die erfolgreiche Kommunikation über ingenieurwissenschaftliche Zusammenhänge in interkulturellen sowie interdisziplinären Teams ermöglichen. Die Studierenden sind in der Lage, zu kontroversen Themen mit ingenieurwissenschaftlichem Bezug ausführlich und logisch nachvollziehbar Stellung zu beziehen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Eine fachbezogene Präsentation zu Studieninhalten im Rahmen der Lehrveranstaltung ist obligatorisch. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch für Ingenieur/innen C1 (Seminar, 2 SWS)

Hartkopf D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0332: German as a Foreign Language B2+C1 - Intercultural Communication Skills - "Working as an Engineer in Germany" | Deutsch als Fremdsprache B2+C1: Interkulturelle Kommunikation - Als IngenieurIn in Deutschland arbeiten**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 1	<b>Total Hours:</b> 45	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

1 schriftlicher Test 90 min. (100%), Hilfsmittel sind erlaubt.

In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Dabei lösen die Kandidaten Aufgaben, die Faktenwissen zu Besonderheiten des deutschen Arbeitsmarktes und zu interkulturellen Modellen abfragen. Ferner wird die interkulturelle Reflexionskompetenz durch die schriftliche Analyse von Critical Incidents geprüft. 25% der Note besteht aus der Bewertung des sprachlichen Ausdrucks in der Fremdsprache Deutsch.

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

gesicherte Deutschkenntnisse mindestens der Stufe B2.1

#### **Content:**

Das Modul orientiert sich am Niveau B2/C1 des GER. Im Seminar werden Kenntnisse in interkultureller Kommunikation erarbeitet, die es Studierenden in ingenieurwissenschaftlichen Fächern ermöglichen, interkulturell kompetent und zielführend in multinationalen Projektteams und im deutschen Arbeitskontext zu kommunizieren. Die Studierenden erarbeiten die Anwendung interkultureller Modelle zur Analyse komplexer, interkulturell anspruchsvoller Situationen im beruflichen Umfeld. Ferner erhalten Sie Faktenwissen über die Besonderheiten des deutschen Arbeitsmarktes, wie Sozialpartnerschaft, betriebliche Mitbestimmung, Inhalt und Aufbau eines Arbeitsvertrages, Unternehmensstrukturen, etc. Dazu erarbeiten sie sich den entsprechenden wirtschaftsdeutschen Fachwortschatz.

**Intended Learning Outcomes:**

Die Studierenden können erkennen, inwiefern und auf welche Weise die interkulturelle Komponente in der konkreten Zusammenarbeit in multikulturellen Teams eine Rolle spielt. Sie haben sich Tools zur Analyse und zielführenden Interpretation interkulturell komplexer Situationen erarbeitet und verfügt über die sprachlichen Mittel, diese kommunikativ umzusetzen, um eine gegenseitige Verständigung zu ermöglichen. Sie können nach Bedarf das eigene Wissen über abweichende kulturelle Werte und Standards durch gezieltes Nachfragen erweitern und die eigene Sichtweise darlegen. Sie können annähernd flüssig argumentieren und auf die Argumente anderer sowohl mündlich als auch schriftlich eingehen.

**Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte anhand von Selbsterfahrungsübungen, Videomaterial, Critical Incidents und theoretischem Input in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung und zur Vertiefung des eigenen Hintergrundwissens) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2+C1 - Interkulturelle Kommunikation - "Als Ingenieur/in in Deutschland arbeiten" (Seminar, 2 SWS)

Koch H, Nierhoff-King B

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0333: German as a Foreign Language B1 - Kommunikation in Companies | Deutsch als Fremdsprache B1 - Kommunikation im Unternehmen

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b>	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1.1; Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglichen, im einfachen beruflichen Kontext zusammenhängend und verständlich zu kommunizieren.

Anhand von Fallstudien (Case Studies) werden berufliche Situationen simuliert wie z.B. E-Mails schreiben, Telefonate führen, Präsentationen halten, Meetings organisieren bzw. durchführen und einfache Konzepte verfassen.

Die Studierenden erarbeiten ein Spektrum an berufsbezogenem Vokabular, Redewendungen und Dialogmustern und benutzen Diskursmuster eines Meetings wie z.B. Vor- und Nachteile angeben, Vorschläge machen, Lösungen anbieten und widersprechen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER.

Im Anschluss an die Teilnahme an der Modulveranstaltung können die Studierenden auf B1-Niveau einfach und zusammenhängend in mündlichen und schriftlichen Kommunikationssituationen im Büroalltag verstehbar reagieren.

Sie sind in der Lage anhand realitätsnaher einfacher Szenarien einem Meeting bzw. Telefonat in einer Firma zu folgen, sowie die wichtigen Punkte zu verstehen und bei Bedarf nachzufragen.

Sie können über berufliche Erfahrungen und Ereignisse berichten, im beruflichen Kontext Ziele und Pläne beschreiben, Ratschläge erteilen, Ansichten kurz begründen oder erklären, sofern sie in klarer Standardsprache vorgetragen werden und die berufliche Thematik vertraut ist.

Sie können zu einem Unternehmensthema aus der Case Study einfache Konzepte präsentieren und dazu schriftlich eine Stellungnahme verfassen, wenn Hilfestellung gegeben wird.

**Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Anhand vorgegebener Kriterien und Kommunikationsmuster werden Grundlagen des Referierens und des Diskutierens in der Fremdsprache zu beruflichen Themen vermittelt. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0334: German as a Foreign Language A2.2 plus B1.1 | Deutsch als Fremdsprache A2.2 plus B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 8	<b>Total Hours:</b> 270	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A2.1; Einstufungstest mit Ergebnis A2.2

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Sport, Musik, Umwelt etc. selbständig und sicher in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird.

Die Studierenden erarbeiten ein grundlegendes Repertoire an Satz-Strukturen (Kausalsatz, Temporalsatz, Finalsatz, Konsekutivsatz, Relativsatz etc.). Sie lernen/ üben grammatische Konzepte, wie z.B. die Funktionen und den Gebrauch des Konjunktiv II und des Futur I. Sie



wiederholen und ergänzen elementare Aspekte der Grammatik wie den Gebrauch der Zeiten und der Präpositionen.

Sie erarbeiten und benutzen Wortschatz und Ausdrucksmöglichkeiten zu Themen von allgemeinem Interesse und vertrauten Situationen (z.B. Studium, Freizeit, Arbeit, Familie).

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 und B1 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage sich in den meisten Situationen, denen man in Studium, Beruf und Freizeit im Sprachgebiet begegnet, sicher zu verständigen. Sie können Vorschläge machen und reagieren, Informationen austauschen und Ratschläge geben, sich zur Berufswelt und Bewerbungen äußern sowie über umweltrelevante Themen diskutieren.

Sie können wesentliche Inhalte in einfachen, authentischen Texten aus alltäglichen Bereichen verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen beteiligen.

Sie können längere persönliche E-Mails und Texte zu eigenen Erfahrungen verfassen.

Sie können selbständig und kooperativ Lerninhalte erarbeiten/ üben und verfügt über Strategien, um in alltäglichen Situationen handlungsfähig zu sein.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A2.2 plus B1.1 (Seminar, 6 SWS)

Karsten-Ott M, Schimmack B, Schmid P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0335: German as a Foreign Language A1.2 + A2.1 | Deutsch als Fremdsprache A1.2 + A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 8	<b>Total Hours:</b> 270	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 90

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A1.1; Einstufungstest mit Ergebnis A1.2

#### Content:

In diesem Modul werden Grundkenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen - z.B. in Studium oder Beruf, beim Arzt, beim Einkauf, auf Reisen, unter Kolleg\*innen und Freund\*innen - trotz geringer Sprachkenntnisse zurechtzufinden.

Sie lernen/üben grundlegendes Vokabular/Ausdrucksmöglichkeiten zu Themen wie Ausbildung, Beruf, Gesundheit, Wohnen, Kleidung, Feiern und Reisen. Sie lernen/üben, einfach strukturierte Haupt- und Nebensätze (z.B. aber, denn, dass, weil, etc.) zu benutzen, im Präsens und Perfekt zu berichten, den Gebrauch der Modalverben, des Imperativ, der Präpositionen mit Dativ und

Akkusativ, den Gebrauch des Komparativ und Superlativ und die Deklination des Adjektivs. Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 und A2 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte.

Sie können beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation im Präsens oder Perfekt beschreiben.

Die Studierenden können längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Sie sind in der Lage kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A1.2 plus A2.1 (Seminar, 6 SWS)

Bakker S, Meuschel G, Stiebeler H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0337: German as a Foreign Language A1.1 | Deutsch als Fremdsprache A1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 135	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Aids are permitted.

The examination performances are designed in their entirety to test the use of vocabulary and grammar, reading and/or listening comprehension, and free text production.

Oral communication skills will be tested via the use of appropriate idioms in written dialogue examples and/or in the form of an audio/video file. For this purpose, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

none

#### Content:

This module teaches basic knowledge of German as a Foreign Language, taking into account intercultural and cultural aspects of the country, which will enable students to find their way around despite their limited knowledge of the language, e.g. when shopping, in restaurants, on public transport, etc.

They will learn/practice basic vocabulary on topics such as family, work, leisure and food, ask and answer simple personal/family questions, understand and use numbers, prices and times and report everyday activities in simple structured main sentences in the present tense, using verbs, nouns, personal pronouns, possessive articles and negation forms.

Students practice teamwork skills by collaborating on tasks in multinational groups.

**Intended Learning Outcomes:**

The module is oriented towards level A1 of the CEFR. After completing this module, students will be able to use everyday expressions and very simple sentences aimed at meeting specific needs of everyday life: They can introduce themselves and others and ask other people questions about themselves and give answers to questions of this kind. They can describe daily routines in basic structures and give basic information about themselves in writing. They can communicate their needs if interlocutors speak clearly and slowly and are supportive. Students learn how to organize their own learning process of the foreign language independently and effectively.

**Teaching and Learning Methods:**

The module consists of a seminar in which students study the learning content with targeted listening, reading, writing and speaking exercises. The communicative and action-oriented approach is implemented by combining these exercises in individual, partner and group exercises. Online material for controlled self-study of basic grammatical phenomena and communication patterns is provided to deepen and intensify the content taught during the course. Voluntary homework (for preparation and revision) consolidates what has been learned.

**Media:**

Textbook, multimedia-supported teaching and learning material, also online

**Reading List:**

Textbook: will be announced in the course

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A1.1 (Seminar, 3 SWS)

Bakker S, Burmasova S, Endraß E, Grgic T, Hanke C, Huber D, Keza I, Koch H, Kraut-Schindlbeck S, Lechle K, Pinskaia I, Pletschacher T, Schmidt-Bender S, Selent D, von Caprivi Caprara de Montecucculi A, von Egloffstein A, Witzig B

Blockkurs Deutsch als Fremdsprache A1.1 (Seminar, 3 SWS)

Comparato G, Kretschmann A, Schlüter J, von Egloffstein A, Zerfass A

Deutsch als Fremdsprache A1.1 - EuroTeq Programm (Seminar, 3 SWS)

Lechle K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0338: German as a Foreign Language A1.2 | Deutsch als Fremdsprache A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 135	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A1.1; Einstufungstest mit Ergebnis A1.2

#### Content:

In diesem Modul werden Grundkenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich trotz geringer Sprachkenntnisse z.B. beim Einkaufen, im Restaurant, im öffentlichen Verkehr etc. zurechtzufinden.

Sie lernen/üben grundlegendes Vokabular zu Themen wie Familie, Studium und Beruf, Freizeit, Wohnen, Gesundheit, Einkaufen und Reisen zu benutzen und in einfach strukturierten Hauptsätzen Alltägliches im Präsens und Perfekt zu berichten, unter Verwendung von

Modalverben, trennbaren Verben, Imperativ und grundlegender lokaler und temporaler Präpositionen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage alltägliche Ausdrücke und einfache Sätze zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen:

Sie können einfache Fragen in alltäglichen Situationen stellen und beantworten, Tagesabläufe in Vergangenheit und Gegenwart beschreiben und einfache schriftliche Mitteilungen zur Person machen, Verabredungen treffen und in grundlegenden alltäglichen Situationen beispielsweise beim Einkauf oder im Restaurant ihre Wünsche erfolgreich kommunizieren, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A1.2 (Seminar, 3 SWS)

Comparato G, Grgic T, Jennert J, Keza I, Khvintelani N, Pinskaia I, Reulein C, Schimmack B, von Egloffstein A

Blockkurs Deutsch als Fremdsprache A1.2 (Seminar, 3 SWS)

Kretschmann A, Menck-Zwick C, Meuschel G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0339: German as a Foreign Language B2.1 | Deutsch als Fremdsprache B2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe B1.2; Einstufungstest mit Ergebnis B2.1

#### Content:

Das Modul orientiert sich am Niveau B2 des GER. In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die den Studierenden eine mündliche Diskurspartizipation zu aktuellen und wissenschaftlichen Themen ermöglicht. Die Studierenden behandeln Themen des Satzbaus und vertiefen ihre Kenntnisse zum Passiv sowie Strukturen, die für das Vergleichen relevant sind. Sie erweitern ihr Repertoire an Nomen, Verben und Präpositionen sowie an festen Verbindungen. Ein umfangreicher und differenzierter Wortschatz zu interkulturellen, sprachlichen und studienrelevanten Themen wird erarbeitet. Die Studierenden lernen den Gebrauch von



spezifischen Redemitteln für Meinungsäußerung, vergleichende Argumentation und persönliche Erfahrungsberichte.

**Intended Learning Outcomes:**

Im Anschluss an die Teilnahme an den Modulveranstaltungen können die Studierenden wesentliche Inhalte von authentischen Artikeln und Berichten aus dem eigenen Fach- und Interessensgebiet selbständig verstehen und wiedergeben. Sie sind in der Lage, in einer Diskussion oder Präsentation Standpunkte darzulegen, wobei sie komplexe Satzstrukturen und fachspezifisches Vokabular benutzen. Sie können begründen, warum sie einer bestimmten Meinung sind, und die Standpunkte anderer kommentieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen sollen von den Studierenden eigenständig Grammatikthemen und Wortschatzübungen mit vorgegebenen (Online-) Materialien erarbeitet werden. Freiwillige Hausaufgaben (zur Vor- und Nachbereitung der Lehrveranstaltung) festigen das Gelernte.

**Media:**

Lehrbuch, multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2.1 (Seminar, 2 SWS)

Comparato G, Huber D, Kraut-Schindlbeck S, Mielert A, Sabel B, Thiessen E

Blockkurs Deutsch als Fremdsprache B2.1 (Seminar, 2 SWS)

Kromer V, Temel C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0340: German as a Foreign Language B2.2 | Deutsch als Fremdsprache B2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe B2.1; Einstufungstest mit Ergebnis B2.2

#### Content:

Das Modul orientiert sich am Niveau B2 des GER. In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglichen, über allgemeine und berufsbezogene Themen aktiv und annähernd flüssig zu kommunizieren. Anhand von Lese- und Hörtexten zu verschiedenen Themen lernen die Studierenden, Inhalte mündlich und schriftlich kohärent zusammenzufassen und Vor- und Nachteile abzuwägen und Stellung zu nehmen. Die Studierenden erarbeiten sich ein Spektrum an themenbezogenem Vokabular, Redemitteln und Textbausteinen, die sie für das Zusammenfassen von Texten und den Austausch von Argumenten benötigen. Sie analysieren den Satzbau in komplexen Sätzen, setzen sich mit den entsprechenden

grammatischen Strukturen (wie z.B. Konnektoren, Kohäsionsmitteln und Partizipien) auseinander und vertiefen ihre Kenntnisse zur Wortbildung und den Nominalisierungsmöglichkeiten.

**Intended Learning Outcomes:**

Im Anschluss an die Teilnahme an den Modulveranstaltungen können die Studierenden den Inhalt von Texten zu allgemeinen und berufsbezogenen Themen verstehen und mündlich und schriftlich kohärent wiedergeben. Sie sind in der Lage, mündlich und schriftlich Argumente zu verschiedenen, mitunter auch kontrovers diskutierten Themen zu formulieren, gegeneinander abzuwägen und Stellung zu beziehen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen sollen von den Studierenden eigenständig Grammatikthemen und Wortschatzübungen mit vorgegebenen (Online-) Materialien erarbeitet werden. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung der Lehrveranstaltung) festigen das Gelernte.

**Media:**

Lehrbuch, multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Deutsch als Fremdsprache B2.2 (Seminar, 2 SWS)

Grigorieva A, Sabel B

Deutsch als Fremdsprache B2.2 (Seminar, 2 SWS)

Hanke C, Huber D, Schmidt-Bender S, Stoephasius J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0341: German as a Foreign Language C1.1 | Deutsch als Fremdsprache C1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe B2.2; Einstufungstest mit Ergebnis C1.1

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache auf gehobenem schriftsprachlichen Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte erarbeitet.

Die Studierenden überprüfen und vertiefen anhand komplex aufgebauter und anspruchsvoll formulierter Hör- und Lesetexte zu Themen von gesamtgesellschaftlichem Interesse ihre Fähigkeiten, ohne große Mühe und überwiegend flüssig in der Fremdsprache zu agieren.

Sie lernen, Textsorten und Schreibstile zu unterscheiden und situationsadäquat anzuwenden. Sie üben, komplexe Sachtexte auch außerhalb des eigenen Fachgebietes zu analysieren, zu komprimieren und kritisch mündlich sowie schriftlich zu kommentieren.

Sie üben, längeren Redebeiträgen, Vorträgen, Reportagen etc. detaillierte Informationen zu entnehmen. Sie lernen, Bedeutungsnuancen verwandter Ausdrücke zu differenzieren und Redewendungen zu verstehen, und sie vertiefen ein differenziertes Repertoire an Ausdrucksvarianten anhand verschiedener aktueller Themen. Positionen des öffentlichen Diskurses werden dabei auch nach ihrer kulturellen Bedingtheit hinterfragt.

Parallel beschäftigen sich die Studierenden mit ausgewählten grammatischen Phänomenen. Dabei liegt der Schwerpunkt auf Konnektoren, sowie den Unterschieden bei Nominal- und Verbalstil.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1 des GER.

Die Studierenden können den Inhalt von komplexen Artikeln und Berichten auch außerhalb des eigenen Fach- und Interessengebiets selbstständig und vielfach mühelos verstehen und Standpunkte identifizieren.

Sie können längeren Redebeiträgen und Vorträgen zu aktuellen Themen wie auch Fachvorträgen innerhalb und außerhalb ihres Fachgebietes folgen, sofern sie klar vorgetragen werden.

Sie sind in der Lage, zu aktuellen Themen aus Wissenschaft und Sozialleben ausführlich und logisch nachvollziehbar Stellung zu beziehen, sowie zu Themen aus ihrem Interessen- oder Fachgebiet klar strukturiert und verständlich zu referieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Ergänzend sollen die Teilnehmenden durch kontrolliertes Selbstlernen ausgewählte Grammatikthemen und Wortschatzübungen mit vorgegebenen Materialien eigenständig erarbeiten.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Lehrbuch: wird im Seminar bekannt gegeben.

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache C1.1 (Seminar, 2 SWS)

Sabel B, Steidten R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0343: German as a Foreign Language B2.2 - Communication in Companies | Deutsch als Fremdsprache B2.2 - Kommunikation im Unternehmen

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.1; Einstufungstest mit Ergebnis B2.2

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglichen, im beruflichen Kontext aktiv und annähernd flüssig zu kommunizieren.

Anhand verschiedener beruflicher Themenfelder werden Situationen aus dem Arbeitsleben simuliert, wie z.B. E-Mails schreiben, Telefonate führen, Präsentationen halten, Meetings und Small Talks.

Die Studierenden erarbeiten ein Spektrum an berufsbezogenem Vokabular, Redewendungen und Dialogmustern und benutzen Diskursmuster eines Meetings wie z.B. Vor- und Nachteile angeben, Vorschläge machen, Lösungen anbieten und widersprechen.

Sie analysieren den Satzbau in komplexen Sätzen und setzen sich mit den entsprechenden Konnektoren auseinander.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2 des GER. Nach Abschluss dieses Moduls können die Studierenden auf B2-Niveau auf formelle und informelle Kommunikationssituationen im Büroalltag mündlich spontan und zusammenhängend und schriftlich angemessen und in jeder Hinsicht verstehbar reagieren.

Sie sind in der Lage, anhand realitätsnaher Szenarien einem Meeting bzw. Telefonat in einer Firma zu folgen und bei Bedarf nachzufragen. Die Studierenden können formelle und informelle Redewendungen in E-Mails unterscheiden und je nach Situation ihren Stil anpassen.

Sie können annähernd flüssig argumentieren und auf die Argumente anderer eingehen, sofern sie in der Standardsprache vorgetragen werden. In Konfliktsituationen können sie mit geeigneten Redemitteln moderieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Anhand vorgegebener Kriterien und Kommunikationsmuster werden Grundlagen des Referierens und des Diskutierens in der Fremdsprache zu beruflichen Themen vermittelt.

Durch kontrolliertes Selbstlernen grammatischer Phänomene und Kommunikationsmuster mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Inhalte ergänzt.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2.2 - Kommunikation im Unternehmen (Seminar, 2 SWS)

Schmidt-Bender S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0344: German as a Foreign Language B2.2: Controversial Topics in Science and Society | Deutsch als Fremdsprache B2.2 - Kontrovers: Was Wissenschaft und Gesellschaft bewegt**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Sehr gute Kenntnisse der Stufe B2.1; Einstufungstest mit Ergebnis C1.1 oder C1.2

#### **Content:**

In dieser LV stehen Diskurse in mündlicher und schriftlicher Kommunikation im Vordergrund. Die Studierenden setzen sich mit kontroversen Themenbereichen der deutschsprachigen Gesellschaft, Wissenschaft und Kulturszene auseinander, in denen zentrale Aspekte des gesellschaftlichen Zusammenlebens verhandelt werden. Thematische Schwerpunkte sind die Bereiche Wirtschaft, Umwelt, Technik und Nachhaltigkeit. Konkrete Inhalte orientieren sich an den Interessen der Studierenden.



Die Studierenden erweitern ihre sprachlichen Fertigkeiten durch die Entfaltung und Differenzierung ihres Wortschatzes zu den kontroversen Themen (argumentative Strukturen, Redemittel). Sie erarbeiten Diskursmuster und wenden diese in kommunikativen Settings an. Dabei vertiefen sie auch ihre grammatikalischen Kenntnisse. Sie erarbeiten kurze mündliche Präsentationen zu den Themen von persönlichem Interesse und leiten im Anschluss eine Diskussion. Auch interkulturelle Unterschiede hinsichtlich entsprechender Diskurs-Konventionen werden hierbei reflektiert. Grammatischen Themen des Niveaus B2.2 sowie schriftlicher Kommunikation wird in dieser LV vor allem asynchron nachgekommen. Den Schwerpunkt der synchronen Unterrichtszeit bilden mündliches Argumentieren, Darstellen und Präsentieren in formellen und informellen Situationen; ergänzt durch die Rezeption kürzerer Texte, Audios und Videos. Die schriftliche Ausdrucksfähigkeit wird insbesondere durch ergänzende freiwillige Hausaufgaben gefestigt.

### **Intended Learning Outcomes:**

Das Seminar orientiert sich am Niveau B2 des GER. Studierende erweitern ihre diskursbezogenen Kenntnisse in schriftlicher und gesprochener Kommunikation. Sie können den eigenen Standpunkt zu persönlich relevanten Themen und aktuellen kontroversen Fragestellungen erläutern und begründen. Sie können in authentischen Lese- und Hörtexten kontroverse Standpunkte auch impliziter Art erkennen und damit verknüpfte Argumente einordnen und bewerten. Sie können kontroverse Themen präsentieren und eine Diskussion über ein Thema persönlichen Interesses leiten. Sie verfügen über sprachliche Mittel, die eine erfolgreiche Teilnahme an mündlichen und schriftlichen Diskussionen unterschiedlicher Art ermöglichen. Sie sind sensibilisiert für interkulturelle Unterschiede beim Umgang mit Diskursen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die Studierenden sowohl eigenständig als auch kooperativ arbeiten. Die angestrebten Lerninhalte werden mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet und erprobt. Durch kontrolliertes Selbststudium ausgewählter Aspekte der Grammatik und des Wortschatzes mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Inhalte vertieft. Die Teilnehmer erarbeiten eigenständig oder in Team- bzw. Projektarbeit vorgegebene Themen und überarbeiten ihre Ergebnisse nach Feedback. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Wird im Kurs bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0345: German as a Foreign Language C1: Controversial Topics in Science and Society | Deutsch als Fremdsprache C1 - Kontrovers: Was Wissenschaft und Gesellschaft bewegt**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel schriftlich überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Sehr gute Kenntnisse der Stufe B2.2; Einstufungstest mit Ergebnis C1.1 oder C1.2

#### **Content:**

In diesem Modul liegt der Schwerpunkt auf dem Meinungs-austausch zu kontrovers diskutierten Themen aus den Schnittstellen von Wissenschaft/Technik, Gesellschaft und Nachhaltigkeit/ Umwelt. Die konkreten Themen orientieren sich an den Interessen der Studierenden.

Techniken, Strukturen und Redemittel des Argumentierens, Diskutierens und Moderierens in unterschiedlichen Kontexten werden reflektiert und praktisch erprobt. Die Studierenden tauschen sich dabei auch über kulturelle Unterschiede in Diskurs-Konventionen aus.

Die sprachlichen Fertigkeiten werden insbesondere durch den Ausbau von Wortschatz zu den behandelten Themen, sowie argumentativer Strukturen und Redemittel gefestigt und erweitert. Den Schwerpunkt der gemeinsamen Unterrichtszeit bilden mündliches Darstellen, Argumentieren und Diskutieren in verschiedenen Formaten. Dies wird ergänzt durch die Rezeption und Analyse von Texten, Audios und Videos. Die schriftliche Ausdrucksfähigkeit wird insbesondere durch ergänzende freiwillige Hausaufgaben gefestigt.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1 des GER.

Im Anschluss an das Modul können die Teilnehmenden Diskussionen vorbereiten und moderieren. Sie können in authentischen Lese- und Hörtexten kontroverse Standpunkte auch impliziter Art erkennen und damit verknüpfte Argumente einordnen/bewerten. Sie verfügen über sprachliche Mittel, die eine erfolgreiche Teilnahme an mündlichen und schriftlichen Diskussionen unterschiedlicher Art ermöglichen. Die Studierenden sind in der Lage, zu kontroversen Themen kontextadäquat und logisch nachvollziehbar Stellung zu beziehen. Sie sind sensibilisiert für kulturelle Unterschiede in der Führung von Diskursen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Die Teilnehmenden erarbeiten eigenständig oder in Team- bzw. Projektarbeit vorgegebene oder selbstgewählte Themen und überarbeiten ihre Ergebnisse nach Feedback. Insbesondere wird die diskursorientierte Auseinandersetzung in der Gruppe intensiv erprobt.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Aktuelle authentische Lesetexte, Audios und Videos

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache C1 - Kontrovers: Was Wissenschaft und Gesellschaft bewegt (Seminar, 2 SWS)

Steidten R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0346: German as a Foreign Language C1.2: Communicating Professionally in Science and Business | Deutsch als Fremdsprache C1.2 - Professionell kommunizieren in Wissenschaft und Beruf**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt. Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

gesicherte Kenntnisse der Stufe C1.1; Einstufungstest mit Ergebnis C1.2

#### **Content:**

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache auf anspruchsvollem schriftsprachlichen Niveau und unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte erarbeitet.

Die Studierenden beschäftigen sich mit komplex aufgebauten und anspruchsvoll formulierten Hör- und Lesetexten auf wissenschaftssprachlichen Niveaus zu aktuellen Themen aus Bereichen wie z.B. Ökologie, Ökonomie und Soziologie. Sie überprüfen und vertiefen dabei ihre Fähigkeiten, mühelos und flüssig in der Fremdsprache zu agieren.

Sie erweitern ihre Fertigkeit, Textsorten und Schreibstile zu unterscheiden und implizit formulierte Meinungen zu identifizieren. Sie üben, komplexe Sachtexte auch außerhalb des eigenen Fachgebietes zu analysieren, strukturiert zu komprimieren und ausführlich Stellung zu beziehen. Sie üben, längeren Redebeiträgen, Vorträgen, Reportagen etc. detaillierte Informationen zu entnehmen. Sie lernen Bedeutungsnuancen verwandter Ausdrücke zu differenzieren und eine Vielzahl von Redewendungen zu verstehen. Sie vertiefen ein differenziertes Repertoire an Ausdrucksvarianten zu aktuellen Themen wissenschaftlicher und populärwissenschaftlicher Fragestellungen. Sie beschäftigen sich mit ausgewählten grammatischen Besonderheiten wie z.B. Nominalisierungsmöglichkeiten und Nominalstil, Textkohärenz, den verschiedenen Formen der Indirekten Rede, Wortbildungsvarianten und der Funktion des Pronomens „es“.

Die Studierenden hinterfragen Positionen des öffentlichen Diskurses auch nach ihrer kulturellen Bedingtheit. Sie setzen sich mit ausgewählten Aspekten der Arbeitskultur in Deutschland auseinander.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1 des GER.

Die Studierenden können den Inhalt von komplexen Artikeln und Berichten auch außerhalb des eigenen Fach- und Interessengebiets selbstständig und vielfach mühelos verstehen und Standpunkte identifizieren.

Sie können längeren Redebeiträgen und Vorträgen zu aktuellen Themen wie auch Fachvorträgen innerhalb und außerhalb ihres Fachgebietes folgen, sofern sie klar vorgetragen werden.

Sie sind in der Lage, zu aktuellen Themen aus Wissenschaft und Sozialleben ausführlich und logisch nachvollziehbar Stellung zu beziehen, sowie zu Themen aus ihrem Interessen- oder Fachgebiet klar strukturiert und verständlich zu referieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Ergänzend sollen die Teilnehmenden durch kontrolliertes Selbstlernen ausgewählte Grammatikthemen und Wortschatzübungen mit vorgegebenen Materialien eigenständig erarbeiten.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Lehrbuch wird im Seminar bekannt gegeben

### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache C1.2 - Professionell kommunizieren in Wissenschaft und Beruf  
(Seminar, 2 SWS)

Koch H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0347: German as a Foreign Language Training C1 - Writing and Grammar Skills | Deutsch als Fremdsprache C1 - Sicherheit in Wortschatz und Grammatik

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten können anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen und/oder in Form einer Audio-/Videodatei überprüft werden. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.2; Einstufungstest mit Ergebnis C1.1

#### Content:

In diesem Modul vertiefen die Studierenden ihr Verständnis für ausgewählte Bereiche des Wortschatzes und der Grammatik auf dem Niveau C1.1 bis zu Niveau C1.2.

Die Studierenden entwickeln differenzierte Wortschatzkenntnisse, die es ihnen ermöglichen, ihre Ausdrucksfähigkeit in der Fremdsprache Deutsch mündlich wie schriftlich zu perfektionieren.



Ausgehend von exemplarischen Lesetexten werden thematisch zugeschnittene Grammatik-Übungen eingesetzt, und die Studierenden erarbeiten anhand solcher Texte selbstständig ein Verständnis grammatischer Problemfälle, die anschließend gemeinsam diskutiert werden. Ein Fokus liegt auf komplexen grammatischen Strukturen, wie z.B. der Umwandlung von Partizipialkonstruktionen, festen Nomen-Verb-Verbindungen und Funktionsverbgefügen sowie möglichen Ersatzformen und subjektivem Gebrauch der Modalverben. Die Studierenden erarbeiten auch Strategien zur Vermeidung häufiger grammatischer Fehler.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1 des GER.

Nach der Teilnahme an diesem Modul sind die Studierenden in der Lage, anspruchsvolle Texte zu verfassen und dabei auch feine Bedeutungsnuancen verwandter Ausdrücke und Redewendungen zu differenzieren. Die Studierenden können komplexe Redemittel und erlernte grammatische Strukturen sinnvoll und sicher anwenden und entwickeln dabei ein Repertoire an Ausdrucksvarianten unter Verwendung komplexer grammatischer Strukturen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die Teilnehmenden eigenständig und kooperativ vorgegebene Themen hauptsächlich schriftlich erarbeiten. Durch Übungen in Einzel-, Partner- und Gruppenarbeit, sowie durch angeleitete Selbst-, Partner- und Lehrerkorrektur werden die angestrebten Lerninhalte entwickelt. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Seminar bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache C1 - Sicherheit in Wortschatz und Grammatik (Seminar, 2 SWS)

Willy P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0348: German as a Foreign Language A1.1: Dive into the grammar and apply it in practice | Deutsch als Fremdsprache A1.1: Dive into the grammar and apply it in practice**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

keine

#### **Content:**

In diesem Modul werden Grundkenntnisse in Deutsch als Fremdsprache vermittelt, die es den Studierenden ermöglichen, sich trotz geringer Sprachkenntnisse in alltäglichen Situationen zurechtzufinden.

Sie lernen grundlegende Strukturen der Wortbildung und des Satzbaus (Verben, Personalpronomen, Nomen, Präpositionen und Satzstrukturen), die es ermöglichen, Fragen und Antworten zu verstehen und zu formulieren und in einfach strukturierten Sätzen Informationen über sich und andere zu geben.

Es werden Möglichkeiten aufgezeigt grundlegendes Vokabular zu Themen wie Familie, Beruf, Freizeit und Essen eigenverantwortlich zu lernen sowie Zahlen, Preise und Uhrzeiten zu verstehen und zu benutzen. Auf der Basis der erworbenen Kenntnisse werden kommunikative Fertigkeiten in alltagstypischen Situationen angewendet.

Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 (GER). Nach Abschluss dieses Moduls sind die Studierenden in der Lage, Strukturen der Wortbildung und des Satzbaus zu verstehen und anzuwenden.

Sie können sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen und auf Fragen dieser Art Antwort geben, in einfacher Weise Tagesabläufe beschreiben und einfache schriftliche Mitteilungen zur Person machen. Sie können ihre Wünsche kommunizieren, wenn die Gesprächspartner deutlich und langsam sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Die LV besteht zum Teil aus Seminaren, zum Teil aus Tutorien. In den Seminaren werden Grammatik und Strukturen präsentiert und von den Studierenden in der Regel schriftlich angewendet. In den Tutorien werden erlernte Strukturen und Vokabular interaktiv eingeübt und in alltagstypischen Situationen angewendet und so die kommunikativen Fertigkeiten entwickelt. Materialien zur Anwendung der erlernten Inhalte werden auf Moodle bereitgestellt. Empfohlene Inhalte des begleitenden Lehrmaterials werden von den Studierenden im Selbststudium erlernt und vertieft. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache A1.1 - Dive into the grammar and apply it in practice (Seminar, 1 SWS)

Anders D, Nierhoff-King B, Schlüter J, Steidten R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0349: German as a Foreign Language C1 - Communication in Companies | Deutsch als Fremdsprache C1 - Kommunikation im Unternehmen

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft.

Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt. Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden. Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Deutschkenntnisse Niveau C1/gesicherte Kenntnisse der Stufe B2.2

#### Content:

Das Modul orientiert sich am Niveau C1 des GER. In dieser Lehrveranstaltung werden Kenntnisse in Deutsch als Fremdsprache erarbeitet und vertieft, die den Studierenden ermöglichen, im beruflichen Kontext sprachlich souverän und flüssig zu kommunizieren. Anhand ausgewählter beruflicher Themenfelder (wie z. B. Karriereentwicklung, Unternehmensleitbilder, ‚Digitale Transformation‘, Kreativität und Innovation sowie Projektarbeit und Unternehmenspräsentation) werden Teilprozesse und Situationen aus dem Berufsalltag simuliert und aktiv trainiert, wie z.B. Leitbild eines Unternehmens verstehen, E-Mails kontextbezogen schreiben, Präsentationen halten und proaktiv an Meetings teilnehmen.

Die Studierenden vertiefen ein Spektrum an berufs- und branchenbezogenem Vokabular. Sie trainieren entsprechende Mehrwortverbindungen und Dialogmuster und vertiefen ihre Grammatikkenntnisse in Bezug auf indirekte Aufforderungen (Imperativ, wichtige Verben mit Vorsilben) sowie den Verbal- und Nominalstil.

**Intended Learning Outcomes:**

Im Anschluss an das Modul kann der/die Studierende das Unternehmensleitbild eines Unternehmens verstehen und mögliche Fragen an das Unternehmen per E-Mail formulieren, einer Podiumsdiskussion die Hauptaussagen entnehmen und zusammenfassen, einen Kommentar per E-Mail verfassen, ein Produkt präsentieren und auf mögliche Fragen souverän reagieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert im jeweiligen Berufskontext erarbeitet werden.

Anhand ausgewählter Themenschwerpunkte und Kommunikationsmuster werden Grundlagen des monologischen und dialogischen Sprechens in der Fremdsprache zu beruflichen Themen vermittelt.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folien, Übungsblätter, Bilder, Grafiken, Filme, etc.), auch online

**Reading List:**

Baier, Gabi/Karagiannakis, Evangelia/Merkelbach, Matthias/ Schappert, Petra/ Weimann, Gunther: Fokus Deutsch C1 – Erfolgreich im Alltag und Beruf, Berlin: Cornelsen 2022 (freiwillig)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache C1 - Kommunikation im Unternehmen (Seminar, 2 SWS)

Häusler A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0350: German as a Foreign Language B1.1 | Deutsch als Fremdsprache B1.1

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 135	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe A2.2; Einstufungstest mit Ergebnis B1.1

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Konsum, Zukunft, Umwelt etc. selbständig und sicher in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird.

Die Studierenden erweitern und benutzen ein grundlegendes Repertoire an logischen Haupt- und Nebensatz-Strukturen (z.B. Konsekutivsatz, Finalsatz und Relativsatz) und an Verben und Nomen mit Präpositionalergänzung. Sie lernen/üben den Genitiv, die Funktion und den Gebrauch des

Konjunktiv II und des Futur I. Sie wiederholen und ergänzen elementare Aspekte der Grammatik wie den Gebrauch der Zeiten und der Präpositionen.

Die Studierenden beschäftigen sich mit kulturspezifischen Besonderheiten, beispielsweise in Bezug auf Reiseverhalten, Berufswelt und Bewerbung sowie individuelle Zukunftskonzepte. Sie gewinnen Einblicke in aktuelle Themen wie Umwelt und Naturschutz.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage sich in den meisten Situationen, denen man in Studium, Beruf und Freizeit im Sprachgebiet begegnet, sicher zu verständigen. Sie können über Vorlieben und Zukunftsvorstellungen sprechen, von Veränderungen berichten und Folgen ausdrücken, sich zur Berufswelt und Bewerbungen äußern sowie über umweltrelevante Themen diskutieren und eigene Ziele formulieren.

Sie können wesentliche Inhalte in einfachen, authentischen Texten aus alltäglichen Bereichen verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen beteiligen.

Sie können längere persönliche E-Mails, Blog-Einträge und Texte zu eigenen Erfahrungen verfassen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Durch kontrolliertes Selbstlernen grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

### **Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B1.1 (Seminar, 3 SWS)

Grgic T, Grigorieva A, Lechle K, Mielert A, Oelmayer J, Schmid P, Sohlbach M, Werkhausen R

Blockkurs Deutsch als Fremdsprache B1.1 (Seminar, 3 SWS)

Oelmayer J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0351: German as a Foreign Language B1.2 | Deutsch als Fremdsprache B1.2

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 135	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe B1.1; Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Gesundheit, soziales Engagement, Kunst etc. selbständig und sicher in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird.

Die Studierenden erarbeiten ein erweitertes Spektrum an Vokabular, Redewendungen und Dialogmustern, erfassen und benutzen ein grundlegendes Repertoire an logischen Haupt-

und Nebensatz-Strukturen (Temporalsatz, Relativsatz, Vergleichssatz) und an zweiteiligen Konnektoren. Sie lernen/üben den Gebrauch reflexiver Verben und das Passiv. Sie wiederholen und ergänzen elementare Aspekte der Grammatik wie den Gebrauch der Zeiten, der Präpositionen, der Deklination des Adjektivs und der Komparation.

Die Studierenden beschäftigen sich mit kulturspezifischen Besonderheiten, beispielsweise in Bezug auf Freundschaft und Beziehungen, Großstadtleben und soziale Projekte, und sie gewinnen Einblicke in die zeitgenössischen Kulturszene Deutschlands.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage sich in den meisten Situationen, denen man in Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher zu verständigen. Sie können z.B. Informationen aus Zeitungstexten weitergeben, über lebenswerte Städte diskutieren, Personen und Dinge genauer beschreiben, Meinungen äußern und argumentieren.

Sie können wesentliche Inhalte in einfachen, authentischen Sachtexten, literarischen Texten und in Fernseh- oder Radiosendungen verstehen und wiedergeben und sich spontan an Gesprächen zu Themen von allgemeinem Interesse beteiligen. Sie können einfache formelle E-Mails und längere persönliche Briefe verfassen und von persönlichen Erfahrungen berichten. Sie können strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

### **Teaching and Learning Methods:**

In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Gesundheit, soziales Engagement, Kunst etc. selbständig und sicher in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird.

Die Studierenden erarbeiten ein erweitertes Spektrum an Vokabular, Redewendungen und Dialogmustern, erfassen und benutzen ein grundlegendes Repertoire an logischen Haupt- und Nebensatz-Strukturen (Temporalsatz, Relativsatz, Vergleichssatz) und an zweiteiligen Konnektoren. Sie lernen/üben den Gebrauch reflexiver Verben und das Passiv. Sie wiederholen und ergänzen elementare Aspekte der Grammatik wie den Gebrauch der Zeiten, der Präpositionen, der Deklination des Adjektivs und der Komparation.

Die Studierenden beschäftigen sich mit kulturspezifischen Besonderheiten, beispielsweise in Bezug auf Freundschaft und Beziehungen, Großstadtleben und soziale Projekte, und sie gewinnen Einblicke in die zeitgenössischen Kulturszene Deutschlands.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Deutsch als Fremdsprache B1.2 (Seminar, 3 SWS)

Aristakesyan V

Deutsch als Fremdsprache B1.2 (Seminar, 3 SWS)

Aristakesyan V, Bauer-Hutz B, Endraß E, Körner C, Kraut-Schindlbeck S, Niehaus B, Oelmayer J, Willy P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0354: German as a Foreign Language B1 - Get for B2 | Deutsch als Fremdsprache B1 Brückenkurs - Werden Sie fit für die B2**

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 4	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

#### **Content:**

#### **Intended Learning Outcomes:**

#### **Teaching and Learning Methods:**

#### **Media:**

#### **Reading List:**

#### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0355: German as a Foreign Language B2 - Grammar compact | Deutsch als Fremdsprache B2 - Grammatik Kompakt**

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

#### **Content:**

#### **Intended Learning Outcomes:**

#### **Teaching and Learning Methods:**

#### **Media:**

#### **Reading List:**

#### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2 - Grammatik Kompakt (Seminar, 2 SWS)

Selent D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0356: German as a Foreign Language B2.1 - Start at Companies | Deutsch als Fremdsprache B2.1 - Einstieg ins Unternehmen

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

gesicherte Kenntnisse der Stufe B1.2; Einstufungstest mit Ergebnis B2.1

#### Content:

Das Modul orientiert sich am Niveau B2.1 des GER. In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglichen, im beruflichen Kontext aktiv und annähernd flüssig zu kommunizieren.

Anhand verschiedener Themenfelder des Berufseinstiegs wie z.B. Stellensuche, Bewerbung und der erste Arbeitstag werden Situationen aus dem Arbeitsleben simuliert. Dazu gehört über die eigene Branche und Berufsziele sprechen, einen Lebenslauf schreiben, Telefonate führen, sich im Vorstellungsgespräch präsentieren, Small Talk, Einstand und Kennenlernen der Kolleg:innen.



Die Studierenden erarbeiten ein Spektrum an Vokabular für den Berufseinstieg, Redewendungen und Dialogmuster und benutzen Diskursmuster eines Vorstellungsgesprächs wie z.B. Selbstpräsentation, über Stärken und Schwächen sprechen, über Karriereziele sprechen. Sie analysieren den Satzbau in komplexen Sätzen, setzen sich mit den entsprechenden Konnektoren auseinander und vertiefen Grammatikthemen wie z.B. den Gebrauch des Konjunktiv II für den höflichen Umgang im Gespräch oder Nominalisierungsstrategien für den Lebenslauf. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Im Anschluss an die Teilnahme an die Modulveranstaltungen können die Studierenden auf B2.1-Niveau auf formelle und informelle Kommunikationssituationen beim Berufseinstieg mündlich spontan und zusammenhängend und schriftlich angemessen und gut verstehbar reagieren. Sie sind in der Lage, anhand realitätsnaher Szenarien eine Bewerbung zu schreiben, ein Telefonat mit einer Firma zu führen und bei Bedarf nachzufragen. Die Studierenden können sich im Vorstellungsgespräch präsentieren und auf Nachfragen angemessen reagieren. Sie unterscheiden formelle und informelle Redewendungen in E-Mails und können je nach Situation ihren Stil anpassen.

Sie können bezogen auf das eigene Fach annähernd flüssig sprechen und auf die Fragen anderer eingehen, sofern sie in der Standardsprache vorgetragen werden. In Konfliktsituationen können sie mit geeigneten Redemittel mitdiskutieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Anhand vorgegebener Kriterien und Kommunikationsmuster werden Grundlagen des Referierens und des Diskutierens in der Fremdsprache zu beruflichen Themen vermittelt. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch, multimedial gestütztes Lehr- und Lernmaterial, auch online

**Reading List:**

Lehrbuch: wird im Kurs bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2.2 - Einstieg ins Unternehmen (Seminar, 2 SWS)

Reulein C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0357: German as a Foreign Language B1.1 - Start at Companies | Deutsch als Fremdsprache B1.1 - Einstieg ins Unternehmen**

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 4	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

#### **Content:**

#### **Intended Learning Outcomes:**

#### **Teaching and Learning Methods:**

#### **Media:**

#### **Reading List:**

#### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B1.1 - Einstieg ins Unternehmen (Seminar, 3 SWS)

Karsten-Ott M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0359: German as a Foreign Language B2.2 - Start at Companies | Deutsch als Fremdsprache B2.2 - Einstieg ins Unternehmen

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Erlaubte Hilfsmittel werden jeweils definiert.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.1; Einstufungstest mit Ergebnis B2.2

#### Content:

Das Modul orientiert sich am Niveau B2.2 des GER. In diesem Modul werden Kenntnisse in Deutsch als Fremdsprache erarbeitet, die es Studierenden ermöglichen, im beruflichen Kontext aktiv und flüssig zu kommunizieren.

Anhand verschiedener Themenfelder des Berufseinstiegs wie z.B. Stellensuche, Bewerbung und der erste Arbeitstag werden Situationen aus dem Arbeitsleben simuliert. Dazu gehört über die eigene Branche und Berufsziele sprechen, einen Lebenslauf schreiben, Telefonate führen, sich im Vorstellungsgespräch präsentieren, Small Talk, Einstand und Kennenlernen der Kolleginnen und Kollegen.

Die Studierenden erarbeiten ein Spektrum an Vokabular für den Berufseinstieg, Redewendungen und Dialogmuster und benutzen Diskursmuster eines Vorstellungsgesprächs wie z.B. Selbstpräsentation, über Stärken und Schwächen sprechen, über Karriereziele sprechen. Sie analysieren den Satzbau in komplexen Sätzen, setzen sich mit den entsprechenden Konnektoren auseinander und vertiefen Grammatikthemen wie z.B. den Gebrauch des Konjunktiv II für den höflichen Umgang im Gespräch oder Nominalisierungsstrategien für den Lebenslauf. Die Studierenden üben Teamkompetenz durch kooperatives Handeln in multinational gemischten Gruppen.

**Intended Learning Outcomes:**

Im Anschluss an die Teilnahme an die Modulveranstaltungen können die Studierenden auf B2.2-Niveau auf formelle und informelle Kommunikationssituationen beim Berufseinstieg mündlich spontan und zusammenhängend und schriftlich angemessen und gut verstehbar reagieren. Sie sind in der Lage, anhand realitätsnaher Szenarien eine Bewerbung zu schreiben, ein Telefonat mit einer Firma zu führen und situationsgerecht zu interagieren. Die Studierenden können sich im Vorstellungsgespräch in einer Firma ausführlich und strukturiert präsentieren und auf Nachfragen angemessen reagieren. Sie unterscheiden formelle und informelle Redewendungen in E-Mails und können je nach Situation ihren Stil anpassen. Sie können bezogen auf das eigene Fach flüssig sprechen und auf die Fragen anderer eingehen, sofern sie in der Standardsprache vorgetragen werden. In Konfliktsituationen können sie mit geeigneten Redemittel mitdiskutieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einer Lehrveranstaltung, in der die angestrebten Lerninhalte mit gezielten Hör-, Lese- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Anhand vorgegebener Kriterien und Kommunikationsmuster werden Grundlagen des Referierens und des Diskutierens in der Fremdsprache zu beruflichen Themen vermittelt. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2.2 - Einstieg ins Unternehmen (Seminar, 2 SWS)

Reulein C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0360: German as a Foreign Language B1 – Crossover German: Communication at University and in daily Life | Deutsch als Fremdsprache B1 – Crossover German: Kommunikation an der Uni und im öffentlichen Leben**

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

#### **Content:**

#### **Intended Learning Outcomes:**

#### **Teaching and Learning Methods:**

#### **Media:**

#### **Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B1 – Crossover German: Kommunikation an der Uni und im öffentlichen Leben (Seminar, 2 SWS)

Gröbl J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0361: Projekt Weeks: German as a Foreign Language B2.2 - Sustainability using the example of a national park | Projektwochen: Deutsch als Fremdsprache B2.2 - Nachhaltigkeit am Beispiel eines Nationalparks**

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 6	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben und E-Tests erbracht. Hilfsmittel sind erlaubt. Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie schriftliche Textproduktion geprüft werden. Wenn im Rahmen einer (Portfolio)Prüfungsaufgabe eine schriftlich ausgearbeitete Präsentation mit mündlichem Anteil erfolgt, z.B. auch in Form einer Audio- oder Videoaufnahme, werden einzelne Aspekte der Mündlichkeit zur Bewertung mit hinzugezogen. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Dieses Modul richtet sich an alle Bachelor- und Master-Studierende der TUM, vor allem aber an Studierende der naturwissenschaftlichen Fächer sowie an Studierende der Management-Studiengänge. Sie haben Kenntnisse der Stufe B2.1, mindestens aber gesicherte Kenntnisse der Stufe B1.2 und bringen Interesse an projektorientiertem Fremdsprachenunterricht mit. Sie verfügen bereits über Methoden und Strategien des selbstgesteuerten Lernens von Fremdsprachen und möchten an fachorientierten, aktuellen Diskursen mit (natur)wissenschaftlichen Bezügen, die nicht unbedingt mit ihrem Studienfach zu tun haben, teilnehmen können. Sie sind darüber hinaus an das Arbeiten in multinational zusammengesetzten Teams gewöhnt und interessieren sich für interkulturelle Fragestellungen.



### **Content:**

In dieser semesterbegleitenden Lehrveranstaltung setzen sich die Studierenden mit dem Thema Nachhaltigkeit am Beispiel eines Nationalparks auseinander. Sie erweitern ihre zielsprachliche Projektkompetenz, indem sie Informationen zu einem selbst gewählten Unter-Thema recherchieren und in Gruppenarbeit und mithilfe von KI weiterführende Fragen für Interviews entwickeln, z.B. mit Personen mit entsprechender Expertise innerhalb und außerhalb der Universität, auf Zoom oder vor Ort im Nationalpark. Dabei trainieren sie wichtige Gesprächstechniken und verbessern ihre mündlichen Fähigkeiten wie auch ihre Mediationskompetenzen, wobei Wortschatz und Redemittel sowie Strukturen der Niveaustufe B2.2 zur Anwendung kommen und gefestigt werden.

Die Inhalte der Recherchen sind interdisziplinär angelegt, so dass die Studierenden über ihr eigenes Studienfach hinaus Einblick in alltagsprachliche Diskurse mit (natur)wissenschaftlichen Bezügen bekommen, z.B. der Biologie, der Geographie oder auch des Managements. Als konkrete Unter-Themen bieten sich an: Wasserwirtschaft, Tiermonitoring, Besuchermanagement usw.

Am Ende werten die Studierenden ihre Rechercheergebnisse aus und reflektieren ihre Vorgehensweise und Methoden. Sie vernetzen sich mit einer Arbeitsgruppe aus einem anderen Sprachbereich des TUM Sprachenzentrums, die zu ähnlichen Fragestellungen und zu einem Nationalpark eines anderen Landes recherchiert hat, und erarbeiten gemeinsam eine Präsentation, bei der neben interkulturellen Aspekten auch Mehrsprachigkeit eine Rolle spielt.

### **Intended Learning Outcomes:**

Die Studierenden können zu einem selbst gewählten Nachhaltigkeitsthema im Kontext eines Nationalparks selbständig und in Gruppen recherchieren sowie Fragen für ein Interview mit Personen mit entsprechender Expertise - auch unter Nutzung von KI - vorbereiten. Sie können die Interviews eigenverantwortlich durchführen und auswerten und ihre Vorgehensweise reflektieren, wobei ausgewiesener Wortschatz, Redemittel und Strukturen der Niveaustufe B2.2 ebenso zur Anwendung kommen wie eigenständig erarbeiteter Wortschatz und Strukturen mithilfe von KI. Und sie sind in der Lage, ihre Ergebnisse mit einer Lerngruppe aus einem anderen Sprachbereich zu teilen, sie gemeinsam ansprechend aufzubereiten und dann vor einem breiteren Publikum zu präsentieren. Dabei können sie nicht nur Strategien und Methoden der Mehrsprachigkeit anwenden, sondern auch interkulturelle Fragestellungen mit in den Blick nehmen.

### **Teaching and Learning Methods:**

Die angestrebten Lernergebnisse sollen anhand von gezielten Inputs sowie von Partner- und Gruppenarbeitsphasen, in denen kooperative Lernformen überwiegen, erreicht werden. Dabei werden die Studierenden ermutigt, ihren eigenen Themenwünschen nachzugehen und eigenverantwortlich zu arbeiten. Ein Schwerpunkt des Moduls liegt auf der Vermittlung von kommunikativen Kompetenzen mithilfe von handlungsorientierten Aufgaben, die auch außerhalb des Kursraums zu bewältigen sind. Im Kursraum selbst dienen Simulationen und Rollenspiele dazu, Neu-Erarbeitetes und Gelerntes zu erproben und/ oder weiter zu festigen. Die regelmäßige Reflexion von Lernwegen und Methoden soll schließlich dazu führen, dass die Studierenden im Kontext von Fremdsprachenlernen selbständiger und souverän agieren können.

**Media:**

Für die Stufe B2.2 entwickeltes Lehr- und Lernmaterial sowie weiteres, multimedial gestütztes Lernmaterial mit Informationstexten, Audios und Videos, z.B. von den Webseiten eines Nationalparks oder von anderen ausgewählten Internetseiten.

**Reading List:**

**Responsible for Module:**

Christina Thunstedt Heide Stiebeler

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2.2 – Projektwochen: Nachhaltigkeit am Beispiel eines Nationalparks  
(Seminar, 4 SWS)

Stiebeler H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0362: German as a Foreign Language B1.1 - Communication in everyday life and internships | Deutsch als Fremdsprache B1.1 - Kommunikation im Alltag und Praktikum

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 4	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B1.1 - Kommunikation im Alltag und Praktikum (Seminar, 3 SWS)

Reulein C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0363: German as a Foreign Language C1.2 - Quickly grasping and commenting on complex texts | Deutsch als Fremdsprache C1.2 - Komplexe Texte schnell erfassen und kommentieren**

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

#### **Content:**

#### **Intended Learning Outcomes:**

#### **Teaching and Learning Methods:**

#### **Media:**

#### **Reading List:**

#### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache C1.2 - Komplexe Texte schnell erfassen und kommentieren (Seminar, 2 SWS)

Koch H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0364: German as a Foreign Language B2.1 with Grammar | Deutsch als Fremdsprache B2.1 mit Grammatik

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 4	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

Deutsch als Fremdsprache B2.1 mit Grammatik (Seminar, 3 SWS)

Schlömer A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



**SZ0003-04: English | Englisch****Module Description****SZ0403: English - Academic Presentation Skills C1 - C2 | Englisch - Academic Presentation Skills C1 - C2**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include four different graded extemporaneous speeches, three informative and one persuasive. Each graded speech contributes to 25% of the overall course grade. Aspects of proper delivery include proper oral citations, use of language, and implementation of rhetorical skills.

Students are evaluated on their ability to prepare and deliver speeches with the help of audio or visual aids and a handout. Depending on the course format, the presentations are delivered either live in person or via a video recording.

Where audio or video is recorded, the Basic Data Protection Regulation (DSGVO, Art. 12 -21) is observed.

**Repeat Examination:****(Recommended) Prerequisites:**

Ability to begin work at the C2 level as evidenced by a placement test score of at least 75 percent.

**Content:**

This course allows students to practice and improve ability to carry out formal speaking tasks in English such as a class presentation, dissertation defense, department colloquium, conference talk or project proposals. All forms of presentations replicate academic speaking situations and include sections for question and answer or a debate format.

**Intended Learning Outcomes:**

This course helps students to gain practical experience in a range of both graded and non-graded presentation scenarios designed to build confidence and improve delivery in English. The acquired techniques and skill set can be successfully transferred to a number of academic and professional presentation scenarios. Students learn how to effectively write, practice and evaluate presentations in addition to giving and receiving constructive peer feedback.

**Teaching and Learning Methods:**

This course makes use of recording and/or classroom evaluation to help students develop their public speaking skill and uses a variety of training techniques such as extemporaneous speaking and PechaKucha to hone specific skills.

**Media:**

Text material, online platform, recordings. Videos and in-class modeled presentations and examples.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Academic Presentation Skills C1 - C2 (Seminar, 2 SWS)

Davies A, Field B, Ritter J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0404: English - English for Architects C1 | Englisch - English for Architects C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include two written assignments (one of which comprising of multiple drafts), a visually supported presentation and a final written examination. Students are graded on their ability to present content clearly and succinctly taking the audience's needs and written/ spoken conventions into consideration.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12-21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this module grammatical forms are reviewed and practiced with a focus on topics of interest to students preparing for their further studies and a professional life in architecture. A key component is the requirement for student autonomy and collaboration within the framework of the module, which includes opportunities for students to practice both written and oral communication needed in academic and professional life. Emphasis is placed on developing strategies for continued learning.

**Intended Learning Outcomes:**

After completion of this module, students will be able to understand complex texts on architecturally-relevant topics, critically analyse these and effectively communicate their ideas in English to an international audience.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops with peer review, listening exercises, and pair work, etc. to allow students to effectively communicate as future professionals in their field.

**Media:**

Text materials, use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, film viewings and audio practice.

**Reading List:**

Handouts.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English for Architects C1 (Seminar, 2 SWS)

Eden C, Jacobs R

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ04041: English - Basic English for Architects B2 | Englisch - Basic English for Architects B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include two written assignments (one of which comprising of multiple drafts), a visually supported presentation and a final written examination. Students are graded on their ability to present content clearly and succinctly taking the audience's needs and written/ spoken conventions into consideration.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this module grammatical forms are reviewed and practiced with a focus on topics of interest to students preparing for their further studies and a professional life in architecture. A key component is the requirement for student autonomy and collaboration within the framework of the module, which includes opportunities for students to practice both written and oral communication needed in academic and professional life. Emphasis is placed on developing strategies for continued learning.

#### Intended Learning Outcomes:

After completion of this module, students will be able to understand complex texts on architecturally-relevant topics, critically analyse these and effectively communicate their ideas in English to an international audience.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops with peer review, listening exercises, and pair work, etc. to allow students to effectively communicate as future professionals in their field.

**Media:**

Text materials, use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, film viewings and audio practice.

**Reading List:**

Handouts.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ04043: English - English in Action - What is Art? from B2 | Englisch - English in Action - What is Art? ab B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. A presentation (including visual aids, 30%); Writing assignments (40%); A final written examination (30%) in which students prove they can express themselves clearly and concisely.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this module grammatical forms are reviewed and practiced with a focus on topics of interest to students preparing for their further studies and a professional life in areas requiring a keen awareness of the conventions of art and art history. A key component is the requirement for student autonomy and collaboration within the framework of the module, which includes opportunities for students to practice both written and oral communication needed in academic and professional life. Emphasis is placed on developing strategies for continued learning.

#### Intended Learning Outcomes:

After completion of this module students will possess an awareness of English language public speaking conventions and will be able to put them into practice. In terms of their writing, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work, etc. to allow students to effectively communicate as future professionals in their field.

**Media:**

Printed materials, use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, film viewings and visits to art museums.

**Reading List:**

Handouts.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).



## Module Description

### SZ0406: English - Writing Academic Research Papers C2 | Englisch - Writing Academic Research Papers C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b>	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include a 350-word abstract for an academic research paper (15%); a 15-minute oral “academic-conference-style” presentation of research and findings (35%); and complete an academic research paper of up to 5,000 words including references (APA/MLA style, 50%), in which they demonstrate an ability to critically engage in academic discourse, making use of rhetorical devices and conventions appropriate for their audience. The major assignment is based on multiple iterations of the academic research paper on which critical feedback has been given by the instructor.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at at least the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This is a process writing course during which students will study effective organization of written academic English incorporating discourse markers, topic sentences, and good paragraphing; study effective use of rhetorical structures appropriate to academic English: e.g. theme and rheme, nominalisation, use of passive, as well as register and style appropriate to target audience; and choose a topic commensurate with their interests/area of study and produce an abstract, a presentation and an academic research paper with the support of peers and tutor.

**Intended Learning Outcomes:**

**Teaching and Learning Methods:**

Students will:

- a) Research a topic and gather information pertinent to a self-chosen thesis/research question
- b) Prepare a presentation outlining their chosen research question or thesis which they will have to defend orally
- c) Work on their chosen topic with tutor support and regular tutorials

The tutor will:

- a) Give short input presentations with accompanying language based activities (pair work, group work) at the beginning of each sessions in the first half of the course
- b) Give regular tutorial support

**Media:**

Powerpoint presentations (student and lecturer generated); Audio and visual recordings from a variety of sources; printed handouts.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Writing Academic Research Papers C2 (Seminar, 2 SWS)

Davies A, Hughes K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0407: English - Advanced Business Communication C2 | Englisch - Advanced Business Communication C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks which include:

- 2 assignments for a total of 50%
- presentation on a current business related topic (including visual aids) 25%
- final written examination 25% based on topics and materials discussed in class.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C2 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course focuses on professional communication skills and integrates reading, listening, speaking and writing with vocabulary and grammar, as needed by the specific group. The subject matter consists of a wide range of current issues in the business world, ranging from ethics and sustainability to leadership and diversity. Students will have many opportunities to explore, critically discuss, present, and write about these topics and other business- and industry-relevant topics that are most interesting to them.

**Intended Learning Outcomes:**

After completion of this module, students will be able to understand complex texts on current business-related topics, critically analyse these and effectively communicate their ideas based on these in English to an international audience.

Corresponds to C2 of the CER.

**Teaching and Learning Methods:**

Communicative and skills-oriented approach to topics with use of group discussion, reading and listening exercises, pair and group tasks, presentations etc. Students will need to complete regular assignments.

**Media:**

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Advanced Business Communication C2 (Seminar, 2 SWS)

Jansen van Rensburg P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ04100: English - Selected Readings in Popular Science B2 | Englisch - Selected Readings in Popular Science B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined in the form of a cumulative portfolio of competence and action-oriented tasks. These include three graded tasks: an oral assessment (including visual aids and a handout), a written assignment, and a final examination. The oral assessment may include either an original recording or live “presentation” in the video-blog style, followed by group facilitation of a class discussion.

The original written assignment requires one English Writing Center appointment, which serves as extra support in drafting and revising the text. Ungraded tasks such as the EWC appointment and the review forum submissions are required to pass the course. The final exam may be co-created by students from weekly mandatory (ungraded) submissions to the examination review questions forum, which allows students to take ownership of their learning process and contribute their original ideas to the final examination.

Unless exams are offered online (in open-book format), no aids will be allowed in exams and tests. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).T

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the B2 level of the GER as evidenced score in the range of 40 – 60 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

**Content:**

What is popular science, how does this genre look today, and how does it generate enthusiasm for scientific discoveries? This course explores these questions while examining the constellation of conversations that popular science texts create. We read texts by popular science writers in order to understand how an author's writing style can change from one format to the next. In addition to discussing style, persuasive techniques and target audiences, we analyze these texts as a means to improving our own language and writing skills.

**Intended Learning Outcomes:**

After completion of this module, students will have better grasp of how an author's writing style can change to follow the conventions of a genre. By reading popular science texts, students will learn strategies for making their writing clearer and more interesting. They will also analyze the techniques authors use to draw the reader in, to hold the reader's attention, and to make persuasive arguments. Students will recognize that many of these techniques and strategies can not only be applied across popular science genres, but also when writing academic texts.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

This course takes a communicative approach to topics including the use of pair and group tasks, group discussion, and short collaborative writing exercises. Students will need to complete regular preparation for the lessons.

**Media:**

Book chapters, handouts, presentations, audio-visual material

**Reading List:**

Text selections may include book reviews, press releases, chapters from bestselling books, social media posts, newsletters, blog posts, video-blogs and obituaries, as well as newspaper and magazine articles. These may vary each semester to include recent publications, to provoke thought about current events, discoveries or research techniques, and to reflect student research interests.

**Responsible for Module:****Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ04102: English - Great Minds in Science and Technology C1 | Englisch - Great Minds in Science and Technology C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Assessment is based on one to three short written assignments, e.g. a review of an article, short research papers (total of 1000-1200 words) - 40%; presentations (including visual aids and a handout), group or individual - 40%; final exam, including reading and listening comprehension, 20%.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course content is comprised of 6 to 8 articles, book chapters, books in the particular field (see above), along with student presentations on related topics. The students will discuss topics, argue for and/or against perspectives, debate, peer review the texts of each other, evaluate texts based on various criteria.

**Intended Learning Outcomes:**

Upon completion of this module, students will be better able to discuss and write texts about their specific area of study (maths, biology, chemistry, physics, history/philosophy of science, and more). They will be more confident engaging in discussions in English.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Class discussions, group work. presentations, and more.

**Media:**

Books, book chapters, essays, handouts, videos, Moodle, etc.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ04103: English - English for Computer Science and the Tech Industry C1 | Englisch - English for Computer Science and the Tech Industry C1

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ04104: English - English for Nerds: Learning with Sci-fi and Fantasy C1 | Englisch - English for Nerds: Learning with Sci-fi and Fantasy C1

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including: written assignments in the form of a group presentation (50%), a written assignment (25%), and a final written examination (25%).

Resources that may be used to aid the completion of the abovementioned portfolio-components will be determined as per the nature of the individual task.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21). Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER based on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de).

#### Content:

In this module communicative skills are practiced with a focus on topics of interest to students preparing for professions in science and technology branches which will be extrapolated from short works or excerpts taken from the work writers in the genres of science fiction and fantasy. The works used will be selected to correspond with sci-fi/fantasy topics that students choose in a needs analysis.

**Intended Learning Outcomes:**

After completion of this module students can understand a wide range of demanding, medium-length texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices. In particular, students will be able to describe future events and speculative outcomes in a highly differentiated manner.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, short films and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Students do not need to acquire any texts as these will be provided in class.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ04105: English - English Grammar Advanced C1 | Englisch - English Grammar Advanced C1

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ04106: English - Poetry for Engineers C1 | Englisch - Poetry for Engineers C1

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b>	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ04107: English - Key Issues in Business and Technology B2 + C1 | Englisch - Key Issues in Business and Technology B2 + C1

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

This course assesses reading, listening, speaking and writing abilities based on:

- 2 graded assignments for a total of 50%
- presentation on a current topic related to the themes dealt with in the course (including visual aids) 25%
- final written examination 25% based on topics and materials discussed in class.

Duration of the final examination: 60 – 90 minutes minutes.

Resources that may be used to aid the completion of the abovementioned portfolio-components will be determined as per the nature of the individual task.

#### Repeat Examination:

#### (Recommended) Prerequisites:

This course is taught at the B2 and C1 levels. Students need to complete the placement test before the first lesson.

#### Content:

This course focuses on improving communication skills and integrates reading, listening, speaking and writing with vocabulary and grammar, as needed by the specific group. The subject matter consists of a wide range of current issues, for example sustainability and AI. Students will have many opportunities to explore, critically discuss, present, and write about these, as well as other business- and technology related topics that are most interesting to them.

**Intended Learning Outcomes:**

After completion of this course, students will be able to understand complex texts and audio-material on current business and technology related topics, critically analyse these and effectively communicate their ideas based on these in English to an international audience.

**Teaching and Learning Methods:**

Communicative and skills-oriented approach to topics with use of group discussion, reading and listening exercises, pair and group tasks, presentations etc. Students will need to complete regular homework tasks.

**Media:**

moodle.tum.de

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Key Issues in Business Today: From AI to Sustainability C1 (Seminar, 2 SWS)  
Bhar A

Englisch - Key Issues in Business Today: From AI to Sustainability B2 (Seminar, 2 SWS)  
Bhar A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ04108: English - Professional English for Business and Technology C1 | Englisch - Professional English for Business and Technology C1

Version of module description: Gültig ab winterterm 2024/25

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks which include:

- 2 assignments for a total of 50%
- presentation on a current business related topic (including visual aids) 25%
- final written examination 25% based on topics and materials discussed in class.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course focuses on professional communication skills and integrates reading, listening, speaking and writing with vocabulary and grammar, as needed by the specific group. The subject matter consists of a wide range of current issues in the business world, ranging from ethics and sustainability to leadership and diversity. Students will have many opportunities to explore, critically discuss, present, and write about these topics and other business- and industry-relevant topics that are most interesting to them.

**Intended Learning Outcomes:**

After completion of this module, students will be able to understand complex texts on current business-related topics, critically analyse these and effectively communicate their ideas based on these in English to an international audience.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills-oriented approach to topics with use of group discussion, reading and listening exercises, pair and group tasks, presentations etc. Students will need to complete regular assignments.

**Media:**

Textbook, use of [www.moodle.tum.de](http://www.moodle.tum.de), online learning resources, presentations, film viewings and audio practice.

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Professional English for Business and Technology C1 (Seminar, 2 SWS)

Lemaire E

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0411: English - Management and Shakespeare C1 | Englisch - Management and Shakespeare C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. In addition to reading all the work on the syllabus, students will lead a lesson on one of Shakespeare's plays (with support from fellow students and the instructor), as well as complete written assignments and an exam demonstrating familiarity with the plays and material covered in lectures.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level as evidenced by a placement test score in the range of 60 – 80 percent. (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course will use four Shakespeare plays to help students understand and practice principles of management as well as become more sensitive to interpersonal issues. It will focus on aspects of leadership vs management, decision making, risk, conflict management, personal/cultural identity, and will familiarize students with language and ideas that have shaped the contemporary world.

#### Intended Learning Outcomes:

After completion of this module students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text

on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion and lecture.

**Media:**

Texts material and video.

**Reading List:**

Four Shakespeare plays, all available online and in bookshops and libraries. Additional reading material provided on Moodle.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Management and Shakespeare C1 (Seminar, 2 SWS)

Jacobs R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0413: English - Professional English for Business and Technology - Management and Finance Module C1 | Englisch - Professional English for Business and Technology - Management and Finance Module C1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b>	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks which include:

- 2 assignments for a total of 50%
- presentation on a current business related topic (including visual aids) 25%
- final written examination 25% based on topics and materials discussed in class.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### **Content:**

This course focuses on professional communication skills and integrates reading, listening, speaking and writing with vocabulary and grammar, as needed by the specific group. The subject matter consists of a wide range of current issues in the business world, ranging from ethics and sustainability to leadership and diversity. Students will have many opportunities to explore, critically discuss, present, and write about these topics and other business- and industry-relevant topics that are most interesting to them.

**Intended Learning Outcomes:**

After completion of this module, students will be able to understand complex texts on current business-related topics, critically analyse these and effectively communicate their ideas based on these in English to an international audience.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills-oriented approach to topics with use of group discussion, reading and listening exercises, pair and group tasks, presentations etc. Students will need to complete regular assignments.

**Media:**

Textbook, use of [www.moodle.tum.de](http://www.moodle.tum.de), online learning resources, presentations, film viewings and audio practice.

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).



## Module Description

### SZ0414: English - Intercultural Communication C1 | Englisch - Intercultural Communication C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks consisting of: A classroom presentation (including a handout and visual aids) (50%) and a final exam (50%). In the presentations and final exam students demonstrate a critical awareness of various dimensions and theories of cultural difference and show that they can apply them in situations where intercultural communication occurs.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course, taught in English, should familiarize you with some dimensions of cultural variation and theories of culture and communication. While learning to understand and appreciate cultural difference, you will improve your ability to communicate effectively in a global context.

#### Intended Learning Outcomes:

After completion of this module, students will be able to communicate more effectively with partners from other cultures. Specifically, they can recognize cultural differences when they occur, understand some specific ways in which cultures can differ, and have developed self-awareness of their own cultural behaviors and values, which will help them be more effective in cross-cultural communication situations.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Textbook, use of online learning platform, presentations, film viewings, podcasts and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Intercultural Communication C1 (Seminar, 2 SWS)

Balton-Stier J, Hughes K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0417: English - Introduction to English Pronunciation B2 | Englisch - Introduction to English Pronunciation B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined using a cumulative portfolio of competence and action-oriented tasks by means of two assignments (each 25%) and two written assessments - a midterm exam and a final exam (each 25%). The assignments may consist of recording exercises in order to determine areas for improvement and to provide individual feedback.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Students should have a minimum course entry level equivalent to CER B1/B2

#### Content:

The course will cover the following aspects of English pronunciation: production of speech sounds; short vowels; long vowels ; diphthongs; voicing & consonants; the relationships between spelling and pronunciation and grammar and pronunciation; word level and sentence level stress; aspects of connected speech; introduction to intonation.

#### Intended Learning Outcomes:

Upon completion of this module, students' pronunciation of English will have improved in accuracy and they will have developed a better understanding of the production and linking of English sounds. This course prepares students for the English Pronunciation C1 course.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

Via short lectures at the start of each session and accompanying exercises, the course will provide students with a foundation in English phonetics and phonology in order to enable them to identify and analyse areas of weakness and improve pronunciation. Class work will incorporate active discussion of theoretical aspects of pronunciation based on the reading material together with practical exercises to improve actual production in pairs, groups and individually. Homework will be assigned by the instructor.

**Media:**

Powerpoint presentations to accompany lectures; Printed handouts; Audio and video recordings from a variety of sources; Written and spoken exercises from a variety of sources

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Introduction to English Pronunciation B2 (Seminar, 2 SWS)

Schenk T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0418: English - English Through Cinema C1 | Englisch - English Through Cinema C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students must demonstrate familiarity with the films viewed by being able to summarize main plots, and be able to put them into the context of the culture or topic of focus in a written paper of at least 5 pages to achieve a pass grade.

In the event that audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the upper B2 level of the GER or higher as evidenced by a score over 50 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de).

#### Content:

Sessions will include film screenings and in-depth discussion of various aspects of culture and communication.

#### Intended Learning Outcomes:

Upon completion of this course, students will have an increased understanding of the English-speaking world through viewing of films. They will be able to discuss films critically with spoken and written accuracy and range of vocabulary around specified topic areas. Students will have developed greater fluency in interactive communication in English through guided and freer discussion of issues related to topic areas. They will be familiar with key critical concepts in cultural studies.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion and film viewing.

**Media:**

Film viewings, handouts, use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de).

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English through Cinema C1 (Seminar, 2 SWS)

Linetsky A

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0420: English - Focus on the USA C1 | Englisch - Focus on the USA C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks consisting of: An oral presentation (including a handout and visual aids, 25%), written assignments in the form of two entries in an online journal (25% each, in which students are assessed on their ability to accurately summarize the content of textual and documentary evidence and analyze how it applies to principles discussed in class) and a final written examination with short essay questions (25%, in which students are expected to demonstrate a critical awareness of life in the United States).

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This module helps students prepare for studying or working in the United States, and increases their awareness of cultural differences they can expect to encounter in their dealings with US Americans.

Common stereotypes about U.S. such as exceptionalism will be critically examined.

**Intended Learning Outcomes:**

After completion of this module, students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices; They are prepared for studying or working in the United States. Corresponds to C1 of the CER.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Textbook, use of online learning platform at [www.moodle.tum.de](http://www.moodle.tum.de), presentations, film viewings, podcasts and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Focus on the USA C1 (Seminar, 2 SWS)

Schrier T

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).



## Module Description

### SZ0421: English - English Writing for Social Scientists C2 | Englisch - English Writing for Social Scientists C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks.

Students will submit seven assignments (based on their current current study program) in which they demonstrate that they are able to express themselves with greater clarity and precision in written English and that they are familiar with and can apply strategies for effective academic writing in English.

Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the upper C1 or C2 level of the GER. Basic understanding of grammatical terms (e.g., parts of speech, subject, verb, object, active, passive, nominalization).

#### Content:

This course is aimed at students currently writing research papers and theses. It combines group seminars with individual consultations. The group sessions go beyond mere questions of "correct" grammar and word choice and emphasize instead stylistic guidelines for forceful and clear English writing at a high academic level. Discussions have a slight emphasis on strategies for German speakers but are appropriate to students from any language background. The individual sessions are tailored to the needs of each student.

**Intended Learning Outcomes:**

After completion of this module, students are able to express themselves with greater clarity and precision in written English. They are more familiar with strategies for effective academic writing in English specifically, while gaining a sense for potential contrasts with their own native languages. Students develop techniques to implement compelling sentence constructions, create cohesion within and between sentences, and render paragraphs coherent through specific semantic and syntactic choices.

Corresponds to C2 of the CER.

**Teaching and Learning Methods:**

Class sessions adopt a communicative and skills-oriented approach. Students become familiar with strategies for effective academic writing through group discussions, case studies, presentations, group work, etc. Individual sessions use students' texts as the primary learning materials, hence enabling them to reflect upon and to improve their academic writing skills.

**Media:**

Handouts, presentations, audio-visual material, students' own texts

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English Writing for Social Scientists C2 (Seminar, 2 SWS)

Balton-Stier J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0422-1: English - Jobline B2 | Englisch - Jobline B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including exercises and written assignments (75%), and a final written test (25%).

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

B2/C1 level according to the online placement test

#### Content:

This blended-learning course consists of sessions of face-to-face tuition in the classroom and self-study accessing the Jobline web-site ([www.jobline-lmu.de](http://www.jobline-lmu.de)) and doing the online activities. You will 'learn by doing'. You will gain practice in describing job advertisements and company requirements, writing CVs and cover-letters, practising for face-to-face and telephone job interviews.

#### Intended Learning Outcomes:

Upon completion of this module, students will have greater confidence in applying for jobs with international companies and have improved their fluency in spoken English in the job interview situation.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Pair- & groupwork, role-playing (interviewer-interviewee/job candidate)

**Media:**

Internet web-site: [www.jobline.lmu.de](http://www.jobline.lmu.de)

**Reading List:**

Internet web-site: [www.jobline.lmu.de](http://www.jobline.lmu.de)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0423: English - English for Technical Purposes - Industry and Energy Module C1 | Englisch - English for Technical Purposes - Industry and Energy Module C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including an oral presentation (including a handout and visual aids, 25%), multiple drafts of two assignments to allow students to develop written skills by means of a process of drafting and revising texts (25% each), and a final written examination (25%).

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this module grammatical forms are reviewed and practiced with a focus on topics of interest to students preparing for professions in business and technology branches. The module includes opportunities for students to practice both written and oral communication needed in professional life, with emphasis on career skills such as questioning techniques, negotiating, prioritizing, problem solving, and persuading, as well as aspects of intercultural communication needed

for achieving professional success. Emphasis is placed on developing strategies for continued learning.

**Intended Learning Outcomes:**

After completion of this module students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.

Students will develop an awareness of Anglo-American public speaking conventions and will be able to put these into practice. In written and spoken contexts they will be able to differentiate accurately between situations requiring formal or familiar registers and select the correct form. Further, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback

**Media:**

Textbook, use of [www.moodle.tum.de](http://www.moodle.tum.de), online learning resources, presentations, film viewings and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### **SZ0424: English - English for Technical Purposes - Environment and Communication Module C1 | Englisch - English for Technical Purposes - Environment and Communication Module C1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including an oral presentation (including a handout and visual aids, 25%), multiple drafts of two assignments to allow students to develop written skills by means of a process of drafting and revising texts (25% each), and a final written examination (25%).

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### **Content:**

In this module grammatical forms are reviewed and practiced with a focus on topics of interest to students preparing for professions in business and technology branches. The module includes opportunities for students to practice both written and oral communication needed in professional life, with emphasis on career skills such as questioning techniques, negotiating, prioritizing, problem solving, and persuading, as well as aspects of intercultural communication needed

for achieving professional success. Emphasis is placed on developing strategies for continued learning.

**Intended Learning Outcomes:**

After completion of this module students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.

Students will develop an awareness of Anglo-American public speaking conventions and will be able to put these into practice. In written and spoken contexts they will be able to differentiate accurately between situations requiring formal or familiar registers and select the correct form. Further, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Textbook, use of [www.moodle.tum.de](http://www.moodle.tum.de), online learning resources, presentations, film viewings and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).



## Module Description

### SZ0425: English - Introduction to Academic Writing C1 | Englisch - Introduction to Academic Writing C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. This includes three writing assignments (each 30%) covering various essay genres such as process description, comparison/contrast, problem/solution, requiring argumentation, persuasion and analysis, as well as a final exam (10%). Students will be graded on their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by the placement test at [www.moodle.tum.de](http://www.moodle.tum.de).

#### Content:

This course will help students learn to express themselves more correctly and persuasively in written English. There will be a focus on forming correct sentences and paragraphs, working towards the production of longer texts of the type students will be expected to write during their academic studies. They will also learn to evaluate and interpret the written texts of others.

**Intended Learning Outcomes:**

After completion of this module students will be able to write academic texts with greater fluency and accuracy and with fewer grammatical errors. They will be able to engage the rules of composition to construct logical and mature descriptions, explanations, and claims of the sort they will need throughout their academic years and beyond.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

This course makes use of peer group revision (students give each other feedback on their texts), working through multiple drafts, and evaluation of model texts to help students develop their academic writing skills.

**Media:**

Peer groups, handouts, textbook, online resources.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Introduction to Academic Writing C1 (Seminar, 2 SWS)

Field B, Lemaire E, Schenk T, Schrier T, Starck S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0426: English - Professional English for Business and Technology - Marketing Module C1 | Englisch - Professional English for Business and Technology - Marketing Module C1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks which include:

- 2 assignments for a total of 50%
- presentation on a current business related topic (including visual aids) 25%
- final written examination 25% based on topics and materials discussed in class.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### **Content:**

This course focuses on professional communication skills and integrates reading, listening, speaking and writing with vocabulary and grammar, as needed by the specific group. The subject matter consists of a wide range of current issues in the business world, ranging from ethics and sustainability to leadership and diversity. Students will have many opportunities to explore, critically discuss, present, and write about these topics and other business- and industry-relevant topics that are most interesting to them.

**Intended Learning Outcomes:**

After completion of this module, students will be able to understand complex texts on current business-related topics, critically analyse these and effectively communicate their ideas based on these in English to an international audience.

Students will develop an awareness of Anglo-American public speaking conventions and will be able to put these into practice. In written and spoken contexts they will be able to differentiate accurately between situations requiring formal or familiar registers and select the correct form. Further, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills-oriented approach to topics with use of group discussion, reading and listening exercises, pair and group tasks, presentations etc. Students will need to complete regular assignments.

**Media:**

Textbook, use of [www.moodle.tum.de](http://www.moodle.tum.de), online learning resources, presentations, film viewings and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0427: English - Academic Writing C2 | Englisch - Academic Writing C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks consisting of multiple iterations of three texts (each 400-500 words) in various genres.

Students will also demonstrate the ability to produce texts spontaneously in a final in-class writing assignment (exam).

The drafts of each text, as well as the final in-class assignment will count equally toward the final grade.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C2 level as evidenced by a placement test score in the range of 75 – 100 percent. (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this course students write and revise essays of various genres including description, evaluation, explanation, argument and analysis, while learning how to evaluate and interpret written texts of others in regular workshop sessions.

In each essay, students will show that they are familiar with and can apply conventions of Anglo-American academic writing such as beginning a text with an introduction, supplying a transparent, coherent set of supporting paragraphs, and ending with a succinct conclusion. They will be able to apply conventions of grammar and mechanics consistently, and will demonstrate a sensitivity to readers' needs by responding to feedback given by fellow students in workshops and by the instructor in consultations and in writing.

Students will receive both peer and teacher feedback on each draft and will revise their texts to demonstrate a command of the conventions of each genre (e.g. in an evaluative essay they will be able to respond to readers' needs for information, state a clear judgment, provide evidence for it, use appropriate strategies such as comparing and contrasting, citing sources responsibly, anticipating and acknowledging counterarguments, and adopting a credible voice).

### **Intended Learning Outcomes:**

After completion of this module, students have improved their ability to communicate clearly and powerfully in formal written English, become familiar with some common forms of expository writing, increased academic, professional and everyday vocabulary, developed regular habits to continue this learning process, and generally have increased their self-confidence with regard to written text production.

In addition, students can understand formal texts with increased ease, summarize information from different written sources, reconstructing arguments and accounts in a coherent presentation; they can express themselves spontaneously very fluently and precisely, differentiating finer shades of meaning even in more complex situations.

Corresponds to C2 of the CER.

### **Teaching and Learning Methods:**

In this workshop-style course we explore a range of topics through short readings and essay-length composition writing. Students will participate in writing workshops in which they demonstrate an ability to analyze texts of fellow students and provide appropriate feedback. Techniques for evaluating one's own writing will be practiced, with opportunities to revise drafts. Oral and written peer evaluations will form a regular component of the class sessions including use of an online peer forum and online instructor feedback.

### **Media:**

Text material, online platform with forum and text archive allow students to develop writing ability in a process-oriented manner.

### **Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Academic Writing C2 (Seminar, 2 SWS)

Schrier T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0429: English - English for Scientific Purposes C1 | Englisch - English for Scientific Purposes C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks consisting of multiple drafts of two assignments to allow students to develop written skills by means of a process of drafting and revising texts (25% each assignment), as well as an oral presentation (including a handout and visual aids, 25%) , and a final written examination (25%).

#### Repeat Examination:

#### (Recommended) Prerequisites:

C1 level according to the online placement test

#### Content:

This course enables students to practise scientific and technical English through active group discussions and delivery of subject-related presentations.

Students will develop an awareness of Anglo-American public speaking conventions and will be able to put these into practice. In written and spoken contexts they will be able to differentiate accurately between situations requiring formal or familiar registers and select the correct form. Further, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

#### Intended Learning Outcomes:

On completion of this module/course students will have expanded their knowledge of vocabulary related to science and technology. The student's reading, writing and listening skills as well as oral fluency will improve.



Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

This course involves pair-work and group-work enabling students to develop their verbal and written skills in scientific and technical environment.

**Media:**

Internet sources, handouts contributed by course tutor/students, e-learning platform

**Reading List:**

Internet articles, Journals such as Nature and Scientific American

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English for Scientific Purposes C1 (Seminar, 2 SWS)

Hanson C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0430: English - English in Science and Technology C1 | Englisch - English in Science and Technology C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks consisting of multiple drafts of two assignments to allow students to develop written skills by means of a process of drafting and revising texts (25% each assignment), as well as an oral presentation (including a handout and visual aids, 25%) , and a final written examination (25%).

#### Repeat Examination:

#### (Recommended) Prerequisites:

C1 level according to the online placement test

#### Content:

This course enables students to practise scientific and technical English through active group discussions and delivery of subject-related presentations.

Students will develop an awareness of Anglo-American public speaking conventions and will be able to put these into practice. In written and spoken contexts they will be able to differentiate accurately between situations requiring formal or familiar registers and select the correct form. Further, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

#### Intended Learning Outcomes:

On completion of this module/course students will have expanded their knowledge of vocabulary related to science and technology. The student's reading, writing and listening skills as well as oral fluency will improve.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

This course involves pair-work and group-work enabling students to develop their verbal and written skills in scientific and technical environment.

**Media:**

Internet sources, handouts contributed by course tutor/students, e-learning platform

**Reading List:**

Internet articles, Journals such as Nature and Scientific American

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English in Science and Technology C1 (Seminar, 2 SWS)

Bhar A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ04311: English - Basic English for Academic Purposes B2 | Englisch - Basic English for Academic Purposes B2

Version of module description: Gültig ab Sommerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including: Two/three written assignments for a total of 60% (based on multiple drafts to encourage learning by means of revision) in which students are able to produce clear, detailed text on a topic related to their fields of study and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options; a presentation (including a handout and visual aids, 20%) in which oral fluency is demonstrated and an ability to conduct technical discussions in their fields of specialization; a final written examination (20%) in which they demonstrate that they understand the main ideas of complex text in their field on both concrete and abstract topics, including technical discussions, and can express their opinions using a wide range of grammatical structures and collocations accurately.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the B2 level of the GER as evidenced score in the range of 40 – 60 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

**Content:**

This course includes practice with note-taking, practising tutorial participation, academic writing and presenting a topic on a related field of study. Common verb forms such as present simple vs continuous, future forms, present perfect and past simple as well as conditionals will be reviewed and practiced. Other grammatical structures covered include: modal verbs of likelihood, comparatives and superlatives and uses of articles. Oral and written communication skills needed in academic life will be introduced and practiced, as well as aspects of intercultural communication needed for achieving professional success. Emphasis is placed on developing strategies for continued learning.

**Intended Learning Outcomes:**

On completion of this module students will have gained some of the study skills required for participating in an English-speaking academic environment. Students are able to produce some academic level work in degree courses held in English. They can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in their fields of specialization; they can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party; they can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

This course involves practising study situations (participating in seminars, tutorials, note-taking), communicative and skills-oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work encourage active use of language, as well as opportunities for feedback.

**Media:**

Texts from a variety of sources, presentations, videos and listening practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Basic English for Academic Purposes B2 (Seminar, 2 SWS)  
Bhar A, Davies A, Lemaire E, Schenk T, Xu M

Blockkurs Englisch - Basic English for Academic Purposes B2 (Seminar, 2 SWS)  
Schenk T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0438: English - Transatlantic Relations: Current Affairs in the U.S. and the E.U. C1 | Englisch - Transatlantic Relations: Current Affairs in the U.S. and the E.U. C1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including: assignments (50%), an oral presentation (including handout and visual aids, 25%) and a final written examination (25%).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C1 level as evidenced by a placement test score.

#### **Content:**

This course allows students to improve their English skills by speaking and writing about the current events and social/political issues which are of interest to them. Classes are organised thematically around diverse contemporary topics selected by students. Presentations introduce a topic each week (these will be made by the lecturer in the first classes and subsequently by the students) before group and pair speaking tasks allow students to explore issues in greater depth. Importantly, the activities allow students to develop practical English skills which will be of use in both professional and social contexts, e.g. discussion, information exchange, argumentation, negotiation etc.

Students will also develop their English writing skills for a report and examination.

#### **Intended Learning Outcomes:**

After completion of this course students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without

much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, listening exercises, and pair work, etc.

**Media:**

Course handouts, online platform, recordings

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0442: English - The Science of Science Fiction C1 | Englisch - The Science of Science Fiction C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks including: written assignments in the form of a group presentation (50%), a written assignmentResources that may be used to aid the completion of the abovementioned portfolio-components will be determined as per the nature of the individual task. (25%), and a final written examination (25%).

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER based on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de).

#### Content:

In this module communicative skills are practiced with a focus on topics of interest to students preparing for professions in science and technology branches which will be extrapolated from short works or excerpts taken from the work writers in the genre of science fiction. The works used will be selected to correspond with sci-fi topics that students choose in a needs analysis.

**Intended Learning Outcomes:**

After completion of this module students can understand a wide range of demanding, medium-length texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices. In particular, students will be able to describe future events and speculative outcomes in a highly differentiated manner.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, short films and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - The Science of Science Fiction C1 (Seminar, 2 SWS)

Clark R

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0443: English - English Grammar Compact B1 | Englisch - English Grammar Compact B1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Written assignments (in which students are given the opportunity revise drafts of short texts to improve accuracy of written expression) and a final written examination (in which students demonstrate the ability to communicate spontaneously in everyday situations) contribute equally to the final grade.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the B1 level of the GER as evidenced score in the range of 25 to 40 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course is intended for international students who need to review basic structures of English with a focus on listening and speaking.

#### Intended Learning Outcomes:

After completing this module, students can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple

connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.

Corresponds to B1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Textbook, online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de) or Macmillan English Campus online resources ([www.mec-3.com/tum](http://www.mec-3.com/tum)), presentations, audio-visual material.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English Grammar Compact B1 (Seminar, 2 SWS)

Balton-Stier J, Candappa R, Xu M

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0452: English - Critical Thinking and Science Writing C2 | Englisch - Critical Thinking and Science Writing C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 4	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. The course includes, as its graded components, a short paper, a written final project (evaluating a debate), and a final presentation (including visual aids and a handout).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Students should have a minimum course entry level equivalent to upper CER C1 or C2, as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course develops both critical thinking and scientific writing skills. Critical thinking has always been central to intellectual pursuits, and is a disciplined process of analyzing and applying information. Rather than merely receiving information, students in this course will learn to question and critique scientific writing before applying key concepts to their own fields. To this end, the students will encounter a variety of critical thinking models and techniques. The course will also enhance the students' comprehension of the main components of academic writing.

#### Intended Learning Outcomes:

The students will be able to: critically evaluate and apply information taken from scientific writing, structure their writing according to the conventions of English-language scientific texts, and write scientific texts according to the principles of good grammar, structure, rhetoric, etc.

Corresponds to C2 of the CER.

**Teaching and Learning Methods:**

This course takes a communicative approach to topics including the use of pair and group tasks, group discussion, and short collaborative writing exercises. Students will need to complete regular preparation for the lessons.

**Media:**

Book chapters, handouts, presentations, audio-visual material

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0453: English - Scientific Presentation and Writing C2 | Englisch - Scientific Presentation and Writing C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. An oral presentation including a handout and visual aids (25%), written assignments (50%), and a final exam (25%) contribute to the final course grade. Students are expected to complete a presentation, an argumentative research essay, five forum entries, and a final exam for the final grade.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C2 level as evidenced by a placement test score in the range of 80 – 100 percent. (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

This course allows students to practice for formal speaking tasks in English such as a class presentation, dissertation defense or conference talk, and for completing formal written tasks such as a journal article, report, project proposal or a literature summary.

#### Intended Learning Outcomes:

After completion of this module students can understand with increased ease virtually everything heard or read; they can summarize information from different spoken and written sources,

reconstructing arguments and accounts in a coherent presentation, and they can express themselves spontaneously very fluently and precisely, differentiating finer shades of meaning even in more complex situations.

Corresponds to C2 of the CER.

**Teaching and Learning Methods:**

Techniques for evaluating one's own presenting and writing will be practiced, with opportunities to revise drafts. Oral and written peer evaluations will form a regular component of the class sessions including use of an online peer forum and online instructor feedback.

**Media:**

Course handouts, online platform

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Scientific Presentation and Writing C2 (Seminar, 2 SWS)

Field B, Hughes K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0454: English - Basic English for Scientific Purposes B2 | Englisch - Basic English for Scientific Purposes B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Grades for an oral presentation (including a handout and visual aids, 25%) , multiple drafts of two assignments to allow students to develop written skills by means of a process of drafting and revising texts (25% each assignment), and a final written examination (25%) contribute to the final course grade.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

B2 level according to the online placement test

#### Content:

This course enables students to practise scientific and technical English through active group discussions and delivery of subject-related presentations.

#### Intended Learning Outcomes:

On completion of this module/course students will have expanded their knowledge of vocabulary related to science and technology. The student's reading, writing and listening skills as well as oral fluency will improve.

Students will develop an awareness of Anglo-American public speaking conventions and will be able to put these into practice. In written and spoken contexts they will be able to differentiate accurately between situations requiring formal or familiar registers and select the correct form. Further, they will improve their ability to present content clearly and succinctly taking readers' needs and writing conventions into consideration.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

This course involves pair-work and group-work enabling students to develop their verbal and written skills in scientific and technical environment.

**Media:**

Internet sources, handouts contributed by course tutor/students, e-learning platform

**Reading List:**

Internet articles, Journals such as Nature and Scientific American

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Basic English for Scientific Purposes B2 (Seminar, 2 SWS)

Hanson C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0455: English - English for Political Science C1 | Englisch - English for Political Science C1

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students are expected to complete a presentation, a few short essays, and a final exam which count equally toward the final grade.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to work at the C1 level, as demonstrated through the placement test in Moodle

#### Content:

This course prepares students to read and understand political science texts in English. The texts will primarily be from the fields of political theory, comparative politics, and international relations. Additional learning materials related to current affairs will be selected by the students.

#### Intended Learning Outcomes:

On completion of this course, students will be able to fluently read and discuss political science academic texts in English.

#### Teaching and Learning Methods:

presentations, discussions, debates, videos & news articles

#### Media:

Class time will be largely dedicated to presentations, discussions, and debates. The course emphasizes vocabulary, spoken fluency, and persuasive writing skills.

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English for Political Science C1 (Seminar, 2 SWS)

Starck S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0456: English - English Grammar Intermediate B2 | Englisch - English Grammar Intermediate B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks: These include weekly home study tasks and a written exam at the end of the course.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the B2 level of the GER as evidenced score in the range of 40 – 60 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

Lessons will address areas of English grammar which commonly present students with difficulties at the B2 and C1 levels, such as tenses, quantifiers, the definite article, relative clauses, phrasal verbs, punctuation, and commas. The classes will emphasize practical, realistic use of English grammar by having students communicate with one another, both orally and in writing, using the grammatical structure(s) of the day.

#### Intended Learning Outcomes:

Students will refresh and become comfortable with using the grammatical structures that commonly give problems to intermediate learners.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

Communicative and skills-oriented approach to topics with use of group discussion, reading and listening exercises, pair and group tasks, presentations etc. Students will need to complete regular preparation for the lessons.

**Media:**

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English Grammar Intermediate B2 (Seminar, 2 SWS)

Candappa R, Clark R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0458: English - Literature, Technology and Society C1 | Englisch - Literature, Technology and Society C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 5	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. In addition to reading the books on the syllabus, students must participate in online forums, complete multiple drafts of two essays, and take a final exam testing their familiarity with the books read and other material from class.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

Throughout human history, advances in science and technology have gone hand-in-hand with social change, from early developments in the stone to metal ages, through the industrial revolution, all the way to the digital age and beyond. In this team-taught seminar, six instructors choose works of literature to spark discussions about the interaction between technology and society. Students will read five works (these may include graphic novels, narrative non-fiction or collections of short stories) and use this experience to probe how technology changes our experience of the world. Class sessions include presentations, group discussion, individual exercises, and multi-media experiences.

**Intended Learning Outcomes:**

Students will be able to analyze complex literary texts, speak with fluency and subtlety about literature, write with precision and evidence about their opinions of the texts, and discuss what authors from hundreds of years ago to today have to say about the role of technology in society.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Through group discussions, writing seminars, presentations and exercises, students are supported in learning to read literature analytically, and share their opinions of it with subtlety and force both in writing and orally. Communicative and skills-oriented treatment of topics with use of group discussion, games, presentations, videos, writing workshops, and pair work all encourage active use of language, as well as opportunities for peer and instructor feedback.

**Media:**

Five books, all readily available at libraries or for purchase. Some material on the syllabus may be posted in Moodle. Students must also plan on logging into Moodle between sessions in order to participate in forums.

**Reading List:**

Students are expected to read English-language editions of all five books on the syllabus.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Literature, Technology and Society C1 (Seminar, 2 SWS)

Jacobs R, Jansen van Rensburg P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0460: English - English for Automotive Engineers C1 | Englisch - English for Automotive Engineers C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Grades for an oral presentation (including a handout and visual aids, 25%), multiple drafts of two assignments to allow students to develop written skills by means of a process of drafting and revising texts (25% each assignment), and a final written examination (25%) contribute to the final course grade.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this module grammatical forms are reviewed and practiced with a focus on topics of interest to students preparing for professions in business and technology branches. The module includes opportunities for students to practice both written and oral communication needed in professional life, with emphasis on career skills such as questioning techniques, negotiating, prioritizing, problem solving, and persuading, as well as aspects of intercultural communication needed for achieving professional success. Emphasis is placed on developing strategies for continued learning.

**Intended Learning Outcomes:**

After completion of this module students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes, and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work to encourage active use of language, and provide opportunities for ongoing feedback.

**Media:**

Textbook, use of online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, film viewings and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English for Automotive Engineers C1 (Seminar, 2 SWS)

Clark R

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

## Module Description

### SZ0471: English - Intensive Thesis Writers' Workshop C2 | Englisch - Intensive Thesis Writers' Workshop C2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Students' thesis-writing ability will be assessed based on their demonstration of clear improvements over the course of the workshop, showing that an effort has been made to implement the material discussed in class and the individual consultations with the instructor.

#### Repeat Examination:

#### (Recommended) Prerequisites:

For students currently writing theses or dissertations in English. Ability to begin work at the upper C1 or C2 level of the GER, as demonstrated by a score above 75% on the English placement test at [www.moodle.tum.de](http://www.moodle.tum.de). Basic understanding of grammatical terms (e.g., parts of speech, subject, verb, object, active, passive, nominalization).

#### Content:

This course is aimed at students currently writing theses or dissertations. It combines group seminars with individual consultations. All sessions go beyond mere questions of "correct" grammar and word choice and emphasize instead stylistic guidelines for compelling and clear English writing at a high academic level. Discussions have a slight emphasis on strategies for German speakers but are appropriate to students from any language background. The individual sessions are tailored to the needs of each student.

#### Intended Learning Outcomes:

After completion of this module, students will be able to express themselves with greater clarity and precision in written English. They will become more familiar with strategies for effective

academic writing in English specifically, while gaining a sense for potential contrasts with their own native languages. Students will develop techniques to implement compelling sentence constructions, create cohesion within and between sentences, and render paragraphs coherent through specific semantic and syntactic choices.

Corresponds to C2 of the CER.

**Teaching and Learning Methods:**

Seminars adopt a communicative and skills-oriented approach through group discussion, case studies, presentations, group work, etc. Individual sessions use students' texts as the primary learning materials.

**Media:**

Handouts, presentations, audio-visual material, students' own texts.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Intensive Thesis Writers' Workshop C2 (Workshop, 2 SWS)  
Jacobs R, Ritter J, Wellershausen N

Blockkurs Englisch - Intensive Thesis Writers' Workshop C2 (Seminar, 2 SWS)  
Wellershausen N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0479: English - Introduction to Critical Thinking and Science Writing B2 | Englisch - Introduction to Critical Thinking and Science Writing B2**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include the completion of moodle tests, a group presentation (with visual aids and a handout), a report on a topic of the students' choosing, and a final written exam.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C2 level as evidenced by a placement test score in the range of 80 – 100 percent. (Please check current announcements as the exact percentages may vary each semester.)

#### **Content:**

This course develops both critical thinking and scientific writing skills. Critical thinking has been central to intellectual pursuits since Socrates elaborated the method 2,500 years ago and is a disciplined process of actively conceptualizing, analysing and applying information. Rather than merely understanding information, students on this course will learn to question and critique scientific writing before applying concepts to their own fields. To this end, students will encounter a variety of critical thinking models and techniques. The course also familiarises students with the formats and conventions of English-language scientific texts, e.g. articles, reports and theses, and

enhances their mastery of key components of academic writing, e.g. style, grammar, register and argumentation.

**Intended Learning Outcomes:**

Upon completing the module students will be able to:

- critically evaluate and apply information taken from scientific writing,
- structure their writing according to the conventions of English-language scientific texts, and
- write scientific texts according to principles of style, grammar, rhetoric etc.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

Online videos will introduce theories and concepts before Moodle tests reinforce students' knowledge of what they have learned. Class time will be devoted to applying theories and concepts through discussion, communicative pair and group work, analysing texts, and workshopping students' own writing.

**Media:**

Course handouts, online platform, recordings

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0480: English - Controversial Topics in Science and Technology C1 | Englisch - Controversial Topics in Science and Technology C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Tasks include an oral presentation including visual aids (30%), assignments (40%), and a final written examination (30%) contributing to the final course grade.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the C1 level as evidenced by a placement test score.

#### Content:

In this course, students will improve their English through studying and discussing controversial issues in science and technology. The specific topics will be determined by the students themselves, but they might include some of these areas

- cloning & stem-cell research
- artificial intelligence
- the nature of consciousness
- climate change
- drones
- overpopulation
- GMO foods

- the future of energy
- biodiversity
- animal ethics
- paranormal phenomena

Class time will be largely dedicated to presentations, discussions, and debates. The course emphasizes building vocabulary and spoken fluency but will also help students improve their writing skills.

**Intended Learning Outcomes:**

After completion of this course students can understand a wide range of demanding, longer texts, and recognize implicit meaning; they can express themselves fluently and spontaneously without much obvious searching for expressions; they can use language flexibly and effectively for social, academic and professional purposes and they can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, listening exercises, and pair work, etc.

**Media:**

Course handouts, online platform, recordings

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Controversial Topics in Science and Technology C1 (Seminar, 2 SWS)

Balton-Stier J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0488: English - Gateway to English Master's C1 | Englisch - Gateway to English Master's C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include multiple drafts of an argumentative research paper (alternatively: two assignments) to allow students to develop written skills by means of a process of drafting and revising texts (50% total), an oral presentation (including a handout and visual aids 25%), and a final written examination (25%). No aids may be used during the examination.

Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

C1 level according to the online placement test

#### Content:

This course includes note-taking, discussions, academic writing and presenting a topic on a related field of study focusing on skills such as avoiding plagiarism, ethics, hedging language, and formulating research questions.

#### Intended Learning Outcomes:

Upon finishing this course you will be able to follow lectures in English with little difficulty and summarize the main ideas. You will be sufficiently comfortable with English as to be able to write longer papers and critical essays in English, making use of general argumentation and rhetorical conventions.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

This course involves practising study situations (participating in seminars, tutorials, note-taking in lectures), pair-work & group-work in an English-speaking academic environment.

**Media:**

Internet, handouts, online material

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English for Academic Purposes: Gateway to English Master's C1 (Seminar, 2 SWS)  
Bhar A, Clark R, Ritter J, Schrier T, Stapel M, Starck S, Wellershausen N

Englisch - English for Geodesy: Gateway to English Master's C1 (Seminar, 2 SWS)  
Clark R

Englisch - English for Civil Engineering: Gateway to English Master's C1 (Seminar, 2 SWS)  
Clark R

Englisch - English for Environmental Engineering: Gateway to English Master's C1 (Seminar, 2 SWS)  
Clark R

Blockkurs Englisch - English for Academic Purposes: Gateway to English Master's C1 (Seminar, 2 SWS)  
Clark R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0489: English - English Pronunciation C1 | Englisch - English Pronunciation C1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks by means of students' weekly tasks (50%) and a final exam (50%). The tasks includes recording exercises in order to determine areas of weakness, so the instructor can provide individual feedback and exercises.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

The students' English pronunciation should be understandable by native and non-native English speakers. They should have a general understanding of the correlation between spelling and individual vowel and consonant sounds. For students who do not meet these criteria, the course Introduction to English Pronunciation is more appropriate. Students should have a minimum course entry level equivalent to CER C1 (evidenced by the score on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de))

#### Content:

The first part of the course introduces students to a variety of English accents, resources for the independent study of pronunciation and the differences between pronunciation in slow and fast speech. The second part of the course concerns pronunciation in words and phrases, including consonant clusters and stressed and unstressed syllables, and the pronunciation of foreign words. The next section of the course is about pronunciation in conversation, including how intonation

contributes to meaning. The final section deals with pronunciation in formal settings, including professional contexts such as giving business or conference presentations.

**Intended Learning Outcomes:**

The focus of this course is on improving pronunciation in communication rather than practising individual sounds or words. Students will be able to understand a variety of English accents; identify correct stress in words and phrases; identify and use features of fluent speech in conversation such as linking sounds, omitting sounds, and using intonation to convey meaning. Students will also be able to use understandable pronunciation in formal settings.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Using the course book as a guide, the course instructor gives short lectures and explanations regarding content, and then works together with the students to put the information into practice. The course instructor works together with the students in order to determine individual areas of weakness. The emphasis of this course is spoken English; therefore, the students have plenty of opportunities to speak in order to practice new skills. The students engage in conversation pairs, group discussions, and individual spoken exchanges with the course instructor. Although the focus of the course is spoken pronunciation, the students are given the opportunity to practise listening to speech at conversational speed and in a variety of English accents.

**Media:**

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0495: English - English Conversation Partners Program B1-C1+ | Englisch - English Conversation Partners Program B1-C1+

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 2	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 30	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. In this class where the emphasis is on seizing the opportunity for regular discourse in English, students are required to evidence their participation in group discussions through a conversation diary. In addition, a group task to be delivered in class is also required to pass the course.

Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the B1 (minimum) level as evidenced by the placement test.

#### Content:

This course gives students opportunities to practice speaking tasks in an informal environment through weekly class meetings. In addition, students will be organised into smaller groups (typically campus based) which will meet privately on a weekly basis for more conversation on self-directed topics.

#### Intended Learning Outcomes:

After completion of this module, students will be able to speak with ease in a variety of social situations, especially on topics of special interest to them and will show only little hesitation and need to search for expressions or self-correct grammar. They will be able to express complex ideas by paraphrasing and may need to fill gaps by using a dictionary or asking for help. They

will be aware of cultural differences and be able to analyze features of their own culture they may previously have taken for granted.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of small group discussion, listening exercises, and pair work encourage active use of language, as well as opportunities for feedback.

**Media:**

Materials shared via Moodle.

**Reading List:**

Materials shared via Moodle.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - English Conversation Partners Program B1 - C1+ (Seminar, 2 SWS)

Eden C, Stapel M, Wellershausen N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0497: English - Creative Writing C1: Introduction to Narrative Strategies and Literary Forms | Englisch - Creative Writing C1: Introduction to Narrative Strategies and Literary Forms**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include a presentation (including visual aids and/or a handout) on a topic relevant to the focus of the course and completion of original creative writing, collaborative writing and reflective texts. Together these will showcase students' acquisition, assimilation and implementation of the various storytelling tools and rhetorical methods acquired during the course.

Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### **Content:**

The course provides students with a stimulating overview of a range of narrative forms, tools and rhetorical devices. Some of the forms covered include contemporary nature writing, games narrative design and hybrid narrative essays. In the course, students will have the opportunity to experiment with some of these forms and try out many of the storytelling instruments and concepts first-hand. Critical reading assignments focusing on the interplay between language, form and content will aid students in exploring the rules and strategies of composition used in both fiction

and non-fiction genres and enable them to engage more closely with the English language to develop linguistic dexterity therein.

**Intended Learning Outcomes:**

Upon completion of the course students will have acquired enhanced rhetorical and composition skills. Practicing and analyzing a variety of narrative forms will aid STEM students in developing an aptitude for creative problem solving and help them learn how to tolerate uncertainty in process and outcome whilst embracing creative and intellectual risk as well as develop their critical vocabulary in feedback sessions. The model texts chosen will introduce them to the cultural diversity of the global English language canon.

Corresponds to C1 of the CER.

**Teaching and Learning Methods:**

Presentations, group discussions, and technique specific writing exercises will require participants to study and analyse stylistic and structural approaches employed by authors, which will help deepen their writing abilities to achieve well-organized, rhetorically effective English prose. Students are required to read the assigned texts. In-class discussions based on the assigned readings are to be expected. Current theories of literary and cultural criticism will be introduced and students will be expected to critically evaluate model texts as well as their own writing whilst being encouraged to appraise, support and critique the writing of their peers in a guided workshop environment.

**Media:**

Books, book chapters, essays, handouts, videos, Moodle, etc.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Creative Writing C1: Introduction to Narrative Strategies and Literary Forms (Seminar, 3 SWS)

Jansen van Rensburg P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### **SZ0498: English - Creative Writing C1: The Art of Craft - Toward Publication: Critical Revision Techniques | Englisch - Creative Writing C1: The Art of Craft - Toward Publication: Critical Revision Techniques**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. These include a presentation (including visual aids and/or a handout) on a topic relevant to the focus of the course and completion of original creative writing, collaborative writing and reflective texts. Together these will showcase students' acquisition, assimilation and implementation of the various storytelling tools and rhetorical methods acquired during the course.

Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Ability to begin work at the C1 level of the GER as evidenced by a score in the range of 60 – 80 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### **Content:**

Students who are already familiar with the basics of narratology can further explore other fiction and non-fiction genres, the interplay between form and content and further deepen their writing abilities to achieve well-organized, rhetorically effective English prose. Students will also appraise, support and critique the literary and reflective writing of their peers in a guided workshop environment. Critical revision techniques will be covered and a component on manuscript preparation for publication will help prepare students for both academic and non-fiction publishing.

### **Intended Learning Outcomes:**

Upon completion of the course students will be able to demonstrate an understanding of the following elements of basic rhetorical theory and storytelling: Employing ethos, pathos and logos to captivate an audience, and plot, scene, summary, point of view, flashback (analepsis) and flash-forward (prolepsis). Course participants will identify these elements in the reading assignments and attempt to utilize these components in their own writing assignments.

Corresponds to C1 of the CER.

### **Teaching and Learning Methods:**

Presentations, group discussions, and technique specific writing exercises will require participants to study and analyse stylistic and structural approaches employed by authors, which will help deepen their writing abilities to achieve well-organized, rhetorically effective English prose. Students are required to read the assigned texts. In-class discussions based on the assigned readings are to be expected. Current theories of literary and cultural criticism will be introduced and students will be expected to critically evaluate model texts as well as their own writing whilst being encouraged to appraise, support and critique the writing of their peers in a guided workshop environment.

### **Media:**

Books, book chapters, essays, handouts, videos, Moodle, etc.

### **Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Creative Writing C1: The Art of Craft - Toward Publication: Critical Revision Techniques (Seminar, 2 SWS)

Jansen van Rensburg P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0499: English - Basic English for Technical Purposes B2 | Englisch - Basic English for Technical Purposes B2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Performance, testing the learning outcomes specified in the module description, is examined by a cumulative portfolio of competence and action-oriented tasks. Assessment is based on: two written assignments for a total of 50% (based on multiple drafts to encourage learning by means of revision) in which students are able to produce clear, detailed text on a topic related to their fields of study and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options; a presentation (including a handout and visual aids) 25% in which oral fluency is demonstrated and an ability to conduct technical discussions in their fields of specialization; a final written examination 25% which they demonstrate that they understand the main ideas of complex text in their field on both concrete and abstract topics, including technical discussions, and can express their opinions using a wide range of grammatical structures and collocations accurately.

As the course may be offered in various formats (online or classroom) the form and conditions of the final exam (with or without aids) will vary. Where audio or video is recorded, we observe the Basic Data Protection Regulation (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Ability to begin work at the B2 level of the GER as evidenced score in the range of 40 – 60 percent on the placement test at [www.moodle.tum.de](http://www.moodle.tum.de). (Please check current announcements as the exact percentages may vary each semester.)

#### Content:

In this module selected verb forms and grammatical structures will be reviewed and practiced, as necessary and tailored to the class's needs. These may include: gerunds and infinitives, reported

speech, passives, modal verbs, present simple vs continuous, future forms, present perfect and past simple as well as all types of conditionals. Grammatical structures such as comparatives and superlatives, uses of articles, compound nouns and prefixes and suffixes. Oral and written communication skills needed in professional life will be introduced and practiced, as well as aspects of intercultural communication needed for achieving professional success. Emphasis is placed on developing strategies for continued learning.

**Intended Learning Outcomes:**

After completion of this module, students can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in their fields of specialization; they can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party; they can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.

Corresponds to B2 of the CER.

**Teaching and Learning Methods:**

Communicative and skills oriented treatment of topics with use of group discussion, case studies, presentations, writing workshops, listening exercises, and pair work encourage active use of language, as well as opportunities for feedback.

**Media:**

Textbook, online learning platform such as [www.moodle.tum.de](http://www.moodle.tum.de), presentations, film viewings and audio practice.

**Reading List:**

Handouts and selected extracts from published sources will be used in the course. Key literature will be advised by the teacher and/ or listed in the course description.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Englisch - Basic English for Technical Purposes B2 (Seminar, 2 SWS)

Stapel M

For further information in this module, please click [campus.tum.de](http://campus.tum.de) or [here](#).

**SZ0003-05: French | Französisch****Module Description****SZ0501: French A1.1 | Französisch A1.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse in der Fremdsprache Französisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz noch geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden lernen und üben einfache Fragen zur Person zu stellen und zu beantworten, sich in einer Stadt zu orientieren, Interessen auszudrücken und Formulare auszufüllen. Es werden u.a. folgende grammatische Themen behandelt, wie z.B. Präsensformen regelmäßiger und einiger unregelmäßiger Verben, Personalpronomen, bestimmte, unbestimmte und Teilungs-Artikel, Fragesätze, Angleichung der Adjektive. Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse in alltäglichen Grundsituationen ermöglichen.

Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch effektiver zu gestalten und die eigene Lernfähigkeit zu verbessern.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „A1 – Elementare Sprachverwendung“ des GER. Der/die Studierende ist nach der Teilnahme an der Modulveranstaltung in der Lage, einfache Fragen über vertraute Themen zu stellen und zu beantworten. Er/sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann einfache schriftliche Mitteilungen zur Person machen. Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der A 1-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch A1.1 (Seminar, 2 SWS)

Bartanus J, Bruel J, Cuneo M, Delavigne C, Gommeringer-Depraetere S, Kirchhoff A, Neumaier-Giacinti E, Suek C

Blockkurs Französisch A1.1 (Seminar, 2 SWS)

Cuneo M, Neumaier-Giacinti E, Paul E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0502: French A1.2 | Französisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe A1.1
- Einstufungstest mit Ergebnis A1.2

#### Content:

In diesem Modul werden die Grundkenntnisse in französischer Lexik und Grammatik für einfache, mündliche und schriftliche Kommunikationssituationen im Alltag erweitert. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Der/Die Studierende lernt z.B., einfache Fragen zu Person und Familie zu stellen und zu beantworten, Verabredungen zu treffen, Reservierungen von Hotel zu tätigen, über Freizeit und Ferien zu berichten, vergangene Erlebnisse zu erzählen. Es werden u.a. folgende grammatische Themen behandelt: Passé Composé, Futur proche, Mengenangaben, Possessivbegleiter, direkte und indirekte Objektpronomen.

Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse in alltäglichen Grundsituationen ermöglichen. Außerdem werden Möglichkeiten aufgezeigt,



den Lernprozess in der Fremdsprache effektiver zu gestalten und die eigene Lernfähigkeit zu verbessern.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „A1 – Elementare Sprachverwendung“ des GER. Der/ Die Studierende ist nach Abschluss dieses Moduls in der Lage, alltägliche Ausdrücke und sehr einfache Sätze zu verstehen und zu verwenden. Er/sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann einfache schriftliche Mitteilungen zur Person machen. Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der A 1-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

Lehrbuch (wird im Unterricht bekanntgegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch A1.2 (Seminar, 2 SWS)

Bartanus J, Bruel J, Cuneo M, Neumaier-Giacinti E, Perconte-Duplain S

Blockkurs Französisch A1.2 (Seminar, 2 SWS)

Suek C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0503: French A2.1 | Französisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe A1
- Einstufungstest mit Ergebnis A2.1

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Französisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden, z.B. auf Reisen, beim Arzt, bei der Wohnungssuche, unter Kollegen, Freunden und Nachbarn. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die grammatischen Strukturen werden weiter aufgebaut. Folgende grammatischen Themen werden behandelt, wie z.B. Verwendung von Passé Composé und Imparfait, Konditional, Relativpronomen, „en + y“ Pronomen, Komparativ und Superlativ.

Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Ferner

werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

**Intended Learning Outcomes:**

Das Modul orientiert sich am „A2 – Elementare Sprachverwendung“ des GER. Nach Abschluss dieses Moduls kann der/die Studierende einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Er/Sie kann beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten beschreiben. Er/Sie ist in der Lage, sich bei der Wohnungssuche und in wesentlichen Situationen im Urlaub oder auf (Geschäfts)Reisen zu verständigen und von daraus resultierenden Erfahrungen und Erlebnissen zu berichten. Er/Sie kann standardsprachliche Ausdrücke in vertrauten Kommunikationssituationen sowohl in mündlicher als auch in schriftlicher Form verstehen und verwenden und dabei Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch, multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch A2.1 (Seminar, 2 SWS)

Delavigne C, Kirchhoff A, Neumaier-Giacinti E, Paul E, Suek C

Blockkurs Französisch A2.1 (Seminar, 2 SWS)

Perconte-Duplain S, Suek C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0504: French A2.2 | Französisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe A2.1
- Einstufungstest mit Ergebnis A2.2

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Französisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Hör- und Leseverstehen sowie das Sprechen werden anhand verschiedener Hörübungen und Texten aus verschiedenen Bereichen des Alltagslebens und der Arbeitswelt trainiert. Die Wiederholung und Vertiefung der Grammatik orientiert sich an den kommunikativen Lernzielen. Es werden u.a. folgende grammatische Themen behandelt: Zukunft, Gerundium, indirekte Rede, Vergangenheitszeiten, Angleichung des Partizips, Subjonctif. Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „A2 – Elementare Sprachverwendung“ des GER. Nach Abschluss dieses Moduls kann der/die Studierende im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte. Der/die Studierende kann Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Er/Sie ist in der Lage kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch, multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch A2.2 (Seminar, 2 SWS)

Bruel J, Comte-Maillard C, Paul E, Suck C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0505: French B1.1 | Französisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe A2
- Einstufungstest mit Ergebnis B1.1

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch erarbeitet, die es den Studierenden ermöglichen, (sich) in vertrauten Situationen, z.B. im Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse selbständig und sicher in der Zielsprache zu operieren/bewegen/verständigen, wenn Standardsprache verwendet wird. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt.

Die Studierenden vertiefen Ihre Kenntnisse anhand verschiedenster aktueller Themen des französischen Lebens. Sie erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der französischen Sprache.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau "B 1- Selbständige Sprachverwendung" des GER. Der/die Studierende kann sich in den ihm/ihr vertrauten Situationen, denen man in Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen.

Er/sie kann wesentliche Inhalte in einfachen authentischen Texten aus alltäglichen Bereichen verstehen und sich an Gesprächen zu vertrauten Themen beteiligen. Er/sie ist in der Lage, persönliche Erfahrungen und Eindrücke schriftlich in eine längere Stellungnahme zum Ausdruck zu bringen.

Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der B 1-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch B1.1 (Seminar, 2 SWS)

Bartanus J, Roubille A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ05061: French B1.2 | Französisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1.1
- Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch erarbeitet, die es den Studierenden ermöglichen, (sich) in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Film, Musik, Sport u.a. selbständig und sicher in der Zielsprache zu operieren/bewegen/verständigen, wenn Standardsprache verwendet wird. Die Studierenden vertiefen Ihre Kenntnisse anhand verschiedenster aktueller Themen des französischen Lebens. Sie erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der französischen Sprache.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER. Der/Die Studierende erlangt Kenntnisse in der Fremdsprache Französisch auf standardsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte.

Nach Abschluss des Moduls kann der/die Studierende sich in den meisten Situationen, denen man in Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen. Er/Sie kann wesentliche Inhalte in einfachen, authentischen Sachtexten, Fernseh- oder Radiosendungen und literarischen Texten verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen von allgemeinem Interesse beteiligen. Er kann einfache formelle und längere persönliche Briefe und Texte verfassen, strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch B1.2 (Seminar, 2 SWS)

Comte-Maillard C, Cuneo M, Gaulon A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0507: French B2 - French for the profession | Französisch B2 - Le français pour la profession

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kumulative Tests: 50%

Präsentation: 30%

Hausarbeit: 20%

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehören eine kurze Präsentation auf Französisch zu einem kulturbezogenen, gesellschaftlichen oder wissenschaftlichen Thema im Zusammenhang mit der Arbeitswelt. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können. Die Hausarbeit (Form, Umfang und Thema) wird am Anfang des Semesters genau mit den Studierenden abgesprochen.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1
- Einstufungstest mit Ergebnis B2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv und mit einem gewissen Grad an Flüssigkeit über Themen

von allgemeinen oder beruflichen Interesse mit einem Muttersprachler zu diskutieren und eine Argumentation gut verständlich ausführen.

Das Modul gibt einerseits eine Einleitung in das Französisch der Arbeitswelt und bereitet andererseits die Studierenden auf einen Studienaufenthalt oder ein Praktikum im frankophonen Sprachraum. Besonderes Augenmerk wird auf die Entwicklung kommunikativer Fähigkeiten und interkultureller Kompetenz gelegt. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft. In diesem Modul bildet das Thema „Bewerben in Frankreich“ eine zentrale Rolle.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „B2- Selbständige Sprachverwendung“ des GER. Der/die Studierende ist in der Lage, durch situationsrelevantes interkulturelles Wissen über Universitäten und Berufswelt im französischen Sprachraum angemessen zu kommunizieren und einen Studien-, Projekt- oder Forschungsaufenthalt, ein Praktikum oder Weiterbildungsmaßnahmen im französischen Sprachraum zu absolvieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

wird in der Lehrveranstaltung bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch B2 Le français pour la profession (Seminar, 2 SWS)

Gaulon A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0511: French B2/C1 - France currently | Französisch B2/C1 - La France actuelle

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kumulative Tests: 80%

Präsentation: 20%

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört auch eine kurze Präsentation auf Französisch zu einem kulturbezogenen, gesellschaftlichen oder wissenschaftlichen Thema im Zusammenhang mit Frankreich oder dem französischen Sprachraum. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1
- Einstufungstest mit Ergebnis B2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv und mit einem gewissen Grad an Flüssigkeit über Themen von allgemeinem Interesse oder von vertrautem Fachgebiet mit einem Muttersprachler zu

diskutieren und eine Argumentation gut verständlich ausführen. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft.

Dieses Modul bietet einen Querschnitt durch die gegenwärtige Kultur Frankreichs, indem gesellschaftliche Tendenzen anhand von Zeitungsartikeln, Radio- und Fernsehausschnitten, diskutiert werden. Auf individuelle Themenvorschläge wird gerne eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „B2-C1“ des GER, je nach Wissenstand der Studierenden. Nach Abschluss des Moduls kann der/die Studierende auf sehr hohem Niveau über aktuellen Themen detaillierte, zusammenhängende Texte berichten, Informationen zusammenfassen, seine/ihre Erfahrungen und Eindrücke wiedergeben, seinen/ihren Standpunkt vertreten. Er/sie kann Inhalte von Lektüren, Gespräche oder Sendungen wiedergeben und seine/ihre Meinung vertreten. Er/sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen. Er/sie ist in der Lage, zu vielen Themen aus seinen/ihren Interessen- oder Fachgebieten klar und strukturiert in mündlicher und schriftlicher Form zu kommunizieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

internes Material

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch B2/C1 La France actuelle (Seminar, 2 SWS)

Gommeringer-Depraetere S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0512: French B1/B2 - Conversation Course: French Society | Französisch B1/B2 - Cours de conversation: La société française

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kumulative Tests: 80%

Präsentation: 20%

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört auch eine kurze Präsentation auf Französisch zu einem kulturbezogenen, gesellschaftlichen oder wissenschaftlichen Thema im Zusammenhang mit Frankreich. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1
- Einstufungstest mit Ergebnis B1

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch erarbeitet, die es den Studierenden ermöglichen, (sich) in verschiedenen Situationen, z.B. in Studium, Arbeit und Freizeit, und zu Themen von allgemeinem Interesse selbständig und sicher in der Zielsprache zu operieren/bewegen/verständigen. Dabei werden interkulturelle, landeskundliche und

studienbezogene Aspekte berücksichtigt. Je nach Bedarf werden Schwerpunkte der französischen Grammatik wiederholt und vertieft.

Presseartikel, Nachrichten aus dem Internet, etc. bieten einen Querschnitt durch die gegenwärtige französische Gesellschaft an und bilden somit die Grundlage für die mündliche Kommunikation. Die aktive Mitarbeit der Studierenden z. B. mittels Kurzvorträgen, Diskussionen wird erwartet und gefördert. Ziel dieses Moduls ist außerdem die Studierenden auf einen Studienaufenthalt im frankophonen Sprachraum (Kanada, ERASMUS, etc.) vorzubereiten.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „B1 - B2“ des GER. Nach der Teilnahme an der Modulveranstaltung können die Studierenden, je nach Wissenstand, über verschiedene Themen detaillierte, zusammenhängende Texte berichten, Informationen zusammenfassen, ihre Erfahrungen und Eindrücke wiedergeben, ihren Standpunkt vertreten. Sie können Inhalte von Lektüren, Gesprächen oder Sendungen wiedergeben und ihre Meinung vertreten. Nach Abschluss des Moduls sind sie in der Lage, zu vielen Themen aus ihren Interessen- oder Fachgebieten klar und strukturiert in mündlicher und schriftlicher Form zu kommunizieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

wird in der Lehrveranstaltung bekannt gegeben.

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0514: French B2 - Communication Course | Französisch B2 - Cours de conversation

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 90	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kumulative Tests: 80%

Präsentation: 20%

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört auch eine kurze Präsentation auf Französisch zu einem kulturbezogenen, gesellschaftlichen oder wissenschaftlichen Thema im Zusammenhang mit Frankreich oder dem französischen Sprachraum. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1
- Einstufungstest mit Ergebnis B2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv und mit einem gewissen Grad an Flüssigkeit über

Themen von allgemeinem Interesse oder von vertrautem Fachgebiet mit einem Muttersprachler zu diskutieren und eine Argumentation gut verständlich ausführen.

Ein besonderes Merkmal wird in diesem Modul auf die Entwicklung von Lesestrategien von allgemeinen und fachbezogenen Texten, auf Wortschatzarbeit und die Entwicklung von Hörstrategien gelegt. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „B2- Selbständige Sprachverwendung“ des GER. Der/die Studierende kann den wesentlichen Inhalt von Artikeln und Berichten sowie Texte aus dem eigenen Fach- und Interessengebiet selbständig verstehen.

Er/sie kann längere Redebeiträge und Vorträge zu aktuellen Themen folgen, sofern sie klar vorgetragen werden.

Er/sie ist in der Lage Texte zu aktuellen Themen zu schreiben und dabei auch zu einem gewissen Grad komplexe Satzstrukturen zu benutzen.

Er/sie kann zu vielen Themen aus seinen/ihren Interessen- oder Fachgebieten klar in mündlicher Form kommunizieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch B2 - Cours de conversation (Seminar, 2 SWS)

Roubille A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0515: French C1 - Upper Conversation Course | Französisch C1 - Cours de conversation supérieure

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kumulative Tests: 60%

Präsentation: 20%

Hausarbeit: 20%

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört auch eine kurze Präsentation auf Französisch zu einem kulturbezogenen, gesellschaftlichen oder wissenschaftlichen Thema im Zusammenhang mit Frankreich oder dem französischen Sprachraum. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können. Die Hausarbeit (Form, Umfang und Thema) wird am Anfang des Semesters genau mit den Studierenden abgesprochen.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B2
- Einstufungstest mit Ergebnis C1

**Content:**

In diesem Modul werden Kenntnisse in der Fremdsprache Französisch erarbeitet, die es den Studierenden ermöglichen, mündlich wie schriftlich in Themenbereichen aus Alltag, Beruf und Kultur situationsadäquat zu handeln (agieren und reagieren). Anhand von Literatur, aktuellen Presseartikeln, Radio- und Fernsehausschnitten werden soziokulturelle Zusammenhänge aktueller Themen reflektiert. Auf individuelle Themenvorschläge wird gerne eingegangen. Es werden Kenntnisse in den benannten Bereichen vertieft und Aspekte der Grammatik wiederholt und ergänzt.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau "C1-Kompetente Sprachverwendung" des GER. Nach der Teilnahme an der Lehrveranstaltung kann der/die Studierende auf sehr hohem Niveau in unterschiedlichsten Situationen mündlich und schriftlich kommunizieren. Er/Sie ist in der Lage, die Fremdsprache mündlich und schriftlich sowohl im Auslandsstudium als auch im Beruf wirksam und flexibel zu gebrauchen. Er/Sie kann ein breites Spektrum anspruchsvoller, längerer Texte verstehen und auch implizite Bedeutungen erfassen. Er/Sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen. Er/Sie kann sich klar, strukturiert und ausführlich zu komplexen Sachverhalten äußern und dabei verschiedene Mittel zur Textverknüpfung angemessen verwenden.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Presseartikel, multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

wird in der Lehrveranstaltung bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0517: French B2 - Preparation Course for University Exchange | Französisch B2 - Cours de préparation à un échange universitaire

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1
- Einstufungstest mit Ergebnis B2

#### Content:

Das Modul bereitet auf ein ausländisches Studium oder Praktikum in einem frankophonen Land vor, indem es verschiedene Aspekte der Kultur und der Gesellschaft aufgreift. und somit die interkulturelle Kompetenz und Performanz erhöht werden.

Im Vordergrund stehen folgende Komponenten:

- Sprachliche und praktische Vorbereitung auf einen Studienaufenthalt an einer frankophonen Universität
- Vermittlung von Umgangsstrategien mit fremden Strukturen und Formen (Hochschullandschaft, Lehr- und Lernformen, Kommunikationsformen)
- Schärfung des Bewusstseins für interkulturelle Aspekte
- Bewerbung

- Entwicklung von Hörstrategien
- Einführung in die Praxis schriftlicher akademischer Arbeit

Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „B2- Selbständige Sprachverwendung“ des GER. Der/die Studierende ist in der Lage, durch situationsrelevantes interkulturelles Wissen über Universitäten und Berufswelt im französischen Sprachraum angemessen zu kommunizieren und einen Studien-, Projekt- oder Forschungsaufenthalt, ein Praktikum oder Weiterbildungsmaßnahmen im französischen Sprachraum zu absolvieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

**Reading List:**

wird in der Lehrveranstaltung bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch B2 - Cours de préparation à un échange universitaire (Seminar, 2 SWS)

Paul E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0518: French B2 Technical French | Français B2 Technisches Französisch

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

- kumulative Tests (75%)
- Präsentation (25%)

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört auch eine kurze Präsentation auf Französisch zu einem studienrelevanten fachbezogenen Thema. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B1
- Einstufungstest mit Ergebnis B2

#### Content:

Das Modul führt einerseits in die französische Fachsprache im technischen Bereich und andererseits bereitet auf ein ausländisches Studium in einem frankophonen Land vor, indem es verschiedene Aspekte der Kultur und der Gesellschaft aufgreift. und somit die interkulturelle Kompetenz und Performanz erhöht werden.

Im Vordergrund stehen folgende Komponenten:

- Vermittlung einer Fachterminologie zu einzelnen studienrelevanten fachbezogenen Schwerpunkten
  - Übung und Anwendung des Gelernten in relevanten interaktiven Kontexten
  - Schärfung des Bewusstseins für interkulturelle Aspekte
  - Erweiterung der Handlungsfähigkeit in der Fremdsprache auf komplexe Sprechsituationen mit fachsprachlichem Inhalt
  - Entwicklung von Lesekompetenz von wissenschafts- u. fachbezogenen Texten
  - Entwicklung von Hörstrategien
  - Einführung in die Praxis schriftlich akademischer Arbeit
- Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „B2- Selbständige Sprachverwendung“ des GER. Der/ die Studierende kann den wesentlichen Inhalt von Artikeln und Berichten sowie Texte aus dem eigenen Fach- und Interessengebiet mühelos verstehen. Er/sie kann längere Redebeiträge und Vorträge sowohl zu aktuellen Themen als auch innerhalb seines/ihres Fachgebietes folgen, sofern sie klar vorgetragen werden. Er/sie ist in der Lage Texte im Kontext seines /ihres Studienfaches zu schreiben und dabei auch zu einem gewissen Grad komplexe Satzstrukturen und fachspezifisches Vokabular zu benutzen. Er/sie kann zu vielen Themen aus seinen/ihren Interessen- oder Fachgebieten klar und strukturiert in mündlicher Form kommunizieren. Er/Sie ist in der Lage, die Fremdsprache sowohl im Auslandsstudium als auch im Beruf wirksam und flexibel zu gebrauchen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

internes Material

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0522: French A1.1 + A1.2 | Französisch A1.1 + A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Französisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz noch geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Der/Die Studierende lernt z.B., einfache Fragen zu Person und Familie zu stellen und zu beantworten sowie über Themen wie Studium, Beruf, Freizeit, in einfachen Sätzen im Präsens und Perfekt zu berichten. Es werden u.a. folgende grammatische Themen behandelt: Präsens, Passé Composé, Futur proche, Artikel, Possessivbegleiter, direkte und indirekte Objektpronomen, Präpositionen, Fragesätze. Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse in alltäglichen Grundsituationen ermöglichen.

Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch effektiver zu gestalten und die eigene Lernfähigkeit zu verbessern.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau „A1 – Elementare Sprachverwendung“ des GER. Der/die Studierende erlangt nach der Teilnahme an der Modulveranstaltung Grundkenntnisse in der Fremdsprache Französisch mit allgemeiner Orientierung unter Berücksichtigung interkultureller und landeskundlicher Aspekte. Er/sie ist in der Lage, einfache Fragen über vertraute Themen zu stellen und zu beantworten. Er/sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann einfache schriftliche Mitteilungen zur Person machen. Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der A 1-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

Lehrbuch (wird im Kurs bekanntgegeben)

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch A1.1 + A1.2 intensiv (Seminar, 4 SWS)

Bartanus J, Delavigne C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0523: French C1 - French in Business | Französisch C1 - Le français des affaires

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

- kumulative Tests (70%)
- Präsentation (30%)

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört eine kurze Präsentation auf Französisch zu einem politischen oder wirtschaftlichen Thema im Zusammenhang mit Frankreich oder dem französischen Sprachraum. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

- gesicherte Kenntnisse der Stufe B2
- Einstufungstest mit Ergebnis C1
- Vorkenntnisse in BWL und/oder VWL sind keineswegs erforderlich.

#### Content:

In dieser LV werden Kenntnisse in der Fremdsprache Französisch aufgebaut und vertieft, die es den Studierenden ermöglichen, spontan und fließend über Themen von politischen, wirtschaftlichen oder gesellschaftlichen Interesse mit einem Muttersprachler zu diskutieren und

eine Meinung strukturiert und überzeugend zu vertreten, ohne öfter deutlich erkennbar nach Worten suchen zu müssen.

Die LV gibt einerseits eine Einleitung in das Französisch des Wirtschaftslebens und bereitet andererseits die Studierenden auf einen (Studien-)Aufenthalt im frankophonen Sprachraum vor. Besonderes Augenmerk wird auf die Entwicklung kommunikativer Fähigkeiten und interkultureller Kompetenz gelegt. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden bei Bedarf Schwerpunkte der Grammatik wiederholt und vertieft.

In dieser LV bilden ausgewählte volkswirtschaftliche Themen (Konsum, Rolle des Staates, diverse betriebliche Funktionen, Globalisierung, Nachhaltigkeit u. a.) eine zentrale Rolle.

### **Intended Learning Outcomes:**

Die LV orientiert sich am Niveau C 1 Fachkundige Sprachkenntnisse des GER. Der/die Studierende ist in der Lage, durch relevantes interkulturelles Wissen über Berufs- und Wirtschaftswelt im französischen Sprachraum angemessen zu kommunizieren und einen Studienaufenthalt, ein Praktikum oder Weiterbildungsmaßnahmen im französischen Sprachraum anzustreben.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Französisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

Moderierte Diskussionen.

### **Media:**

Presseartikel, multimedial gestütztes Lehr- und Lernmaterial (Tafel, Folie, Übungsblätter, Bild, Film, etc.), auch online.

### **Reading List:**

wird in der Lehrveranstaltung bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0526: French B1.1 + B1.2 | Französisch B1.1 + B1.2

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 6	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0527: French A2.1 + A2.2 | Französisch A2.1 + A2.2

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 6	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch A2.1 + A2.2 (Seminar, 4 SWS)

Perconte-Duplain S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0528: French C1 - oral and written expression | Französisch C1 - s'exprimer à l'écrit comme à l'oral

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

Französisch C1 - s'exprimer à l'écrit comme à l'oral (Seminar, 2 SWS)

Perconte-Duplain S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-06: Italien | Italienisch****Module Description****SZ0601: Italian A1.1 + A1.2 - Intensive | Italienisch A1.1 + A1.2 - Intensiv**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Situationen zurechtzufinden, wie z.B. sich und andere vorstellen, Auskünfte über sich selbst geben und Auskünfte über den Gesprächspartner erfragen, Weginformationen erfragen und geben, über vergangene Aktivitäten und Ereignisse kurz berichten etc.

Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden werden in die italienische Phonetik eingeführt; sie erlernen grundlegendes Vokabular zu Themen wie Studium/Beruf, Freizeit, Tagesablauf. Es werden u. a. folgende grammatische Kapitel gelernt und geübt: Bestimmte und unbestimmte Artikel, Nomen- und Adjektivdeklinaton, Präpositionen, Präsens regelmäßiger und unregelmäßiger Verben, Passato prossimo, direkte und indirekte Objektpronomen.

Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 – Elementare Sprachverwendung des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Die Studierenden erlangen Grundkenntnisse in der Fremdsprache Italienisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung interkultureller und landeskundlicher Aspekte.

Nach Abschluss des Moduls sind die Studierenden in der Lage, sehr einfache Ausdrücke und Sätze zu verwenden, die auf die Befriedigung konkreter Bedürfnisse des alltäglichen Bedarfs zielen. Sie können

persönliche Auskünfte über sich geben sowie persönliche Auskünfte über den Gesprächspartner erfragen, in einfacher Weise Tagesabläufe beschreiben und schriftliche Mitteilungen zur Person machen, Vorlieben nennen, Verabredungen treffen. Zudem können sie in einfach strukturierten Sätzen von vergangenen Ereignissen und Aktivitäten erzählen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien. Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch A1.1+A1.2 - Intensiv (Seminar, 4 SWS)

Aquaro M, Finzi A, Mainardi D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ0602: Italian A1.1 | Italienisch A1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden werden in die italienische Phonetik eingeführt; sie lernen und üben den Grundwortschatz; sie lernen und üben einfache Fragen zur Person zu stellen und zu beantworten, Interessen auszudrücken, Wünsche zu nennen, über die eigenen Gewohnheiten kurz zu berichten und Formulare auszufüllen. Es werden dabei grammatische Themen wie z.B. Präsensformen regelmäßiger und einiger unregelmäßiger Verben, Personalpronomen, bestimmte, unbestimmte Artikel, Fragesätze, Angleichung der Adjektive behandelt.

Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 – Elementare Sprachverwendung des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls sind die Studierenden in der Lage, sich auf sehr einfache Art in der Fremdsprache Italienisch zu verständigen, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Sie können einfache Ausdrücke und Sätze verwenden, die auf die Befriedigung konkreter Bedürfnisse des alltäglichen Bedarfs zielen wie z. B. sich und andere vorstellen, Auskünfte über sich selbst geben und Auskünfte über die anderen erfragen, Wünsche äußern, über Tagesablauf und Vorlieben sprechen bzw. schreiben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien. Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch A1.1 (Seminar, 2 SWS)

Aquaro M, Bertolini S, Cappellari C, Mainardi D, Nalin S, Perfetti Braun L, Taddia E, Togni M, Villadei M, Zangrilli D

Blockkurs Italienisch A1.1 (Seminar, 2 SWS)

Nalin S, Schmidt C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0604: Italian C1 - Italian Communication: Language and Conversation | Italienisch C1 - Comunicare in italiano: lingua e conversazione

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Content:

Das Modul orientiert sich am Niveau C1, „Kompetente Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, aktiv und situationsadäquat über aktuelle gesellschaftliche Themen Italiens oder von einem vertrauten Fachgebiet mit einem Muttersprachler zu diskutieren. Er/sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen.

Er/sie kann klar und gut strukturierte Texte wie Briefe, Aufsätze oder Berichte über komplexe Sachverhalte verfassen.

Er/sie kann längeren Redebeiträgen folgen, auch wenn diese nicht klar strukturiert sind und wenn Zusammenhänge nicht explizit ausgedrückt sind. Ohne allzu große Mühe kann er/sie Fernsehsendungen und Spielfilme verstehen.

Darüber hinaus ist er/sie in der Lage, lange, komplexe Sachtexte und literarische Texte zu verstehen und Stilunterschiede wahrzunehmen. Wesentliche Inhalte von Fachartikeln und längeren technischen Anleitungen kann er/sie aufnehmen, auch wenn sie nicht in seinem/ihrem Fachgebiet liegen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1, „Kompetente Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, aktiv und situationsadäquat über aktuelle gesellschaftliche Themen Italiens oder von einem vertrauten Fachgebiet mit einem Muttersprachler zu diskutieren. Er/sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen.

Er/sie kann klar und gut strukturierte Texte wie Briefe, Aufsätze oder Berichte über komplexe Sachverhalte verfassen.

Er/sie kann längeren Redebeiträgen folgen, auch wenn diese nicht klar strukturiert sind und wenn Zusammenhänge nicht explizit ausgedrückt sind. Ohne allzu große Mühe kann er/sie Fernsehsendungen und Spielfilme verstehen.

Darüber hinaus ist er/sie in der Lage, lange, komplexe Sachtexte und literarische Texte zu verstehen und Stilunterschiede wahrzunehmen. Wesentliche Inhalte von Fachartikeln und längeren technischen Anleitungen kann er/sie aufnehmen, auch wenn sie nicht in seinem/ihrem Fachgebiet liegen.

### **Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

### **Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Wird im Unterricht bekannt gegeben

### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0605: Italian A1.2 | Italienisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls A1.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis A1.2

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch unter Berücksichtigung landeskundlicher und interkultureller Aspekte weitervermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden.

Der/Die Studierende lernt bzw. erweitert grundlegendes Vokabular zu vertrauten Themen wie Alltag und Freizeit, Studium und Studentenleben, Stadt und öffentlicher Verkehr.

Er/sie lernt u.a. über sich selbst und über die eigenen Gewohnheiten im Alltag zu berichten; auf der Straße um Auskunft zu bitten und darauf zu reagieren; einen Weg zu beschreiben; Verabredungen zu treffen; von vergangenen Erlebnissen und Erfahrungen zu erzählen. Es werden u.a. folgende grammatische Themen behandelt: Direkte und indirekte Objektpronomen, Präpositionen mit und ohne Artikel, Passato prossimo. Die italienische Phonetik wird weitergelernt und geübt.

Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 – Elementare Sprachverwendung - des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, sich auf sehr einfache Art in der Fremdsprache Italienisch zu verständigen, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann den Grundwortschatz zu Themen wie Alltag und Freizeit, Universität, Stadt und öffentlicher Verkehr verstehen und in sehr einfach strukturierten Sätzen verwenden. Außerdem kann er/sie über sich selbst, die eigenen Gewohnheiten und Vorlieben kurz berichten; auf der Straße um Auskunft bitten und darauf reagieren; Verabredungen treffen; von Erfahrungen in der Vergangenheit in sehr elementarer Form erzählen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien. Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch A1.2 (Seminar, 2 SWS)

Bertolini S, Mainardi D, Nalin S, Togni M, Villadei M

Blockkurs Italienisch A1.2 (Seminar, 2 SWS)

Taddia E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0606: Italian A2.1 | Italienisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls A1.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis A2.1.

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch aufgebaut, die den Studierenden –trotz noch geringer Sprachkenntnisse- erlauben, sich in Alltagssituationen wie z. B. beim Einkaufen oder auf Reisen, in der Konversation und dem Austausch unter Kollegen, Freunden und Nachbarn zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Der/die Studierende lernt u.a. über vergangene Ereignisse mündlich und schriftlich zu berichten; Ratschläge und Anweisungen zu geben; kurze formelle oder informelle E-Mails zu schreiben, sich telefonisch über etwas zu erkundigen. Wortschatz und Grammatik werden weiter aufgebaut. U.a. werden grammatische Themen, wie z.B. Passato prossimo mit unregelmäßigen Partizipien; direkte Objektpronomen und „ne“ in Verbindung mit dem Passato prossimo; Bildung und Gebrauch des Adverbs; Imperativ und Stellung der Pronomen. Ferner werden Möglichkeiten und Strategien aufgezeigt, die den Lernprozess in der Fremdsprache Italienisch effektiver gestalten sollen.



**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 – „Elementare Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, beim Hören bzw. Lesen die wichtigsten Informationen zu bekannten Themen und in routinemäßigen Situationen zu verstehen. Mündlich und schriftlich kann er/sie u.a. Ereignisse und Erlebnisse in der Vergangenheitsform in sehr einfacher Form schildern; er kann kurze formelle und informelle E-Mails verfassen sowie Informationen am Telefon erfragen; er/sie kann Ratschläge und Anweisungen geben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Italienisch A2.1 (Seminar, 2 SWS)

Aquaro M

Italienisch A2.1 (Seminar, 2 SWS)

Bonomini F, Mainardi D, Noch nicht bekannt N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0607: Italian A2.1 + A2.2 - Intensive | Italienisch A2.1 + A2.2 - Intensiv

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls A1.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis A2.1.

#### Content:

Abschlussmodul des A-Niveaus des Gemeinsamen Europäischen Referenzrahmens für Sprachen (Grundstufe)

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch aufgebaut, die es den Studierenden – trotz noch geringer Sprachkenntnisse - ermöglichen, sich in Alltagssituationen wie z.B. beim Einkaufen oder bei der Wohnungssuche zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Der/die Studierende lernt u.a. von Geschehnissen, Situationen und Gewohnheiten in der Vergangenheitsform zu erzählen; Personen physisch und charakterlich zu beschreiben; über die Familie zu sprechen; eine höfliche Aufforderung, einen Wunsch, eine Vermutung auszudrücken; Ratschläge bzw. Anweisungen zu geben; eine Entscheidung zu begründen und die eigene Meinung zu äußern.

Grammatische Themen wie z.B. Passato prossimo, Imperfetto, Adverbien, Imperativ, Konditional Präsens, Relativpronomen, Adverbien werden behandelt. Grundlegendes Wortschatz zu vertrauten Themen wie z.B. Einkaufen, Familie, Freunde, Wohnen, Kleidung wird gelernt und geübt.

Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz geringer Sprachkenntnisse erlauben. Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 „Elementare Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, beim Hören bzw. Lesen die wichtigsten Informationen zu bekannten und allgemeinen Themen zu verstehen. Mündlich und schriftlich kann er/sie u.a. auf elementare Weise von Geschehnissen, Situationen und Gewohnheiten in der Vergangenheitsform erzählen; Personen beschreiben (Charakter- und Körpereigenschaften); höfliche Aufforderungen, Wünsche, Vermutungen ausdrücken; Ratschläge bzw. Anweisungen geben; Entscheidungen kurz begründen; die eigene Meinung äußern. Er/sie kann grundlegendes Vokabular zu Themen wie Familie und Verwandtschaft, Kleidung, Wohnen, Ernährung verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch A2.1+A2.2 - Intensiv (Seminar, 4 SWS)

Mainardi D, Soares da Silva D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0608: Italian A2.2 | Italienisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls A2.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis A2.2.

#### Content:

Abschlussmodul des A-Niveaus des Gemeinsamen Europäischen Referenzrahmens für Sprachen (Grundstufe)

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Der/die Studierende lernt und übt u.a. eine höfliche Aufforderung, einen Wunsch, eine Vermutung auszudrücken; eine Entscheidung kurz zu begründen; die eigene Meinung in elementarer Form zu äußern. Gewohnheiten und Zustände in der Vergangenheit zu schildern. Grammatische Themen wie u.a. Konditional Präsens; Imperfetto; Relativpronomen werden gelernt und geübt. Grundlegendes Vokabular zu vertrauten Themen wie z. B. Familie, Freunde, Wohnen, Internet und soziale Netzwerke wird gelernt, geübt und gefestigt.

Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz geringer Sprachkenntnisse erlauben. Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 „Elementare Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls kann der/die Studierende im Gespräch elementare Sätze und Ausdrücke zu einem erweiterten Spektrum an vertrauten Themen wie z.B. Wohnen, Familien, Freunden verstehen und gebrauchen. Er/sie kann längere Texte zu bekannten und allgemeinen Themen verstehen, in denen gängige bzw. einfache, alltagsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Er/sie ist zudem in der Lage, kurze, informative Texte schriftlich zu verfassen sowie höfliche Aufforderungen, Wünsche, Vermutungen auszudrücken; Entscheidungen kurz zu begründen; die eigene Meinung in einfacher Form zu äußern.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch A2.2 (Seminar, 2 SWS)

Soares da Silva D, Togni M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ06081: Italian A2.2/B1.1 for Medicines | Italienisch für Medizinstudierende A2.2/B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Fundierte Kenntnisse des Moduls A2.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis A2.2

#### Content:

Das Modul besteht aus einem Seminar, das sich an alle Medizinstudierende richtet, insbesondere an diejenigen, die an einem Austauschprogramm (Erasmus, Praktikum, Famulatur etc.) teilnehmen wollen.

Es werden Grundkenntnisse in der Fremdsprache Italienisch aufgebaut und vertieft, die es den Studierenden ermöglichen, sich in alltäglichen medizinischen Situationen mit italophonen Patienten, Kollegen und Krankenhauspersonal zu verständigen.

Folgende Themen werden u.a. behandelt:

- Einführung in die italienische Fachterminologie der Medizin
- Grundlagen der menschlichen Anatomie
- Anamneseerhebung anhand ausgewählter Fallbeispiele
- Führen von Arzt-Patienten Gesprächen

- Diagnosestellung und Therapieverschreibung

Anhand von Reportagen, Filmausschnitten, Auszügen aus der Fachliteratur wird der/die Studierende einen Einblick in das Gesundheits- und Medizinwesen im italienischen Sprachgebiet gewinnen.

Zur Festigung der mündlichen und schriftlichen Fertigkeiten werden einige Strukturen der Allgemeinsprache wiederholt bzw. ergänzt und der Wortschatz erweitert.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2, „Elementare Sprachverwendung“, und am Niveau B1, „Selbständige Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls kann der/die Studierende sich in den meisten Grundsituationen der Medizinwelt, denen man in Studium und Beruf im Sprachgebiet begegnet, sicher verständigen, wenn Standardsprache verwendet wird. Er/Sie kann wesentliche Inhalte in kurzen, authentischen Fachtexten aus dem Bereich der Medizin aufnehmen und in einfacher Form mündlich und schriftlich wiedergeben; er/sie kann das Grundvokabular der medizinischen Fachsprache adäquat verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte..

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Wird im Unterricht bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0609: Italian B1.1 | Italienisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis B1.1

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Aktualität, Gesellschaft, Sport sicherer in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden festigen und vertiefen die bisher erlernten Sprachstrukturen des A-Niveaus und lernen/üben u.a. längere Berichte über vergangene Erfahrungen in mündlicher und schriftlicher Form zu verfassen; längere authentische Texte zusammenzufassen; Meinungen präziser zu äußern und zu widersprechen; für und gegen etwas zu argumentieren. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz behandelt, gefestigt und vertieft. Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.



**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 „Selbständige Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls sind die Studierenden in der Lage, sich in den meisten Situationen, denen man in Studium oder in der Freizeit im Sprachgebiet begegnet, sicherer zu verständigen und zu alltäglichen Themen eine persönliche Meinung zu äußern und zu widersprechen bzw. für und gegen etwas zu argumentieren.

Die Studierenden können wesentliche Inhalte in einfachen, authentischen Texten aus alltäglichen Bereichen verstehen und in einfacher Form wiedergeben und sich spontan an Gesprächen zu vertrauten Themen beteiligen. Sie können längere Texte zu Alltagsthemen oder zu eigenen Erfahrungen verfassen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch B1.1 (Seminar, 2 SWS)

Finzi A, Talpo F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ06091: Italian B1.2 | Italienisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls B1.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Aktualität, Gesellschaft, Film, Musik selbständiger und sicherer in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird. Dabei werden landeskundliche und interkulturelle Aspekte berücksichtigt. Die Studierenden lernen/üben u.a. Personen, Orte, Situationen präziser in mündlicher und schriftlicher Form zu beschreiben und zu vergleichen; Zweifel, Vorbehalt, Gegenmeinung zu äußern; Pläne, Ziele sowie persönliche Ansichten zu formulieren. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz behandelt, gefestigt und vertieft. Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1, „Selbständige Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls können die Studierenden die meisten Situationen bewältigen, denen man im Sprachgebiet begegnet. Sie können ohne Vorbereitung an Gesprächen über Themen teilnehmen, die ihnen vertraut sind, die sie persönlich interessieren oder die sich auf Themen des Alltags wie Familie, Hobbys, Studium/Beruf, Film, Musik, aktuelle Ereignisse beziehen. Sie sind in der Lage, mündlich wie schriftlich über Erfahrungen und Ereignisse einfach und zusammenhängend zu berichten; Personen, Orte und Situationen genau zu beschreiben und zu vergleichen; Eindrücke, Gefühle sowie Ziele und Wünsche zu formulieren; den eigenen Standpunkt zu vertreten. Beim Hören von Beiträgen über aktuelle Ereignisse und über Themen aus eigenem Studium- oder Interessensgebiet können sie die Hauptinformationen verstehen. Beim Lesen können sie wesentliche Inhalte in längeren und authentischen Sachtexten wie Zeitungsartikeln oder Auszügen aus der zeitgenössischen italienischen Literatur aufnehmen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch B1.2 (Seminar, 2 SWS)

Aquaro M, Finzi A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **SZ0616: Italian B2/ C1 - Communication in Italy: language and conversation | Italienisch B2/ C1 - Comunicare in italiano: lingua e conversazione**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Gesicherte Kenntnisse des Moduls B2.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis B2.2.

#### **Content:**

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch aufgebaut und vertieft, die es den Studierenden ermöglichen, auf schriftsprachlichem Niveau aktiv und weitgehend flüssig über Themen von allgemeinem Interesse oder in vertrauten Fachgebieten mit einem Muttersprachler zu kommunizieren und eine Argumentation klar und gut strukturiert auszuführen. Dabei werden landeskundliche, interkulturelle und studienbezogene Aspekte berücksichtigt. Neben der alltagsbezogenen Kommunikation werden auch Themenbereiche aus Kultur, Aktualität und Beruf anhand von Literatur, Presseartikeln, Filmausschnitten reflektiert. Ein besonderes Augenmerk wird im Modul auf die mündliche Interaktion gelegt, indem Wortschatz und Idiomatik in typischen Gesprächssituationen gelernt und geübt werden. Interaktionsstrategien (z.B. Sprecherwechsel, Rückfragen stellen, auf Einwände reagieren, um Klärung bitten) werden

aufgezeigt und durch Rollenspielen, Impulsübungen, themenbezogene Diskussionen gefördert. Der/die Studierende trainiert und verbessert den mündlichen Ausdruck sowie die Fertigkeit, sprachlich spontan und situationsadäquat zu reagieren.

Ferner hat der/die Studierende die Möglichkeit, durch eine kurze Präsentation auf Italienisch zu einem vorgegebenen Thema, seine/ihre persönlichen Ausdrucksmöglichkeiten zusätzlich zu erweitern, indem differenzierter Wortschatz und Sprachbausteine erarbeitet werden, die typisch für Präsentationen sind.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2/C1, „Selbständige und Kompetente Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, aktiv und situationsadäquat über aktuelle gesellschaftliche Themen Italiens oder von einem vertrauten Fachgebiet mit einem Muttersprachler zu diskutieren. Er/sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen.

Er/sie kann über eine Vielzahl von Themen klare und detaillierte Texte schreiben und in einem Aufsatz oder Bericht Informationen wiedergeben oder Argumente und Gegenargumente für oder gegen einen bestimmten Standpunkt darlegen.

Darüber hinaus ist er/sie in der Lage, längeren Redebeiträgen und Vorträgen zu folgen sowie komplexe Sachtexte, Artikel, Berichte und zeitgenössische literarische Prosatexte zu lesen und verstehen.

### **Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte..

### **Media:**

multimedial gestütztes Lehr- und Lernmaterial.

### **Reading List:**

Wird im Unterricht bekannt gegeben

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0618: Italian B2.1 | Italienisch B2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis B2.1

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv, selbständig und mit einem gewissen Grad an Flüssigkeit über Themen von allgemeinem Interesse oder von vertrautem Fachgebiet mit einem Muttersprachler zu diskutieren und eine Argumentation gut verständlich auszuführen. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Die Studierenden erarbeiten umfangreichen und differenzierten Wortschatz zu einem breiten Spektrum an aktuellen und soziokulturellen Themen. Sprachliche Handlungsformen wie z.B. Beschreiben, Vergleichen, Gegenüberstellen, Stellungnehmen, Kommentieren, Kritisieren werden mündlich und schriftlich intensiv trainiert.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2 – selbstständige Sprachverwendung des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls können die Studierenden den wesentlichen Inhalt von authentischen Artikeln und Texten sowie von längeren Redebeiträgen zu allgemeinen soziokulturellen Themen oder aus ihrem Interessens- und Fachgebiet aufnehmen und darüber in klarer und strukturierter Form berichten; schriftlich und mündlich sind sie in der Lage, zu verschiedenen Themen aus ihren Interessensgebieten eine klare Darstellung zu geben sowie einen Standpunkt zu einer aktuellen Frage zu erläutern und Vor- und Nachteile verschiedener Möglichkeiten anzugeben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch B2.1 (Seminar, 2 SWS)

Talpo F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0619: Italian B1/B2 - Modern Italian Society | Italienisch B1/B2 - La società italiana oggi

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls B1.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch aufgebaut und vertieft, die es den Studierenden ermöglichen, sich mündlich und schriftlich zu Themenbereichen aus Alltag, Beruf, Politik und Kultur des heutigen Italiens zu äußern. Anhand von authentischen Materialien (Presseartikeln, Filme, Radiosendungen, Beiträge aus dem Internet etc.) werden die Studierenden einen Einblick in die aktuelle italienische Gesellschaft gewinnen und soziokulturelle Aspekte reflektieren. Besonderes Augenmerk wird auf die Entwicklung kommunikativer Fähigkeiten und interkultureller Kompetenz gelegt.

Zur Festigung der mündlichen und schriftlichen Fertigkeiten werden einige Sprachstrukturen wiederholt bzw. ergänzt und der Wortschatz erweitert.

Ferner hat der/die Studierende die Möglichkeit, durch eine kurze Präsentation auf Italienisch zu einem vorgegebenen Thema, seine/ihre persönlichen Ausdrucksmöglichkeiten zusätzlich zu



erweitern, indem differenzierter Wortschatz und Sprachbausteine erarbeitet werden, die typisch für Präsentationen sind.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1/B2, „Selbständige Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Der/Die Studierende erlangt Kenntnisse in der Fremdsprache Italienisch auf standardsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, komplexe mündliche oder schriftliche Texte zu aktuellen und kulturellen Themen aus italienischen Medien zu verstehen, sie zusammenzufassen und darüber zu berichten. Außerdem kann er/sie zu diesen Themen eine persönliche Meinung äußern und widersprechen bzw. für und gegen etwas argumentieren.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

wird im Unterricht bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0620: Italian B2.2 | Italienisch B2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls B2.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis B2.2

#### Content:

Abschlussmodul des B-Niveaus –selbstständige Sprachverwendung des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch erarbeitet, die es den Studierenden ermöglichen, auf schriftsprachlichem Niveau aktiv und weitgehend flüssig über Themen von allgemeinem Interesse oder in vertrauten Fachgebieten mit einem Muttersprachler zu kommunizieren und eine Argumentation strukturiert auszuführen. Die Studierenden erarbeiten umfangreichen und differenzierten Wortschatz zu einem breiten Spektrum an aktuellen Themen. Sie lernen/wiederholen und vertiefen grammatische Kapitel wie z.B. „periodo ipotetico“, „discorso indiretto“ concordanza die tempi“.

#### Intended Learning Outcomes:

Das Modul orientiert sich am Niveau B2 – Selbständige Sprachverwendung des GER

Die Studierenden können den wesentlichen Inhalt von authentischen und komplexeren Texten aus dem eigenen Fach- und Interessengebiet selbständig und fast mühelos verstehen sowie Standpunkte identifizieren. Sie sind in der Lage längeren Redebeiträgen sowohl zu aktuellen Themen als auch im Studienkontext zu folgen.

Sie können detaillierte Darstellungen zu aktuellen Themen und im Kontext des Studienfaches verfassen und dabei kohärent argumentieren und fachspezifisches Vokabular benutzen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch B2.2 (Seminar, 2 SWS)

Talpo F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0623: Italian A1.2 + A2.1 - Intensive | Italienisch A1.2 + A2.1 - Intensiv

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls A1.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis A1.2

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Italienisch unter Berücksichtigung landeskundlicher und interkultureller Aspekte weitervermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen -trotz geringer Sprachkenntnisse - zurechtzufinden.

Der/Die Studierende lernt bzw. erweitert grundlegendes Vokabular zu vertrauten Themen wie Alltag und Freizeit, Studium und Studentenleben, Stadt und öffentlicher Verkehr, Reisen, Einkaufen.

Er/sie lernt u.a. über sich selbst und die eigenen Gewohnheiten im Alltag zu berichten; auf der Straße um Auskunft zu bitten und darauf zu reagieren; einen Weg zu beschreiben; von Ereignissen, Situationen und Gewohnheiten in der Vergangenheit zu erzählen; Ratschläge und Anweisungen zu geben.

Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1/A2, „Elementare Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls kann der/die Studierende den Grundwortschatz zu Themen wie Alltag und Freizeit, Universität, Stadt und öffentlicher Verkehr, Einkaufen verstehen und in sehr einfach strukturierten Sätzen verwenden. Außerdem kann er/sie über sich selbst, die eigenen Gewohnheiten und Vorlieben berichten; auf der Straße um Auskunft bitten und darauf reagieren; einen Weg und einen Ort beschreiben; von Ereignissen und Erlebnissen in der Vergangenheit erzählen. Er/sie ist in der Lage, sowohl in formellen als auch in informellen Kontexten sprachlich zu interagieren, indem er/sie Fragen und Antworten zu bekannten und vorhersehbaren Themen in elementarer Form formuliert.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0624: Italian A2.2 + B1.1 - Intensive | Italienisch A2.2 + B1.1 - Intensiv

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis A2.2

#### Content:

Das Modul führt zum Abschluss des Kompetenzniveaus A (Grundstufe) und ermöglicht einen leichten Einstieg ins B-Niveau (Mittelstufe) des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Es werden Grundkenntnisse in der Fremdsprache Italienisch aufgebaut, die es den Studierenden ermöglichen, sich in Alltagssituationen wie z.B. beim Arzt oder bei der Wohnungssuche zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Der/die Studierende lernt und übt u.a. eine höfliche Aufforderung, einen Wunsch, eine Vermutung auszudrücken; Ratschläge bzw. Anweisungen zu geben; jemanden um Rat zu bitten; Meinungen zu formulieren und zu widersprechen; für und gegen etwas zu argumentieren; Grundlegendes Vokabular zu Themen wie Familie, Wohnen, Gesundheit, Studium/Beruf wird gelernt bzw. erweitert.

Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2, „Elementare Sprachverwendung“ und am Niveau B1 – Selbständige Sprachverwendung des GER.

Nach Abschluss des Moduls kann der/die Studierende sich in den meisten Situationen, denen man in Studium, Beruf und Freizeit im Sprachgebiet begegnet, sicher verständigen, wenn Standardsprache verwendet wird. Er/sie ist in der Lage, höfliche Aufforderungen, Wünsche und Vermutungen auszudrücken; Ratschläge bzw. Anweisungen zu geben; um Rat zu bitten; Meinungen zu formulieren und zu widersprechen; für und gegen etwas zu argumentieren. Er/Sie kann wesentliche Inhalte in einfachen, authentischen Texten aus alltäglichen Bereichen verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen beteiligen. Er/Sie kann längere persönliche Texte zu eigenen Erfahrungen verfassen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte..

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0630: Italian B1/B2 Conversation | Italienisch B1/B2 - Corso di conversazione

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21)..

#### Repeat Examination:

#### (Recommended) Prerequisites:

Fundierte Kenntnisse des Moduls B1.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch vermittelt/aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv und mit einem gewissen Grad an Flüssigkeit über Themen von allgemeinem Interesse oder von vertrautem Fachgebiet mit einem Muttersprachler zu diskutieren und eine Argumentation gut verständlich auszuführen. Dabei werden landeskundliche und interkulturelle Aspekte berücksichtigt. Presseartikeln, Filme, Radio- und Fernsehsendungen sowie Blogs und Beiträgen aus den sozialen Netzwerken bilden die Grundlage für den interaktiven Unterricht. Der/die Studierende lernt die bisher erworbenen Sprachkenntnisse durch eine intensive Kommunikationspraxis zu aktivieren bzw. auszubauen. Er/sie verbessert die eigene mündliche Ausdrucksfähigkeit, indem er/sie differenzierteren Wortschatz und Idiomatik in verschiedenen Gesprächssituationen erarbeitet. Typische sprachliche Interaktionsstrategien wie z.B. Sprecherwechsel, Rückfragen stellen,



um Klärung bitten, auf Einwände und schwierige Fragen reagieren, werden durch gezielte Übungssequenzen trainiert. Je nach Bedarf werden Schwerpunkte der Grammatik wiederholt und vertieft.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1/B2, „Selbständige Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls ist der/die Studierende in der Lage, mündliche Beiträge oder schriftliche Texte zu aktuellen und kulturellen Themen aus italienischen Medien zu verstehen, sie zusammenzufassen und darüber zu berichten. Außerdem kann er/sie zu diesen Themen eine persönliche Meinung äußern und widersprechen bzw. für und gegen etwas argumentieren. Er/sie kann in einer Diskussion über allgemeine und aktuelle Themen wie z.B. Film, Musik, Umwelt, Politik adäquat interagieren.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

wird im Unterricht bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0631: Italian B1.1 + B1.2 - intensive | Italienisch B1.1 + B1.2 - intensiv

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b>	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis B1.1

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch unter Berücksichtigung interkultureller und landeskundlicher Aspekte erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Aktualität, Sport, Film, Musik selbständiger und sicherer in der Zielsprache zu verständigen, wenn Standardsprache verwendet wird. Die Studierenden festigen und vertiefen die bisher erlernten Sprachstrukturen des A-Niveaus und lernen/üben u.a. Meinungen zu äußern und zu widersprechen; für und gegen etwas zu argumentieren; über Lese- und Filmvorlieben sowie über Musikgeschmack zu sprechen bzw. zu schreiben; eine kurze Zusammenfassung eines Buchs/Films zu verfassen; Personen, Orte, Situationen exakt zu beschreiben und zu vergleichen; Pläne und Ziele zu formulieren. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz behandelt, gefestigt und vertieft.

Außerdem werden Möglichkeiten aufgezeigt, wie man den Lernprozess in der Fremdsprache Italienisch eigenverantwortlich und effektiv gestalten kann.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1, „Selbständige Sprachverwendung“, des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls können die Studierenden die meisten Situationen bewältigen, denen man im Sprachgebiet begegnet. Sie können ohne Vorbereitung an Gesprächen über Themen teilnehmen, die ihnen vertraut sind, die sie persönlich interessieren oder die sich auf Themen des Alltags wie Aktualität, Studium/Beruf, Reisen, Film und Musik beziehen. Sie sind in der Lage, mündlich wie schriftlich über Erfahrungen und Ereignisse einfach und zusammenhängend zu berichten; Personen, Orte und Situationen genau zu beschreiben und zu vergleichen; Eindrücke, Gefühle sowie Ziele und Wünsche zu formulieren; den eigenen Standpunkt zu vertreten. Beim Hören von Beiträgen über aktuelle Ereignisse und über Themen aus eigenem Studium- oder Interessensgebiet können sie die Hauptinformationen verstehen. Beim Lesen können sie wesentliche Inhalte in längeren und authentischen Sachtexten wie Zeitungsartikeln oder Auszügen aus der zeitgenössischen italienischen Literatur aufnehmen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0632: Italian B1/B2 – Grammar Compact | Italienisch B1/B2 – Grammatica compatta

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft). Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse des Moduls B1.1 (bestandene Klausur) oder Einstufungstest mit Ergebnis B1.2

#### Content:

In diesem Modul werden relevante grammatische Strukturen der italienischen Sprache in komprimierter Form gelernt, vertieft und durch schriftliche und mündliche Aufgaben intensiv trainiert.

Ziel ist die Verbesserung der schriftlichen und mündlichen Ausdrucksfähigkeit.

Darüber hinaus werden Strategien zur Vermeidung häufiger grammatischer Fehler erarbeitet.

Auf einzelne Wünsche der Studierende kann in einem gewissen Umfang eingegangen werden.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1/B2 „Selbständige Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen und ist für Studierende konzipiert worden, die mehr Sicherheit im Gebrauch der italienischen Grammatik gewinnen möchten.

Nach Abschluss des Moduls können die Studierenden erlernte grammatische Strukturen korrekt und sinnvoll anwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

wird im Unterricht bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch B1/B2 - Grammatica compatta (Seminar, 2 SWS)

Mainardi D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0633: Italian B2.1 + B2.2 - intensive | Italienisch B2.1 + B2.2 - Intensiv

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis B2.1

#### Content:

Abschlussmodul des B-Niveaus des Gemeinsamen Europäischen Referenzrahmens für Sprachen (Mittelstufe).

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv, selbständig und mit einem gewissen Grad an Flüssigkeit über Themen von allgemeinem Interesse oder von vertrautem Fachgebiet mit einem Muttersprachler zu diskutieren und eine Argumentation gut verständlich auszuführen. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Die Studierenden erarbeiten umfangreichen und differenzierten Wortschatz zu einem breiten Spektrum an aktuellen und soziokulturellen Themen und setzen sich mit zeitgenössischen literarischen Prosatexten auseinander. Sprachliche Handlungsformen wie z.B. Beschreiben, Vergleichen, Gegenüberstellen, Stellungnehmen, Kommentieren, Kritisieren werden mündlich und schriftlich intensiv trainiert.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2, „Selbständige Sprachverwendung“, des GER  
Nach Abschluss des Moduls kann der/die Studierende längere Redebeiträge und Vorträge sowohl zu Themen von allgemeinen Interesse als auch innerhalb seines/ihres Fachgebietes folgen, sofern sie klar vorgetragen werden; er/sie kann wesentliche Inhalte von authentischen Artikeln, Berichten und Texten zu allgemeinen soziokulturellen Themen oder aus dem eigenen Interessens- und Fachgebiet aufnehmen und darüber in klarer und strukturierter Form berichten; er/sie kann zeitgenössische literarische Prosatexte verstehen; schriftlich und mündlich ist er/sie in der Lage, zu vielen Themen aus seinen/ihren Interessensgebieten eine klare und detaillierte Darstellung zu geben sowie einen Standpunkt zu einer aktuellen Frage zu erläutern und Vor- und Nachteile verschiedener Möglichkeiten anzugeben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.  
Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Lehrwerk; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrwerk (wird im Unterricht bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0635: Italian C1.1 | Italienisch C1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).)

#### Repeat Examination:

#### (Recommended) Prerequisites:

Fundierte Kenntnisse des Moduls B2.2 (bestandene Klausur) oder Einstufungstest mit Ergebnis C1.1

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Italienisch aufgebaut und vertieft, die es den Studierenden ermöglichen, kommunikative Kompetenzen auf gehobenem sprachlichem Niveau zu entwickeln. Dabei werden landeskundliche, interkulturelle und studienbezogene Aspekte berücksichtigt.

Die Studierenden überprüfen und vertiefen anhand komplex aufgebauter und anspruchsvoll formulierter Hör- und Lesetexte zu Themen von gesamtgesellschaftlichem Interesse ihre Fähigkeiten, ohne große Mühe und überwiegend flüssig in der Fremdsprache zu agieren. Sie lernen, Textsorten und Schreibstile zu unterscheiden, implizit formulierte Meinungen zu identifizieren und moderne literarische Texte nach Interpretationshinweisen zu untersuchen. Sie üben, komplexe Sachtexte auch außerhalb des eigenen Fachgebietes zu analysieren, zu komprimieren und kritisch zu kommentieren.



Strategien zur Erschließung anspruchsvoller Texte wie z.B. Fachartikel, journalistische Beiträge, zeitgenössische Literatur werden aufgezeigt.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1 – Kompetente Sprachverwendung des Gemeinsamen Europäischen Referenzrahmens für Sprachen.

Nach Abschluss des Moduls können die Studierenden, die Sprache im gesellschaftlichen und beruflichen Leben ziemlich wirksam und flexibel gebrauchen. Sie können den Inhalt von komplexen Artikeln und Berichten, auch außerhalb des eigenen Fach- und Interessengebiets, fast mühelos verstehen und Standpunkte identifizieren; Sie sind in der Lage, moderne literarische Texte zu interpretieren; Sie können die eigenen Gedanken und Meinungen präzise ausdrücken sowie die eigenen Beiträge geschickt mit denen anderer Personen verknüpfen; Sie können klar und gut strukturierte Texte wie Briefe, Aufsätze oder Berichte über komplexe Sachverhalte verfassen und dabei den Stil wählen, der für die jeweiligen Leserinnen und Leser angemessen ist.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Wird im Unterricht bekannt gegeben

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Italienisch C1.1 (Seminar, 2 SWS)

Bonomini F

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-07: Japanese | Japanisch****Module Description****SZ0705: Japanese A1.1 | Japanisch A1.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

Den Teilnehmern wird empfohlen, sich vor Kursbeginn mit der Hiragana-Silbenschrift vertraut zu machen. Hierfür werden Unterlagen im jeweiligen Moodle-Kurs bereitgestellt.

**Content:**

In dieser LV werden neben der Einübung des japanischen Schrift- und Lautsystems (v.a. Hiragana) Grundkenntnisse des Japanischen vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: sich vorstellen; einkaufen gehen; Öffnungszeiten/Telefonnummer erfragen etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: Nominalaussage und Partikeln, Demonstrativpronomen, Zahlen und Zeitangaben. Die Studierenden lernen, mit dem grundlegenden Vokabular zu Themen wie Familie, Beruf,

Freizeit und Wohnen einfach strukturierte Hauptsätze zu formulieren und Alltägliches zu berichten/erfragen.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und sehr einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Er/Sie kann die japanischen Silbenschriften Hiragana selbstständig lesen, schreiben und aussprechen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter und (online-)Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A1.1 (Seminar, 2 SWS)

Bauer K, Gottschalk H, Koide I, Miyayama-Sinz M, Murakami N, Stinner-Hasegawa Y

Blockkurs Japanisch A1.1 (Seminar, 2 SWS)

Gottschalk H, Murakami N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ07052: Japanese A1.1 + A1.2 | Japanisch A1.1 + A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Den Teilnehmern wird empfohlen, sich vor Kursbeginn mit der Hiragana-Silbenschrift vertraut zu machen. Hierfür werden Unterlagen im jeweiligen Moodle-Kurs bereitgestellt.

#### Content:

In dieser LV werden neben der Einübung des japanischen Schrift- und Lautsystems (Hiragana, Katakana und elementare Kanji) Grundkenntnisse des Japanischen vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: sich vorstellen; einkaufen gehen; Einladungen aussprechen und annehmen/ablehnen etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: Verben und Partikeln, Zahlen und Zeitangaben, zwei Arten von Adjektiven (i-Adjektiv u. na-adjektiv) und Existenzverben. Die Studierenden lernen, mit dem grundlegenden Vokabular zu Themen wie Familie, Beruf, Freizeit und Wohnen einfach strukturierte Hauptsätze zu formulieren und Alltägliches zu berichten/erfragen.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und sehr einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 20 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter und (online-)Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A1.1 + A1.2 (Seminar, 4 SWS)

Ishikawa-Vetter M, Murakami N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0706: Japanese A1.2 | Japanisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A 1.1 oder vergleichbare Kenntnisse

#### Content:

In dieser LV werden Grundkenntnisse des Japanischen vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Erlernen der Schriftzeichen (Kanji) ist ebenfalls grundlegend. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: Verabredungen treffen; jemanden besuchen; nach dem Weg fragen etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: transitive Verben und Partikeln, zwei Arten von Adjektiven (i-Adjektiv u. na-adjektiv) und Existenzverben. Die Studierenden lernen, mit dem grundlegenden Vokabular zu Themen wie Familie, Beruf, Freizeit und Wohnen einfache strukturierte Hauptsätze zu formulieren und Alltägliches zu berichten/erfragen.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und ganz einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Er/Sie kann ein sehr kurzes Kontaktgespräch führen (begrüßen, danken, entschuldigen, Einladungen aussprechen). Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 20 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A1.2 (Seminar, 2 SWS)

Koide I, Miyayama-Sinz M

Blockkurs Japanisch A1.2 (Seminar, 2 SWS)

Stinner-Hasegawa Y

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0707: Japanese A1.3 | Japanisch A1.3

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A 1.2 oder vergleichbare Kenntnisse

#### Content:

In dieser LV werden die Grundkenntnisse des Japanischen erweitert, die es den Studierenden ermöglichen, sich in alltäglichen Situationen mit Basissprachkenntnissen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Erlernen der Schriftzeichen (Kanji) ist ebenfalls grundlegend. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: im Restaurant; mit dem Taxi fahren; über Ferien und Freizeit berichten etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: Ausdrücke für Zahlen und Mengen, Wunschformen, te-Form der Verben. Die Studierenden lernen, mit dem grundlegenden Vokabular zu Themen wie Familie, Beruf, Freizeit und Wohnen einfache strukturierte Hauptsätze zu formulieren und Alltägliches zu berichten/erfragen.



**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und ganz einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Er/Sie kann in einfacher Weise Tagesabläufe beschreiben und Wünsche kommunizieren. Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 60 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A1.3 (Seminar, 2 SWS)

Miyayama-Sinz M, Stinner-Hasegawa Y

Blockkurs Japanisch A1.3 (Seminar, 2 SWS)

Taguchi-Roth Y

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0709: Japanese A1.4 | Japanisch A1.4

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A 1.3 oder vergleichbare Kenntnisse

#### Content:

In dieser LV werden die Grundkenntnisse des Japanischen erweitert, die es den Studierenden ermöglichen, sich in alltäglichen Situationen mit Basissprachkenntnissen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Erlernen der Schriftzeichen (Kanji) ist ebenfalls grundlegend. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: in der Bank; beim Arzt; Gespräche unter Freunden etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: Verbindung von zwei oder mehr Sätzen, nai-Form, Wörterbuchform sowie ta-Form der Verben und Dialoge im „einfachen Stil“. Die Studierenden lernen, mit dem grundlegenden Vokabular zu Themen wie Familie, Beruf, Freizeit und Wohnen einfache strukturierte Hauptsätze zu formulieren und Alltägliches zu berichten/erfragen.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und ganz einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Er/Sie kann schriftliche Mitteilungen im „einfachen Stil“ machen. Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 100 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A1.4 (Seminar, 2 SWS)

Abe M

Blockkurs Japanisch A1.4 (Seminar, 2 SWS)

Abe M, Bauer K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0711: Japanese A2 Communication Course | Japanisch A2 Kommunikation

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2

#### Content:

Im Modul A2 Kommunikation liegt der Schwerpunkt auf dem modernen gesprochenen Japanisch, und die Unterschiede zum Schriftjapanisch werden vermittelt. In verschiedenen alltagsnahen Situationen werden natürliche Sprechmuster gemeinsam erarbeitet und eingeübt. Dabei wird nicht nur der „höfliche Stil“, sondern auch der „einfache Stil“ aktiv verwendet. In diesem Kurs bekommt jeder Gelegenheit, über Themen seines Interesses zu diskutieren und sich sein eigenes, situationsgerechtes Sprechniveau zu erarbeiten.

#### Intended Learning Outcomes:

Nach Abschluss dieses Moduls kann der/die Studierende zu alltäglichen Themen eine persönliche Meinung äußern bzw. für und gegen etwas argumentieren. Er/sie kann durch die Teilnahme an einfachen Diskussionen und Alltagsgesprächen Sicherheit in vorhersehbaren Alltagssituationen

gewinnen und das Vertrauen in die eigenen (bereits erworbenen) Kenntnisse stärken. Der/die Studierende ist in der Lage, unterschiedliche Kontexte und Höflichkeitsniveaus des Gesprächspartners zu erkennen und adäquat zu reagieren.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Eigenständiges Referieren; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, leicht leserliche Texte, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A2 Kommunikation (Seminar, 2 SWS)

Miyayama-Sinz M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0716: Japanese A2.3 + A2.4 | Japanisch A2.3 + A2.4

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A 2.2 oder vergleichbare Kenntnisse

#### Content:

In dieser LV werden Sprachkenntnisse in Japanisch erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen, z.B. im Studium, in der Arbeit, in der Freizeit und mit der Familie, und zu Themen von allgemeinem Interesse wie Film, Musik, Sport etc. selbständig und sicher in der Zielsprache zu verständigen. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Erlernen der Schriftzeichen (Kanji) ist ebenfalls grundlegend. Dazu werden u.a. folgende Themen der Grammatik behandelt: Intentionalform, Imperativ- und Verbotform und Konditionalform der Verben sowie Passivverben. Die Studierenden erweitern und überprüfen ein grundlegendes Repertoire an logischen Haupt- und Nebensatz-Strukturen.

#### Intended Learning Outcomes:

Nach Abschluss dieses Moduls kann der/die Studierende sich in den meisten Situationen, denen man in Studium, Beruf und in der Freizeit begegnet, sicher verständigen. Er/Sie kann sich einfach

und zusammenhängend über vertraute Themen und persönliche Interessengebiete äußern und ist in der Lage, Ratschläge und Anweisungen zu erteilen. Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 260 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A2.3 + A2.4 (Seminar, 4 SWS)

Abe M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0717: Japanese B1 Communication | Japanisch B1 Kommunikation

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.4

#### Content:

Im Modul B1 Kommunikation werden Kenntnisse in der Fremdsprache Japanisch vertieft, die es den Studierenden ermöglichen, aktiv und mit einem gewissen Grad an Flüssigkeit über Themen vom allgemeinem Interesse oder von vertrautem Fachgebiet zu diskutieren und eine Argumentation gut verständlich auszuführen. Der/die Studierende lernt die bisher erworbenen Sprachkenntnisse durch eine intensive Kommunikationspraxis zu aktivieren bzw. auszubauen. Er/sie verbessert die situationsgerechte Ausdrucksfähigkeit, indem er/sie differenzierte Höflichkeitsformen (sonkei-go / kenjo-go) erarbeitet.

#### Intended Learning Outcomes:

Nach Abschluss dieses Moduls kann der/die Studierende über verschiedene Themen aus seinen/ihren Interessen- oder Fachgebieten mündlich wie schriftlich detailliert und zusammenhängend berichten, Informationen zusammenfassen und seinen/ihren Standpunkt vertreten. Er/sie ist in der



Lage, unterschiedliche Kontexte und Höflichkeitsniveaus des Gesprächspartners zu erkennen und mit ihm klar und strukturiert zu kommunizieren.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Eigenständiges Referieren; moderierte (Rollen-) Diskussionen.  
Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch B1 Kommunikation (Seminar, 2 SWS)

Ishikawa-Vetter M, Miyayama-Sinz M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0718: Japanese A1.3 + A1.4 | Japanisch A1.3 + A1.4

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A 1.2 oder vergleichbare Kenntnisse

#### Content:

In dieser LV werden die Grundkenntnisse des Japanischen erweitert, die es den Studierenden ermöglichen, sich in alltäglichen Situationen mit Basissprachkenntnissen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Erlernen der Schriftzeichen (Kanji) ist ebenfalls grundlegend. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: im Restaurant; über Ferien und Freizeit berichten; Gespräche unter Freunden etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: Wunschformen, te-Form, nai-Form sowie Wörterbuchform der Verben und Dialoge im „einfachen Stil“. Die Studierenden lernen, mit dem grundlegenden Vokabular zu Themen wie Familie, Beruf, Freizeit und Wohnen einfache strukturierte Hauptsätze zu formulieren und Alltägliches zu berichten/erfragen.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls sind die Studierenden in der Lage, vertraute, alltägliche Ausdrücke und ganz einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen, bzw. Fragen dieser Art beantworten. Er/Sie kann nicht nur im „höflichen Stil“, sondern auch im „einfachen Stil“ Gespräche unter vertrauten Leuten führen. Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 100 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A1.3 + A1.4 (Seminar, 4 SWS)

Taguchi-Roth Y

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0719: Japanese A2.1 + A2.2 | Japanisch A2.1 + A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A 1.4 oder vergleichbare Kenntnisse

#### Content:

In dieser LV werden die Grundkenntnisse des Japanischen erweitert, die es den Studierenden ermöglichen, sich in alltäglichen Situationen mit Basissprachkenntnissen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Das Erlernen der Schriftzeichen (Kanji) ist ebenfalls grundlegend. Um dieses Ziel zu erreichen, wird Kommunikation im Kontext folgender Situationen eingeübt: einfache Meinungen äußern; Abläufe/Zustand erklären; mit Freunden/der Familie im „einfachen Stil“ (nicht im „höflichen Stil“) sprechen etc. Dazu werden u.a. folgende Themen der Grammatik behandelt: direkte u. indirekte Rede, Konditionalsätze, Potenzialverben und Verbenpaare (transitiv/intransitiv). Die Studierenden lernen, in einfach strukturierten Haupt- und Nebensätzen Alltägliches zu berichten/erfragen.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls kann der/die Studierende im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen Themen unter Einbeziehung landeskundlicher Aspekte. Der/die Studierende ist in der Lage, Pläne, Wünsche und Hoffnungen zu äußern, Einladungen auszusprechen, anzunehmen oder abzulehnen. Außerdem kann er/sie neben den japanischen Silbenschriften Hiragana und Katakana ca. 180 für den Alltag relevante Kanji (chinesische Schriftzeichen) verstehen und verwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens. Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben)

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Japanisch A2.1 + A2.2 (Seminar, 4 SWS)

Bauer K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0720: Japanese B1.1 | Japanisch B1.1

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0722: Japanese B2 Communication | Japanisch B2 Kommunikation

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Aufgaben zur Anwendung von Schriftzeichen, Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten (Portfolio-)Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1

#### Content:

Im Modul B2 Kommunikation haben die Studierenden die Möglichkeit, gemeinsam mit japanischen Studierenden der Partneruniversität über aktuelle Themen zu diskutieren und ihre sprachlichen sowie interkulturellen Fähigkeiten auszubauen. Dabei werden sowohl Mediationskompetenzen als auch Lernerautonomie gefördert. Darüber hinaus werden anhand der aktuellen Materialien fachspezifische Begriffe und Themen vermittelt, die es den Studierenden ermöglichen, auf wissenschaftlicher Ebene Diskussionen zu führen und Präsentationen zu halten.

#### Intended Learning Outcomes:

Nach Abschluss dieses Moduls kann der/die Studierende über verschiedene Themen aus seinen/ihren Interessens- oder Fachgebieten Präsentationen halten und seinen/ihren Standpunkt vertreten. Er/sie ist in der Lage, mit Gesprächspartnern aus anderen Kulturräumen adäquat und verständnisvoll zu kommunizieren.



**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Eigenständiges Referieren; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben (zur Vor- und Nachbearbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Vom Kursleiter selbst angefertigte/zusammengestellte Arbeitsblätter, (online-) Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-08: Portuguese | Portugiesisch****Module Description****SZ0801: Portuguese A1 | Portugiesisch A1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse in Fremdsprache Portugiesisch unter Berücksichtigung plurikultureller, plurilingualer und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich in vertrauten und alltäglichen Grundsituationen trotz noch geringer Sprachkenntnisse zurechtzufinden.

Sie lernen/üben grundlegendes Vokabular zu Themen wie Familie, Beruf, Freizeit, Einkaufen, Wohnen, Reisen und Gesundheit, einfache Gespräche in alltäglichen Situationen zu führen und in Hauptsätzen Alltägliches in Gegenwart und Zukunft zu äußern, unter Verwendung von

Nomen, Verben, Pronomen und Possessivartikeln, Modalverben und grundlegenden lokalen und temporalen Präpositionen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage Ausdrücke und einfache Sätze zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen.

Sie können einfache Fragen in alltäglichen Situationen stellen und beantworten, Tagesabläufe in Präsenz beschreiben, Absichten ausdrücken und einfache schriftliche Mitteilungen zur Person machen, Verabredungen treffen und in grundlegenden alltäglichen Situationen beispielsweise beim Einkauf oder im Restaurant ihre Wünsche erfolgreich kommunizieren, sofern die Gesprächspartner langsam und deutlich sprechen und Wiederholungen anbieten, wenn es erforderlich ist.

Die Studierenden können einfache, vorhersehbare Informationen von unmittelbarem Interesse übermitteln, die in kurzen, einfachen Texten wie Schildern und Notizen, Postern und Programmen enthalten sind. Die Kommunikation kann mit Hilfe von Internationalismen und verwandten Wörtern/ Gebärden aus anderen Sprachen erfolgen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

### **Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Blockkurs Portugiesisch A1 (Seminar, 2 SWS)

de Sena Lang J

Portugiesisch A1 (Seminar, 2 SWS)

de Sena Lang J, Paiva Pissarra R, Viegas Cunha R, Werkhausen R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0806: Portuguese A2.1 | Portugiesisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau A1.

#### Content:

In diesem Modul werden Grundkenntnisse in Portugiesisch unter Berücksichtigung plurikultureller, plurilingualer und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, sich einfachen, routinemäßigen Situationen zurechtzufinden, z.B. auf Reisen, beim Arzt, auf Wohnungssuche, im Kaufhaus, unter Kollegen, Freunden und Nachbarn.

Die Studierenden lernen/üben u.a.: Vergleiche anzustellen, über Erfahrungen zu sprechen und sie zu bewerten, über Alltagsaktivitäten zu berichten und diese zu planen, über vergangene Ereignisse zu berichten und Zustände und Probleme zu beschreiben und vergleichen. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz behandelt. Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess

eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage, im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte.

Sie können beispielsweise sich und andere Personen, persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation beschreiben. Sie können die vergangenen Ereignisse in Perfekt verstehen und schriftlich und mündlich ausdrücken.

Die Studierenden können längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Sie können kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium verfassen.

Die Studierenden können erkennen, wenn Schwierigkeiten auftreten und in einfacher Sprache andeuten, welcher Art das Problem offenkundig ist. Sie können die Hauptpunkte kurzer, einfacher Gespräche oder Texte zu alltäglichen Themen von unmittelbarem Interesse übermitteln, sofern diese klar in einfacher Sprache ausgedrückt sind.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch A2.1 (Seminar, 2 SWS)

de Sena Lang J, Paiva Pissarra R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0807: Portuguese A2.2 | Portugiesisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau A2.1

#### Content:

In diesem Modul werden Grundkenntnisse in Fremdsprache Portugiesisch unter Berücksichtigung plurikultureller, plurilingualler und landeskundlicher Aspekte, die es den Studierenden ermöglichen, sich in einfachen, routinemäßigen Situationen zurechtzufinden, z. B. Studium und Ausbildung, Beruf, Wohnen, Medien und Reisen.

Die Studierenden lernen/üben in komplexerer Struktur u.a. wie man Meinungen äußert und darauf reagiert; wie man über die Ursachen und Folgen von etwas spricht; wie man Anweisungen gibt; wie man Situationen und Ereignisse in der Vergangenheit schildert; wie man Geschichten erzählt. Wie man einfache Diskussionen führen kann, eine Auswahl treffen und begründen. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz bearbeitet.



Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch eingegangen.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und zu gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte.

Sie können beispielsweise sich und andere Personen, die persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation im Präsens oder Perfekt beschreiben. Sie können Vorschläge machen und reagieren, Informationen austauschen und Ratschläge geben.

Sie sind in der Lage, mit Hilfe feststehender Wendungen kurze, informative Texte oder Mitteilungen zu verfassen. Es werden Haupt- und Nebensätze verwendet, die durch eine Reihe von Bindewörtern kontextadäquat verbunden werden.

Die Studierenden können in Gesprächen eine unterstützende Rolle übernehmen, sofern andere Teilnehmer/innen an Gesprächen langsam sprechen und einer oder mehrere von ihnen einem dabei helfen, etwas beizutragen und Vorschläge zu machen. Sie können wichtige Informationen aus klar strukturierten, kurzen, einfachen Informationstexten übermitteln, sofern die Texte konkrete, vertraute Themen betreffen und in einfacher Alltagssprache verfasst sind.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben);

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch A2.2 (Seminar, 2 SWS)

Werkhausen R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0808: Portuguese B1.2 | Portugiesisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau B1.1.

#### Content:

In diesem Modul werden Kenntnisse in Portugiesisch gefestigt und erweitert, unter Berücksichtigung plurikultureller, plurilingualer und landeskundlicher, studienbezogener Aspekte, die es den Studierenden ermöglichen, sich in vertrauten Situationen (Studium, Arbeit, Freizeit und Familie) und zu Themen von allgemeinem Interesse wie z. B. Kunst, Geschichte, soziales Engagement, selbständig und sicher in der Zielsprache zu äußern und zu verstehen, wenn Standardsprache der verschiedenen Varietäten des Portugiesisch verwendet wird.

Die Studierenden erarbeiten ein erweitertes Spektrum an Vokabular und Redewendungen, erfassen und benutzen ein grundlegendes Repertoire an logischen Haupt- und Nebensatz-Strukturen mit Konjunktiv. Sie lesen selbständiger Texte über Ihrem Studiumfeld und weitere globale, wissenschaftliche und literarische Texte und äußern sich schriftlich und mündlich

darüber. Dazu werden entsprechende hierfür notwendige grammatikalische Themen erlernt und angewendet.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiv zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage sich in den meisten Situationen, denen man in Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher zu verständigen. Sie können z.B. Informationen aus Zeitungstexten weitergeben, über lebenswerte Städte diskutieren, Personen und Dinge genauer beschreiben, Meinungen äußern und argumentieren.

Sie können wesentliche Inhalte in einfachen, authentischen Sachtexten, literarischen Texten und in Fernseh- oder Radiosendungen verstehen und wiedergeben und sich spontan an Gesprächen zu Themen von allgemeinem Interesse beteiligen. Sie können einfache formelle E-Mails und längere persönliche Briefe verfassen und von persönlichen Erfahrungen berichten. Sie können die wesentlichen Punkte langer Texte übermitteln, die in unkomplizierter Sprache zu Themen von persönlichem Interesse formuliert sind, sofern man die Bedeutung einzelner Wendungen überprüfen kann.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

angefertigte/zusammengestellte Lehrmaterialien; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen und Materialien; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch B1.2 (Seminar, 2 SWS)

Werkhausen R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0809: Portuguese B1.1 | Portugiesisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau A2.

#### Content:

In diesem Modul werden Kenntnisse in Fremdsprache Portugiesisch unter Berücksichtigung plurikultureller, plurilingualler, landeskundlicher und studienbezogener Aspekte, die es den Studierenden ermöglichen, sich in vertrauten Situationen (Studium, Arbeit, Freizeit und Familie) und zu Themen von allgemeinem Interesse wie z. B. Konsum, Zukunft, Umwelt und Gesellschaft, selbständig und sicher in der Zielsprache zu verständigen, wenn Standardsprache der verschiedenen Varietäten des Portugiesisch verwendet wird.

Die Studierenden wiederholen und ergänzen elementare Aspekte der Grammatik wie den Gebrauch der Zeiten und der Präpositionen. Es werden auch gängige Redemittel bei Argumentation vermittelt und geübt. Sie lernen/üben den Gebrauch reflexiver Verben und das Passiv, wie man bestimmte Haltungen, Kenntnisse, Warnungen, Meinungen, Ziele und

Bewertungen ausdrückt; wie man Empfehlungen und Ratschläge gibt; wie man die persönliche Auslegung eines Gedankens erklärt; wie man in der Gruppe über ein Thema diskutiert, um Erklärungen bittet und sich auf das Gesagte bezieht.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1.1 des GER.

Nach Abschluss des Moduls sind die Studierenden in der Lage sich in den meisten Situationen, denen man in Studium, Beruf und Freizeit im Sprachgebiet begegnet, sicher zu verständigen und zu alltäglichen Themen eine persönliche Meinung äußern und widersprechen bzw. für und gegen etwas argumentieren.

Sie können sich über kulturelle Unterschiede und Sprache austauschen; Ratschläge, Warnungen und Meinungen aussprechen und schreiben; die meisten Situationen bewältigen, denen man auf Reisen und im Sprachgebiet begegnet; über Erfahrungen und Ereignisse berichten, Träume, Hoffnungen und Ziele beschreiben und dies auch begründen oder erklären; über persönliche Themen, und zu Ihrem Studiumfeld, kurze Texte schreiben.

Die Studierenden können andere Menschen einladen, ihr Fachwissen, ihre eigenen Erfahrungen und Sichtweise einzubringen. Sie können Informationen in klaren, gut strukturierten Texten zu Themen übermitteln, die ihnen vertraut oder von persönlichem oder aktuellem Interesse sind, obwohl der begrenzte Wortschatz gelegentlich zu Formulierungsproblemen führen kann.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

angefertigte/zusammengestellte Lehrmaterialien; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen und Materialien; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch B1.1 (Seminar, 2 SWS)

Werkhausen R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### **SZ0815: Portuguese - Portuguese for Spanish speakers A1 + A2 | Portugiesisch - Português para hispanofalantes A1 + A2**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### **Repeat Examination:**

#### **(Recommended) Prerequisites:**

Muttersprachliche Kenntnisse im Spanischen oder Spanisch als Fremdsprache auf Niveau B2.

#### **Content:**

In diesem Modul werden Grundkenntnisse in Fremdsprache Portugiesisch unter Berücksichtigung plurikultureller, plurilingualer und landeskundlicher Aspekte, die es den Studierenden ermöglichen, mit Unterstützung ihres Repertoires in anderen romanischen Sprachen, hier insbesondere Spanisch, sich in einfachen, routinemäßigen Situationen zurechtzufinden, z. B. Studium und Ausbildung, Beruf, Wohnen, Medien und Reisen, vorausgesetzt die Gesprächspartner äußern sich deutlich in den verschiedenen Varianten der portugiesischen Sprache.

Die Studierenden lernen/üben von einfachen zu komplexeren Strukturen u.a. Fragen zur Person/ zur Familie zu stellen und zu beantworten; Zahlen, Preise und Uhrzeiten zu verstehen und zu benutzen; Angabe zu einem Ort und zu Personen zu machen; Vergleiche anzustellen, über

Erfahrungen zu sprechen und sie zu bewerten, über Alltagsaktivitäten zu berichten und diese zu planen; über die Ursachen und Folgen von etwas sprechen; Anweisungen zu geben; Situationen und Ereignisse in der Vergangenheit zu schildern und erzählen; einfache Diskussionen zu führen; Meinungen zu äußern und zu begründen. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz behandelt.

Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch als auch im Vergleich zum Spanischen eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich an den Niveaustufen A1 und A2 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und zu gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte. Sie sind in der Lage, ihre spanischen Vorkenntnisse beim Erlernen der portugiesischen Sprache nützlich einzubringen.

Sie können beispielsweise sich und andere Personen, die persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation im Präsens oder Perfekt beschreiben. Sie können Vorschläge machen und reagieren, Informationen austauschen und Ratschläge geben.

Sie sind in der Lage, mit Hilfe feststehender Wendungen kurze, informative Texte oder Mitteilungen zu verfassen. Es werden Haupt- und Nebensätze verwendet, die durch eine Reihe von Bindewörtern kontextadäquat verbunden werden.

Die Studierenden können in Gesprächen eine unterstützende Rolle übernehmen, sofern andere Teilnehmer/innen an Gesprächen langsam sprechen und einer oder mehrere von ihnen einem dabei helfen, etwas beizutragen und Vorschläge zu machen. Sie können wichtige Informationen aus klar strukturierten, kurzen, einfachen Informationstexten übermitteln, sofern die Texte konkrete, vertraute Themen betreffen und in einfacher Alltagssprache verfasst sind.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor-und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0816: Portuguese B2.1 | Portugiesisch B2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau B1

#### Content:

In diesem Modul werden unter Berücksichtigung plurikultureller, plurilingualer, landeskundlicher und akademischer Aspekte Kenntnisse in Portugiesisch vermittelt/aufgebaut und vertieft, die es den Studierenden ermöglichen, sich aktiv und annähernd flüssig über aktuelle gesellschaftlichen und berufsbezogenen Themen oder über vertrauten Fachgebieten sich zu informieren und zu argumentieren sowie sich mit interkulturellen Themen zu beschäftigen. Die Entwicklung von Lesestrategien von fachbezogenen Texten, sowie Wortschatzaufbau und Hörstrategien wird gefordert. Zur Festigung der mündlichen und schriftlichen Fertigkeit, werden Schwerpunkte der Grammatik (z.B. Nominalisierung, Indikativ/Konjunktiv, Indirekte Rede, komplexer Satzbau und Satzgefüge) wiederholt und vertieft.

Es werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiv zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2 des GER.

Nach Abschluss des Moduls können Studierende den wesentlichen Inhalt von authentischen Artikeln und Berichten sowie Texte aus dem eigenen Fach- und Interessengebiet selbständig verstehen. Sie sind in der Lage längere Redebeiträge und Vorträge zu verschiedenen Themen zu folgen, sofern sie klar vorgetragen werden. Sie können in einer Diskussion oder Präsentation Standpunkte darlegen, wobei sie komplexe Satzstrukturen und fachspezifisches Vokabular benutzen. Sie können begründen, warum sie einer bestimmten Meinung sind, und die Standpunkte anderer kommentieren.

Sie können gut mit anderen Menschen zusammenarbeiten und eine positive Atmosphäre schaffen, indem man sie unterstützt und Fragen zur Identifizierung gemeinsamer Ziele stellt, dabei Umsetzungswege abwägt und Vorschläge zum weiteren Vorgehen macht. Sie können Ideen Anderer weiterentwickeln, Fragen stellen, die zu Antworten aus verschiedenen Perspektiven einladen und eine Lösung oder nächste Schritte vorschlagen. Sie können detaillierte Informationen und Argumente zuverlässig übermitteln, z.B. die wichtigsten Punkte komplexer, aber gut strukturierter Texte aus den eigenen beruflichen, akademischen oder persönlichen Interessengebieten.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen sollen von den Studierenden eigenständig Grammatikthemen und Wortschatzübungen mit vorgegebenen (Online-) Materialien erarbeitet werden. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

angefertigte/zusammengestellte Lehrmaterialien; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen und Materialien; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch B2.1 (Seminar, 2 SWS)

Werkhausen R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0817: Portuguese B2.2 | Portugiesisch B2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau B2.1

#### Content:

In diesem Modul werden Kenntnisse in Portugiesisch vermittelt/aufgebaut und vertieft, unter Berücksichtigung plurikultureller, plurilingualler und akademischer Aspekte, die es den Studierenden ermöglichen, über allgemeine und berufsbezogene Themen aktiv und annähernd flüssig zu kommunizieren. Anhand von Lese- und Hörtexten zu verschiedenen Themen lernen die Studierenden, Inhalte mündlich und schriftlich kohärent zusammenzufassen und Vor- und Nachteile abzuwägen und Stellung zu nehmen.

Sie erarbeiten sich ein Spektrum an themenbezogenem Vokabular, Redemitteln und Textbausteinen, die sie für das Zusammenfassen von Texten und den Austausch von Argumenten benötigen. Sie analysieren den Satzbau in komplexen Sätzen, setzen sich mit den entsprechenden

grammatischen Strukturen (wie z.B. Konnektoren und Kohäsionsmitteln) auseinander und vertiefen ihre Kenntnisse zur Umschreibung, Wortbildung und den Nominalisierungsmöglichkeiten. Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online). Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesischen eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B2 des GER.

Nach Abschluss des Moduls können Studierende den wesentlichen Inhalt von authentischen Artikeln und Berichten sowie Texte aus dem eigenen Fach- und Interessengebiet selbständig verstehen. Sie sind in der Lage längere Redebeiträge und Vorträge zu verschiedenen Themen verstehen und mündlich und schriftlich kohärent wiedergeben.

Sie sind in der Lage, den Austausch von Ideen förderliche Atmosphäre zu schaffen und die Diskussion heikler Themen zu erleichtern, indem man verschiedene Perspektiven würdigt, die Teilnehmer/innen an Gesprächen zur Erkundung unterschiedlicher Standpunkte ermutigt und dabei die eigene Ausdrucksweise einfühlsam anpasst. Sie können auf den Ideen Anderer aufbauen und Vorschläge zum weiteren Fortgang machen. Sie können die wesentlichen Inhalte von gut strukturierten, aber langen und anspruchsvollen Texten zu Themen der eigenen beruflichen, akademischen oder persönlichen Interessengebiete übermitteln, indem man die Meinungen und Absichten der Sprecher/innen verdeutlicht.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen sollen von den Studierenden eigenständig Grammatikthemen und Wortschatzübungen mit vorgegebenen (Online-) Materialien erarbeitet werden. Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

angefertigte/zusammengestellte Lehrmaterialien; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen und Materialien; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien



**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch B2.2 (Seminar, 2 SWS)

Werkhausen R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0818: Portuguese - Portuguese for Spanish Speakers A1 | Portugiesisch - Português para hispanofalantes A1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Muttersprachliche Kenntnisse im Spanischen oder Spanisch als Fremdsprache auf Niveau B2.

#### Content:

In diesem Modul werden Grundkenntnisse der Fremdsprache Portugiesisch unter Berücksichtigung plurikultureller, plurilingualer und landeskundlicher Aspekte vermittelt, die es den Studierenden ermöglichen, mit Unterstützung ihres Repertoires in anderen romanischen Sprachen, hier insbesondere Spanisch, vertraute und alltägliche Ausdrücke und einfache Sätze zu verwenden und zu verstehen.

Sie lernen/üben grundlegendes Vokabular zu Themen wie Familie, Beruf, Freizeit, Einkaufen, Wohnen, Reisen und Gesundheit, einfache Gespräche in alltäglichen Situationen zu führen und in Hauptsätzen Alltägliches in Vergangenheit, Gegenwart und Zukunft zu äußern, unter Verwendung

von Nomen, Verben, Pronomen und Possessivartikeln, Modalverben, Imperativ und grundlegender lokaler und temporaler Präpositionen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache eigenverantwortlich und effektiv zu gestalten. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online).

Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch als auch im Vergleich zum Spanischen eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich an den Niveaustufen A1 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage Ausdrücke und einfache Sätze zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Sie sind in der Lage, seine spanischen Vorkenntnisse beim Erlernen der portugiesischen Sprache nützlich einzubringen.

Sie können einfache Fragen in alltäglichen Situationen stellen und beantworten, Tagesabläufe in Vergangenheit und Gegenwart beschreiben, Absichten ausdrücken und einfache schriftliche Mitteilungen zur Person machen, Verabredungen treffen und in grundlegenden alltäglichen Situationen beispielsweise beim Einkauf oder im Restaurant ihre Wünsche erfolgreich kommunizieren, sofern die Gesprächspartner deutlich sprechen und Wiederholungen anbieten, wenn es erforderlich ist.

Die Studierenden können einfache, vorhersehbare Informationen von unmittelbarem Interesse übermitteln, die in kurzen, einfachen Texten wie Schildern und Notizen, Postern und Programmen enthalten sind. Die Kommunikation kann mit Hilfe von Internationalismen und verwandten Wörtern/ Gebärden aus anderen Sprachen erfolgen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch - Português para hispanofalantes A1 (Seminar, 2 SWS)

Santiago da Silva Lang R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0819: Portuguese - Portuguese for Spanish Speakers A2 | Portugiesisch - Português para hispanofalantes A2

Version of module description: Gültig ab Sommerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht. Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur oder gesicherte Kenntnisse der Niveau A1 in Portugiesisch.  
Muttersprachliche Kenntnisse im Spanischen oder Spanisch als Fremdsprache auf Niveau B2.

#### Content:

In diesem Modul werden Grundkenntnisse in Fremdsprache Portugiesisch unter Berücksichtigung plurikultureller, plurilingualer und landeskundlicher Aspekte, die es den Studierenden ermöglichen, mit Unterstützung ihres Repertoires in anderen romanischen Sprachen, hier insbesondere Spanisch, sich in einfachen, routinemäßigen Situationen zurechtzufinden, z. B. Studium und Ausbildung, Beruf, Wohnen, Medien und Reisen, vorausgesetzt die Gesprächspartner äußern sich deutlich in den verschiedenen Varianten der portugiesischen Sprache.

Die Studierende lernen/üben in komplexerer Struktur u.a. wie man Meinungen äußert und darauf reagiert; wie man über die Ursachen und Folgen von etwas spricht; wie man Anweisungen gibt;

wie man Situationen und Ereignisse in der Vergangenheit schildert; wie man Geschichten erzählt; wie man einfache Diskussionen führen kann, eine Auswahl treffen und begründen. Dazu werden entsprechende, hierfür notwendige grammatische Themen bzw. Wortschatz bearbeitet. Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess eigenverantwortlich effektiver zu gestalten und damit die eigene Lernfähigkeit zu verbessern. Die Studierenden üben soziale und interkulturelle kommunikative Kompetenz durch kooperatives Handeln und Mediation (auch online). Im Unterricht wird zugleich auf die grammatikalischen und phonetischen Unterschiede zwischen Sprachvarietäten des Portugiesisch als auch im Vergleich zum Spanischen eingegangen.

### **Intended Learning Outcomes:**

Das Modul orientiert sich an den Niveaustufen A2 des GER.

Nach Abschluss dieses Moduls sind die Studierenden in der Lage im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen zu verstehen und zu gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studien- bzw. berufsrelevanten Themen unter Einbeziehung landeskundlicher Aspekte. Sie sind in der Lage, ihre spanischen Vorkenntnisse beim Erlernen der portugiesischen Sprache nützlich einzubringen.

Sie können beispielsweise sich und andere Personen, die persönliche Wohnsituation, Gesundheitszustand, Freizeitverhalten und berufliche Situation im Präsens oder Perfekt beschreiben. Sie können Vorschläge machen und reagieren, Informationen austauschen und Ratschläge geben.

Sie sind in der Lage, mit Hilfe feststehender Wendungen kurze, informative Texte oder Mitteilungen zu verfassen. Es werden Haupt- und Nebensätze verwendet, die durch eine Reihe von Bindewörtern kontextadäquat verbunden werden.

Die Studierenden können in Gesprächen eine unterstützende Rolle übernehmen, sofern andere Teilnehmer/innen an Gesprächen langsam sprechen und einer oder mehrere von ihnen dabei helfen, etwas beizutragen und Vorschläge zu machen. Sie können wichtige Informationen aus klar strukturierten, kurzen, einfachen Informationstexten übermitteln, sofern die Texte konkrete, vertraute Themen betreffen und in einfacher Alltagssprache verfasst sind.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen erarbeitet werden. Durch die Kombination dieser Übungen in Einzel-, Partner- und Gruppenarbeit wird der kommunikative und handlungsorientierte Ansatz umgesetzt. Dadurch wird die Interaktion und Mediation mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln, unter Berücksichtigung der sozialen und interkulturellen Kompetenz. Lernautonomie und Medienkompetenz werden angestrebt.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Portugiesisch - Português para hispanofalantes A2 (Seminar, 2 SWS)

Santiago da Silva Lang R

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0820: Portuguese C1 - Communication Course | Portugiesisch C1 - comunicação oral e escrita

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:



**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-09: Russian | Russisch****Module Description****SZ0901: Russian A1.1 | Russisch A1.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden elementare Kenntnisse der Fremdsprache Russisch vermittelt. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden lernen grundlegendes Vokabular zu den Einstiegsthemen in einfachen sprachlichen Strukturen zu formulieren und über sie im Präsens zu berichten. Die Studierenden üben zum Beispiel einfache Fragen zur Person, Familie und Herkunft zu stellen und zu beantworten sowie über Befinden,

Wohnort und Sprachkenntnisse zu diskutieren. Es werden kommunikative Situationen geübt, die auf einen Aufenthalt im Zielland vorbereiten. Dazu werden die notwendigen grammatikalischen Themen behandelt. Die Studierenden erlernen die russische Schrift und können sie in der Praxis anwenden. Es werden Lernstrategien vermittelt, die einen erfolgreichen Einstieg in die russische Sprache ermöglichen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A1 des Gemeinsamen Europäischen Referenzrahmens (GER). Nach Bestehen des Moduls sind die Studierenden in der Lage vertraute, alltägliche Ausdrücke und ganz einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter Bedürfnisse zielen. Man kann sich und andere vorstellen und den Gesprächspartnern Fragen zu ihrer Person stellen sowie auch selbst auf Fragen dieser Art Antwort geben. Die Studierenden können sich auf einfache Art verständigen, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Vorbereitung einer kurzen Präsentation in der Zielsprache; selbständige Recherchen zu den vorgegebenen Themen. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Russisch A1.1 (Seminar, 2 SWS)

Legkikh V, Minakova-Boblest E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0902: Russian A1.2 | Russisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A1.1 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden Grundkenntnisse der Fremdsprache Russisch vermittelt. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden lernen grundlegendes Vokabular zu verschiedenen Themen in einfachen sprachlichen Strukturen zu formulieren und über sie im Präsens zu berichten. Die Studierenden üben zum Beispiel einfache Fragen zum Beruf zu stellen und zu beantworten, sich über Freizeitbeschäftigungen und Hobbys auszutauschen, Einkaufsgespräche zu führen, eine Speisekarte zu verstehen und etwas zu

bestellen, zu fragen, was man gern zu den Mahlzeiten isst und trinkt. Es werden kommunikative Situationen geübt, die auf einen Aufenthalt im Zielland vorbereiten. Dazu werden die notwendigen grammatikalischen Themen behandelt und Lernstrategien vermittelt, die eine erfolgreiche Gestaltung des weiteren Lernprozesses in der Fremdsprache Russisch ermöglichen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A1 des Gemeinsamen Europäischen Referenzrahmens (GER). Nach Bestehen des Moduls sind die Studierenden in der Lage vertraute, alltägliche Ausdrücke und einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter Bedürfnisse zielen. Die Studierenden können sich auf einfache Art verständigen, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Die Studierenden können einfache Fragen stellen und beantworten, einfache Feststellungen treffen oder auf solche reagieren, sofern es sich um unmittelbare Bedürfnisse oder um sehr vertraute Themen handelt.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Vorbereitung einer Präsentation in der Zielsprache; selbständige Recherchen zu den vorgegebenen Themen. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben); multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Russisch A1.2 (Seminar, 2 SWS)

Minakova-Boblest E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0903: Russian A2.1 | Russisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A1.2 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden Grundkenntnisse der Fremdsprache Russisch vermittelt. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden lernen Informationen zu erfragen und Auskunft zu geben, Pläne/Absichten zu äußern und diese kurz zu begründen, über Vorlieben, Interessen und Erfahrungen zu sprechen. Die Studierenden üben zum Beispiel Einkaufsdialoge im Kaufhaus zu führen, über ihre Kleiderwahl zu sprechen, Reiseerlebnisse zu schildern, sich auszutauschen, wo und wann man gern seinen Urlaub verbringt, wo man gern wohnt. Es werden kommunikative Situationen geübt, die auf einen Aufenthalt im Zielland

vorbereiten. Dazu werden die notwendigen grammatikalischen Themen behandelt und Lernstrategien vermittelt, die eine erfolgreiche Gestaltung des weiteren Lernprozesses in der Fremdsprache Russisch ermöglichen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2 des Gemeinsamen Europäischen Referenzrahmens (GER). Nach Bestehen des Moduls sind die Studierenden in der Lage, sich in einfachen, routinemäßigen Gesprächssituationen zu verständigen, in denen es um einen direkten Austausch von Informationen über vertraute und geläufige Dinge geht. Die Studierenden können die Bedeutung von kurzen, klaren und deutlich artikulierten Mitteilungen und Durchsagen erfassen. Sie sind in der Lage, häufig gebrauchte Ausdrücke anzuwenden und Sätze zu formulieren, die mit Bereichen von ganz unmittelbarer Bedeutung zusammenhängen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Vorbereitung einer Präsentation in der Zielsprache; selbständige Recherchen zu den vorgegebenen Themen. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben); multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Russisch A2.1 (Seminar, 2 SWS)

Minakova-Boblest E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0904: Russian A2.2 | Russisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A2.1 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden Grundkenntnisse der Fremdsprache Russisch vermittelt. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden üben, einfache Gespräche in alltäglichen Kommunikationssituationen zu beginnen und in Gang zu halten sowie sich über vertraute Themengebiete zu äußern. Die Studierenden lernen zum Beispiel sich über Studium/Arbeitsalltag auszutauschen, die Wohnsituation zu beschreiben und Wegbeschreibungen zu geben. Es werden kommunikative Situationen geübt, die auf einen Aufenthalt im Zielland vorbereiten. Dazu werden die notwendigen grammatikalischen



Themen behandelt und Lernstrategien vermittelt, die eine erfolgreiche Gestaltung des weiteren Lernprozesses in der Fremdsprache Russisch ermöglichen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2 des Gemeinsamen Europäischen Referenzrahmens (GER). Nach Bestehen des Moduls sind die Studierenden in der Lage, sich in einfachen, routinemäßigen Gesprächssituationen zu verständigen, in denen es um einen direkten Austausch von Informationen über vertraute und geläufige Dinge geht. Die Studierenden können die Bedeutung von kurzen, klaren und deutlich artikulierten Mitteilungen und Durchsagen erfassen. Sie sind in der Lage, häufig gebrauchte Ausdrücke anzuwenden und Sätze zu formulieren, die mit Bereichen von ganz unmittelbarer Bedeutung zusammenhängen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Vorbereitung einer Präsentation in der Zielsprache; selbständige Recherchen zu den vorgegebenen Themen. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben) (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0905: Russian B1.1 | Russisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A2.2 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden weitere Kenntnisse der Fremdsprache Russisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Kommunikationssituationen wie z.B. Studium, Beruf, Freizeit, Reise zurechtzufinden. Der/Die Studierende übt, sich zu Themenbereichen von allgemeinem Interesse wie Internetnutzung und soziale Netzwerke selbständig und sicher zu verständigen. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Die Studierenden lernen beispielsweise, wie man frühere und heutige

Zeiten vergleicht, über zukünftige Handlungen und Ereignisse spricht, Vermutungen äußert, Bedingungen formuliert, Wünsche äußert usw. Dazu werden entsprechende, hierfür notwendige grammatikalische Themen behandelt.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2/B1 des Gemeinsamen Europäischen Referenzrahmens (GER). Nach der Teilnahme an dieser Lehrveranstaltung können die Studierenden die Hauptpunkte verstehen, wenn klare Standardsprache verwendet wird und wenn es um vertraute Dinge aus den Bereichen Arbeit, Studium, Freizeit u.a. geht. Der/Die Studierende ist in der Lage, sich einfach und zusammenhängend über vertraute Themen und persönliche Interessengebiete zu äußern. Man kann sich im Alltag verständlich ausdrücken und die meisten Gesprächssituationen bewältigen, denen man auf Reisen im Sprachgebiet begegnet. Die Studierenden können über Erfahrungen und Ereignisse berichten, Träume, Hoffnungen und Ziele beschreiben sowie zu Plänen und Ansichten kurze Begründungen oder Erklärungen geben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Vorbereitung einer Präsentation in der Zielsprache; selbständige Recherchen zu den vorgegebenen Themen. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0906: Russian B1.2 | Russisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe B1.1 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden weitere Kenntnisse der Fremdsprache Russisch vermittelt, die den Studierenden ermöglichen, sich an den Gesprächen mit Muttersprachlern aktiv zu beteiligen und sicher zu verständigen, sofern Standardsprache gesprochen wird, z.B. zu Themen wie Reisen, Gesundheit, Ausbildung, Kunst, Umwelt. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Die Studierenden üben u.a.: wie man zu vielen verschiedenen Themen eine klare und detaillierte Darstellung gibt, Informationen wiedergibt,

Meinungen und Pläne erklärt und begründet. Dazu werden entsprechende, hierfür notwendige grammatikalische Themen behandelt.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1 des Gemeinsamen Europäischen Referenzrahmens (GER). Nach der Teilnahme an dieser Modulveranstaltung sind die Studierenden in der Lage, die Hauptinhalte komplexer Texte zu konkreten Themen zu verstehen. Er/Sie kann sich im Gespräch mit einem Muttersprachler relativ spontan und fließend verständigen. Die Studierenden können sich zu einem breiteren Themenspektrum klar und detailliert ausdrücken, einen Standpunkt zu einer aktuellen Frage erläutern, über Erfahrungen und Ereignisse selbständig berichten.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Vorbereitung einer Präsentation in der Zielsprache; selbständige Recherchen zu den vorgegebenen Themen. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0907: Russian B2.1 | Russisch B2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe B1.2 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden weitere Kenntnisse in der Fremdsprache Russisch vermittelt, aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv und mit einem gewissen Grad an Flüssigkeit über Themen von allgemeinem Interesse oder von vertrautem Fachgebiet mit muttersprachlichen Trägern der Zielsprache zu diskutieren und eine Argumentation gut verständlich auszuführen. Die Studierenden trainieren ihre Fertigkeit, Informationen über aktuelle gesellschaftliche, berufsbezogene bzw. weitere Themen ihrer Interessen zu sammeln, zu strukturieren und zu präsentieren. Sie bekommen die Gelegenheit, einen kurzen Vortrag zu

einem fach-/berufsbezogenen, gesellschaftlichen oder kulturellen Thema zu übernehmen und anschließend auf die Fragen zur eigenen Präsentation einzugehen. Auch die interkulturellen Themen werden behandelt. Es werden die Entwicklung der Hörstrategien, der Lesestrategien von längeren, inhaltlich anspruchsvollen Texten sowie Wortschatzaufbau gefordert. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1 des Gemeinsamen Europäischen Referenzrahmens (GER). Die Studierenden erlangen Kenntnisse in der Fremdsprache Russisch auf anspruchsvollem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Nach Abschluss des Moduls sind die Studierenden in der Lage, eine Interaktion zu vielen Themen aus ihren Interessen- oder Fachgebieten selbständig aufrechtzuhalten und sich in einem immer größeren Spektrum von fachbezogenen Situationen zu kommunizieren. Er/Sie kann längeren Redebeiträgen und Vorträgen zu verschiedenen Themen folgen, sofern sie klar vorgetragen werden. Er/Sie ist imstande, den wesentlichen Inhalt von authentischen Artikeln und Berichten sowie Texte aus dem eigenen Fach- und Interessengebiet selbständig zu verstehen. Er/Sie ist in der Lage längere Texte zu schreiben und dabei auch zu einem gewissen Grad komplexe Satzstrukturen und fachspezifisches Vokabular zu benutzen.

### **Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der der Fremdsprache mit vorgegebenen Materialien; Förderung kooperativen Lernens; eigenständiges Vorbereiten der Vorträge; Diskussionen in Gruppen zu vorbereiteten sowie frei/spontan gewählten Themen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0908: Russian - Introduction to Russian in Science B1 | Russisch - Einführung in die Wissenschaftssprache ab B1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A2.2 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul werden grundlegende Kenntnisse in der Fremdsprache Russisch vermittelt, die es den Studierenden ermöglichen, sich mit Russisch zu wissenschaftlichen Zwecken (Wissenschaftliches Russisch) zu befassen und sich in den studien- und wissenschaftsbezogenen Situationen – im Zielland wie im allgemeinen wissenschaftlichen Kontext – zurechtzufinden. Dazu wird der entsprechende Wortschatz aufgebaut und zielführende Lernstrategien vermittelt. Die Studierenden üben, das Russische im wissenschaftlichen Kontext beim/vom Hören zu verstehen



(Vorlesungen, Vorträge) und sich zu den Themen ihres wissenschaftlichen Fachgebiets zu äußern. Sie üben eine wissenschaftliche Diskussion aufzubauen/zu führen und bekommen die Gelegenheit, einen kurzen Vortrag aus/zu dem Gebiet ihres fachlichen Interesses zu übernehmen und anschließend auf die Fragen zur eigenen Präsentation einzugehen. Sie erlernen die für das Lesen, Verstehen und Zusammenfassen wissenschaftlicher und wissenschaftsbezogener Texte notwendigen Strategien und trainieren ihre Fertigkeit, die für ihre wissenschaftliche Arbeit / ihr Studium notwendigen Informationen zu sammeln, zu strukturieren und in der Zielsprache – in mündlicher und schriftlicher Form – zu präsentieren. Es wird dabei auf die für das Zielland spezifischen, aber auch allgemeingültigen Regeln, Formen, Strukturen des mündlichen und schriftlichen Ausdrucks/der Zusammenfassungen eingegangen. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik wiederholt und vertieft.

### **Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des Gemeinsamen Europäischen Referenzrahmens (GER). Die Studierenden erlangen grundlegende Kenntnisse in der Fremdsprache Russisch als wissenschaftliche Sprache. Nach Abschluss des Moduls sind die Studierenden in der Lage, eine Interaktion zu Themen aus ihrem wissenschaftlichen Interessen- oder Fachgebiet selbständig aufrechtzuerhalten und sich in einem größeren Spektrum von fachbezogenen/im wissenschaftlichen Alltag allgemein gültigen Situationen zu kommunizieren. Sie können längeren Redebeiträgen und Vorträgen im wissenschaftlichen/akademischen Kontext folgen. Sie sind imstande, den wesentlichen Inhalt von authentischen wissenschaftlichen/wissenschaftsbezogenen Artikeln und Berichten sowie Texte aus dem eigenen wissenschaftlichen Fach- und Interessengebiet selbständig zu verstehen. Sie sind in der Lage längere auch fachspezifische Texte zu schreiben und dabei zu einem gewissen Grad komplexere Satzstrukturen und fachspezifisches Vokabular zu verwenden.

### **Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der der Fremdsprache mit vorgegebenen Materialien; Förderung kooperativen Lernens; eigenständiges Vorbereiten der Vorträge; Diskussionen in Gruppen zu vorbereiteten sowie frei/spontan gewählten Themen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

### **Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0909: Russian as language of origin from B1 | Russisch als Herkunftssprache ab B1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Kumulative Prüfungsleistungen (mehrere Aufgaben). Hilfsmittel erlaubt.

Bei den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen, sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlicher Textproduktion überprüft.

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten.

In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Text- bzw. Leseverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Russisch als Herkunftssprache mit der kommunikativen Fertigkeit der Stufe A2.2 und höher.

### **Content:**

In dieser Lehrveranstaltung werden grundlegende Kenntnisse in der Herkunftssprache Russisch vermittelt, die es den Teilnehmern ermöglichen, zielorientiert an systematischen wie individuellen Defiziten bei der Beherrschung der russischen Sprache zu arbeiten, um sichere Kenntnisse in allen grundlegenden Sprachfertigkeiten zu erlangen. Dazu werden ausgewählte wie auf die Bedürfnisse der Teilnehmer orientierte Themen der Grammatik behandelt (u. A. gram. Fälle, Verbaspekte, Verben der Bewegung) und der moderne alltägliche wie fach- und studienbezogener Wortschatz aufgebaut/aufgefrischt. Die Teilnehmer werden für Stilistik der russischen Sprache bei Wort und Schrift sensibilisiert. Die Lesefertigkeit wird anhand aktueller landesbezogener Lektüre aufgebaut/erweitert und der schriftliche Ausdruck (inkl. Schreibschrift) bei thematischen Zusammenfassungen, Aufsätzen, fiktiven Blogbeiträgen etc. geübt. Auch an der korrekten Aussprache wird bei bestehendem Bedarf gearbeitet. Die Teilnehmer bekommen die Möglichkeit, einen kurzen Vortrag zu einem selbstgewählten Thema zu halten.

### **Intended Learning Outcomes:**

Diese Lehrveranstaltung orientiert sich am Niveau B1 des Gemeinsamen Europäischen Referenzrahmens (GER). Von der zu erwarteten hohen mündlichen Kompetenz der Teilnehmer ausgehend, werden die Studierenden unter Berücksichtigung des individuellen Bedarfs an die sichere Beherrschung der Stufe B1 herangeführt, wobei systematische sowie individuelle Defizite bei Grammatik, Leseverständnis, schriftlichem Ausdruck, Stilistik, Aussprache und modernem Wortschatz ausgeglichen werden. Nach Abschluss dieser Lehrveranstaltung beherrschen die Teilnehmer die Herkunftssprache Russisch auf hohem Niveau in allen grundlegenden sprachlichen Fertigkeiten. Sie kommunizieren und sind imstande sich schriftlich auszudrücken unter Verwendung der niveaumentsprechenden Grammatik, Stilistik und modernem alltäglichen sowie fach- und studienspezifischen Wortschatz. Sie beherrschen die Schreibschrift und sind imstande niveaumentsprechende allgemeine wie studien- und fachbezogene Texte zu lesen und über diese zu diskutieren.

### **Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen grundlegender grammatischer Phänomene in der Herkunftssprache mit vorgegebenen Materialien; Förderung kooperativen Lernens; eigenständiges Vorbereiten der Vorträge; Diskussionen in Gruppen zu vorbereiteten sowie frei/spontan gewählten Themen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

### **Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

Vom Kursleiter selbst angefertigte / zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Russisch als Herkunftssprache ab B1 (Seminar, 2 SWS)

Legkikh V

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0910: Russian - Communication Course B1/B2 | Russisch - Kommunikationskurs B1/B2

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21). Zu der Prüfungsleistung gehört auch eine kurze Präsentation auf Russisch zu einem kulturbezogenen, gesellschaftlichen oder wissenschaftlichen Thema im Zusammenhang mit Russland oder russischsprachigen Sprachraum. Diese Präsentation ist eigenverantwortlich mündlich wie schriftlich zu gestalten bzw. vorzutragen. Anschließend sollen auch Fragen zur eigenen Präsentation beantwortet werden können.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe Russisch A2.2 oder vergleichbare Kenntnisse.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Russisch vermittelt, aufgebaut und vertieft, die es den Studierenden ermöglichen, sich in verschiedenen Situationen, z.B. in Studium, Arbeit und Freizeit, und zu Themen von allgemeinem Interesse selbständig und sicher in der Zielsprache zu kommunizieren und zu verständigen. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Je nach Bedarf werden Schwerpunkte der russischen Grammatik wiederholt und vertieft. Vor allem die mündliche Kommunikation steht im Vordergrund. Die aktive Mitarbeit der Studierenden z. B. mittels Kurzvorträge und Diskussionen

wird erwartet und gefördert. Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Russisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1/B2 des Gemeinsamen Europäischen Referenzrahmens (GER). Die Studierenden erlangen Kenntnisse in der Fremdsprache Russisch auf anspruchsvollem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Nach Abschluss des Moduls sind die Studierenden in der Lage über verschiedene Themen detailliert und zusammenhängend zu berichten, Informationen zusammenzufassen, ihre Erfahrungen und Eindrücke wiederzugeben, ihren Standpunkt zu vertreten. Sie können Inhalte von Lektüren, Gesprächen, Filmen, Podcasts und Interviews wiedergeben und ihre Meinung äußern. Sie sind in der Lage, zu vielen Themen aus ihren Interessen- oder Fachgebieten klar und strukturiert in mündlicher und schriftlicher Form zu kommunizieren/zurichten.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien; Förderung kooperativen Lernens; eigenständiges Vorbereiten der Vorträge; Diskussionen in Gruppen zu vorbereiteten sowie frei/spontan gewählten Themen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte

**Media:**

Vom Kursleiter/der Kursleiterin selbst angefertigte/zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Reading List:**

Wird in der Lehrveranstaltung bekannt gegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ0911: Russian B1/B2 - Grammar | Russisch B1/B2 - Systematische Grammatik

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Version 1: In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie zur freien Textproduktion und wird in Form von kompetenz- und handlungsorientierten kumulativen Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

Version 2: Schriftliche Abschlussklausur (keine Hilfsmittel erlaubt). Prüfungsdauer: 90 Minuten. In der schriftlichen Prüfung werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhaltet Fragen zur Anwendung von Wortschatz und Grammatik, zu Lese- und Hörverstehen sowie Aufgaben zur freien Textproduktion. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreiche Teilnahme an der Stufe A2.2 oder vergleichbare Sprachkenntnisse.

#### Content:

In diesem Modul (Übungskurs) werden grammatische Kenntnisse in der Fremdsprache Russisch vermittelt, aufgebaut und vertieft. Der Schwerpunkt liegt dabei auf der praktischen Anwendung des Gelernten im täglichen Sprachgebrauch, wozu kommunikative alltagsnahe Übungen in großer Variationsbreite angeboten werden. Zu den Unterrichtsthemen gehören z.B. der Gebrauch der Verbalaspekte im Infinitiv und Imperativ, Deklination der Zahlwörter, Adverbialsätze, der Gebrauch und die Bedeutung der Konjunktionen etc. Auch die Ausdrucksmöglichkeiten von verschiedenen



Sprechabsichten werden behandelt, z.B. die Angabe des Grundes, Ausdruck der Bestimmtheit/ Unbestimmtheit, Ausdruck des Zustandes und des Vorhandenseins etc. Das Modulkonzept bietet Raum für flexible Anpassungen nach den individuellen Lernzielen der Teilnehmer.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1/B2 des Gemeinsamen Europäischen Referenzrahmens (GER). Die Studierenden erlangen grammatische Kenntnisse in der Fremdsprache Russisch auf anspruchsvollem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Nach Abschluss des Moduls sind die Studierenden in der Lage die behandelten grammatischen Themen sicher in ihrer alltäglichen Kommunikation anzuwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen mit vorgegebenen Materialien; Förderung kooperativen Lernens. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Vom Kursleiter/Kursleiterin selbst angefertigte/zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-10: Swedish | Schwedisch****Module Description****SZ1001: Swedish A1 | Schwedisch A1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse in der Fremdsprache Schwedisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden.

Wir lernen / üben grundlegendes Vokabular zu Themen wie Familie, Wohnen, Beruf, Freizeit, Landeskunde und in einfach strukturierten Haupt- und Nebensätzen Alltägliches im Präsens zu berichten; Plural der Nomen; Personal-, Reflexiv-, Demonstrativ- und einige

Possessivpronomen; einfache Negationsformen; den Gebrauch einiger Modalverben und Präpositionen; Adjektivdeklinations.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 des GER. Der/die Studierende erlangt Grundkenntnisse in der Fremdsprache Schwedisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung kultureller und landeskundlicher Aspekte. Nach Abschluss dieses Moduls kann er/sie alltägliche Ausdrücke und sehr einfache Sätze verstehen und verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/Sie kann beispielsweise einfache Fragen zu Person und Familie stellen und beantworten sowie Verabredungen treffen.

Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der A1-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Schwedisch A1 (Seminar, 2 SWS)

Dai Javad P, Matyas E

Blockkurs Schwedisch A1 (Seminar, 2 SWS)

Matyas E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1002: Swedish A2 | Schwedisch A2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur A1

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Schwedisch vermittelt, die es den Studierenden - trotz noch geringer Sprachkenntnisse – ermöglichen sollen, sich in alltäglichen Grundsituationen zurechtzufinden.

Wir lernen/üben grundlegendes Vokabular und Konversation und produzieren auch kürzere Texte (z. B. Brief; Textzusammenfassung und Kurzpräsentationen); vertiefen und erweitern die Grammatik aus der A1-Stufe und lesen Texte in leicht leserlicher Form.

Grammatische Inhalte: Wiederholung der Pronomen; Komplettierung der Possessivpronomen; komplexer strukturierte Haupt- und Nebensätze mit Modalverben; Imperativ; Präteritum; Perfekt

und Plusquamperfekt; Zeitausdrücke /-angaben; Zeit-, Ort- und Richtungsadverbien, Steigerung des Adjektivs.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 des GER. Der/Die Studierende erlangt Grundkenntnisse in Schwedisch mit allgemein sprachlicher Orientierung unter Berücksichtigung kultureller und landeskundlicher Aspekte. Nach Abschluss dieses Moduls kann der/die Studierende im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen Themen unter Einbeziehung landeskundlicher Aspekte. Der/die Studierende ist in der Lage kurze informative Texte oder Mitteilungen zu grundlegenden Situationen zu verfassen und kann längere Texte zu vertrauten Themen verstehen, in denen gängige bzw. einfache alltagsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind.

Sowohl im mündlichen als auch im schriftlichen Sprachgebrauch ist der/die Studierende in der Lage, situationsadäquat, bzw. der A2-Stufe entsprechend, Wortschatz und Grammatik korrekt anzuwenden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben); multimedial gestütztes Lehr- und Lernmaterial

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Schwedisch A2 (Seminar, 2 SWS)

Dai Javad P, Matyas E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1014: Swedish C1.1 | Schwedisch C1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur B2.2

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Schwedisch vermittelt /aufgebaut und vertieft, die es den Studierenden ermöglichen, aktiv über aktuelle gesellschaftliche Themen Schwedens oder von einem vertrautem Fachgebiet, mit einem Muttersprachler zu diskutieren bzw. eine Argumentation zu führen.

Vermittlung eines anspruchsvolleren Wortschatzes (auch Fachtermini, Redewendungen und ausgefallene Phrasen).

Wiederholung der Grammatik aus der B2-Stufe, Vertiefung und Erweiterung von z. B. Satzbau mit mehreren Ergänzungen; Adverbien; Konjunktionen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau C1.1 des GER. Der/Die Studierende erlangt Kenntnisse in der Fremdsprache Schwedisch auf komplexem standardsprachlichem Niveau unter Berücksichtigung interkultureller bzw. gesellschafts-/landeskundlicher Aspekte. Der/Die Studierende kann nach Abschluss des Moduls den wesentlichen Inhalt aus anspruchsvollen, längeren Texten aus dem oben genannten Interessengebiet verstehen (auch implizite Zusammenhänge) und wiedergeben. Er/Sie kann Redebeiträge und Vorträge sowohl zu aktuellen Themen als auch innerhalb seines/ihrer Fachgebietes folgen, sofern sie klar vorgetragen werden.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Multimedial gestütztes Lehr- und Lernmaterial

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1016: Swedish B1.1 | Schwedisch B1.1

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:



**Courses (Type of course, Weekly hours per semester), Instructor:**

Schwedisch B1.1 (Seminar, 2 SWS)

Dai Javad P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SZ0003-11: Intercultural Communication | Interkulturelle Kommunikation

### Module Description

#### SZ1102: EuroTeQ Intercultural Workshop – Intercultural competencies for working in multicultural teams | EuroTeQ Intercultural Workshop – Intercultural competencies for working in multicultural teams

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 1	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

1 written test 90 min. (100%)

Performance, testing the learning outcomes specified in the module description, is examined by a written test. Aids are permitted. Candidates work on tasks that focus on intercultural theories, intercultural models and other content covered in class. As part of the exam, students must prove their intercultural reflection skills by

#### Repeat Examination:

#### (Recommended) Prerequisites:

The course is especially intended for students in engineering programs, but is generally open to all TUM students. In particular, students who will be studying at a EuroTeQ partner university in the coming academic year or those, who are from partner universities and are currently studying at TUM and/or are participating in the EuroTeQ program should feel addressed. Students should envision themselves working in a European engineering context.

#### Content:

The workshops take place on 3-4 days in the specified period. One Workshop on Fridays / Saturdays and one on Mondays / Thursdays.

In addition to their specialist knowledge, future engineers must coordinate cross-disciplinary work and communicate with other disciplines. Accordingly, in a European job market, intercultural competencies and communication skills are required to create successful collaboration.

Intercultural agility, which is essential for studying and working in a multicultural environment, consists of a combination of knowledge about intercultural contexts and an ability to critically analyze one's own thoughts and values from an intercultural perspective. After the course, students can apply intercultural models and strategies based on these models for the practical management of complex, interculturally challenging situations in university and professional settings.

**Intended Learning Outcomes:**

Students can recognize how intercultural factors can play a role when working in multicultural teams and how our ways of thinking, values, attitudes and our personal background influence the way we interact with others. They have acquired tools for analyzing and interpreting intercultural complex situations in a goal-oriented manner and have discourse strategies to implement these in discussions in order to facilitate mutual understanding. Students can expand their own knowledge of divergent cultural values and standards by asking purposeful and appropriate questions and they can present their own perspective.

**Teaching and Learning Methods:**

The module consists of a course in which the learning content is studied in a communicative and action-oriented manner using self-experience exercises, video material, critical incidents and theoretical input in individual, partner and group work. Additional self-study material is provided (for preparation and follow-up work and for deepening one's own background knowledge) for consolidation and supplementation of the classroom sessions.

**Media:**

Multimedia-supported teaching and learning material, also online

**Reading List:**

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

The EuroTeQ Engineer: Cultural Agility for Studying and Working in Multicultural Settings  
(Workshop, 1 SWS)

Elekes R, Nierhoff-King B

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-12: Spanish | Spanisch****Module Description****SZ1201: Spanish A1 | Spanisch A1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse in der Fremdsprache Spanisch vermittelt, die es den Studierenden ermöglichen, sich in vertrauten und alltäglichen Grundsituationen trotz noch geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden lernen, einfache Fragen zur Person/Familie zu stellen und zu beantworten, Anmeldeformulare mit persönlichen Daten auszufüllen, über Studium, Beruf und Freizeitaktivitäten zu sprechen, Gefallen, Interessen und Vorlieben auszudrücken, Orte zu beschreiben etc. Sie lernen/üben grundlegendes Vokabular zu diesen Themen und berichten in einfach strukturierten Hauptsätzen über Alltägliches im Präsens. Es werden u.a. folgende Themen der Grammatik

behandelt: Präsens regelmäßiger und (einige) unregelmäßiger Verben, bestimmte und unbestimmte Artikel, Demonstrativpronomen, Verneinung einfacher Sätze etc.  
Es werden Strategien vermittelt, die eine Verständigung in alltäglichen Grundsituationen ermöglichen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 „Elementare Sprachverwendung“ des GER.  
Der/die Studierende kann nach der Teilnahme an der Modulveranstaltung einfache Fragen über vertraute Themen stellen und beantworten. Er/sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann einfache schriftliche Mitteilungen zur Person machen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A1 (Seminar, 2 SWS)

Borneo Gomez P, Galan Rodriguez F, Garcia Garcia M, Guerrero Madrid V, Lopez Agudo E, Nevado Cortes C, Noch nicht bekannt N, Pardo Gascue F, Rey Pereira C, Rodriguez Garcia M, Tapia Perez T, Villegas Montano J, Zuniga Chinchilla L

Blockkurs Spanisch A1 (Seminar, 2 SWS)

Garcia Garcia M, Gomez Cabornero S, Pardo Gascue F, Rodriguez Garcia M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1202: Spanish A2.1 | Spanisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A1.

Einstufungstest mit Ergebnis A2.1.

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Spanisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden, z.B. Freizeitaktivitäten, auf Reisen, im Restaurant, unter Kommilitonen, Freunden und Nachbarn, Austausch von Erfahrungen etc. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die grammatikalischen Strukturen werden weiter aufgebaut, wie z.B. die Verwendung von den Vergangenheiten pretérito perfecto - pretérito indefinido, ser und estar, unbetonte Personal Pronomen etc.

Es werden Strategien vermittelt, die mündlich wie schriftlich eine Verständigung trotz noch geringer Sprachkenntnisse ermöglichen.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2 „Elementare Sprachverwendung“ der GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, die Bedeutung von kurzen, klaren und deutlich artikulierten Mitteilungen und Durchsagen zu erfassen. Die Kommunikation ist im Rahmen von einfachen, routinemäßigen Kontexten möglich. Der Austausch von Informationen erfolgt über kurze Dialoge mit verschiedenen Zeitbezügen (z.B. Gegenwart, Vergangenheit, einfaches Futur) und umfasst einfache Satzgefüge mit beschränkten Strukturen zu vertrauten Tätigkeiten. Der/Die Studierende kann einfache Fragen zu Inhalten stellen und auch beantworten. Gespräche und Dialoge sind kurz, zeitlich beschränkt und orientieren sich inhaltlich an Kontexten, wie z.B. Familie, Freunde, Lebens- und Wohnraum, Reisen. Die Studierenden können kurze Texte oder Briefe lesen und verstehen, wenn diese einen häufig gebrauchten Wortschatz und bekannte Strukturen beinhaltet und wenn darin vertraute Informationen zu finden sind. Er/Sie ist in der Lage mithilfe feststehender Wendungen kurze, einfache Mitteilungen oder persönliche Briefe zu verfassen.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A2.1 (Seminar, 2 SWS)

Galan Rodriguez F, Guerrero Madrid V, Lopez Agudo E, Tapia Perez T, Villegas Montano J

Blockkurs Spanisch A2.1 (Seminar, 2 SWS)

Listan Rosa M, Montero de Espinosa Candau C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1203: Spanish A2.2 | Spanisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.1.  
Einstufungstest mit Ergebnis A2.2.

#### Content:

In diesem Modul werden weitere Grundkenntnisse der Fremdsprache Spanisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden lernen/üben u.a. Anweisungen und Ratschläge zu geben; Situationen und Ereignisse in der Vergangenheit zu schildern; Geschichten zu erzählen; über die Wohnungssuche zu sprechen. Dazu werden entsprechende hierfür notwendige grammatikalische Themen behandelt wie die Verwendung und Kontrast der Zeiten der Vergangenheit, pretérito imperfecto und pretérito indefinido, das Imperativ, das Gebrauch von Präpositionen etc. Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse (in alltäglichen Grundsituationen) ermöglichen.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2 „Elementare Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage vertraute Sätze und Redewendungen zu einem erweiterten Spektrum an Themen zu verstehen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen oder Studien- bzw. berufsrelevanten Themen. Sie erfassen die Bedeutung von kurzen, klaren und deutlich artikulierten Mitteilungen und Durchsagen. Der Austausch von Informationen erfolgt kurz aber mühelos über eine Reihe bekannter Äußerungen zu vertrauten Tätigkeiten und Themen. Die Studierenden können sich aktiv in kurzen Interaktionen, die über einen beschränkten zeitlichen Umfang gehen, zu bekannten Themen einbringen. Er/Sie kann längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Der/Die Studierende ist in der Lage, mithilfe feststehender Wendungen kurze, informative Texte oder Mitteilungen zu verfassen. Es werden Haupt- und Nebensätze verwendet, die durch eine Reihe von Bindewörtern kontextadäquat verbunden werden.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A2.2 (Seminar, 2 SWS)

Borneo Gomez P, Gomez Cabornero S, Guerrero Madrid V, Lopez Paredes M, Tapia Perez T

Blockkurs Spanisch A2.2 (Seminar, 2 SWS)

Mayea von Rimscha A

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ12031: Spanish A2.1 + A2.2 | Spanisch A2.1 + A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A1.  
Einstufungstest mit Ergebnis A2.1.

#### Content:

In diesem Modul werden weitere Grundkenntnisse der Fremdsprache Spanisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierende lernen/üben u.a.: wie man eine Wohnung sucht; wie man Erfahrungen austauscht; wie man Anweisungen, und Ratschläge gibt; wie man Situationen und Ereignisse in der Vergangenheit schildert; wie man Geschichten erzählt. Dazu werden entsprechende hierfür notwendige grammatikalische Themen behandelt und vertieft. Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse (in alltäglichen Grundsituationen) ermöglichen.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau A2 „Elementare Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, vertraute Sätze und Redewendungen zu einem erweiterten Spektrum an Themen zu verstehen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen oder Studien- bzw. berufsrelevanten Themen. Sie erfassen die Bedeutung von kurzen, klaren und deutlich artikulierten Mitteilungen und Durchsagen. Der Austausch von Informationen erfolgt kurz aber mühelos über eine Reihe bekannter Äußerungen zu vertrauten Tätigkeiten und Themen. Die Studierenden können sich aktiv in kurzen Interaktionen, die über einen beschränkten zeitlichen Umfang gehen, zu bekannten Themen einbringen. Er/Sie kann längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Der/Die Studierende ist in der Lage mithilfe feststehender Wendungen kurze, informative Texte oder Mitteilungen zu verfassen. Es werden Haupt- und Nebensätze verwendet, die durch eine Reihe von Bindewörtern kontextadäquat verbunden werden.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A2.1 + A2.2 (intensiv) (Seminar, 4 SWS)

Gonzalez Sainz C, Mayea von Rimscha A, Pardo Gascue F, Rey Pereira C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1207: Spanish A1 + A2.1 | Spanisch A1 + A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Spanisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden, z.B. auf Reisen, im Restaurant, unter Kommilitonen, Freunden und Nachbarn, Austausch von Erfahrungen etc. Die Studierenden lernen Fragen zur Person/Familie zu stellen und zu beantworten, Anmeldeformulare mit persönlichen Daten auszufüllen, über Studium, Beruf und Freizeitaktivitäten zu sprechen, Gefallen, Interessen und Vorlieben auszudrücken, Orte zu beschreiben. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Es werden u.a. folgende Themen der Grammatik behandelt: Präsens regelmäßiger und unregelmäßiger Verben, bestimmte und unbestimmte Artikel, Demonstrativpronomen, Verneinung einfacher Sätze, Verwendung von den Vergangenheiten pretérito perfecto - pretérito indefinido, ser und estar, unbetonte Personal Pronomen etc.

Es werden Strategien vermittelt, die eine Verständigung in alltäglichen Grundsituationen ermöglichen.

**Intended Learning Outcomes:**

Die Lernergebnisse orientieren sich am Niveau A2 „Elementare Sprachverwendung“ des GER. Der/die Studierende kann nach der Teilnahme an der Modulveranstaltung sich auf einfache Art verständigen, wenn die Gesprächspartner\*in langsam und deutlich sprechen und bereit sind zu helfen. Er/sie ist in der Lage die Bedeutung von kurzen, klaren und deutlich artikulierten Mitteilungen und Durchsagen zu erfassen. Die Kommunikation ist im Rahmen von einfachen, routinemäßigen Kontexten möglich. Der Austausch von Informationen erfolgt über kurze Dialoge mit verschiedenen Zeitbezügen (z.B.: Gegenwart, Vergangenheit, einfaches Futur) und umfasst einfache Satzgefüge mit beschränkten Strukturen zu vertrauten Tätigkeiten. Der/Die Studierende kann einfache Fragen zu Inhalten stellen und auch beantworten. Gespräche und Dialoge sind kurz, zeitlich beschränkt und orientieren sich inhaltlich an Kontexten, wie z.B. Familie, Freunde, Lebens- und Wohnraum, Reisen. Die Studierenden können kurze Texte oder Briefe lesen und verstehen, wenn diese einen häufig gebrauchten Wortschatz und bekannte Strukturen beinhaltet und wenn darin vertraute Informationen zu finden sind. Er/Sie ist in der Lage mithilfe feststehender Wendungen kurze, einfache Mitteilungen oder persönliche Briefe zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A1 + A2.1 (intensiv) (Seminar, 4 SWS)

Garcia Garcia M, Iglesias Martin A, Listan Rosa M, Montero de Espinosa Candau C, Nevado Cortes C, Tapia Perez T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1208: Spanish A1 - AVE (online) | Spanisch A1 - AVE (online)

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 82	<b>Contact Hours:</b> 8

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Keine Spanisch Vorkenntnisse. Die Lehrveranstaltung eignet sich besonders für Studierende, die gerne selbständig arbeiten und online betreut werden möchten.

#### Content:

In diesem Modul werden die Studierenden eine Lizenz für eine sechsmonatige Nutzung eines Online Kurs erwerben (kostenlos).

In diesem Modul werden Grundkenntnisse in der Fremdsprache Spanisch vermittelt, die es den Studierenden ermöglichen, sich in vertrauten und alltäglichen Grundsituationen trotz noch geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden lernen einfache Fragen zur Person/Familie zu stellen und zu beantworten, Anmeldeformulare mit persönlichen Daten auszufüllen, über Studium, Beruf und Freizeitaktivitäten zu sprechen, Gefallen, Interessen und Vorlieben auszudrücken, Orte zu beschreiben etc. Sie lernen/üben grundlegendes Vokabular zu diesen Themen und berichten in einfach strukturierten Hauptsätzen über Alltägliches im Präsens. Es werden u.a. folgende Themen

der Grammatik behandelt: Präsens regelmäßiger und (einige) unregelmäßiger Verben, bestimmte und unbestimmte Artikel, Demonstrativpronomen, Verneinung einfacher Sätze etc.

Es werden Strategien vermittelt, die eine Verständigung in alltäglichen Grundsituationen ermöglichen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 „Elementare Sprachverwendung“ des GER.

Der/die Studierende kann nach der Teilnahme an der Modulveranstaltung einfache Fragen über vertraute Themen stellen und beantworten. Er/sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann einfache schriftliche Mitteilungen zur Person machen.

**Teaching and Learning Methods:**

Die Studierenden arbeiten selbständig mit der Aula Virtual de Español AVE, einer Online-Plattform, die vom Instituto Cervantes entwickelt worden ist und verschiedene Übungsformen bietet. Sie werden durch einen/eine Tutor/Tutorin (die Dozentin) online betreut.

Anhand der Multimediaprodukte über Text, Ton und Bild werden Sprachbeispiele in ihrem realen Kontext vermitteln. Den Studierenden werden attraktive Präsentationen und interaktive Übungen angeboten, mit deren Hilfe er/sie die Inhalte selbstständig praktizieren kann. Der persönliche Tutor/Tutorin orientiert und berät die Studierenden, bietet ihm/ihr Übungen zur Unterstützung oder Anregung an, und ist für die Bewertung seiner/ihrer Arbeit zuständig. Alle Themen enthalten drei oder mehr Kommunikationsübungen in Zusammenarbeit mit den Kursteilnehmern und dem Tutor/Tutorin, und eine Abschlussarbeit, in der jeder Studierende die erlernten funktionellen Inhalte praktisch anwendet. Zusätzlich findet während des Semesters Präsenzunterricht statt.

**Media:**

Online Lernplattform. Der/Die Studierende verfügt über interaktive und multimediale Studienmaterialien.

**Reading List:**

Wird in der Lehrveranstaltung bekanntgegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A1 AVE (online) (Seminar, 2 SWS)

Gomez Cabornero S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1209: Spanish C1 - current issues in Spain and Latin America | Spanisch C1 - La actualidad en España y América Latina

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.2.

Einstufungstest mit Ergebnis C1.1.

#### Content:

In diesem Modul werden den Studierenden kulturelle, soziopolitische und/oder geschichtliche Kenntnisse über die spanischsprachigen Länder vermittelt, die sie in die Lage versetzen, unter Einbeziehung interkultureller Aspekte zu kommunizieren und zu handeln. Diese Veranstaltung bietet einen Querschnitt durch die Kultur und Gesellschaft Spaniens und Lateinamerika, indem gesellschaftliche Tendenzen anhand aktueller Zeitungsartikeln, Literatur (Kurzerzählungen), Essays, Filme etc., diskutiert werden. Es soll den Studierenden eine Vertiefung in das „Fremdverstehen“ der gesamten spanischsprachigen Welt ermöglichen und somit auch die interkulturelle Kompetenz erhöht werden. Es wird ein erweitertes Spektrum an Kommunikationsmöglichkeiten zu aktuellen Themen erarbeitet und Aspekte der Grammatik wiederholt und ergänzt.

In diesem Modul haben die Studierenden die Gelegenheit, eine kurze Präsentation eigenverantwortlich zu gestalten und vorzutragen sowie anschließend auf Fragen zur eigenen Präsentation zu antworten.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau C1 „Kompetente Sprachverwendung“ des Gemeinsamen Europäischen Referenzrahmens für Sprachen des Europarats.

Nach Abschluss des Moduls kann der/die Studierende ein breites Spektrum anspruchsvoller, längerer Texte verstehen und auch implizite Bedeutungen erfassen. Er/Sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen. Er/Sie kann die Sprache im gesellschaftlichen und beruflichen Leben oder in Ausbildung und Studium wirksam und flexibel gebrauchen. Die Studierenden können sich klar, strukturiert und ausführlich zu komplexen Sachverhalten äußern und dabei verschiedene Mittel zur Textverknüpfung angemessen verwenden. Er/Sie kann ihre Gedanken und Meinungen präzise ausdrücken und ihre eigenen Beiträge geschickt mit denen anderer verknüpfen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen; Eigenständiges Referieren und Präsentieren akademischer und gesamtgesellschaftlicher Inhalte zu vorgegebenen Themen.

**Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Wird in der Lehrveranstaltung bekanntgegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1212: Spanish C1 - Spain and Latin America - Yesterday and Today | Spanisch C1 - España y América Latina ayer y hoy

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.2.

Einstufungstest mit Ergebnis C1.1.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, mündlich wie schriftlich in Themenbereichen aus Alltag, Beruf, Kultur, Gesichte, Politik der spanischsprachigen Länder situationsadäquat zu handeln (agieren und reagieren). Anhand ausgewählter Presseartikeln, Literatur, etc., werden soziokulturelle Zusammenhänge aktueller Themen reflektiert. Es werden Kenntnisse in den benannten Bereichen vertieft und Aspekte der Grammatik wiederholt und ergänzt. In diesem Modul haben die Studierenden die Gelegenheit, eine kurze Präsentation eigenverantwortlich zu gestalten und vorzutragen sowie anschließend auf Fragen zur eigenen Präsentation zu antworten.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau C1 „Kompetente Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung kann der/die Studierende auf sehr hohem Niveau in unterschiedlichsten Situationen mündlich und schriftlich kommunizieren. Er/Sie ist in der Lage, die Fremdsprache sowohl im Auslandsstudium als auch im Beruf wirksam und flexibel zu gebrauchen. Die Studierenden können komplexe Sachverhalte ausführlich darstellen und dabei Themenpunkte miteinander verbinden, bestimmte Aspekte besonders ausführen und ihren Beitrag angemessen abschließen. Er/Sie kann ein breites Spektrum anspruchsvoller, längerer Texte verstehen und auch implizite Bedeutungen erfassen. Er/Sie kann sich spontan und fließend ausdrücken, ohne öfter deutlich erkennbar nach Worten suchen zu müssen. Er/Sie kann sich klar, strukturiert und ausführlich zu komplexen Sachverhalten äußern und dabei verschiedene Mittel zur Textverknüpfung angemessen verwenden.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezieltem Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Übungen wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern. Durch kontrolliertes Revidieren grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Kenntnisse vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen; Eigenständiges Referieren und Präsentieren akademischer und gesamtgesellschaftlicher Inhalte zu vorgegebenen Themen.

### **Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Wird in der Lehrveranstaltung bekanntgegeben.

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1216: Spanish B1.2 | Spanisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1.1.  
Einstufungstest mit Ergebnis B1.2.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, (sich) in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Film, Musik, Sport u.a. selbständig und sicher in der Zielsprache zu operieren/bewegen/verständigen, wenn Standardsprache verwendet wird. Sie erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der spanischen Sprache. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Die Studierenden vertiefen ihre Kenntnisse anhand verschiedener aktueller Themen des spanischsprachigen Raums. Dazu werden entsprechende, hierfür notwendige grammatische Themen und Wortschatz behandelt.



### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1 „Selbständige Sprachverwendung“ des GER. Der/Die Studierende erlangt vertiefte Kenntnisse in der Fremdsprache Spanisch auf standardsprachlichen Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Nach Abschluss des Moduls kann der/die Studierende sich in den meisten Situationen, denen man im Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen. Er/Sie ist in der Lage, wesentliche Inhalte in einfachen, authentischen Sachtexten, Fernseh- oder Radiosendungen und literarischen Texten zu verstehen und wiederzugeben und sich spontan an Gesprächen zu vertrauten Themen von allgemeinem Interesse zu beteiligen. Der/Die Studierende kann einfache formelle und längere persönliche Briefe und Texte verfassen, strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch B1.2 (Seminar, 2 SWS)

Borneo Gomez P, Galan Rodriguez F, Noch nicht bekannt N

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1217: Spanish B2.2 | Spanisch B2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.1.  
Einstufungstest mit Ergebnis B2.2.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, aktiv und weitgehend flüssig über Themen von allgemeinem Interesse oder in vertrauten Fachgebieten mit einem Muttersprachler zu kommunizieren und eine Argumentation strukturiert auszuführen. Ein besonderes Augenmerk wird in diesem Modul auf die Entwicklung von Lesestrategien allgemeiner, akademischer und fachbezogener Texten, auf Wortschatzarbeit sowie die Befähigung zur Entwicklung von Hörstrategien gelegt. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik (z.B. *contraste de pasados, indicativo/subjuntivo, estilo indirecto, oraciones subordinadas complejas* 2) erarbeitet, wiederholt und vertieft.

In diesem Modul haben die Studierenden die Gelegenheit, eine kurze Präsentation eigenverantwortlich zu gestalten und vorzutragen sowie anschließend auf Fragen zur eigenen Präsentation zu antworten.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B2 „Selbständige Sprachverwendung“ des GER. Der/die Studierende erlangt Kenntnisse in der Fremdsprache Spanisch auf schriftsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Er/Sie kann mühelos unterschiedlichste Texte, Artikel und Berichte aus Fachbüchern, Zeitschriften und Magazinen zu einem breiten Spektrum an Themen lesen und verstehen. Er/Sie kann in den Texten verschiedene Meinungsbilder, Standpunkte und Haltungen erkennen. Er/Sie ist in der Lage, zeitgenössische Prosatexte zu lesen. Der/Die Studierende kann längere Redebeiträge und Vorträge mühelos verstehen und komplexer Argumentation folgen, sofern sie klar vorgetragen werden. Der/Die Studierende ist in der Lage, klare und detaillierte Texte zu verschiedenen Themen, die von besonderem Interesse für ihn/sie sind oder zu seinem/ihrer Fachgebiet gehören zu verfassen und dabei kohärent zu argumentieren und fachspezifisches Vokabular zu benutzen. Er/Sie kann die eigenen Ansichten und Standpunkte begründen und verteidigen, seine/ ihre Argumentation logisch aufbauen und verbinden sowie Vor- und Nachteile bezüglich einer Entscheidung darlegen. Er/Sie kann sich spontan und fließend verständigen. Er/Sie kann zu vielen Themen aus seinen/ihren Interessen- oder Fachgebieten klar und strukturiert in mündlicher Form kommunizieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch B2.2 (Seminar, 2 SWS)

Guerrero Madrid V, Nevado Cortes C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1218: Spanish B1.1 | Spanisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2.  
Einstufungstest mit Ergebnis B1.1.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, (sich) in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse selbständig und sicher zu operieren/bewegen/verständigen, wenn Standardsprache verwendet wird. Sie erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatikalischen Schwerpunkte der spanischen Sprache. Die Studierenden lernen/üben u.a. wie man Vermutungen anstellt; über biografische und historische Ereignisse spricht; wie man Wünsche und Gefühle ausdrückt. Dazu werden entsprechende, hierfür notwendige grammatische Themen behandelt.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1 „Selbständige Sprachverwendung“ des GER. Der/Die Studierende erlangt in diesem Modul vertiefte Kenntnisse in der Fremdsprache Spanisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung interkultureller und landeskundlicher Aspekte. Nach erfolgreicher Teilnahme am Modul kann der/die Studierende sich in den ihm/ihr vertrauten Situationen, denen man im Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnen kann, sicher verständigen. Der/Die Studierende ist in der Lage, wesentliche Inhalte in einfachen authentischen Texten aus alltäglichen Bereichen zu verstehen, und sich spontan an Gesprächen zu vertrauten Themen zu beteiligen. Die Studierenden können mündlich wie schriftlich über Erfahrungen, Gefühle und Ereignisse einfach und zusammenhängend berichten und zu vertrauten Themen eine persönliche Meinung äußern und argumentieren.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch B1.1 (Seminar, 2 SWS)

Galan Rodriguez F, Lopez Paredes M, Villegas Montano J

Blockkurs Spanisch B1.1 (Seminar, 2 SWS)

Tapia Perez T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1219: Spanish B2.1 | Spanisch B2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1.2.  
Einstufungstest mit Ergebnis B2.1.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, aktiv und annähernd flüssig über Themen von allgemeinem Interesse oder von vertrauten Fachgebieten mit einem Muttersprachler zu kommunizieren und dabei strukturiert zu argumentieren. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden Schwerpunkte der Grammatik (z.B. futuro, imperfecto de subjuntivo, ser/estar, oraciones subordinadas complejas 1) erarbeitet, wiederholt und vertieft. In diesem Modul haben die Studierenden die Gelegenheit, eine kurze Präsentation zu gestalten, vorzutragen und anschließend auf Fragen zur eigenen Präsentation zu antworten.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau B2 „Selbständige Sprachverwendung“ des GER. Der/die Studierende erlangt Kenntnisse in der Fremdsprache Spanisch auf schriftsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Er/Sie kann unterschiedliche Artikel und Berichte aus Büchern oder Zeitschriften, die sowohl mit eigenen Interessen als auch mit ihrem Fachgebiet in Zusammenhang stehen, sicher verstehen. Er/Sie kann längeren Redebeiträgen und Vorträgen zu aktuellen Themen folgen, sofern sie klar vorgetragen werden. Der/Die Studierende ist in der Lage, zusammenhängende Texte zu unterschiedlichen, vertrauten alltagspraktischen aber auch fachsprachlichen Themen zu verfassen und dabei auch komplexere Satzstrukturen und fachspezifisches Vokabular zu benutzen. Er/Sie kann zu vielen Themen aus seinen/ihren Interessen- oder Fachgebieten klar und strukturiert in mündlicher Form kommunizieren.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch B2.1 (Seminar, 2 SWS)

Gomez Cabornero S, Tapia Perez T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1225: Spanish B1.1 + B1.2 | Spanisch B1.1 + B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2.  
Einstufungstest mit Ergebnis B1.1.

#### Content:

In diesem Modul werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, (sich) in vertrauten Situationen, z.B. in Studium, Arbeit, Freizeit und Familie, und zu Themen von allgemeinem Interesse wie Film, Musik, Sport u.a. selbständig und sicher in der Zielsprache zu operieren/bewegen/verständigen, wenn Standardsprache verwendet wird. Sie erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der spanischen Sprache. Dabei werden interkulturelle, landeskundliche und studienbezogene Aspekte berücksichtigt. Die Studierenden vertiefen ihre Kenntnisse anhand verschiedener aktueller Themen des spanischsprachigen Raums. Dazu werden entsprechende, hierfür notwendige grammatische Themen und Wortschatz behandelt.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau B1 „Selbstständige Sprachverwendung“ des GER. Der/Die Studierende erlangt vertiefte Kenntnisse in der Fremdsprache Spanisch auf standardsprachlichen Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte. Nach Abschluss des Moduls kann der/die Studierende sich in den meisten Situationen, denen man im Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen. Er/Sie ist in der Lage, wesentliche Inhalte in einfachen, authentischen Sachtexten, Fernseh- oder Radiosendungen und literarischen Texten zu verstehen und wiederzugeben und sich spontan an Gesprächen zu vertrauten Themen von allgemeinem Interesse zu beteiligen. Der/Die Studierende kann einfache formelle und längere persönliche Briefe und Texte verfassen, strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

### **Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

### **Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch B1.1+B1.2 (intensiv) (Seminar, 2 SWS)

Garcia Garcia M, Lopez Agudo E

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1227: Spanish C1.1 | Spanisch C1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.2.  
Einstufungstest mit Ergebnis C1.1.

#### Content:

In dieser Lehrveranstaltung werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, sich spontan und flüssig auszudrücken und eine Argumentation strukturiert und kohärent auszuführen. In dieser Lehrveranstaltung wird besonderes Augenmerk auf die Erweiterung und den präzisen Umgang mit Vokabular zu allgemeinen und fachlichen Themen (z. B. Graphik- und Datenauswertung) sowie auf die Entschlüsselung und Analyse der diskursiven Merkmale von Text- und audiovisuellen Dokumenten gelegt. Zur Festigung der mündlichen und schriftlichen Fertigkeit werden ausgewählter Schwerpunkte der Grammatik erarbeitet, wiederholt und vertieft. Die Studierenden erhalten die Gelegenheit, eine Präsentation zu einem Thema aus dem eigenen Studienfach zu erarbeiten und vorzutragen und daran anschließend eine Diskussion zu leiten.

**Intended Learning Outcomes:**

Diese Lehrveranstaltung orientiert sich am Niveau C1 „Kompetente Sprachverwendung“ des GER. Der/die Studierende kann eine Vielzahl von Texten verstehen, einschließlich literarischer Schriften, Zeitungs- oder Zeitschriftenartikel und spezialisierter akademischer oder professioneller Publikationen, vorausgesetzt, er/sie kann schwierige Abschnitte erneut nachlesen. Der/die Studierende kann längere Reden und Vorträge unterschiedlicher Fachgebiete verstehen und auch eine komplexe Argumentation folgen, auch wenn diese nicht klar strukturiert ist und Inhalte nur impliziert werden. Er/sie ist in der Lage, ein breites Spektrum idiomatischer Ausdrücke, auch solche umgangssprachlicher Art, zu erkennen und dabei die Registerverschiebungen differenzieren. Er/sie kann nahezu vollständig implizierte Bedeutungen in Rundfunk- und Fernsehprogrammen verstehen. Er/sie kann klare, detaillierte Beschreibungen und Präsentationen zu komplexen Themen geben und Argumentationen mit Beispielen belegen. Er/sie kann klar strukturierte Texte zu komplexen Themen verfassen, die eigene Meinung deutlich darstellen und beherrscht verschiedene Mittel zur Textverknüpfung.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch C1.1 (Seminar, 2 SWS)

Guerrero Madrid V

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1228: Spanish B2 - Spanish in Science and Technology | Spanisch B2 - Español para la Ciencia und Tecnología

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B2.2.

Einstufungstest mit Ergebnis C1.1.

#### Content:

In dieser LV werden Kenntnisse in der Fremdsprache Spanisch erarbeitet, die es den Studierenden ermöglichen, in Studium und Beruf annähernd flüssig über Themen des eigenen und eines fremden Fach- und Interessengebiets zu kommunizieren. Die Studierenden analysieren Strukturen, die in Fachtexten und fachlicher Kommunikation häufig auftreten. Sie erarbeiten einen umfangreichen Wortschatz zu einem breiten Spektrum an technischen Themen. Die Studierenden verwenden Strategien, die effizientes Hören und Lesen im Fach unterstützen. Grundlage der Erarbeitung der genannten Lerninhalte sind in erster Linie authentische Fachtexte. In dieser LV haben die Studierenden die Gelegenheit, eine kurze Präsentation zu gestalten, vorzutragen und anschließend auf Fragen zur eigenen Präsentation zu antworten.

**Intended Learning Outcomes:**

Dieser LV orientiert sich an Niveau B2 „Selbständige Sprachverwendung“ des GER. Nach der Teilnahme an der Lehrveranstaltung kann der/die Studierende den wesentlichen Inhalt von wissenschaftlichen Artikeln und Berichte sowie Texte aus dem eigenen Fach- und Interessengebiet selbständig verstehen und Standpunkte identifizieren. Er/Sie kann längeren Redebeiträge und Vorträgen sowohl zu aktuellen Themen als auch innerhalb seines/ihrer Fachgebietes folgen, sofern sie klar vorgetragen werden. Der/Die Studierende ist in der Lage zusammenhängende Texte fachsprachlichen Themen zu verfassen und dabei auch kohärent zu argumentieren und fachspezifisches Vokabular zu benutzen. Er/Sie kann zu vielen Themen aus seinem/ihrer Interessen- oder Fachgebiet klar und strukturiert referieren und argumentativ Stellung beziehen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Wird im Kurs bekanntgegeben.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1229: Spanish B1 - Grammar Training | Spanisch B1 – Grammatik Training-Curso práctico de gramática

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe B1.2.

Einstufungstest mit Ergebnis B2.1.

#### Content:

In diesem Modul werden ausgewählte Bereiche der Grammatik aus der B1-Stufe wiederholt und vertieft, die es den Studierenden ermöglichen, mündlich wie schriftlich sicherer in der Fremdsprache Spanisch zu kommunizieren. Die Studierenden erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der spanischen Sprache (z. B. ser - estar, Vergangenheiten, subjuntivo, Präpositionen etc.)

#### Intended Learning Outcomes:

Dieses Modul orientiert sich am Niveau B1 „Selbstständige Sprachverwendung“ des GER. Der/Die Studierende erlangt vertiefte Kenntnisse in der Fremdsprache Spanisch auf standardsprachlichen Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte.

Nach Abschluss des Moduls kann der/die Studierende sich in den meisten Situationen, denen man im Studium oder Beruf, Freizeit und auf Reisen im Sprachgebiet begegnet, sicherer verständigen

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1230: Spanish A2 - Grammar Training | Spanisch A2 - Grammatik Training-Curso práctico de gramática

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2.

Einstufungstest mit Ergebnis B1.1.

#### Content:

In diesem Modul werden ausgewählte Bereiche der Grammatik aus der A2-Stufe wiederholt und vertieft, die es den Studierenden ermöglichen, mündlich wie schriftlich sicherer in der Fremdsprache Spanisch zu kommunizieren. Die Studierenden erweitern Ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der spanischen Sprache (z. B. ser - estar, Pronomen, Präsens, Vergangenheiten etc.).

#### Intended Learning Outcomes:

Dieses Modul orientiert sich am Niveau A2 „Elementare Sprachverwendung“ des GER. Der/Die Studierende erlangt vertiefte Kenntnisse in der Fremdsprache Spanisch auf standardsprachlichen Niveau unter Berücksichtigung interkultureller, landeskundlicher und studienbezogener Aspekte.

Nach Abschluss des Moduls kann der/die Studierende sich in einfachen, routinemäßigen Situationen verständigen, in denen es um einen einfachen und direkten Austausch von Informationen über vertraute und geläufige Dinge geht.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1231: Spanish A2 plus - Writing and Grammar Skills | Spanisch A2 plus - Sicherheit in Wortschatz und Grammatik

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch A2 plus – Sicherheit in Wortschatz und Grammatik (Seminar, 2 SWS)

Listan Rosa M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1232: Spanish B2 plus - Preparation for C1 | Spanisch B2 plus - Vorbereitung auf C1

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1234: Spsnish C1.1 | Spanisch C1.1 - Más allá de los límites

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

Spanisch C1.1 (Seminar, 2 SWS)

Guerrero Madrid V

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1235: Spanish C1.2 | Spanisch C1.2

Version of module description: Gültig ab summerterm 2024

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-13: Hebrew | Hebräisch****Module Description****SZ1304: Hebrew A1.1 | Hebräisch A1.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

Der/die Studierende erlangt Grundkenntnisse in der Fremdsprache Hebräisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung kultureller und landeskundlicher Aspekte. Es werden Kenntnisse vermittelt, die es den Studierenden ermöglichen, sehr einfache Strukturen wiederzugeben.

Themen aus alltäglichen Situationen zusammen mit der entsprechenden Grammatik und Wortschatz werden behandelt.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1.1 des GER. Nach Abschluss dieses Moduls sind die Studierenden in der Lage die hebräischen Schriftzeichen selbstständig zu lesen, zu schreiben und auszusprechen, hebräische Druck und Schreibschrift zu beherrschen, sehr einfache Fragen zu vorgegebenen, alltäglichen Themen zu beantworten, sehr einfache vorgegebene Sätze zu erkennen und wiederzugeben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Hebräisch A1.1 (Seminar, 2 SWS)

Weidemann T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1305: Hebrew A1.2 | Hebräisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreich bestandene Stufe A1.1

#### Content:

In diesem Modul werden weitere Grundkenntnisse in der Fremdsprache Hebräisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. U.a. werden die Themen, Uhrzeit, feminine Zahlen, Adjektivflexion, und -verwendung, Verwendung des direkten Objekts und die Wochentage behandelt.

#### Intended Learning Outcomes:

Das Modul orientiert sich am Niveau A1.2 des GER. Nach Abschluss sind die Studierenden in der Lage, sich in sehr einfachen, routinemäßigen Situationen zu verständigen, wenn es um einen direkten Austausch von Informationen und um vertraute Themen und Tätigkeiten geht, ein sehr kurzes Kontaktgespräch zu führen (Begrüßung, Wohlbefinden, Uhrzeit erfragen und angeben, Einkäufe tätigen, nach dem Weg fragen) und mit kurzen Sätzen und einfachen Mitteln z.B. Familie, Wohnsituation, Orte und Gegenstände zu beschreiben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Hebräisch A1.2 (Seminar, 2 SWS)

Weidemann T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1306: Hebrew A2.1 | Hebräisch A2.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreich bestandene Stufe A1.2

#### Content:

In diesem Modul werden weitere Grundkenntnisse in der Fremdsprache Hebräisch vermittelt, die es den Studierenden ermöglichen sich in alltäglichen Situationen zurechtzufinden. U. a. werden vertiefte grammatikalische Themen (z.B. Infinitivbildung verschiedener regelmäßiger und unregelmäßiger Verbgruppen, Adverbien, komplexe Nominalsätze, Zahlen bis 100, Zusammengesetzte Wörter (Smichut) und Indefinitpronomen (jeder/alle) und komplexere landeskundliche Themen (Israelische Geschichte, Kunst, und Kultur) behandelt.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2.1 des GER. Nach Abschluss sind die Studierenden in der Lage, sich in alltäglichen Situationen mündlich und schriftlich zu verständigen und dabei die erlernte Grammatik anzuwenden. Sie sind in der Lage, komplexere Satzstrukturen zu erkennen und setzen diese selbst um (z. B. Ausdruck von konkreten Wünschen, Nachfrage und Angabe von Gründen, Treffen vergleichender Aussagen). Die Studierenden führen erfolgreich kurze Gespräche über einfache geschichtliche und kulturelle Themen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



**SZ0003-14: Turkish | Türkisch****Module Description****SZ1402: Turkish A2.1 | Türkisch A2.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

**Repeat Examination:****(Recommended) Prerequisites:**

Gesicherte Kenntnisse der Stufe A1.2

**Content:**

Aufbauend auf die Grundkenntnisse aus A1 und unter Einbeziehung interkultureller und landeskundlicher Aspekte und der fortdauernden Modernisierung der türkischen Sprache werden in diesem Modul das Hörverstehen trainiert und vertieft und die Verflüssigung der Ausdrucksfähigkeit im aktiven Sprechen gefördert. Der Übungsschwerpunkt liegt in der richtigen Auswahl und Anreihung der Agglutinationen, der Endungsanalyse beim Hören und Lesen von Informationen. Die Studierenden lernen/üben Imperativ, Vergangenheit, Zukunft, Verneinung und Fragesätze zu formulieren und verstehen. Themen aus dem alltäglichen Leben wie Kochen, Freizeit, Nachrichten, Wetter und Aktivitäten planen erweitern den Wortschatz.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau "A2.1 Elementare Sprachverwendung" des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, vertraute Sätze und

Redewendungen zu einem erweiterten Spektrum an Themen zu verstehen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen oder Studien- bzw. berufsrelevanten Themen. Die Lernenden erfassen die Bedeutung von klaren und deutlich artikulierten Mitteilungen. Der Austausch von Informationen erfolgt kurz, aber mühelos zu vertrauten Tätigkeiten und Themen. Der/die Studierende ist in der Lage mithilfe feststehender Wendungen kurze, informative Texte zu verstehen, mündlich wie schriftlich zu wiedergeben und zu verfassen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Dialogübungen; gezielte Hör-, Sprech-, Lese- und Schreibübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Referat; kontrolliertes Selbstlernen grundlegender Phänomene der Fremdsprache mit vorgegebenen Materialien. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Türkisch A2.1 (Seminar, 2 SWS)

Kardes Alper T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1403: Turkish A2.2 | Türkisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.1

#### Content:

Aufbauend auf die Grundkenntnisse aus A 2.1 und unter Einbeziehung interkultureller und landeskundlicher Aspekte und der fortdauernden Modernisierung der türkischen Sprache werden in diesem Modul weiterhin schwerpunktmäßig das Hör- und Leseverstehen trainiert und vertieft und das aktive Sprechen anhand weitere Themen wie Gewohnheiten, Gesundheit, Kultur und Medien gefördert. Im Fokus der Grammatik stehen weitere, besondere Tempusformen.

#### Intended Learning Outcomes:

Dieses Modul orientiert sich am Niveau „A2.2 Elementare Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, sich aktiv in kurzen Interaktionen zu einem erweiterten Spektrum an Themen einzubringen. Die Lernenden können auch längere Texte zu vertrauten Themen verstehen, in denen einfache alltags-, studierenden- und berufsbezogene Sprache verwendet wird. Der Austausch von Informationen erfolgt kurz, aber mühelos zu vertrauten Tätigkeiten und Themen. Der/die Studierende ist in der Lage mithilfe

feststehender Wendungen kurze, informative Texte zu verfassen. Es werden Haupt- und einige Nebensätze verwendet.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Dialogübungen; gezielte Hör-, Sprech-, Lese- und Schreibübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; kontrolliertes Selbstlernen grundlegender Phänomene der Fremdsprache mit vorgegebenen Materialien.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1404: Turkish A1.1 | Türkisch A1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

Nach ersten Einblicken in die Beschaffenheit/Spezifität der Sprache (Agglutination, Vokalharmonie, Satzbau, Fehlen des grammatischen Geschlechts) werden in diesem Modul Grundkenntnisse der Fremdsprache Türkisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte mit einbezogen. Die Studierenden ler-nen/üben einfach strukturierte Hauptsätze zu formulieren und im bestimmten Präsens zu erzählen. Zum Beispiel: Angaben zur eigenen Biografie zu machen oder zur Biografie einer Person Fragen zu stellen und zu beantworten, bezogen auf Namen, momentanes Befinden, Herkunft, Nationalität, Familienstand, Alter, Wohnort, Arbeitsplatz, Studium, Sprachen, Beruf; Zahlen zu verstehen und zu benutzen. Dazu werden entsprechende, hierfür notwendige grammatikalische Themen behandelt. Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse (in alltäglichen Grundsituationen) ermöglichen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich am Niveau „A1.1 Elementare Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, vertraute alltägliche Ausdrücke und sehr einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Er/sie kann sich und andere vorstellen, anderen Leuten Fragen zu ihrer Person stellen und auf Fragen dieser Art Antwort geben. Der/die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Sprech-, Lese- und Schreibübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; kontrolliertes Selbst-lernen grundlegender Phänomene der Fremdsprache mit vorgegebenen Materialien. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Türkisch A1.1 (Seminar, 2 SWS)

Colak A, Kardes Alper T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1405: Turkish A1.2 | Türkisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A1.1

#### Content:

Dieses Modul orientiert sich am Niveau „A1.2 Elementare Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, vertraute alltägliche Ausdrücke, Redewendungen und einfache Sätze zu verstehen und zu verwenden. Dabei handelt es sich um grundlegende, kurze Informationen zu alltäglichen oder Studien- bzw. berufsrelevanten Fragen und vertrauten Tätigkeiten und Themen. Er/sie kann sich und andere vorstellen, anderen Leuten Fragen zu ihrer Person stellen und auf Fragen dieser Art Antwort geben. Der/die Studierende kann sich auf einfache Art verständigen, wenn die Ge-sprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen.

#### Intended Learning Outcomes:

Dieses Modul orientiert sich am Niveau „A1.2 Elementare Sprachverwendung“ des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage, vertraute alltägliche Ausdrücke, Redewendungen und einfache Sätze zu verstehen und zu verwenden. Dabei handelt es sich um grundlegende, kurze Informationen zu alltäglichen oder Studien- bzw. berufsrelevanten

Fragen und vertrauten Tätigkeiten und Themen. Er/sie kann sich und andere vorstellen, anderen Leuten Fragen zu ihrer Person stellen und auf Fragen dieser Art Antwort geben. Der/die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; Dialogübungen; gezielte Hör-, Sprech-, Lese- und Schreibübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; kontrolliertes Selbstlernen grundlegender Phänomene der Fremdsprache mit vorgegebenen Materialien. Freiwillige Hausaufgaben festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial.

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Türkisch A1.2 (Seminar, 2 SWS)

Kardes Alper T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1408: Turkish - Communication A2 | Türkisch - Kommunikation A2

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse (hier: mündliche Kommunikationsfähigkeiten) überprüft. Format: Audiodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.1

#### Content:

In diesem Modul steht die mündliche Kommunikation in der Fremdsprache Türkisch im Vordergrund. Es werden Kenntnisse vermittelt, die es den Studierenden ermöglichen, im einfachen Kontext, d. h. in verschiedenen alltäglichen Situationen und zu Themen von allgemeinem Interesse zusammenhängend und verständlich zu kommunizieren. Dabei wird ein Spektrum an Vokabular, Redewendungen und Dialogmustern erarbeitet; interkulturelle und landeskundliche Aspekte berücksichtigt; Schwerpunkte der Grammatik gemäß der Niveaustufe (insbesondere die Tempus-Formen Präsens, Präteritum und Futur sowie Nebensatzkonstellationen) wiederholt bzw. vertieft und gefestigt. Die aktive Mitarbeit der Studierenden wird erwartet und gefördert.

#### Intended Learning Outcomes:

Nach Abschluss des Moduls können die Studierenden auf A2-Niveau sich an leichteren Gesprächen im Alltag beteiligen bzw. einfach und zusammenhängend in alltäglichen Kommunikationssituationen verstehbar reagieren und Ansichten kurz begründen oder erklären, sofern sie in klarer Standardsprache vorgetragen werden und die Thematik vertraut ist.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Sprechübungen; Einzel-, Partner- und Gruppenarbeit; kontrolliertes Selbstlernen grundlegender Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien; Förderung kooperativen Lernens; Diskussionen in Gruppen zu vorbereiteten sowie frei/spontan gewählten Themen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Vom Kursleiter/der Kursleiterin selbst angefertigte/zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Reading List:**

Vom Kursleiter/der Kursleiterin selbst angefertigte/zusammengestellte Übungen; Auszüge aus kopierbaren Lehrmaterialien; Online-Materialien

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Türkisch - Kommunikation A2 (Seminar, 1 SWS)

Kardes Alper T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-15: Danish | Dänisch****Module Description****SZ1501: Danish A1 | Dänisch A1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In dieser LV werden Grundkenntnisse der dänischen Sprache vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Kommunikationssituationen zurechtzufinden.

Geübt wird: Grundlegendes Vokabular zu Themen wie Freizeit, Familie, Wohnen, Essen, Landeskunde, Beruf und in einfach strukturierten Sätzen über diese Themen im Präsens zu berichten. Ebenso wird grundlegende dänische Grammatik geübt; Substantive (Singular und

Plural), Verben und Modalverben, Personalpronomen, Possessivpronomen, Indefinitpronomen, reflexive Pronomen, einige Präpositionen, Adjektivdeklination sowie Steigerung und Wortstellung.

**Intended Learning Outcomes:**

Die LV orientiert sich an dem Niveau A1 des GER. Die/der Studierende erlangt Grundkenntnisse in der Fremdsprache Dänisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung kultureller und landeskundlicher Aspekte. Nach Abschluss dieses Moduls kann sie/er alltägliche Ausdrücke und einfache Sätze verstehen und verwenden. Die/der Studierende kann sich auf einfache Art verständigen und in dänischer Sprache kommunizieren.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Dänisch A1 (Seminar, 2 SWS)

Vagner S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1502: Danish A2 | Dänisch A2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Prüfungsleistungen A1

#### Content:

In diesem Modul werden erweiterte Kenntnisse der dänischen Sprache vermittelt, die es den Studierenden ermöglichen, sich in fast allen alltäglichen Kommunikationssituationen zurechtzufinden.

Geübt wird: erweitertes Basisvokabular um Beschreibungen und eigene Meinung bekannt zu geben, eigene Situation und Aktivitäten zu weitergeben, über das Wetter zu reden etc. Themen sind z.B. im Bereich Ausbildung, Beruf, Urlaub und (eigene) Zukunft. Die Zeitformen Präteritum und Perfekt sowie die Partizipien werden hier stärker geübt. Die dänische Grammatik wird

dabei erweitert; mehrere Präpositionen, indirekte Rede, unregelmäßige Substantivformen, Komparativformen von Adjektiven, Wortstellung in Nebensätzen, Passivformen von Verben, bestimmter Artikel usw.

**Intended Learning Outcomes:**

Das Modul orientiert sich an dem Niveau A2 des GER. Die/der Studierende erlangt erweiterte Kenntnisse in der Fremdsprache Dänisch mit allgemeinsprachlicher Orientierung und mit besonderem Gewicht auf das Kommunizieren der eigenen Meinung sowie Gegenstände, Aktivitäten und Medien beschreiben und besprechen. Nach Abschluss dieses Moduls kann sie/er an alltäglicher Konversation aktiv teilnehmen. Die/der Studierende kann seine/ihre Meinung äußern und auf einfache Art beschreiben und diskutieren, bewerten, empfehlen etc.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben); multimedial gestütztes Lehr- und Lernmaterial

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Dänisch A2 (Seminar, 2 SWS)

Vagner S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1503: Danish B1 | Dänisch B1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Prüfungsleistungen A2

#### Content:

In diesem Modul werden Kenntnisse der Fremdsprache Dänisch erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen und zu Themen von allgemeinem Interesse selbständig in der Zielsprache zu äußern, wenn Standardsprache verwendet wird. Kommunikationsmöglichkeiten (Vokabular, Redewendungen, Dialogmuster etc.) zu den genannten Bereichen, ergänzen das Repertoire an Nebensätzen. Wir wiederholen / intensivieren und ergänzen elementare Aspekte der Grammatik wie die Präpositionen und Konjunktionen, die Vergangenheitsform, die Adjektive (Komparativ und Superlativ) und Adverbien; Passiv mit –s sowie und Wortfolge in komplexeren Satzmustern. Die LV orientiert sich am Niveau B1 des GER.

Der/Die Studierende erlangt Kenntnisse in der Fremdsprache Dänisch auf standardsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte.

**Intended Learning Outcomes:**

Nach Abschluss dieses Moduls kann der/die Studierende sich in den meisten alltäglichen Situationen, denen man in Studium, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen, z. B. den eigenen Werdegang vorstellen, Wünsche äußern, Ratschläge erteilen, Anweisungen erteilen um Erlaubnis bitten, zu alltäglichen Themen eine persönliche Meinung äußern und widersprechen, für und gegen etwas argumentieren, persönliche Erfahrungen und Pläne kommunizieren.

Er/Sie kann wesentliche Inhalte in einfachen Sachtexten, in den Medien und literarischen Texten verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen von allgemeinem Interesse beteiligen. Er kann einfache formelle und längere persönliche Briefe und Texte verfassen, strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch (wird in der LV bekannt gegeben); multimedial gestütztes Lehr- und Lernmaterial

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



**SZ0003-16: Dutch | Niederländisch****Module Description****SZ1601: Dutch A1 | Niederländisch A1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse, mündlich und schriftlich, in der Fremdsprache Niederländisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierenden lernen/

üben: z.B. Auskunft über die Wohnsituationen zu geben, den Tagesablauf zu beschreiben, über Gewohnheiten, Freizeit, Ausbildung und Arbeit zu sprechen und Wegbeschreibungen zu verstehen /geben.

Dazu werden u.a. folgende Themen der Grammatik behandelt und geübt: Nomen und Adjektive, Präsens, Perfekt und Präteritum, unregelmäßige Verben und Modalverben.

Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse (in alltäglichen Grundsituationen) ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Niederländisch effektiver zu gestalten und die eigenen Lernfähigkeiten zu verbessern.

### **Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau "A1 Elementare Sprachverwendung" des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage vertraute, alltägliche Ausdrücke und sehr einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Er/Sie kann sich und andere vorstellen und anderen Leuten Fragen zu ihrer Person stellen und auf Fragen dieser Art Antwort geben. Der/Die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

### **Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperatives Lernens; Kontrolliertes Selbstlernen grundlegender grammatischer Phänomene der Fremdsprache mit vorgegebenen Materialien.

### **Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

### **Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

### **Responsible for Module:**

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Niederländisch A1 (Seminar, 2 SWS)

Becker H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1602: Dutch A2 | Niederländisch A2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene A1-Stufe

#### Content:

In diesem Modul werden erweiterte Grundkenntnisse, mündlich und schriftlich, der Fremdsprache Niederländisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden lernen/üben: z.B. Auskunft über Gefühle und Stimmungen zu geben und Vermutungen und Meinungen zu äußern, einen formellen Brief zu schreiben, jemanden etwas zu empfehlen.

Dazu werden u.a. folgende Themen der Grammatik behandelt und geübt: den Superlativ, das Wörtchen „er“, das Futur, die Rechtschreibung und das Passiv. Es werden Strategien vermittelt, die eine Verständigung trotz noch geringer Sprachkenntnisse (in alltäglichen Grundsituationen) ermöglichen. Außerdem werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Niederländisch effektiver zu gestalten und die eigenen Lernfähigkeiten zu verbessern.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau "A2 Elementare Sprachverwendung" des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierenden in der Lage vertraute, häufig gebrauchte Ausdrücke zu verstehen, (etwa Informationen zur Person und zur Familie, Einkaufen, Arbeit, nähere Umgebung) und sich in routinemäßigen Situationen mit dem Ziel des Informationsaustausches zu verständigen. Die eigene Herkunft und Ausbildung, direkte Umgebung und Dinge im Zusammenhang mit unmittelbaren Bedürfnissen beschreiben. Der/Die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperatives Lernens; Kontrolliertes Selbstlernen grundlegender grammatischer Phänomene der Fremdsprache mit vorgegebenen Materialien.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Niederländisch A2 (Seminar, 2 SWS)

Becker H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1606: Dutch B1 | Niederländisch B1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene A2-Stufe

#### Content:

In dieser LV werden Kenntnisse der Fremdsprache Niederländisch erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen und zu Themen von allgemeinem Interesse selbständig in der Zielsprache zu äußern, wenn Standardsprache verwendet wird. Kommunikationsmöglichkeiten (Vokabular, Redewendungen, Dialogmuster etc.) zu den genannten Bereichen, ergänzen das Repertoire an Nebensätzen. Wir wiederholen / intensivieren und ergänzen elementare Aspekte der Grammatik wie die Präpositionen und Konjunktionen, die Vergangenheitsform, die Adjektive (Komparativ und Superlativ) und Adverbien; Passiv,

Plusquamperfekt, sowie und Wortfolge in komplexeren Satzmustern. Die LV orientiert sich am Niveau B1 des GER. Der/Die Studierende erlangt Kenntnisse in der Fremdsprache Niederländisch auf standardsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte.

**Intended Learning Outcomes:**

Nach Abschluss der LV kann der/die Studierende sich in den meisten alltäglichen Situationen, denen man in Studium, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen, z. B. den eigenen Werdegang vorstellen Wünsche äußern, Ratschläge erteilen, Anweisungen erteilen um Erlaubnis bitten, zu alltäglichen Themen eine persönliche Meinung äußern und widersprechen, für und gegen etwas argumentieren, persönliche Erfahrungen und Pläne kommunizieren.

Er/Sie kann wesentliche Inhalte in einfachen Sachtexten, in den Medien und in literarischen Texten verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen von allgemeinem Interesse beteiligen. Er kann einfache formelle und längere persönliche Briefe und Texte verfassen, strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperatives Lernens; Kontrolliertes Selbstlernen grundlegender grammatischer Phänomene der Fremdsprache mit vorgegebenen Materialien.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-17: Norwegian | Norwegisch****Module Description****SZ1701: Norwegian A1 | Norwegisch A1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

keine

**Content:**

In diesem Modul werden Grundkenntnisse in der Fremdsprache Norwegisch vermittelt, die es den Studierenden ermöglichen, sich in alltäglichen Grundsituationen trotz geringer Sprachkenntnisse zurechtzufinden. Wir lernen / üben grundlegendes Vokabular zu Themen wie Familie, Wohnen, Beruf, Freizeit, Landeskunde und in einfach strukturierten Haupt- und Nebensätzen Alltägliches im Präsens zu berichten; Plural der Nomen; Personal-, Reflexiv-, Demonstrativ- und einige

Possessivpronomen; einfache Negationsformen; den Gebrauch einiger Modalverben und Präpositionen; Adjektivdeklinations.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 des GER. Der/die Studierende erlangt Grundkenntnisse in der Fremdsprache Norwegisch mit allgemeinsprachlicher Orientierung unter Berücksichtigung kultureller und landeskundlicher Aspekte. Nach Abschluss dieses Moduls kann er/sie alltägliche Ausdrücke und sehr einfache Sätze verstehen und verwenden, die auf die Befriedigung konkreter, in der Bewältigung des Alltags wesentlicher Bedürfnisse zielen. Der/die Studierende kann sich auf einfache Art verständigen, wenn die Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

Er/Sie kann beispielsweise einfache Fragen zu Person und Familie stellen und beantworten sowie Verabredungen treffen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen.

Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Norwegisch A1 (Seminar, 2 SWS)

Janes J

Blockkurs Norwegisch A1 (Seminar, 2 SWS)

Janes J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1702: Norwegian A2 | Norwegisch A2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Studien-/Prüfungsleistungen:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur A1

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Norwegisch vermittelt, die es den Studierenden – trotz geringer Sprachkenntnisse – ermöglichen sollen, sich in alltäglichen Grundsituationen zurechtzufinden.

Wir lernen/üben grundlegendes Vokabular und Konversationen und produzieren auch kürzere Texte (z.B. E-Mail, Textzusammenfassung und Kurzpräsentationen); vertiefen und erweitern die Grammatik aus der A1-Stufe und lesen Texte in leicht leserlicher Form.

Grammatische Inhalte: Wiederholung der Pronomen; Komplettierung der Possessivpronomen; komplexer strukturierte Haupt- und Nebensätze mit Modalverben; Imperativ; Präteritum; Perfekt und Plusquamperfekt; Zeitausdrücke-/angaben; Zeit-, Ort- und Richtungsadverbien; Steigerung des Adjektivs.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2 des GER. Der/Die Studierende erlangt Grundkenntnisse in Norwegisch mit allgemein sprachlicher Orientierung unter Berücksichtigung kultureller und landeskundlicher Aspekte.

Nach Abschluss dieses Moduls kann der/die Studierende im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen Themen unter Einbeziehung landeskundlicher Aspekte. Der/die Studierende ist in der Lage kurze informative Texte oder Mitteilungen zu grundlegenden Situationen zu verfassen und kann längere Texte zu vertrauten Themen verstehen, in denen gängige bzw. einfache alltagsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Norwegisch A2 (Seminar, 2 SWS)

Janes J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1703: Norwegian B1 | Norwegisch B1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Bestandene Abschlussklausur A2

#### Content:

In diesem LV werden Kenntnisse der Fremdsprache Norwegisch erarbeitet, die es den Studierenden ermöglichen, sich in vertrauten Situationen und zu Themen von allgemeinem Interesse selbständig in der Zielsprache zu äußern.

Kommunikationsmöglichkeiten (Vokabular, Redewendungen, Dialogmuster etc.) zu den genannten Bereichen, ergänzen das Repertoire an Nebensätzen.

Wir wiederholen / intensivieren und ergänzen elementare Aspekte der Grammatik. Die LV orientiert sich am Niveau B1 des GER. Der/Die Studierende erlangt Kenntnisse in der Fremdsprache

Norwegisch auf standardsprachlichem Niveau unter Berücksichtigung interkultureller, landeskundlicher, und studienbezogener Aspekte.

Nach Abschluss der LV kann der/die Studierende sich in den meisten alltäglichen Situationen, denen man in Studium, Freizeit und auf Reisen im Sprachgebiet begegnet, sicher verständigen, z. B. den eigenen Werdegang vorstellen, Wünsche äußern, Ratschläge erteilen, Anweisungen erteilen, um Erlaubnis bitten, zu alltäglichen Themen eine persönliche Meinung äußern und widersprechen - für und gegen etwas argumentieren, persönliche Erfahrungen und Pläne kommunizieren.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau B1 des GER. Nach Abschluss dieses Moduls kann der/die Studierende wesentliche Inhalte in einfachen Sachtexten, in den Medien und in literarischen Texten verstehen und wiedergeben und sich spontan an Gesprächen zu vertrauten Themen von allgemeinem Interesse beteiligen. Er/Sie kann einfache formelle und längere persönliche Briefe und Texte verfassen, strukturiert zu einem alltäglichen Thema von persönlichem Interesse referieren und schriftlich eine logisch begründete Stellungnahme zu einem aktuellen Thema verfassen, wenn Hilfestellung gegeben wird.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Norwegisch B1 (Seminar, 2 SWS)

Janes J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1704: Norwegian B2 | Norwegisch B2

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 3	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

**SZ0003-18: Korean | Koreanisch****Module Description****SZ1804: Korean A2.1 | Koreanisch A2.1**

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

**Description of Examination Method:**

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

**Repeat Examination:****(Recommended) Prerequisites:**

Erfolgreich abgeschlossene Stufe A1.2

**Content:**

In diesem Modul werden weitere Grundkenntnisse in der Fremdsprache Koreanisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierende lernen/üben (u. a.) Konsekutivsatz (um ... zu), Richtungs- und Kausalpartikel, Präpositionen: oben, unten, vor, hinter, neben, innen, außen, zwischen, links und rechts, Hilfsverben (mögen, wollen, können),

Futurform, Partizip Präsens/Attributives Adjektiv, Konjugationsform von Adjektiv-Verben, Honorativ und Imperativ, Wegbeschreibung, Reiseplan, Briefschreiben, Shopping, Internetbestellung.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A2.1 des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierende in der Lage Sätze und häufig gebrauchte Ausdrücke zu verstehen, die mit Bereichen von ganz unmittelbarer Bedeutung zusammenhängen. Sie können sich in routinemäßigen Situationen verständigen, in denen es um einen direkten Austausch von Informationen über vertraute und geläufige Themen geht.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Koreanisch A2.1 (Seminar, 2 SWS)

Jeong H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1805: Korean A2.2 | Koreanisch A2.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreich abgeschlossene Stufe A2.1

#### Content:

In diesem Modul werden Grundkenntnisse, die in A2.1 erworben wurden, vertieft. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierende lernen/üben (u. a.) wie man Meinungen äußert und darauf reagiert; wie man über die Ursachen und Folgen von etwas spricht; wie man Anweisungen und Ratschläge gibt; wie man Situationen und Ereignisse in der Vergangenheit schildert; wie man Geschichten erzählt. Sie können einfache Diskussionen führen, eine Auswahl treffen und begründen. Dazu werden entsprechende Themen der Grammatik behandelt: Honorativformen, Modalverben (müssen, können), Konjunktionen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau A2.2 des GER. Nach Abschluss dieses Moduls kann der/die Studierende im Gespräch einfache Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Dabei handelt es sich um grundlegende Informationen zu alltäglichen, oder studienrelevanten Themen unter Einbeziehung landeskundlicher Aspekte. Der/die Studierende kann längere Texte und Briefe zu vertrauten Themen verstehen, in denen gängige aber einfache alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Er/Sie ist in der Lage kurze, informative Texte oder Mitteilungen zu grundlegenden Situationen in Alltag und Studium zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Koreanisch A2.2 (Seminar, 2 SWS)

Kim Y

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1807: Korean B1.2 | Koreanisch B1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreich abgeschlossene Stufe B1.1

#### Content:

In diesem Modul werden Kenntnisse, die in B1.1 erworben wurden anhand verschiedenster aktueller Themen des koreanischen Lebens vertieft. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden erweitern ihren Wortschatz sowie festigen und vertiefen die bisher erlernten grammatischen Schwerpunkte der koreanischen Sprache. Sie lernen/üben u. a. wie man Absichten, Vorschläge, Absagen und Verhandeln formuliert. Dazu werden entsprechende Themen der Grammatik behandelt, wie z. B. eine besondere Form der Nominalisierung, konditionale Konjunktion, Verbot und vielfältige Nebensatzkonstellationen.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau B1.2 des GER. Nach Abschluss dieses Moduls kann der/die Studierende im Gespräch komplizierte Sätze und Redewendungen zu einem erweiterten Spektrum an vertrauten Themen verstehen und gebrauchen. Der/die Studierende kann längere Texte zu vertrauten Themen verstehen, in denen gängige aber gehobene alltags- oder berufsbezogene Sprache verwendet wird und in denen vorhersehbare Informationen zu finden sind. Er/Sie ist in der Lage, längere, informative Texte oder Mitteilungen zu grundlegenden Situationen im Alltag und Studium zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1808: Korean A1.1 | Koreanisch A1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

keine

#### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Koreanisch vermittelt.  
Hangul & Vorbereitung 1 bis 4: Alphabet, Vokale + Konsonanten, Silbenstruktur + Ausspracheregeln, Wort- und Satzstruktur, Begrüßung + Vorstellung, Zahlen (1-100) nach rein koreanischem System, Zahleneinheiten, Berufsbezeichnungen, Ländernamen, Demonstrativ- und Possessivpronomina, Orte + Einrichtungen, Ortsangaben, Konjugationsformen (regelmäßige Verben).

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1.1 des GER. Nach Abschluss sind die Studierenden in der Lage vertraute, alltägliche Ausdrücke und ganz einfache Sätze zu verstehen und zu verwenden, die auf die Befriedigung konkreter Bedürfnisse zielen. Er/Sie kann sich und andere vorstellen und entsprechend Fragen formulieren. Er/Sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-Partner- und Gruppenarbeit; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren nach vorgegebenen Kriterien; moderierte (Rollen-) Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Koreanisch A1.1 (Seminar, 2 SWS)

Jeong H, Kim Y, Lee K, Shin H

Blockkurs Koreanisch A1.1 (Seminar, 2 SWS)

Kim Y

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1809: Korean A1.2 | Koreanisch A1.2

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreich abgeschlossene Stufe A1.2

#### Content:

In diesem Modul werden weitere Grundkenntnisse in der Fremdsprache Koreanisch vermittelt, die den Studierenden ermöglichen, sich in alltäglichen Grundsituationen zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierende lernen/üben (u. a.) Konsekutivsatz (um ... zu), Richtungs- und Kausalpartikel, Präpositionen: oben, unten, vor, hinter, neben, innen, außen, zwischen, links und rechts, Hilfsverben (mögen, wollen, können), Futurform, Partizip Präsens/Attributives Adjektiv, Konjugationsform von Adjektiv-Verben, Honorativ und Imperativ, Wegbeschreibung, Reiseplan, Briefschreiben, Shopping, Internetbestellung.

#### Intended Learning Outcomes:

Das Modul orientiert sich am Niveau A2.1 des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierende in der Lage Sätze und häufig gebrauchte Ausdrücke zu verstehen, die mit Bereichen von ganz unmittelbarer Bedeutung zusammenhängen. Sie können

sich in routinemäßigen Situationen verständigen, in denen es um einen direkten Austausch von Informationen über vertraute und geläufige Themen geht.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien werden die im Seminar vermittelten Grundlagen vertieft. Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Koreanisch A1.2 (Seminar, 2 SWS)

Kim Y, Lee K

Blockkurs Koreanisch A1.2 (Seminar, 2 SWS)

Shin H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### SZ1810: Korean B1.1 | Koreanisch B1.1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Die Prüfungsleistungen werden in Form von kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben erbracht.

Hilfsmittel sind erlaubt.

Die Prüfungsleistungen sind in ihrer Gesamtheit so konzipiert, dass die Anwendung von Wortschatz und Grammatik, das Lese- und/oder Hörverstehen sowie die freie Textproduktion geprüft werden.

Mündliche Kommunikationsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

#### Repeat Examination:

#### (Recommended) Prerequisites:

Erfolgreich abgeschlossene Stufe A2.2

#### Content:

In diesem Modul werden Grundkenntnisse, die in A2.2 erworben wurden, vertieft. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt. Die Studierende lernen/üben u. a. wie man Absichten, Bitten und Vergleiche formuliert und über Erfahrungen spricht. Dazu werden entsprechende Themen der Grammatik behandelt, wie z. B. Konjunktionen, Superlativformen, eine besondere Form der Negation; Nebensatzkonstellationen und die Partizip- und Verlaufsform.

**Intended Learning Outcomes:**

Dieses Modul orientiert sich an Niveau B1.1 des GER. Nach der Teilnahme an der Modulveranstaltung sind die Studierende in der Lage, Sätze und häufig gebrauchte Ausdrücke aus einem erweiterten Themenspektrum zu verstehen (u. a. studienrelevante Themen). Der Austausch von Informationen erfolgt kurz aber mühelos über eine Reihe bekannter Äußerungen zu vertrauten Tätigkeiten und Themen. Die Lerner sind in der Lage mithilfe feststehender Wendungen kurze, informative Texte oder Mitteilungen zu verfassen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechübungen in Einzel-, Partner- und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben zur Vor- und Nachbearbeitung festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial (wird in der LV bekannt gegeben)

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Koreanisch B1.1 (Seminar, 2 SWS)

Shin H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1812: Korean B1.1 plus B1.2 - Preparation for TOPIK | Koreanisch B1.1 plus B1.2 - Vorbereitung auf die Sprachprüfung TOPIK

Version of module description: Gültig ab winterterm 2022/23

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b> 1	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SZ1813: Korean B1.1 + B1.2 - Grammar | Koreanisch B1.1 + B1.2 - Grammatik

Version of module description: Gültig ab summerterm 2023

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 1	<b>Total Hours:</b> 30	<b>Self-study Hours:</b> 15	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Anwendung von Wortschatz und Grammatik. Hilfsmittel sind erlaubt. Mündliche Reaktionsfähigkeiten werden anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Gesicherte Kenntnisse der Stufe A2.2

#### Content:

In diesem Modul wird Grundwissen der Grammatik auf dem Niveau von B1.1 und B1.2 in Form von Lückentexten und Frage-/Antwort-Dialogen behandelt.

Dabei werden in der Fragensammlung interkulturelle, landeskundliche und aktuelle Aspekte berücksichtigt, zum Beispiel, wie man Absichten, Bitten, Vorschläge, Absagen, Verhandlungen, Vergleiche und Erfahrungen formuliert.

#### Intended Learning Outcomes:

Nach erfolgreichem Abschluss des Moduls werden die Studierenden ihr erworbenes Grundwissen der koreanischen Grammatik um die Niveaustufe B1 erweitert; Feinheiten und Nuancen der Sprache vertieft und ihre neuen Kenntnisse und die Anwendung dieser im Alltag anhand gezielter Übungsaufgaben gefestigt haben.

**Teaching and Learning Methods:**

Kommunikatives und handlungsorientiertes Erarbeiten der Inhalte; gezielte Hör-, Lese-, Schreib- und Sprechübungen; Einzel-, Partner- und Gruppenarbeit; Förderung kooperativen Lernens; Kontrolliertes Revidieren einzelner Aspekte der Grammatik mit vorgegebenen (online-) Materialien; Referieren und Präsentieren; moderierte Diskussionen. Freiwillige Hausaufgaben zur Vor- und Nachbereitung festigen das Gelernte.

**Media:**

Multimedial gestütztes Lehr- und Lernmaterial

**Reading List:**

Vom Dozierenden selbst zusammengestelltes Übungsmaterial (PDF-Format).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## SZ0003-20: Catalan | Katalanisch

### Module Description

## SZ2001: Catalan A1 | Katalanisch A1

Version of module description: Gültig ab summerterm 2022

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> Language taught	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

In den Prüfungsleistungen werden die in der Modulbeschreibung angegebenen Lernergebnisse geprüft. Sie beinhalten Aufgaben zur Rezeption (Lese- und Hörverstehen) sowie zur Produktion (Wortschatz und Grammatik sowie freie Textproduktion) und werden in Form von kommunikativen kompetenz- und handlungsorientierten (Portfolio-) Prüfungsaufgaben abgehalten. Hilfsmittel erlaubt. Mündliche Produktion wird anhand der Anwendung entsprechender Redemittel in schriftlichen Dialogbeispielen überprüft und/oder in Form einer Audio-/Videodatei abgehalten. Hierzu beachten wir die Datenschutzgrundverordnung (DSGVO, Art. 12 -21).

### Repeat Examination:

### (Recommended) Prerequisites:

keine

### Content:

In diesem Modul werden Grundkenntnisse in der Fremdsprache Spanisch vermittelt, die es den Studierenden ermöglichen, sich in vertrauten und alltäglichen Grundsituationen trotz noch geringer Sprachkenntnisse zurechtzufinden. Dabei werden interkulturelle und landeskundliche Aspekte berücksichtigt.

Die Studierenden lernen einfache Fragen zur Person/Familie zu stellen und zu beantworten, Anmeldeformulare mit persönlichen Daten auszufüllen, über Studium, Beruf und Freizeitaktivitäten zu sprechen, Gefallen, Interessen und Vorlieben auszudrücken, Orte zu beschreiben etc. Sie lernen/üben grundlegendes Vokabular zu diesen Themen und berichten in einfach strukturierten Hauptsätzen über Alltägliches im Präsens. Es werden u.a. folgende Themen der Grammatik

behandelt: Präsens regelmäßiger und (einige) unregelmäßiger Verben, bestimmte und unbestimmte Artikel, Demonstrativpronomen, Verneinung einfacher Sätze etc.  
Es werden Strategien vermittelt, die eine Verständigung in alltäglichen Grundsituationen ermöglichen.

**Intended Learning Outcomes:**

Das Modul orientiert sich am Niveau A1 „Elementare Sprachverwendung“ des GER.  
Der/die Studierende kann nach der Teilnahme an der Modulveranstaltung einfache Fragen über vertraute Themen stellen und beantworten. Er/sie kann sich auf einfache Art verständigen, wenn die Gesprächspartnerinnen oder Gesprächspartner langsam und deutlich sprechen und bereit sind zu helfen. Er/sie kann einfache schriftliche Mitteilungen zur Person machen.

**Teaching and Learning Methods:**

Das Modul besteht aus einem Seminar, in dem die angestrebten Lerninhalte mit gezielten Hör-, Lese-, Schreib- und Sprechaufgaben in Einzel-, Partner und Gruppenarbeit kommunikativ und handlungsorientiert erarbeitet werden. Durch die Kombination dieser Aufgaben wird die Interaktion mit den Partnern unterstützt und gefordert. Die Studierenden erwerben Teamkompetenz durch kooperatives Handeln in gemischten Gruppen.

Es werden Möglichkeiten aufgezeigt, den Lernprozess in der Fremdsprache Spanisch eigenverantwortlich und effektiver zu gestalten und damit die eigenen Lernfähigkeiten zu verbessern.

Durch kontrolliertes Selbstlernen grundlegender grammatischer Phänomene und Kommunikationsmuster in der Fremdsprache mit vorgegebenen (online-) Materialien werden die im Seminar vermittelten Grundlagen vertieft.

Freiwillige Hausaufgaben (zur Vor- und Nacharbeitung) festigen das Gelernte.

**Media:**

Lehrbuch; multimedial gestütztes Lehr- und Lernmaterial, auch online.

**Reading List:**

Lehrbuch (wird in der Lehrveranstaltung bekanntgegeben).

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Master's Thesis | Master's Thesis

### Module Description

#### WZ2590: Master's Thesis | Master's Thesis

Version of module description: Gültig ab winterterm 2023/24

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 30	<b>Total Hours:</b> 900	<b>Self-study Hours:</b> 300	<b>Contact Hours:</b> 600

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Die Prüfungsleistung besteht aus einer wissenschaftlichen Ausarbeitung (Master's Thesis) im Umfang von ca. 100 Seiten (abhängig von der Themenstellung) sowie einer Präsentation (20 min) über deren Inhalt und der wissenschaftlichen Projektplanung (Präsentation als Studienleistung).

Um die für die Masterarbeit erforderlichen Kompetenzen zu fördern und das Verständnis für die Themenstellung zu vertiefen, soll die wissenschaftliche Projektplanung vor Beginn der Arbeit präsentiert werden. Mit der Erstellung der Master's Thesis demonstrieren die Studierenden, dass sie in der Lage sind, eine neue wissenschaftliche Fragestellung aus ihrem jeweiligen Fachbereich zu identifizieren und zielführende Experimente zur Lösung dieser Frage zu konzipieren. Sie zeigen, dass sie eine praktische Forschungsarbeit eigenständige durchführen und unter Berücksichtigung entsprechender wissenschaftlicher Methoden lösungsorientiert bearbeiten können.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Die Master's Thesis sollte das letzte Modul im Masterstudiengang sein. Aus diesem Grund sollen ausreichend Module belegt worden sein, um den Studiengang mit dem Abschluss der Thesis beenden zu können. Details hierzu regelt die Fachprüfungsordnung. Die Anmeldung der Master's Thesis ist frühzeitig beim Schriftführer des Prüfungsausschusses Biologie persönlich einzureichen.

#### Content:

Im Rahmen der Master's Thesis bearbeiten die Studierenden ein eigenes Forschungsthema an der TUM oder einem fachnahen Forschungsinstitut. Details regelt die Fachprüfungsordnung.

Die Studierenden bearbeiten selbstständig eine wissenschaftliche Fragestellung, werten ihre Ergebnisse aus und bewerten diese mit geeigneten wissenschaftlichen Methoden. Die Vorgehensweise und Ergebnisse werden in der schriftlichen Ausfertigung der Master's Thesis zusammengefasst.

**Intended Learning Outcomes:**

Nach Abschluss der Master's Thesis sind die Studierenden in der Lage:

- ein neuartiges Forschungsprojekt zu identifizieren.
- wissenschaftliche Fragestellungen präzise zu formulieren.
- einen realistischen Zeitplan für die Bearbeitung des Projekts aufzustellen und einzuhalten.
- ein Forschungsprojekt eigenständig durchzuführen.
- die Versuche und Ergebnisse im wissenschaftlichen Kontext des gewählten Fachgebietes einzubetten.
- die gewonnenen Schlussfolgerungen im Vergleich zu den in der Literatur vertretenen Ansichten zu diskutieren.
- einen wissenschaftlichen Text zur Darstellung eigener Forschungsergebnisse zu verfassen, der den formalen Standards der jeweiligen Fachdisziplin entspricht.
- eigene wissenschaftliche Ergebnisse einem Fachpublikum vorzustellen und zu diskutieren.

**Teaching and Learning Methods:**

Die Studierenden wählen ihr Master's Thesis Projekt in enger Abstimmung mit dem aufnehmenden Lehrstuhl oder Institut. Die Studierenden führen die wissenschaftlichen Arbeiten unter der Anleitung des jeweiligen Fachbetreuers bzw. der jeweiligen Fachbetreuerin eigenständig durch und dokumentieren ihre erzielten Ergebnisse gemäß den wissenschaftlichen Standards. Die schriftliche Ausarbeitung der Master's Thesis erfolgt eigenständig durch die Studierenden in enger Abstimmung und unter Rücksprache mit dem jeweiligen Fachbetreuer bzw. der jeweiligen Fachbetreuerin.

**Media:**

Dependent on the topic of the thesis; e.g. specialized literature, software

**Reading List:**

Literatur ist von der Themenwahl abhängig. Sie wird teils durch den/die Themensteller:in, teils durch eigene Recherche zusammengestellt.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

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