

# Module Catalog

*M.Sc. Health Science - Prevention and Health Promotion*

TUM Department of Sport and Health Sciences

Technische Universität München

[www.tum.de/](http://www.tum.de/)  
[www.sg.tum.de](http://www.sg.tum.de)

## 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.

## Index of module handbook descriptions (SPO tree)

Alphabetical index can be found on page 171

### [20211] Health Science - Prevention and Health Promotion | Health Science - Prevention and Health Promotion

<b>Master's Thesis</b>   Master's Thesis	7
<b>[SG850010] Master's Thesis</b>   Master's Thesis	7 - 8
<b>Mandatory Modules</b>   Pflichtmodule	9
<b>[SG810001] Health and Society</b>   Health and Society	9 - 10
<b>[SG810002] Study Design; Ethics - Research Methods</b>   Study Design; Ethics - Research Methods	11 - 12
<b>[SG810003] Advanced Statistics</b>   Advanced Statistics	13 - 14
<b>[SG810004] Scientific Data Processing</b>   Scientific Data Processing	15 - 16
<b>[SG810005] Qualitative Research Methods</b>   Qualitative Research Methods	17 - 18
<b>Elective Modules</b>   Wahlmodule	19
<b>Electives: Health Science Research</b>   Wahlbereich Health Science Research	19
<b>[SG810006] Nutrition - Health Science Research</b>   Nutrition - Health Science Research	19 - 21
<b>[SG810007] Physical Activity - Health Science Research</b>   Physical Activity - Health Science Research	22 - 24
<b>[SG810035] Psychology - Health Science Research</b>   Psychology - Health Science Research	25 - 26
<b>[SG810041] Health Economics</b>   Gesundheitsökonomie	27 - 29
<b>Electives: Health Science Research II</b>   Wahlbereich Health Science Research II	30
<b>[SG810009] Nutrition - Health Science Research II</b>   Nutrition - Health Science Research II	30 - 31
<b>[SG810010] Physical Activity - Health Science Research II</b>   Physical Activity - Health Science Research II	32 - 33
<b>[SG810045] Health Economics 2</b>   Gesundheitsökonomie 2	34 - 36
<b>[SG812011] Psychology - Health Science Research II</b>   Psychology - Health Science Research II	37 - 39
<b>Electives: Applied Research</b>   Wahlbereich Applied Research	40
<b>[SGAKAL02]</b>   Anerkennung im Ausland erbrachter Leistungen II	40 - 41
<b>[SG810012] Cardiovascular/Metabolic Disorders</b>   Cardiovascular/ Metabolic Disorders	42 - 43
<b>[SG810015]</b>   Neurological Health	44 - 45
<b>[SG810025] Behavioral Science, Behavior Change and Health</b>   Behavioral Science, Behavior Change and Health	46 - 47
<b>[SG810030] Cancer</b>   Cancer	48 - 49
<b>[SG810046] Evaluation Methods in Public Health and Health Care</b>   Evaluation Methods in Public Health and Health Care	50 - 52
<b>[SG810047] Economic Evaluations of Health Care Programmes</b>   Economic Evaluations of Health Care Programmes	53 - 55

<b>[SG811014] Mental Health and Well-Being</b>   Mental Health and Well-Being	56 - 57
<b>[SG811016] Orthopedic Health</b>   Orthopedic Health	58 - 60
<b>Electives: Complementary Subjects</b>   Wahlbereich Complementary Subjects	61
<b>[ED0218] Science and Technology Communication</b>   Wissenschafts- und Technikkommunikation	61 - 62
<b>[BGU62062] TUM.city</b>   TUM.stadt	63 - 65
<b>[IN9048] Innovation Generation in the Healthcare Domain</b>   Innovationsentwicklung in der Gesundheitsbranche	66 - 68
<b>[MA8113] TUM Data Innovation Lab</b>   TUM Data Innovation Lab [TUM-DI- LAB]	69 - 71
<b>[MW2245] Think. Make. Start.</b>   Think. Make. Start. [TMS]	72 - 75
<b>[POL00011] Politics for Rocket Scientists: An Introduction to Political Science for Non-Political Scientists</b>   Politics for Rocket Scientists: Einführung in die Politikwissenschaft für Nicht-Politikwissenschaftler	76 - 78
<b>[POL24302] The Political Economy of Technical Standards</b>   The Political Economy of Technical Standards	79 - 80
<b>[POL40100] Introductory Lecture: Politics and Technology</b>   Ringvorlesung: Politics & Technology	81 - 82
<b>[POL61500] Global Governance, Ethics, and Technology</b>   Global Governance, Ethics, and Technology	83 - 84
<b>[POL62100] Civil Society and Technological Change</b>   Civil Society and Technological Change	85 - 87
<b>[POL67001] Digital Sustainability Transformation of, by and for the TUM</b>   Digital Sustainability Transformation of, by and for the TUM	88 - 89
<b>[SG160053] Introduction to Health Literacy Research</b>   Einführung in die Gesundheitskompetenzforschung	90 - 92
<b>[SG160432] Health-promoting physical activity in action</b>   Erfahrungsorientierte Bewegungsangebote zur Gesundheitsförderung	93 - 94
<b>[SG160439] VHB - English Competence and Research Training for Health Professionals</b>   VHB - English Competence and Research Training for Health Professionals	95 - 96
<b>[SG160440] VHB - Leadership and Communication in Global Business</b>   VHB - Leadership and Communication in Global Business	97 - 98
<b>[SG160441] VHB - Advanced Occupational Safety and Health</b>   VHB - Advanced Occupational Safety and Health	99 - 101
<b>[SG160442] VHB - Performance Management in Teams</b>   VHB - Performance Management in Teams	102 - 103
<b>[SG160443] VHB - Fundamentals of Project Management</b>   VHB - Fundamentals of Project Management	104 - 105
<b>[SG160445] Introduction to Programming for Digital Health</b>   Introduction to Programming for Digital Health	106 - 107

<b>[SG8000160] Sponsorship-linked Marketing (Online-course)  </b> Sponsorship-linked Marketing (Online-Kurs)	108 - 110
<b>[SG800051] Motion analysis in sports and medicine  </b> Bewegungsanalyse in Sport und Medizin	111 - 112
<b>[SG800080] Anxiety and Stress in Sport Performance  </b> Anxiety and Stress in Sport Performance	113 - 114
<b>[SG800081]  </b> Psychology of Choking Under Pressure	115 - 116
<b>[SG810018] VHB - Introduction to Human Resource Management  </b> VHB - Einführung in das Personalmanagement	117 - 118
<b>[SG810021] VHB - Cross-border Health Care Management  </b> VHB - Cross-border Health Care Management	119 - 120
<b>[SG810023v2] Health, (Dis)ability and Participation in a Global Perspective  </b> Health, (Dis)ability and Participation in a Global Perspective	121 - 122
<b>[SG810024v2] Mountain Sports: Practice, Physiology &amp; Technology  </b> Mountain Sports: Practice, Physiology & Technology	123 - 125
<b>[SG810032v2] Scientific Writing  </b> Scientific Writing	126 - 127
<b>[SG810033] Inclusive Settings in University Teaching  </b> Inklusive Settings in der Hochschullehre	128 - 130
<b>[SG810036] Global Health Epidemiology  </b> Global Health Epidemiology	131 - 132
<b>[SG810040] Inclusive Physical Education – Summer School  </b> Inclusive Physical Education – Summer School	133 - 135
<b>[SG810042] Seminar in Health Care Management  </b> Seminar Health Care Management	136 - 137
<b>[SG810043] Public Health and Socio-economic Aspects in the Prevention of Non-communicable Diseases (NCDs)  </b> Public Health and Socio-economic Aspects in the Prevention of Non-communicable Diseases (NCDs)	138 - 139
<b>[SG810044v2] Global Health Challenges and One Health  </b> Global Health Challenges and One Health	140 - 141
<b>[SG810048] The effects of light on human health: Practical course on measuring illumination (residential summer school)  </b> The effects of light on human health: Practical course on measuring illumination (residential summer school)	142 - 144
<b>[SG810049] Interdisciplinary research seminar: Current topics in chronobiology and circadian health  </b> Interdisciplinary research seminar: Current topics in chronobiology and circadian health	145 - 146
<b>[SG810050] Global Health Policy  </b> Global Health Policy	147 - 149
<b>[SG811037] Systematic Literature Reviews and Meta-Analysis  </b> Systematic Literature Reviews und Meta-Analysen	150 - 151
<b>[SG860017] Participation and Inclusion  </b> Participation and Inclusion	152 - 153
<b>[SOT86700] EuroTeQ Collider - Leave no Waste Behind (Master)  </b> EuroTeQ Collider - Leave no Waste Behind (Master)	154 - 156

<b>[WI001121] International Management &amp; Organizational Behavior  </b> International Management & Organizational Behavior	157 - 159
<b>[WI001293] Theoretical and applied basics of mindfulness practice  </b> Theoretische und anwendungsbezogene Grundlagen der Achtsamkeitspraxis	160 - 162
<b>Modules by Carl-von-Linde-Akademie  </b> Module Carl-von-Linde-Akademie	163
<b>[ED0179] Technology, Nature and Society  </b> Technik, Natur und Gesellschaft	163 - 164
<b>[CLA10510] Change in the German System of Science  </b> Der Wandel des deutschen Wissenschaftssystems	165 - 166
<b>[CLA30230] Ethics and Responsibility  </b> Ethik und Verantwortung	167 - 168
<b>[CLA31601] Ethics and Responsibility II  </b> Ethik und Verantwortung II	169 - 170

## Master's Thesis | Master's Thesis

### Module Description

#### SG850010: Master's Thesis | Master's Thesis

##### Thesis

Version of module description: Gültig ab winterterm 2011/12

<b>Module Level:</b> Master	<b>Language:</b> 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> 870	<b>Contact Hours:</b> 30

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

#### Description of Examination Method:

The Master's Thesis consists of a scientific exposition and a presentation. The scientific exposition should demonstrate the ability to independently deal with a problem from the respective subject area according to scientific methods within a given period of time. The scope of the work depends, among other things, on the subject matter and is to be agreed individually with the supervisor. The presentation consists of a presentation part (about 20 minutes) and a subsequent discussion (about 30 minutes) of the Master's Thesis. The presentation part presents the most important theses and findings of the Master's Thesis. The discussion is intended to show that the student has sound knowledge of the respective subject area and has applied it meaningfully in his work. The presentation is not graded and it does not affect the evaluation of the Master's Thesis.

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

After successful assignment of all modules of the 1.-3. Semesters (except free electives)

#### Content:

The participants work under guidance in a question of the health scientific diagnostics. They receive a related question that is still quite general and not specified yet. They must investigate and evaluate different solutions, and decide for themselves which one to perform. The accompanying exposition summarizes the essential aspects of the subdiscipline, discusses different approaches, justifies the choice made, and describes the chosen solution.

This module is offered by all chairs. The chairs select suitable topics from their area of expertise, usually a partial aspect of one of their research projects. They support the students in learning

the scientific skills to comprehensively explore an aspect of a subject area and, based on this, to answer a limited yet general question about this aspect with scientific methods.

**Intended Learning Outcomes:**

After completing the Master's Thesis, the participants will be able to familiarize themselves quickly with a question in health science diagnostics. Based on a specific question, they will understand how to analyze and evaluate the essential aspects of the research steps required for the solution. They can define the scope of possible procedures, describe them and choose a solution. They are able to accurately describe, discuss and solve a health problem.

**Teaching and Learning Methods:**

The module requires independent work. The Master's Thesis can be supplemented by a colloquium to discuss the status of the final thesis and to clarify emerging theoretical and empirical questions around the Master's Thesis.

**Media:**

n / A.

**Reading List:**

self recherche

**Responsible for Module:**

Klug, Stefanie; 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](#).



## Mandatory Modules | Pflichtmodule

### Module Description

#### SG810001: Health and Society | Health and Society

Version of module description: Gültig ab winterterm 2016/17

<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:

A written exam assesses the students' ability to understand sociological theories and social dimensions of health and illness as well as social aspects of prevention and health promotion. In a given time (90 min) they have to demonstrate their ability to summarize their level of knowledge by answering open short-answer questions.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of social and health sciences

#### Content:

- History of social medicine and the sociological approach towards health and illness
- Illness as social deviance
- Medicalization and the social construction of health and illness
- Professionalism and professionalization in health care
- Diversity and health
- Functional health and (dis-)ability
- Sociology and the body
- Assistive technologies in health care
- Social conditions, contextual factors and social determinants of health
- Salutogenesis and health promotion
- Globalization and the WHO perspective on global health
- Sociological critiques of health promotion

**Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- to understand social conditions, contextual factors and social determinants of health
- to comprehend sociological approaches towards health and illness
- to understand and discuss processes of the social construction of health problems
- to critically assess health discourses and dynamics of medicalization
- to identify social inequalities in health related matters
- to have thorough knowledge of gender- and diversity-sensitive aspects in prevention and health promotion
- to understand resource-based approaches, following a salutogenic model

**Teaching and Learning Methods:**

The module consists of 2 classes with blended learning components. The contents of the lecture are transmitted live and through multimedia presentations. In the exercise students will work in small groups, reading and discussing literature that deepens the understanding of the lectures contents. Discussions will be initiated via student presentations.

**Media:**

PowerPoint, video clips, reader, Moodle

**Reading List:**

Germov J. (2009). Second opinion: an introduction to health sociology. 4th Edition. Oxford University Press.

**Responsible for Module:**

Richter, Matthias; Prof. Dr. rer. soc.

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

Health & Society (Vorlesung, 2 SWS)

Göttler A

Health & Society (Übung, 2 SWS)

Göttler A, Obeka B

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

## Module Description

### SG810002: Study Design; Ethics - Research Methods | Study Design; Ethics - Research Methods

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/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 written examination (90 min; 60%) students demonstrate their theoretical, methodological and analytic competence by answering questions using given answers. This will show that they understand different study designs, study conduct and study analysis as well as methods to control bias and confounding. Additionally, the attainment of learning outcomes for the module will be assessed by a written research grant proposal (about 15-20 pages; 40%). By developing a research grant proposal, students will show their ability to work independently and in detail on a selected complex epidemiological study design, applying good epidemiological practice, principles of ethics and international quality standards.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of study design and research methods, basics of epidemiology, basics of biostatistics

#### Content:

- Study design, planning, conduct and analysis
- Research questions and hypotheses
- Ethical approval
- Research grants
- Time / Cost / Resource Assessment
- Literature review and Meta-Analysis
- Standards / Principles of Ethics
- International human rights / guidelines
- Good Epidemiological Practice Good Clinical Practice

- Methods to avoid bias and control confounding

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- To understand advanced epidemiology
- To understand details of different epidemiological study designs
- To understand study planning and conduct
- To understand the importance of ethical issues
- To understand the responsibilities of research ethics committees
- To apply Good Epidemiological Practice
- To apply principles of ethics and international quality standards
- To understand informed consent
- To write a research grant proposal
- To develop a study design (including literature review / analysis / ethics)
- To understand study conduct
- To apply study analysis
- To understand bias and confounding

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

The module consists of one lecture with blended learning components and one practical seminar. The content of the lectures will be discussed in detail in the seminars using research papers and student presentations. Students will work in small groups on a research grant and will be encouraged to study the relevant literature.

### **Media:**

PowerPoint slides, Scientific publications from elektr. Semester apparatus, exercise sheets

### **Reading List:**

Gordis, L. (2014). Epidemiology. Oxford: Elsevier LDT (fifth edition).

Rothman, K.J.; Greenland, S.; Lash, T.L. (2013). Modern Epidemiology. Philadelphia: Lip-pincott Williams & Wilkins (third edition).

Further literature will be announced in the lecture

### **Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Applied Study Design; Ethics (Seminar, 2 SWS)

Eberl M, Gimazova K, Liang L, Sudharsanan N

Advanced Study Design; Ethics (Vorlesung, 2 SWS)

Gimazova K, Klug S

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

## Module Description

### SG810003: Advanced Statistics | Advanced Statistics

Version of module description: Gültig ab summerterm 2017

<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:

A written exam is deemed the most appropriate mode of examination (90 min). Using predetermined tools the students demonstrate their theoretical, methodological and analytic competence by answering questions, but may also be asked to do calculations as well as to analyze and interpret data.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Knowledge of study design, descriptive statistics and inferential statistics

#### Content:

- Probability theory
- Analysis of variance
- Exploratory data analysis
- Factor analysis
- Univariable and multivariable modeling
- Linear, logistic, Poisson and Cox regression models
- Meta-Analysis
- Handling of missing values
- Analysis of confounding
- Multivariate Methods

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:

- To determine adequate quantitative approaches
- To understand analysis of variance and covariance analysis

- To understand fixed-effects and random-effects models
- To apply different modeling approaches
- To understand multivariate methods
- To deal with missing data
- To handle confounding
- To apply survival analysis

**Teaching and Learning Methods:**

The module consists of one lecture with blended learning components, one seminar and a tutorial. The content of the module is conveyed through lectures and presentations. In the seminar students learn to implement their theoretical knowledge by completing training tasks. The students acquire methodological knowledge and analytic competences. While the lecture is used to teach statistical models, the seminar is used to apply (use appropriate models, perform tests, interpret data) these models on research issue using the statistical software R. The tutorial is intended to provide a platform for individual support of the students in case of questions or possible gaps in presumed knowledge.

**Media:**

Slides, exercise sheets, suggested solutions

**Reading List:**

Regression, Fahrmeir, Marx, Lang and Kneib, Springer Verlag, 2013  
Further literature will be announced in the lecture.

**Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Applied Statistics (Seminar, 2 SWS)  
Osmani V

Advanced Statistics (Vorlesung, 2 SWS)  
Schauberger G

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

## Module Description

### SG810004: Scientific Data Processing | Scientific Data Processing

Version of module description: Gültig ab summerterm 2017

<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 comprises a written test (90 min), where students have to show the ability of solving fundamental data processing problems in sport and health science. The students have to answer questions, but may also be asked to create and explain structures and do calculations.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basics of quantitative, statistical research

#### Content:

- Fundamental data structures (variables, data types, lists, arrays, classes, files) to store scientific data
- Fundamental control structures (loops, conditions, if-statements, functions) for processing scientific data
- Reading of data from sensors or databases
- Converting data between different file formats
- Linkage of data between different sources
- Validation of data (plausibility control)
- Calculation of indicators
- Visualization of data

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:

- to understand and describe fundamental concepts of storing and processing data in computer systems

- to solve typical data processing problems in sport and health science using modern programming environments.

**Teaching and Learning Methods:**

The module consists of a practical course, where first general concepts of data processing are presented. Second, students will solve tasks which are related to the topics presented. Results will be discussed.

**Media:**

Slide script, videos and exercises

**Reading List:**

Gordis, L. (2014). Epidemiology. Oxford: Elsevier LDT (fifth edition).

Rothman, K.J.; Greenland, S.; Lash, T.L. (2013). Modern Epidemiology. Philadelphia: Lippincott Williams & Wilkins (third edition).

Further literature will be announced in the lecture.

**Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Scientific Data Processing (Übung, 4 SWS)

Schulte-Coerne J

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



## Module Description

### SG810005: Qualitative Research Methods | Qualitative Research Methods

Version of module description: Gültig ab summerterm 2017

<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:

Term paper (5-10 pages). The students understanding of theoretical concepts of qualitative research approaches and their ability to apply these concepts will be evaluated by submission of a term paper, which includes theoretical reflections and a summary of conclusions of the data interpretation process of the practical exercise.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of social science theory and research practices

#### Content:

- History, theory and methodology of qualitative research
- Qualitative research in sport science
- Content analysis and objective hermeneutics
- Grounded theory and situational analysis
- Conducting interviews and focus groups
- Action research and participatory methods
- Processes of collecting, analyzing and interpreting qualitative data
- Coding and data mapping

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:

- to understand and describe fundamental concepts of qualitative research methods and qualitative data analysis
- to apply strategies of qualitative analysis in practical exercises

- to create substantial interpretations of research data

**Teaching and Learning Methods:**

The module consists of one seminar with blended learning components and a supplementary exercise. In the interactive seminar, students are activated via tasks, presentations and structured discussions. The outcomes will be written down and saved in a MOODLE for further use within the exercise. In the exercise, students will be separated in small groups, to work on application-oriented tasks, practicing the hands-on process of qualitative coding of data material using and - in recourse to the seminars materials - comparing strengths and weaknesses of different methods.

**Media:**

Multimedia presentations (PowerPoint), exercises on online platform (Moodle)

**Reading List:**

Flick, Uwe (2009): An introduction to qualitative research. London: Sage.

**Responsible for Module:**

Richter, Matthias; Prof. Dr. rer. soc.

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

Methodology of Qualitative Research (Seminar, 2 SWS)

Schmid A

Methods of Qualitative Data Inquiry and Analysis (Übung, 2 SWS)

Schmid A

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

## Elective Modules | Wahlmodule

### Electives: Health Science Research | Wahlbereich Health Science Research

#### Module Description

### SG810006: Nutrition - Health Science Research | Nutrition - Health Science Research

*Nutrition: Health promotion and Prevention*

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> 8	<b>Total Hours:</b> 240	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 60

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

#### Description of Examination Method:

Successful completion of the course will be based on the quality of written exam (100%, 90 minutes).

In the exam students are expected to demonstrate, by answering questions, their theoretical knowledge of nutritional prevention, methods of nutritional assessment and of body composition measurement. The questions will also include case studies. Furthermore, they have to prove their knowledge about the practically applied tools (nutritional assessment and of body composition) in different settings and problems. So, they provide evidence to establish case-related settings.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Baseline knowledge on nutrition related parameters

#### Content:

- Prevention policy (e.g. prevention framework in Germany)
- Prevention programs in nutritional medicine (e.g. diabetes, obesity, cancer, neuro-degeneration, osteoporosis, atherosclerosis, coronary heart disease)
- Prevention programs in different life stages and settings (pregnancy, lactation, early childhood, school, employee health management, elderly, nursing homes etc.)

- Special prevention programs against malnutrition/undernutrition in third world countries (i.e. iodine, iron, vitamin A, etc.)
- Nutritional assessment methods and its use in research
- Application of nutritional assessment methods for prevention strategies in real-life settings
- Body composition methods and their application/evaluation in different target populations and settings

**Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- to understand, communicate and apply target-group-specific prevention strategies
- to understand and describe prevention strategies in different healthcare settings
- to analyze the efficacy of prevention programs in different indication areas and evaluate the benefit for the target population
- to suggest relevant nutritional prevention programs for different age groups in different settings
- to use typical methods, tools, instruments and software programs for nutritional assessment (i.e. 24-h recall, diet history, food frequency questionnaire)
- to assess and use reliable methods for measuring body composition in different target populations (i.e. BMI, BIA, skinfold thickness, MRI, ultrasonography, etc.).

**Teaching and Learning Methods:**

The module consists of 2 parts: 1 lecture and 1 exercise. Within the lecture part students will learn the basics of nutritional prevention programs in different indication areas / for different target groups. The according literature for the prevention programs will be in English and the students have to understand and critically reflect the contents by self-study, so that during the lessons the basic content of the programs is existent. During the first part of the exercise course students will learn nutritional assessment methods and their practical use. The second part of the exercise will comprise body composition methods and how to use them. Both, the nutritional assessment methods and the body composition methods will be tested personally and among each other, so that each unit contains preliminary work, e.g. survey 24-h recall nutritional assessment. Furthermore, the student will test the tools in real-life settings by recruiting different target populations.

**Media:**

PowerPoint

**Reading List:**

Current international publications via Pubmed

**Responsible for Module:**

Köhler, Karsten; Prof. Dr. rer. nat.

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

Methods of nutritional assessment and of body composition measurement (Übung, 2 SWS)

Hechenbichler Figueroa S, Wasserfurth-Grzybowska P

Nutritional prevention strategies and research (Vorlesung, 2 SWS)

Hofmann H

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

## Module Description

### SG810007: Physical Activity - Health Science Research | Physical Activity - Health Science Research

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> 8	<b>Total Hours:</b> 240	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 90

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

#### Description of Examination Method:

The targeted learning outcomes of the module will be assessed by a written exam (90 min.). Exam questions will test the ability to evaluate the empirical methodology for life-span health research within the domains of human movement science and sports medicine. Students' insight into limitations and boundaries of the scientific study of the role of physical activity in disease prevention and treatment will be assessed. The students will be required to suggest specific prevention strategies, treatment approaches as well as developmental interventions suitable to promote healthy living over the life-span. Finally, the prerequisites of successful delivery of an empirical project will be tested by referring to the practical projects' research background, methodology, results, discussion, interpretation, limitations as well as lessons learnt. During the exam, students will not be able to use any memory aides. Responses to the exam questions will comprise formulation of own statements as well as marking response items in multiple-choice format.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of human movement science, biomechanics as well as human anatomy and physiology.

#### Content:

- The significance of physical activity for health.
- The different appearances of physical activity (e.g., exercise).
- Knowledge on and prevalence of relevant forms of physical activity in the general population.
- The role of health professionals to foster physical activity.
- The development of cognitive and sensorimotor function from childhood to senescence.

- Exercise classifications and their targets (e.g., endurance training).
- Target parameters of qualitative and quantitative (physical activity, physical fitness, & brain and sensorimotor function) nature derived from self-reports, wearables, fitness tests, sensorimotor assessments, and neuroimaging.
- The interplay of development and physical activity (behavior).
- The potential of physical activity in special groups.
- The role of environment & infrastructure (parks, sports clubs, ...) for physical activity.

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- To comprehend the significance of physical activity in all dimensions of prevention.
- To critically evaluate different assessment strategies of physical activity.
- To differentiate between the different forms of physical activity (including exercise), physical fitness, and health and disease.
- To elaborate strategies to foster physical activity in the general population as well as special groups.
- To understand the interplay between (motor) development over the life-span and cognitive function and physical activity.
- To reference to current literature of the field.
- To optimize lifestyles towards health benefits.

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

The module consists of 1 lecture with blended learning components, 1 literature seminar and 1 practical seminar. While the lecture series will prepare students' basic knowledge, the literature seminar will practice students' critical thinking skills with respect to seminal and state-of-the-art scientific publications. They will be encouraged to study the respective literature for a substantive discussion in class. The practical seminar will provide the opportunity for first-hand scientific experience by performing an experimental project in small groups. The outcome of these small-scale empirical research projects will be presented as a poster in the literature seminar.

### **Media:**

Slides

### **Reading List:**

Current literature will be announced in the lecture.

### **Responsible for Module:**

Hermsdörfer, Joachim; Prof. Dr.

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

Contemporary research methods in human development (Seminar, 2 SWS)

Gulde P, Hermsdörfer J, Johannsen L, Kampe T, Schmidle S

Lab and field research methods in human development (Übung, 2 SWS)

Gulde P, Hermsdörfer J, Johannsen L, Kampe T, Schmidle S

Fundamentals of the development of cognitive and motor functions (Vorlesung, 2 SWS)

Johannsen L, Hermsdörfer J, Kampe T, Müller J, Schmidle S, Gulde P

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



## Module Description

### SG810035: Psychology - Health Science Research | Psychology - Health Science Research

SG810008 - new version (2017)

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> 8	<b>Total Hours:</b> 240	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 60

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

#### Description of Examination Method:

As an examination, a presentation including a short-written description will serve to test whether students are able to design a specific prevention strategy, program or research project in a prevention area addressed in the module (credit requirement). To demonstrate their knowledge of prevention and psychology methods, the different concepts/methods, their connection and the actual stand of research presented in the lecture students have to turn in and discuss in the seminar 3 short discussion papers (pass/fail credit requirement).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Introductory course in psychology; Basic knowledge on: Psychology of learning and behavior; Psychology of Motivation and self-regulation.

#### Content:

- Differentiation of prevention and (mental) health promotion in the field of psychology
- Differentiation of mental illness and mental health
- Models of attitude and behavior change in general and in health-related behavior
- Essentials of effective behavior change methods
- Application of the Intervention Mapping Framework: 6 steps of program planning: deed assessment, program objectives, program methods and strategies, program production, program adoption and implementation and program evaluation.

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:

- to understand and describe the major psychological problems in prevention
- to understand and describe main methods and approaches in the psychology of prevention
- to discuss and evaluate approaches in health promotion and the prevention of disease from a psychological perspective
- to understand, communicate and design target-group-specific prevention strategies in health-related issues
- to apply the Intervention Mapping Framework within program planning.

**Teaching and Learning Methods:**

The module consists of 1 lecture with blended learning components, and 1 practical seminar. The content of the module is conveyed through lectures, presentations and discussions. In the lecture the students will read relevant and current literature. In the seminar, the students will apply the six steps of the Intervention Mapping Framework to create their own health promotion program. The seminar involves discussions, group work as well as feedback on planning a health promotion program.

**Media:**

Slides, Worksheets

**Reading List:**

Barry, M. M., Clarke, A. M., Petersen, I., & Jenkins, R. (Eds.). (2019). Implementing mental health promotion. Springer Nature.

Bartholomew, L. K., Parcel, G. S., Kok, G., Gottlieb, N. H., Schaalma, H. C., Markham, C. C., ... & Partida, S. C. (2006). Planning health promotion programs: an intervention mapping approach. Jossey-Bass.

Romano, J.L. (2015). Prevention Psychology. Enhancing Personal and Social Well-Being. Washington: American Psychological Association.

Further literature will be announced in the lecture.

**Responsible for Module:**

Ebert, David; Prof. Dr. habil.

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

Research Methods in Psychological Prevention (Seminar, 2 SWS)

Ebert D [L], Kählke F

Methodologies in Psychological Prevention I (Vorlesung, 2 SWS)

Ebert D [L], Kählke F

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

## Module Description

### SG810041: Health Economics | Gesundheitsökonomie

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 semester
<b>Credits:*</b> 8	<b>Total Hours:</b> 240	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 60

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

#### Description of Examination Method:

Einmalige Übungsleistung („Open-Book-Klausur“) (120 Minuten):

In der einmaligen Übungsleistung demonstrieren die Studierenden in Form von

- Textaufgaben ihr Verständnis von gesundheitsökonomischen Zusammenhängen;
- Erklärungen von (teilweise graphisch dargestellten) Modellen und mittels der Wiedergabe theoretischer Zusammenhänge ihr Verständnis gesundheitsökonomischer Konzepte;
- Textaufgaben ihr Verständnis von Organisation von Gesundheitssystemen mit Fokus auf gesundheitsökonomische Zusammenhänge;
- Rechenaufgaben ihr Verständnis von gesundheitsökonomischen Zusammenhängen und die Fähigkeit diese selber anzuwenden;
- Textaufgaben ihre Fähigkeit verschiedene Formen von Anreizwirkungen im Gesundheitswesen kritisch zu diskutieren

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Grundlegende statistische Kenntnisse
- Grundlegende mathematische Kenntnisse auf dem Niveau der Oberstufe
- Grundlegende Zusammenhänge des Gesundheitssystems

#### Content:

Die Vorlesung und Übung zu Gesundheitsökonomie vermitteln einen verständlichen Überblick über die Organisation und Finanzierung von Gesundheitssystemen. Es werden grundlegende gesundheitsökonomische Konzepte und Vorgehensweisen vermittelt. Die Vorlesung ermöglicht es den Studierenden, Anreizwirkungen und Regulierungen im Gesundheitssystem zu analysieren. Folgende Leitfragen strukturieren die Veranstaltung:

- Wie ist das deutsche Gesundheitssystem grundlegend strukturiert?

- Wie werden Gesundheitssysteme finanziert?
- Wie viel Geld sollte das Sozialversicherungssystem für neue Arzneimittel und Technologien ausgeben?
- Wie werden neue Arzneimittel zugelassen und wie können sie in den Markt eintreten?
- Wie werden niedergelassene Ärzte und Krankenhäuser vergütet und welche Anreize gibt es im System?

### **Intended Learning Outcomes:**

Nach Bestehen des Moduls sind die Studierenden in der Lage:

- Strukturen und Organisationsformen internationaler Gesundheitssysteme zu beschreiben
- Internationale Finanzierungssysteme des Gesundheitswesens zu verstehen und in Detailtiefe zu erklären
- Einfache mikroökonomische Modelle nachzuvollziehen, Berechnungen zu verschiedenen Zusammenhängen zu lösen und Graphen zu gesundheitsökonomischen Zusammenhängen zu erklären und zu interpretieren
- Verschiedene Krankenversicherungssysteme nachzuvollziehen und gesundheitsökonomische Beispiele zu berechnen
- Anreize im Gesundheitswesen zu analysieren und zu reflektieren
- Den Arzneimittelsektor zu beschreiben und Regulierungsinstrumente sowie deren Wirkweisen zu verstehen und zu reflektieren
- Qualitätsmessungen im Gesundheitswesen kritisch zu analysieren
- Gesundheitsökonomische Evaluationsformen zu verstehen und anhand von Beispielen anzuwenden
- Die wichtigsten Theorien, Prinzipien, Methoden zu verstehen und zwecks Analysen von Zusammenhängen im Gesundheitssystem und zur Analyse von Akteurskonstellationen anzuwenden.

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

- Vorlesung mit interaktiven Elementen und integrierten Übungen zur Förderung des Verständnisses
- Praxisvorträge
- Rechenaufgaben
- Computeraufgabe

### **Media:**

- PowerPoint
- Ergänzende Literatur
- Computerraum

### **Reading List:**

- Breyer, Zweifel, Kifmann (2013): Gesundheitsökonomik. Springer: 6. Auflage
- Schulenburg, Greiner (2013): Gesundheitsökonomik. Siebeck: 3. Auflage.
- Busse, Schreyögg, Gericke (2010): Management im Gesundheitswesen. Springer: 2. Auflage

- Busse, Blümel & Ognyanova (2013): Das deutsche Gesundheitssystem – Akteure, Daten und Analysen. MWV

**Responsible for Module:**

Prof. Leonie Sundmacher

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

Übung zur Gesundheitsökonomie (Übung, 2 SWS)

Bock T, Kropp S, Schüttig W, Sundmacher L

Gesundheitsökonomie (Vorlesung, 2 SWS)

Sundmacher L

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

## Electives: Health Science Research II | Wahlbereich Health Science Research II

### Module Description

#### SG810009: Nutrition - Health Science Research II | Nutrition - Health Science Research II

*Nutrition: Health Promotion and Prevention*

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> 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 ability to summarize and evaluate new topics in the field of nutritional prevention will be tested through an individual oral presentation / poster (20 min) and through active participation in the seminars. The oral presentation will allow students to present a given scientific topic in a particular amount of time. It shows also the ability to understand the context and complexity of nutritional influences on health. Furthermore, students must lead a discussion (journal club) and deliver pros/cons arguments on the given topic (pros/cons discussions at least 10 times). This is aimed to test the students' ability to discuss and evaluate nutritional prevention approaches.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Successful completion of the module "Nutrition - Health Science Research"

#### Content:

- Prevention (e.g. prevention law, politics) in Germany
- Chances and limitations of nutritional prevention strategies
- Research studies in nutritional prevention
- Pros and cons of prevention programs
- Evaluation / Discussion of new topics in the field of nutritional prevention

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- to understand the possibilities of nutritional prevention in total and particularly in Germany, compared to other countries
- to understand and describe nutritional prevention strategies in different settings and for different target groups
- to understand and describe research of nutritional prevention
- to summarize and evaluate new topics in the field of nutritional prevention (strategies and research)
- to discuss and evaluate nutritional prevention approaches (pros and cons).

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

The module consists of 2 parts: 1 seminar offered as a literature seminar (journal club) and 1 seminar offered as a pros/cons discussion (e.g. presentation). Within the literature seminar (journal club) students will learn more about prevention strategies in the field of nutrition in Germany and other countries. Literature will be handed out to the students by the lecturer. Students should present the content of the literature in an oral presentation. Within the seminar pros/cons discussion students will be instructed how to search literature / references for respective new topics and how to evaluate the references. In oral presentation students present their pros/cons arguments for a specific topic in nutritional prevention and create ideas for better prevention strategies.

### **Media:**

PowerPoint

### **Reading List:**

Course 1: Current international publications via Pubmed

Course 2: Literature will be self-selected by the students

### **Responsible for Module:**

Köhler, Karsten; Prof. Dr. rer. nat.

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

Presenting scientific literature in the field of nutritional prevention (Seminar, 2 SWS)

Hechenbichler Figueroa S, Höchsmann C

Pros / Cons of nutritional prevention strategies (Seminar, 1 SWS)

Hechenbichler Figueroa S, Höchsmann C

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

## Module Description

### SG810010: Physical Activity - Health Science Research II | Physical Activity - Health Science Research II

*Modern technological solutions for research into physical activity and sensorimotor functional integrity*

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> 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 module will be assessed using a written examination (90 min.) which covers topics like influence of physical activity to health, training approaches, efficacy of different programs and technological approaches to monitor activity and improve health. The written exam consists of several questions which check whether students have reached the outcomes of the course and can apply the methods to solve problems in the field of physical activity, prevention and research. The module will deepen the gained knowledge from Physical Activity – Health Science Research I.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Successful completion of the module "Physical Activity - Health Science Research"

#### Content:

- Biophysics (the human sensor system)
- Neuroplasticity (HAROLD, PASA, neurotrophic mediation of PA effects)
- Coordination
- Postural control
- Accidents (falls, fractures, and concussions)
- Rehabilitation (incl. robotics)
- Augmentation (music, VR/AR, sonification, exergames)
- Workplace (health and PA) interventions
- Activities of daily living
- Nutrition (interplay with PA)



- Professional & extreme sport (extremes of PA & fitness)
- PA in animals (evolutionary perspective)

**Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- To understand how the human body perceives PA (including exertion).
- To be able to critically reflect brain health as a complementary outcome to cardiovascular fitness and health.
- To comprehend the role of motor control as a basis of PA and its mediating role for health, with an emphasis on postural control.
- To understand the role of accidents (e.g., falls) as a consequence and risk of/for insufficient PA.
- To comprehend the role of technology to foster PA and prevention, with an emphasis on rehabilitation.
- To critically reflect on the complex role of different classes of activities of daily living in PA and their role for independent living.
- To understand extremes of PA and physical fitness, the role of nutrition (needs and supplementation), and critically reflect PA in the light of an evolutionary perspective.

**Teaching and Learning Methods:**

The module consists of 1 lecture with blended learning components and 1 literature seminar. The content of the module is conveyed through lectures and presentations. Students will be encouraged to study relevant literature for substantive discussion of the respective research topics. As part of the lecture series, representatives of companies in the health technology segment will be invited to demonstrate their products to the students in order to discuss the respective application and its market potential.

**Media:**

PowerPoint, Films

**Reading List:**

Current primary literature will be introduced during the lectures and seminars.

**Responsible for Module:**

Hermsdörfer, Joachim; Prof. Dr.

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

Advanced technological platforms in sensorimotor health research (Vorlesung, 2 SWS)  
Gulde P, Johannsen L

Application of sensor technology and motorized assistive devices in the living environment  
(Seminar, 1 SWS)

Kampe T, Schmidle S

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

## Module Description

### SG810045: Health Economics 2 | Gesundheitsökonomie 2

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> 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:

A Project work comprising a presentation (20 minutes) and a written report (22,200 characters):  
In this course students work in groups on a topic of health economics in cooperation with an external cooperation partner. Students plan and implement the assigned topic and summarize the procedure systematically in a written report.

At the end of the module students are able to

- systematically discuss interrelationships in the health care system and, in particular, in the field of health economics within the framework of a project work
- plan and implement a project in cooperation with an external cooperation partner
- select instruments and methods to address adequately the topic in group work
- work constructively and goal-oriented in a group on a common project
- present project results systematically in a report.

The oral presentations serve the students to present their results in the course and to critically discuss their work in the group.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Basic knowledge in statistics
- Basic mathematical knowledge at advanced level
- Participation in the lecture Health Economics
- Basic knowledge in health economics
- Basic knowledge in scientific literature search methods
- Basic knowledge of the German health care system

**Content:**

The course Health Economics 2 is directed to students who have already attended a course in the field of health economics and would like to increase their knowledge in this subject. Contents and approaches of health economics will be applied to practical issues. For example, how negotiations between hospitals and statutory health insurances are designed or how an evaluation of costs and benefits of disease management programs is conducted. The students will work in groups on topics of health economics and will be accompanied by an external cooperation partner. Topics are dealt with from the perspective of various actors. The project work includes planning, implementation and presentation of the topic in groups. The results are summarized in a report.

**Intended Learning Outcomes:**

After successfully completing the module, students will be able to

- work on topics in health economics
- select appropriate instruments and methods of health economics to address the research question
- refer to scientific literature to answer the research question
- apply basic knowledge from the field of health economics to a specific real-world problem
- work on an assignment in a professional and goal-oriented manner in cooperation with external partners
- present and discuss results in a group
- discuss constructively the results of other students.

**Teaching and Learning Methods:**

- Course with interactive elements
- Lectures held by external cooperation partners
- Workshops to discuss the current status of the project work, if necessary also with the external cooperation partner(s)
- Final presentations of the results

**Media:**

- PowerPoint
- Supplementary literature
- Computer lab
- Electronic library

**Reading List:**

- Breyer, Zweifel, Kifmann (2013): Gesundheitsökonomik. Springer: 6. Auflage
- Schulenburg, Greiner (2013): Gesundheitsökonomik. Siebeck: 3. Auflage.
- Busse, Schreyögg, Gericke (2010): Management im Gesundheitswesen. Springer: 2. Auflage
- Busse, Blümel & Ognyanova (2013): Das deutsche Gesundheitssystem – Akteure, Daten und Analysen.

**Responsible for Module:**

Sundmacher, Leonie; Prof. Dr. rer. oec.

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

Gesundheitsökonomie II (Vorlesung, 3 SWS)

Bock T, Flemming R, Flothow A, Kropp S, Sundmacher L

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

## Module Description

### SG812011: Psychology - Health Science Research II | Psychology - Health Science Research II

*Modern psychophysiological and neurophysiological methods*

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> 105	<b>Contact Hours:</b> 45

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

#### Description of Examination Method:

Report (analysis of existing data) [3000 words] (25%)

Report (protocol/pre-registration) [6000 words] (50%)

Final presentation [20 minutes] (25%).

Students will be assessed on a project asking an exploratory or confirmatory research question employing psychophysical, psychophysiological and neurophysiological methods. Students will identify relevant primary research data, which will form the basis of a report (25%). Students will write a protocol/pre-registration (50%), which they will present in a final presentation (25%).

#### Repeat Examination:

Next semester / End of Semester

#### (Recommended) Prerequisites:

Successful completion of the module „Health Science Research“

#### Content:

This course will provide an introduction in modern psychophysical, psychophysiological and neurophysiological methods in human-subjects research. The course will focus on electroencephalography, fMRI, pupillometry, neuroendocrine measurements (e.g., melatonin secretion), circadian and sleep biomarkers, and peripheral physiological measurements (e.g., HRV, GSR). In addition to these primary topics, a key focus will be on designing open and reproducible research.

#### Intended Learning Outcomes:

At the end of the module students are able to:

- remember different psychophysical, psychophysiological and neurophysiological methods in human-subjects research
- understand challenges in designing physiological research
- evaluate original primary research employing physiological methods
- analyse some physiological time-series data
- apply some physiological techniques in humans
- create protocols and pre-registrations for psychological studies asking novel confirmatory or exploratory research questions.

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

The module consists of one lecture course with blended learning components and one practical seminar. The content of the module is conveyed through lectures, presentations, and practical components. The lecture gives an overview of modern psychophysical, psychophysiological and neurophysiological methods and research in health-related psychology, also discussing meta-research aspects including pre-registration, open science and reproducibility. In the seminar, practical methods will be demonstrated (e.g. pupillometry). Throughout the term, students will be led to thinking about a specific research question employing psychophysical, psychophysiological and neurophysiological methods by consulting the primary literature and identifying relevant existing research data. These will then form the basis of a novel pre-registered research protocol asking a confirmatory or exploratory question

### **Media:**

Slides with text and diagrams, animations, research articles

### **Reading List:**

Textbook:

Cacioppo, J. T., Tassinari, L. G., & Berntson, G. G. (2017). Handbook of psychophysiology (Fourth edition. ed.). Cambridge, United Kingdom ; New York, NY, USA: Cambridge University Press. (eBook available at TUM library: <https://opac.ub.tum.de/TouchPoint/perma.do?q=+1035%3D%22BV044040771%22+IN+%5B2%5D&v=tum&l=de>)

Selected in-depth reading (additional reading will be assigned):

Mathot, S. (2018). Pupillometry: Psychology, Physiology, and Function. *J Cogn*, 1(1), 16. doi:10.5334/joc.18

Wirz-Justice, A. (2007). How to measure circadian rhythms in humans. *Medicographia*, 29(1), 84-90. [https://www.researchgate.net/publication/296706491\\_How\\_to\\_measure\\_circadian\\_rhythms\\_in\\_humans](https://www.researchgate.net/publication/296706491_How_to_measure_circadian_rhythms_in_humans)

Blume, C., Garbazza, C., & Spitschan, M. (2019). Effects of light on human circadian rhythms, sleep and mood. *Somnologie (Berl)*, 23(3), 147-156. doi:10.1007/s11818-019-00215-x

Klein, O., Hardwick, T. E., Aust, F., Breuer, J., Danielsson, H., Mohr, A. H., . . . Frank, M. C. (2018). A practical guide for transparency in psychological science. *Collabra-Psychology*, 4(1). doi.org/10.1525/collabra.158

Munafo, M. R., Nosek, B. A., Bishop, D. V. M., Button, K. S., Chambers, C. D., du Sert, N. P., . . . Ioannidis, J. P. A. (2017). A manifesto for reproducible science. *Nat Hum Behav*, 1, 0021. doi:10.1038/s41562-016-0021

Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. *Proc Natl Acad Sci U S A*, 115(11), 2600-2606. doi:10.1073/pnas.1708274114

Saunders, B., & Inzlicht, M. (2021). Pooling resources to enhance rigour in psychophysiological research: Insights from open science approaches to meta-analysis. *Int J Psychophysiol*, 162, 112-120. doi:10.1016/j.ijpsycho.2021.01.018

Whitaker, K., & Guest, O. (2020). #bropenscience is broken science: Kirstie Whitaker and Olivia Guest ask how open 'open science' really is. *The Psychologist*, 33, 34-37. [https://www.mpi.nl/publications/item\\_3286863](https://www.mpi.nl/publications/item_3286863)

**Responsible for Module:**

Spitschan, Manuel; Prof. Dr.

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

Modern psychophysiological and neurophysiological methods: Lectures (Vorlesung, 2 SWS)  
Spitschan M

Modern psychophysiological and neurophysiological methods: From idea to reproducible research (Seminar, 1 SWS)

Spitschan M

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

## Electives: Applied Research | Wahlbereich Applied Research

### Module Description

#### SGAKAL02:

Version of module description: Gültig ab winterterm 2017/18

<b>Module Level:</b> Bachelor/Master	<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:



SGAKAL02:

**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

### SG810012: Cardiovascular/Metabolic Disorders | Cardiovascular/ Metabolic Disorders

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<b>Contact Hours:</b> 120

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

#### Description of Examination Method:

The examination performance will be in the form of a poster presentation (10 min + 5 min discussion, English). The scientific poster (format A1, English) supplemented by an ungraded study proposal (1000 words, English) covers the objectives, methodology and results of a small scientific study under supervision, which was independently planned, implemented and evaluated.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Advanced study design
- Literature Research

#### Content:

- Basics of cardio-vascular health concepts
- Demonstration of adequate measurement tools
- Review of metabolic and cardiovascular mechanism and structures
- Clinically-based understanding of cardiovascular disorders and risk factors adaption of the cardiovascular and metabolic system by physical exercise
- Reduction in morbidity and mortality associated with regular exercise
- Critical evaluation of test results
- Different Types of lab base assessments (IMT- measurement) and field based tests (fitness monitoring)
- Similarities and differences of programs for individuals with different cardiac or metabolic disorders
- Theory and practice of monitoring cardiovascular parameters

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- to analyze and evaluate current research topics as a prerequisite for own projects
- to understand cardiovascular disorders and analyze cardiovascular risk factors
- to apply innovative measurement tools
- to apply clinical exercise testing procedures
- to evaluate (exercise) programs and guidelines for physical activity depending on test results of patients
- to create a study depending on current research with participants suffering from metabolic/ cardiovascular conditions (including own research questions, measurements, evaluation, scientific writing).

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

Scientific explanation of current cardiovascular methods (e.g., spiroergometry, IMT, PWV, accelerometry, etc.) and their practical application, guided pilot studies, design of study designs, scientific writing.

In the seminars, the students learn to apply various methods (including innovative measurement tools) in the field of cardiovascular and metabolic health and get help by planning their study and writing a research proposal, abstract and/or article.

### **Media:**

PowerPoint, e-learning, flipchart, blackboard, practical demonstration.

### **Reading List:**

How to design and Report Experiments (A. Field & G. Hole);  
Klinische Studien lesen und verstehen (M. Benesch & E. Raab-Steiner);  
Further literature will be announced in the courses.

### **Responsible for Module:**

Oberhoffer-Fritz, Renate; Prof. Dr.med.

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

Planning of applied research projects: Cardiovascular and Metabolic Health and Disease (Seminar, 1 SWS)

Goeder D, Müller J, Wacker-Gußmann A

Assessment of Cardiovascular and Metabolic Health and Disease (Seminar, 1 SWS)

Goeder D, Müller J, Wacker-Gußmann A

Study management in the field of Cardiovascular and Metabolic Health and Disease (Seminar, 2 SWS)

Müller J, Wacker-Gußmann A

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

## Module Description

### SG810015:

*Diagnosis and therapy of neurological disorders*

Version of module description: Gültig ab summerterm 2017

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<b>Contact Hours:</b> 120

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

#### Description of Examination Method:

The students have to create an independent research project in small groups by assessing the symptoms and underlying disorders of a specific neurological disease or by evaluating appropriate approaches to treatment and care. In an abstract and poster session they show their ability to design a scientific project and to structure and present their results in written and oral form.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge and understanding of scientific research methods.

#### Content:

- Epidemiology, time course, diagnostic criteria of and common therapeutic approaches to such frequent neurological diseases as Alzheimer's and Parkinson's disease, stroke, cerebral palsy, multiple sclerosis, traumatic brain injury
- Efficacy, indications and contraindications of movement interventions for these diseases
- Importance of lifestyle choices and mediating factors
- Suitable lifestyle adaptations
- Phases of clinical intervention development and evaluation: active ingredients/mechanisms of action/proof of concept, feasibility trials, single RCTs, multicenter-RCTs

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:

- to remember and describe the epidemiology, time course, diagnostic criteria and therapeutic interventions of frequent neurological disorders
- to apply and evaluate corresponding movement therapeutic interventions

- to recommend, create and put into practice appropriate lifestyle adaptations in terms of training regimes promoting physical activity
- to design and to conduct an experimental or intervention study with participants suffering from neurological conditions

**Teaching and Learning Methods:**

The module consists of 1 literature seminar and 1 practical project. In the literature seminar, students will present and discuss seminal papers and current literature on the topics. In the practical project, the students will conduct an independent research project in small groups by assessing the symptoms and underlying disorders of a specific neurological disease or by evaluating appropriate approaches to treatment and care. Group excursions to institutions of neurological care and research will complement the module's learning experience.

**Media:**

PowerPoint, Films

**Reading List:**

Textbook of Neural Repair and Rehabilitation: Vol II – Medical Neurorehabilitation: 2nd Ed.  
Cambridge University Press (Eds. M.E. Selzer, S.C., L.G. Cohen, G.K. and R.H. Miller)

**Responsible for Module:**

Hermsdörfer, Joachim; Prof. Dr.

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

Modern interventions in neurological conditions (Seminar, 2 SWS)

Hermsdörfer J

Applied research into neurological disorders (Seminar, 2 SWS)

Hermsdörfer J, Stadler W

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

## Module Description

### SG810025: Behavioral Science, Behavior Change and Health | Behavioral Science, Behavior Change and Health

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<b>Contact Hours:</b> 120

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

#### Description of Examination Method:

Take-home exercises (individually) and one presentation of a behavioral science study (in groups) per semester (pass/fail).

The exercise will test student's understanding of the lecture material. It will consist of 5-8 short answer questions that ask students to critically reflect on the topics we have covered in the lecture. They will have a week to complete this. The presentation will be in groups and will require students to provide a 20-minute presentation summarizing, evaluating, and critiquing a published empirical behavioral science study.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Coursework on quantitative methods are helpful but not required. Interest in behavioral science/behavior change and health.

#### Content:

Theories and approaches to behavior change (We will focus heavily on theories, methods, and interventions from behavioral economics and social psychology but will also briefly cover classical theories from the health behavior literature)

- Critically evaluating and summarizing existing empirical research on behavioral science and health
- Developing theories of change and designing studies to test these theories of change
- Basics of randomized experiments and quasi-experimental studies.

#### Intended Learning Outcomes:

After successfully completing this course, students will be able to:

1. Describe the different behavioral theories and approaches to health behavior change.
2. Understand the basics of randomized experiments and quasi-experimental studies and how they are both applied in the behavioral sciences
3. Be able to evaluate the credibility of empirical behavioral science studies and whether they support a given behavioral theory
4. For a given health-related behavior:
  - a. Generate hypotheses for why the behavior is not being done
  - b. Develop theories of behavior change that can guide intervention development
  - c. Detail study designs for behavior change interventions based on the theory of change (including power calculations and descriptions of how the behavior will be measured).

**Teaching and Learning Methods:**

The class will consist of one lecture and one exercise/tutorial per week. Students will use the exercise/tutorial session to critically read, present, and discuss empirical studies and also get practice applying the skills and concepts learned during the lecture.

**Media:**

Presentations, e-learning materials, videos, and podcasts

**Reading List:**

Hallsworth M. & Kirkman E. (2020). Behavioral Insights. Cambridge: The MIT Press Essential Knowledge series.

A further reading list will be provided at the start of the class

**Responsible for Module:**

Sudharsanan, Nikkil; Prof. Dr.

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

Behavioral Science, Behavior Change and Health (exercise) (Übung, 2 SWS)

Favaretti C, Sudharsanan N

Behavioral Science, Behavior Change and Health (Vorlesung, 2 SWS)

Sudharsanan N

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

## Module Description

### SG810030: Cancer | Cancer

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<b>Contact Hours:</b> 120

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

#### Description of Examination Method:

Research paper and Presentation (30 minutes).

The evaluation will take place in both semesters. In the first part of the module, the assessment will be based on a written assignment (research paper – "cancer report"). This assignment should contain at least 2500 words (excluding references and annexes) and accounts for 65% of the final grade. In the second part of the module, the evaluation will be based on the research paper's oral presentation (30 minutes). The oral presentation contributes to 35% of the final grade. Both the research paper and the oral presentation are individual assignments. The performance of the research paper and the oral presentation demonstrate the students' ability to formulate a valid research question in cancer epidemiology, acquire and analyse suitable data, and present discussion and interpret findings.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Module Study Design and Ethics

#### Content:

- Molecular basis of cancer
- Risk factors for cancer
- Infection and cancer
- Biomarkers in cancer
- Cancer epidemiology and global cancer
- Cancer prevention
- Childhood cancer
- Cancer in elderly
- Radiation and cancer



- Cancer surveillance

**Intended Learning Outcomes:**

After successfully completing the module, students will be able to:

- understand the basis of cancer development, including the role of risk factors
- explain study designs and key epidemiological indicators in cancer research
- conduct basic epidemiological analyses of cancer data
- analyse cancer prevention strategies
- critically assess scientific publications/projects in cancer epidemiology
- formulate a valid research question in cancer epidemiology

**Teaching and Learning Methods:**

The module consists of lecture, seminar and exercise. Various teaching methods are used and include lectures, presentations, videos, discussions, group activities, an individual project, suggested readings, a debate, peer assessments, self-assessments, case studies, quizzes, forums and role-playing.

**Media:**

PowerPoint, Moodle, Zoom, videos

**Reading List:**

Michael J Thun, Martha S Linet, James R Cerhan, Christopher A Haiman and David Schottenfeld (eds). Schottenfeld and Fraumeni Cancer Epidemiology and Prevention. 4th edition. New York, NY: Oxford University Press, 2017.

**Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Applied conduct of cancer research - Literature background, planning, conduct and analyses of projects in cancer prevention\_Part 2 winter (Übung, 2 SWS)

Fiengo Tanaka L

Cancer Research Lecture (Vorlesung, 2 SWS)

Klug S

Applied conduct of cancer research - Literature Seminar (Seminar, 2 SWS)

Klug S, Osmani V

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

## Module Description

### SG810046: Evaluation Methods in Public Health and Health Care | Evaluation Methods in Public Health and Health Care

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<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 examination consists of project work (40 % of the final grade) and an oral examination (20 min., 60 % of the final grade).

a) The project work comprises a written report and a group presentation. It contains the analysis of a scientific publication and the problem-based development of a study/evaluation design.

- Students demonstrate their ability to reflect on or to develop evaluation designs.

b) In the oral examination, students demonstrate their ability to

- Understand and explain concepts of evaluation in the context of public health interventions;

- Understand and explain strengths, weaknesses, and assumptions of particular study designs;

- Critically analyze and evaluate scientific studies/evaluations.

There is the possibility for a midterm assignment. It includes the completion of exercise sheets & programming exercise. With the successful completion of the midterm assignment, the total module grade will be improved.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Basic knowledge of study designs
- Basic knowledge in mathematics and statistics
- Basic knowledge in the use of the statistical software R
- Interest in analytical questions
- Interest in public health and health care

#### Content:

The course "Evaluation Methods in Public Health and Health Care" provides an overview of the approaches, concepts, and methods used in the evaluation of public health and health care

interventions. A basic understanding of evidence generation and synthesis is fostered. The course enables students to plan and conduct their own evaluations. Course content includes the topics:

- Study- and evaluation designs
- Classical and non-classical experimental evaluation designs
- Quasi-experimental evaluation designs
- Model-based evaluation
- Evidence synthesis.

### **Intended Learning Outcomes:**

Overarching goal of the course is

- to advance the students' analytical skills to generate causal evidence,
  - to equip them with skills and tools to conduct their own scientific evaluations, and
  - to train them to become critical recipients of scientific evidence in the context of public health/ health care,
- to prepare them for jobs in the fields of science, industry, NGOs, and the health system.

After completing the module, students will be able to:

- Understand, explain and apply a variety of state-of-the-art evaluation methods in the context of public health and health care interventions;
- Understand and explain different types of study designs and analytical approaches including their strengths, weaknesses, and assumptions;
- Perform the necessary analytical steps and calculations in an evaluation context and to interpret graphical illustrations;
- Analyze and critically discuss scientific evaluation studies in the context of public health interventions;
- Develop evaluation/analysis designs on their own and to conduct empirical analyses based on simple data sets, data set descriptions, and corresponding research questions.

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

- Interactive lecture with corresponding tutorials to promote the understanding and application of the presented methods
- Presentations followed by group discussions
- Exercise sheets
- Programming tasks

### **Media:**

- Power Point presentations
- Exercise sheets
- Computer sessions/Open-Source statistics software (R)
- Online Quizzes

### **Reading List:**

- L. Friedman et al.: Fundamentals of Clinical Trials. Springer International Publishing 2015

- P.J. Gertler et al.: Impact Evaluation in Practice. 2nd Edition, The World Bank Group 2016
- J. Wooldridge.: Introductory Econometrics. A Modern Approach. South Western Educ Pub 2019
- S. Cunningham: Causal Inference: The Mixtape. Yale University Press 2021
- M. Egger.: Systematic reviews and meta-analysis. Oxford Textbook of Public Health. Oxford University Press 2009
- Briggs, A. et al.: Decision modelling for health economic evaluation. Oxford University Press 2006

**Responsible for Module:**

Laxy, Michael; Prof. Dr.

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

Evaluation Methods in Public Health and Health Care (Seminar, 1 SWS)

Laxy M

Evaluation Methods in Public Health and Health Care (Übung, 1 SWS)

Laxy M

Evaluation Methods in Public Health and Health Care (Vorlesung, 2 SWS)

Laxy M

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

## Module Description

### SG810047: Economic Evaluations of Health Care Programmes | Economic Evaluations of Health Care Programmes

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<b>Contact Hours:</b> 120

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

#### Description of Examination Method:

„Einmalige Übungsleistung“ (open book exam, 120 minutes) and project work:

The module includes an open book exam which is held in the summer term, and a project work, which takes place in the following winter term.

In the open book exam, students demonstrate in the form of:

- written tasks their understanding of interrelationships
- descriptions of (partly graphically presented) models and by means of the reproduction of theoretical relationships their understanding of health economic concepts
- problem solving tasks their understanding of health economic issues
- calculating tasks their understanding of health economic interrelationships and the ability to apply them independently
- written tasks their ability to critically discuss health economic evaluations.

The project work comprises the creation and analysis of study designs for health economic evaluation.

Students demonstrate their ability to develop and reflect on health economic evaluation designs.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Basic knowledge in statistics
- Basic mathematical knowledge at advanced level
- Participation in the lecture “Health Economics”
- Basic knowledge in scientific literature search methods
- Basic knowledge of health care systems

**Content:**

The lecture and tutorial on Economic Evaluation of Health Programmes provide a comprehensive overview of the concepts and methods used to evaluate health programmes. Basic health economic concepts and procedures are taught. The lecture enables students to conduct their own applications of health economic evaluation. Students apply the knowledge they have acquired to a project in health economic evaluation.

**Intended Learning Outcomes:**

After passing the module, students will be able to:

- understand and explain concepts of health economic evaluation and apply them by using examples
- grasp simple microeconomic models, solve calculations on different contexts and explain and interpret graphs on health economic contexts
- comprehend various applications of health economic evaluation and calculate examples
- understand and apply the main theories, principles and methods for the purpose of analysing health programs
- evaluate and critically interpret published economic evaluations
- collect data themselves and to conduct an economic evaluation on the basis of these data or taking secondary data into account.

**Teaching and Learning Methods:**

- lecture with interactive elements and integrated exercises to promote understanding
- group work
- practical lectures
- computational tasks
- computer tasks

**Media:**

- PowerPoint presentations
- additional scientific literature
- computer lab
- video conferences

**Reading List:**

- Breyer et al. (2005): Gesundheitsökonomik, Berlin: Springer, 5. Auflage.
- Drummond et al. (2015): Methods for the Economic Evaluation of Health Care Programmes, Oxford: University Press, 4th edition.
- Leidl (2003): Der Effizienz auf der Spur: Eine Einführung in die ökonomische Evaluation, In: Schwartz et al. (Hrsg.): Das Public Health Buch. Gesundheit und Gesundheitswesen, München und Jena: Urban & Fischer, 2. Auflage, S. 461-484.
- Schöffski et al. (2007): Gesundheitsökonomische Evaluationen, Berlin: Springer, 3. Auflage.

**Responsible for Module:**

Sundmacher, Leonie; Prof. Dr. rer. oec.

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

Applications in Economic Evaluations of Health Care Programmes (Seminar, 4 SWS)

Hanselmann M, Laxy M, Stephan A

Exercises in Economic Evaluations of Health Care Programmes (Übung, 2 SWS)

Sundmacher L

Economic Evaluations of Health Care Programmes (Vorlesung, 2 SWS)

Sundmacher L

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

## Module Description

### SG811014: Mental Health and Well-Being | Mental Health and Well-Being

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<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 will be assessed using a written abstract and oral poster presentation (20 min) on the practical project in the second semester. The students create an abstract which contains the results of a scientific relevant research question. Therefore, they have to prove that they can work independently on a research project and keeping all guidelines of good clinical working in mind. They prepare a structured abstract and poster, which will be orally presented in form of a scientific poster walk.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge and understanding of scientific research methods

#### Content:

- Epidemiology, time course, diagnostic criteria of and common therapeutic approaches to frequent mental disorders, such as Burnout and Depression, Anxiety disorder, Attention deficit hyperactivity disorder, Borderline personality disorder, Posttraumatic Stress disorder, and Somatoform disorder.
- Diagnostic approaches and criteria
- Neurophysiological mechanisms underlying the disorders
- Efficacy, indications and contraindications of certain therapeutic approaches (Behavior therapy, Clinical Hypnosis, Psychodynamic approaches, Systemic approaches) for these disorders
- Importance of lifestyle choices and mediating factors
- Suitable lifestyle adaptations
- Phases of clinical intervention development

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:



- to differentiate frequent mental disorders and describe the epidemiology, time course, diagnostic criteria and possible therapeutic interventions for those disorders
- understand the different neurophysiological mechanisms underlying the disorders
- to differentiate basic psychotherapeutic approaches and their range of application
- to evaluate the contribution of physical activity and/or sport programs in the prevention and treatment of mental disorders
- to design and to conduct research (survey, experimental or intervention study) with participants susceptible to or suffering from mental problems

**Teaching and Learning Methods:**

The module consists of 1 literature seminar and 1 practical project. In the literature seminar, students will present and discuss seminal papers and current literature on the topics. In the practical project, small groups of students will conduct research projects by assessing the conditions for the development or prevention of and/or testing interventions for specific mental disorders. Group excursions to psychosomatic clinics and research groups will complement the module's learning experience.

**Media:**

Semesterapparat, Reviewscripts, PowerPoint

**Reading List:**

Basic Literature: Kring, A.M., Johnson, S.L., Davison, G.C., & Neale, J.M. (2017). *Abnormal Psychology: The Science and Treatment of Psychological Disorders*. New York: Wiley. In addition: current journal articles in the field.

**Responsible for Module:**

Ebert, David; Prof. Dr. habil.

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

Forms and treatments of mental disorders (Seminar, 2 SWS)  
Ebert D

Applied research on prevalence, prevention and treatment of mental disorders (Seminar, 2 SWS)  
Hähli W

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

## Module Description

### SG811016: Orthopedic Health | Orthopedic Health

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> two semesters	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 240	<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 will be assessed using a written abstract and oral poster presentation on the practical project in the second semester. The performance of the talk demonstrates the students' ability to structure their results and illustrate the outcomes of their own therapeutic relevant study in the field of orthopedic research. Further it assess that they are able to solve a scientific problem in this field. The abstract is a further step to prove that they are able to concentrate on the key points of their work and to prepare a scientific paper.

**Abstract:** The students will choose one conference (relevant for their research field) as a group and prepare the abstract according to the requirements of the chosen conference. The scope of the abstract is determined by the authorship guidelines of the respective conference. The abstract will be graded individually and account 2/3 of the overall module grade.

**Presentation:** The presentation (10 min + 5 min discussion) will be in the context of a poster session together with the module 'Cardiovascular/Metabolic Disorders'. The poster and presentation graded in groups and accounts 1/3 of the overall module grade.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge and understanding of scientific research methods, basics of anatomy (name of bones, joints, muscles and their functions), basics of physiology (muscle contraction, adaptation of tissue to load), basics of statistics and research design, literature research

#### Content:

- Epidemiology, time course, diagnostic criteria of and common therapeutic approaches to frequent orthopedic disorders such as osteoarthritis, back pain, abnormal gait, traumatic injuries, and rheumatoid arthritis

- Efficacy, indications and contraindications of movement interventions for these diseases
- Importance of lifestyle choices and mediating factors
- Phases of clinical intervention development and evaluation: active ingredients/mechanisms of action/proof of concept, feasibility trials, single RCTs, multicenter-RCTs
- Diagnostic devices and methods common in orthopedic research
- Data post-processing and statistical evaluation

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able:

- to remember and describe the epidemiology, time course, diagnostic criteria and therapeutic interventions of frequent orthopedic disorders
- to apply and evaluate corresponding movement therapeutic interventions
- to recommend, create and put into practice appropriate lifestyle adaptations in terms of training regimes promoting physical activity
- to design and to conduct an experimental or interventional study with participants suffering from orthopedic conditions
- to apply common orthopedic diagnostic methods and to process data appropriately
- to disseminate and present research findings in a scientifically adequate form

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

The module consists of 1 literature seminar and 2 research seminars. In the literature seminar, students will present and discuss seminal papers and current literature on the topics. In the research seminars, the students will apply modern research methods within pilot testing and apply post-processing routines to their data. They will further conduct an independent research project in small groups by assessing the symptoms and underlying disorders of a specific orthopedic disease or by evaluating appropriate approaches to treatment and care. The students will disseminate their findings in written form and present it verbally.

### **Media:**

PowerPoint, e-learning, flipchart, exercise sheets, flipchart, blackboard, practical demonstration

### **Reading List:**

Abrahamson E, Comfort P (eds). Sports rehabilitation and injury prevention. Chichester, West Sussex, UK, Hoboken, NJ: Wiley-Blackwell; 2010.

Whiting WC, Zernicke RF. Biomechanics of musculoskeletal injury, 2nd ed. Champaign, IL: Human Kinetics; 2008.

Further literature will be announced in the courses.

### **Responsible for Module:**

Horstmann, Thomas; Prof. Dr.med.

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

Modern methods in orthopedic research (Seminar, 1 SWS)

Gabriel A, Horstmann T, Pohl T

Evidence-based therapy of orthopedic disorders (Seminar, 1 SWS)  
Horstmann T, Pohl T

Applied research into orthopedic disorders (Seminar, 2 SWS)  
Horstmann T, Pohl T

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

## Electives: Complementary Subjects | Wahlbereich Complementary Subjects

### Module Description

#### ED0218: Science and Technology Communication | Wissenschafts- und Technikkommunikation

Version of module description: Gültig ab summerterm 2014

<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> 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 umfasst aufgrund der unterschiedlichen Lernergebnisse der beiden zugeordneten Veranstaltungen zwei Teilleistungen: (1) ein Essay (1000-1500 Wörter) zum Workshop (20%) und (2) ein Referat (inkl. schriftl. Ausarbeitung (1000-1500 Wörter)) im Seminar (80%).

#### Repeat Examination:

Next semester

#### (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.

Alexander Gerber: Trendstudie zur Wissenschaftskommunikation, 2011, [http://www.stifterverband.de/publikationen\\_und\\_podcasts/positionen\\_dokumentationen/wissenschaftskommunikation\\_trendstudie/wissenschaftskommunikation\\_trendstudie\\_2011.pdf](http://www.stifterverband.de/publikationen_und_podcasts/positionen_dokumentationen/wissenschaftskommunikation_trendstudie/wissenschaftskommunikation_trendstudie_2011.pdf).

**Responsible for Module:**

Heckl Wolfgang (heckl@tum.de)

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

KI Kommunikation (Seminar, 2 SWS)

Heckl W [L], Weitze M

KI Kommunikation (Seminar, 2 SWS)

Heckl W [L], Weitze M

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

### BGU62062: TUM.city | TUM.stadt

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> 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:

The module's examination consists of an exam (90 minutes) and a voluntary mid-term performance in the form of a scientific work. With the written exam, students demonstrate that they are able to reflect the theoretical knowledge on City & Water, understand the interdisciplinary interactions and are able to evaluate them in practice.

The scientific work consists of a written paper (approx. 12 pages) and a final presentation. The students work on a chosen topic in the area of City and Water in greater depth. Here, the students show that the interdisciplinary aspects of a healthy city have been understood and how these can be analysed, interpreted and applied. With the oral presentation of the scientific paper the contents and results are presented.

The grade of the scientific paper can be credited with 33% of the overall grade if the exam is passed to improve the grade.

#### Repeat Examination:

#### (Recommended) Prerequisites:

Participation in the lecture TUM.stadt.

#### Content:

The course is based on the contents of the lecture.

What ecological, economic and social challenges do cities face with regard to climate change and redensification?

How can interdisciplinary approaches to solutions be developed?

What are the interfaces/encounters from the different disciplines on the topic of "City & Water"?

These and other questions are aimed at the core areas of a liveable city and this requires the interdisciplinary collaboration of planners, engineers, natural scientists, social scientists, economists and life scientists.

The following contents will be dealt with in the lecture and seminar:

- Identification of the networking of engineers, architects, natural scientists, social scientists, economists and life scientists.
- Exploration of new, interdisciplinary basic knowledge
- Exploration of interfaces/synergies and contradictions on the topic of the city through different disciplines.
- Identification, analysis and, if necessary, further development of relevant urban systems
- Impulses for the transformation of our living environments
- Development of new research questions
- Development of new interdisciplinary approaches to solutions
- Practice of working together across disciplines

The contents and topics are taught in the form of lectures, which are deepened in the seminar through interdisciplinary collaboration practice and guidance of the experts.

Graphics, pictures, short films or other suitable forms are used to illustrate the topics. In addition, interesting articles and literature recommendations are made available for download via Moodle.

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

After successful participation in the course, students are able to evaluate the subject-related and interdisciplinary interactions (synergies, potentials, contradictions) with regard to city and e.g. well-being, water or mobility.

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

The seminar builds on the lecture TUM.stadt. Experts from interdisciplinary fields are involved in the lecture series.

The teaching content of the lecture is conveyed through tandem lectures. These lectures are intended to sensitise students

to the topic of "City & Water", encourage them to discuss the content and give them insights into the subject area from different

specialist perspectives. The subsequent seminar is supervised by the assistants from the previous lecture and the initiators of TUM.stadt.

The students will be sensitised to the topic of "encounter city" through group work, on-site visits, etc., in order to actively and

consciously experience connections such as trees for shading, density, heat, stress,... or water as a design tool, food, medium for

leisure and health or natural hazard. Based on the knowledge gained, the students have to develop solutions in theory.



**Media:**

PowerPoint presentation, live feedback, blackboard work, video

**Reading List:**

Wang, Xiaochang C.; Fu, Guangtao (2021): Water-Wise Cities and Sustainable Water Systems: Concepts, Technologies, and Applications: IWA Publishing.

Grant, Gary (2016): The Water Sensitive City. Chichester, UK: John Wiley & Sons, Ltd.

Haass, Heiner (2010): StadtWasser. Wasserkonzepte in der Stadtplanung. Stuttgart: Fraunhofer-IRB-Verl. (StadtGestaltung).

Russell, James S.: The Agile City. Building Well-being and Wealth in an Era of Climate Change. Washington DC, 2011.

Bott, H., Grassl, G.C., & Anders, S. (2014). Nachhaltige Stadtplanung: Konzepte für nachhaltige Quartiere. [München]: Detail.

Ekardt, F. (2016). Theorie der Nachhaltigkeit: Ethische, rechtliche, politische und transformative Zugänge - am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel (2., vollständig überarbeitete und aktualisierte Auflage). Baden-Baden: Nomos.

Friedman, T. L. (2009). Hot, flat, and crowded: Why we need a green revolution--and how it can renew America (Release 2.0, updated and expanded ; 1st Picador ed.). New York: Picador/Farrar, Straus and Giroux.

Meadows, D. H., Meadows, D. L., & Randers, J. (1992). [Hauptband] (6. Aufl.). Die neuen Grenzen des Wachstums: die Lage der Menschheit: Bedrohung und Zukunftschancen / Donella H. Meadows: A. Stuttgart: Dt. Verl.-Anst.

**Responsible for Module:**

Markus Disse markus.disse@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

### IN9048: Innovation Generation in the Healthcare Domain | Innovationsentwicklung in der Gesundheitsbranche

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> 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:

Type of Assessment: Project Work

Throughout the module, students will develop all necessary components to validate the customer requirements to design the best product / service fitting a specific customer group. This requires active attendance of the interactive lectures. For optimal guidance, several stages of this process are evaluated in either written (value proposition canvas and documentation of validated innovation) or oral form (2 presentations), allowing the lecturer to provide in-depth feedback.

Grading will be based on attendance (10%), the mid-term presentation (10%), the final group presentation (20%), written assignments/report (40%), and a written test (45 minutes) on the technology basics (20%). Written assignments and oral presentations are conducted in groups of 2-4 students.

#### Repeat Examination:

#### (Recommended) Prerequisites:

You know the basics of imaging and image guidance and you are interested in understanding the difference between research and clinical solutions. You are highly motivated, eager to work in a team and you want to understand how the healthcare system works and validate an idea if it is an innovation (will someone apply and buy it). It will be of advantage if you have already an idea (e.g. through the Image Guided Surgery module) and you want to validate throughout the module if this is an innovation (i.e. it has potential in a market) or if it is only a great idea/invention.

### **Content:**

The modul focuses on customer validation and development around novel ideas in healthcare with the focus on medical imaging systems, medical technology & healthcare services. It focuses on the value proposition design and validation of system requirements.

Students will learn how to get user/customer feedback from medical professionals, learn methods to generate ideas and validate them quickly and derive business cases using state of the art methods for customer development and business generation. Furthermore, a basic understanding of markets in the medical domain and the various healthcare systems will be provided in overview lectures. The students will work on real life examples and use cases and with close contact to the Munich university clinics.

In all lecture blocks we will also work with a set of INNOVATION Games on identifying problems and solutions as well as generating novel concepts and ideas - very useful for identifying translational ideas and also for analyzing and improving complex project or task that eventually could result in a venture and new business generation.

### **Intended Learning Outcomes:**

The learning of this module includes:

- To learn and apply tools and methods to evaluate the innovation degree of an idea
- To apply tools and methods to validate the innovation/market of an invention
- To learn methodology to conduct innovation games to develop ideas in a structured way
- To apply use of business model and value proposition canvas
- To learn, understand and apply product management and project management methods and tools
- To understand the medical market, its payer models and healthcare reimbursement
- To understand the business in the biomedical market
- To learn apply methods and tools to translate the inventions to innovations
- To learn soft skills how to present ideas in front of a review/investment committee

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

By means of a presentation, regularly by slides, the lecturer presents basic principles on innovation generation in the healthcare domain i.e. creation of market potential for inventions, and illustrates these by means of examples.

Accompanying assignments deepen the understanding of the concepts explained in the lecture, and train students to apply the learnt techniques to create their optimized business case and validated for an intended customer group.

After the module students, should be able to analyze ideas with the learned and applied methods and tools and can create their own business model.

### **Media:**

Slide show, blackboard, flipchart

### **Reading List:**

Primary:

- Osterwalder, A., Pigneur, Y., Bernarda, G. & Smith, A. Value Proposition Design: How to Create Products and Services Customers Want. (John Wiley & Sons, 2014).
- Brant Cooper, Patrick Vlaskovits -- The Lean Entrepreneur -- ISBN 978-1-118-29534-2
- Alexander Osterwalder -- Business Model Generation -- ISBN 978-0470876411
- Harvard Business Review on Entrepreneurship -- ISBN 978-0-87584-910-2
- Steve Blank Slide Share - particularly up to Slide 115 (<http://bit.ly/2gIKNW1>)

Optional:

- Eric Ries, The Lean Startup, ISBN 978-0307887894
- Langdon Morris, The Innovation Master Plan (<http://www.innovationmanagement.se>)
- Peter Merrill, Innovation Generation, ISBN 978-0873897341
- Kim, W. C. & Mauborgne, R. Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant. (Harvard Business School Press, 2005).
- Keeley, L., Walters, H., Pikkell, R. & Quinn, B. Ten Types of Innovation: The Discipline of Building Breakthroughs. (John Wiley & Sons, 2013).
- Blank, S. & Dorf, B. The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company. (K & S Ranch, 2012).

**Responsible for Module:**

Navab, Nassir; Prof. Ph.D.

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

Innovationsentwicklung in der Gesundheitsbranche (IN9048) (Vorlesung mit integrierten Übungen, 4 SWS)

Traub J [L], Traub J, Keicher M, Eilers C

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

## Module Description

### MA8113: TUM Data Innovation Lab | TUM Data Innovation Lab [TUM-DI-LAB]

Version of module description: Gültig ab winterterm 2016/17

<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> 210	<b>Contact Hours:</b> 90

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

#### Description of Examination Method:

The examination consists of an oral presentation of contents and results, followed by a discussion of a project work carried out in a group of 3-4 students. Additionally, a written documentation of the problem, the proposed solution and the major achievements obtained within the project work should be produced. During the project presentation (10-15 min per participant, within a 40-min presentation per group) the students are allowed to use learning aids (notes, reference material). With the presentation, the students demonstrate their ability to understand the central issues of their respective assigned project problems, to describe the approach taken and their command of the techniques used. The students present their work with the help of a slide presentation designed to be appealing to the audience, thereby demonstrating their ability to communicate mathematical problems and ideas also to a non-mathematical audience and to conduct a discussion about the presented subject. Additionally, a detailed written description measures the student's ability to summarize the major facts in a clear and concise manner. Regular discussions with the Mentor and the Lab Coordinator measure the student's ability to develop the ideas from initial concepts to the complete picture within the given time frame, delivering interim results at relevant milestones.

The evaluation of each team member is accounted as follows: the implemented solution accounts for 60% of the grade. The documentation accounts for 20% of the grade. The oral presentation accounts for 20%.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

[IN0008] Fundamentals of Databases

[IN0007] Fundamentals of Algorithms and Data Structures

[MA4800] Foundations of Data Analysis or

[IN2326] Foundations in Data Engineering  
[MA3402] Computational Statistics

**Content:**

The TUM Data Innovation Lab (TUM-DI-LAB) is a summer (or winter) educational research experience (internship) that welcomes TUM Master students of any Department interested in exploring new data-driven approaches to interdisciplinary challenges. Students join small project teams, working alongside other teams in a communal environment. They learn how to marshal, analyze, and visualize data, while gaining broad exposure to the modern world of data science. A list of potential projects provided by any TUM department, other universities or innovative companies is constantly kept up to date by the TUM-DI-LAB Coordinator.

Students are invited to apply for the development of one or more of the proposed projects. According to projects, student applications and qualifications, groups of max. 3-4 selected Master students preferably of different background (Mathematics, Computer Science, Biology, Engineering etc.) will be formed to work on assigned projects.

One Mentor will be appointed to each project team to assist and supervise the students during the development of the project. A Mentor is a TUM doctoral student, a postdoc or a professor, who is investing research time on the project. The number of accepted students per internship will always depend on the actual personnel capacity and project proposals to support the activity.

The project work consists of a practical solution to a specific data-related challenge. The specific goal of a project may vary significantly and it depends on the currently available proposed projects by any TUM department, other universities or innovative companies.

Check our webpage for information about available projects: [www.di-lab.tum.de](http://www.di-lab.tum.de)

**Intended Learning Outcomes:**

Upon successful completion of this module, students are able to:

- formulate real-life problems in mathematical terms, strive to propose potential solutions and implementations. This effort should foster both creativity and pragmatism;
- learn data analysis and engineering methods and how they can be applied to solve a real-life problem;
- set up a project plan and monitor the project progress;
- learn project management techniques to distribute tasks and be aware of the importance of their individual contributions;
- evaluate different solution techniques;
- implement appropriate numerical algorithms;
- assess and interpret their mathematical results with respect to the underlying application;
- present their work to a scientific and a non-scientific audience;
- work in groups of 3-4 students with multidisciplinary background in order to generate cross-disciplinary fertilization and develop a common language.

**Teaching and Learning Methods:**

Accompanied by Mentors and the Lab Coordinator, students will work in groups on assigned projects. The student team starts with a brainstorming on the given problem and with the research

and the selection of possible tools for solutions. After this initial phase, which should last no more than 2 weeks, the student team supervised by the Lab Coordinator prepare a project plan with precise milestones to arrive to the end of the internship with a possible result. The realization of the project follows by regular weekly meetings of the student team and meetings with the Mentor and the Lab Coordinator.

In order to obtain satisfactory results for an assigned project, teaching methods such as individual work, group work and a presentation will be used. For this, the students will use learning methods such as research of reference materials, study of specialist literature, definition of problems, creation of reports and preparation of presentations. The project management approach will foster revisions on basis of critique, work under time constraints and generate constructive critique of own work, as well as constructive critique of others work.

**Media:**

Slide presentations

**Reading List:**

Provided by project proposer and mentor

**Responsible for Module:**

Fornasier, Massimo; Prof. Dr.

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

TUM Data Innovation Lab [MA8113] (Vorlesung, 2 SWS)

Acevedo Cabra R, Rauchensteiner M

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

## Module Description

### MW2245: Think. Make. Start. | Think. Make. Start. [TMS]

*Build innovative products of your ideas in 10 days!*

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> 6	<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:

The module examination consists of a project work incl. written documentation (approx. 10 pages) and presentation (10 min), in which the students develop a new product in a group project and present their idea for founding a company on this basis. The individual performance is assessed to what extent the students are able to develop a product with market potential by means of an iterative approach to prototypical implementation. The assessment also includes the ability to work in a team, the ability to make well-founded design decisions and the completeness and conclusiveness of the concept, taking into account social relevance, novelty and innovation. As part of the project work, in addition to documentation, there is a final oral presentation. Through the presentation, students are expected to show whether they can demonstrate their ability to act as a competent team.

#### Repeat Examination:

#### (Recommended) Prerequisites:

The basic requirement is a willingness to engage with new learning methods, approaches, disciplines and ways of working. Cross-role experience in project management, product development (Design Thinking, TRIZ, Systems Engineering, etc), interdisciplinary teamwork, communication skills, creativity and problem solving skills are an advantage. A lot of emphasis is placed on practical experience.

For the "Problem Expert" role, experience in the following areas is an advantage:

- User Testing, Requirements Engineering, Interviewing, Human-Centered Design, Design, Visualisation, Use Case Definition, UX/UI Design, marketing, market research, benchmarking, design thinking.



For the "Tech Developer" role, experience in the following areas is an advantage:

- Hardware (mechanical): design, manufacturing (workshop/makerspace), prototyping, CAD/CAM.
- Hardware (electronic): embedded systems engineering, microcontrollers, sensors/actuators, Arduino, Raspberry, circuitry, board design, metrology, BUS protocols, prototyping, closed-loop/open-loop control, robotics
- Software focus: Backend development, databases, frontend development, machine learning, web development, app development, embedded systems

For the "Business Developer" role, experience in the following areas is an advantage:

- Business Plan/Strategy/Design, Marketing, Sales, Interviewing, Finance & Accounting, Business Law & Regulations, Entrepreneurship.

The number of participants is limited and there will be an application process.

### **Content:**

During the interdisciplinary team project, students work methodically, purposefully and agilely on a development project to develop innovative new products with the intention of successfully launching them on the market. Current needs and problems from social, technological and economic systems are identified, analysed and validated in the interdisciplinary team. In doing so, they cooperatively solve challenges that arise from constraints from the different disciplines. They generate suitable market hypotheses and product ideas at an early stage and interact with initial potential customers/users. They iteratively create prototypes and evaluate their hypotheses with them in experiments.

For more information, visit [www.thinkmakestart.com](http://www.thinkmakestart.com) and [www.tms.tum.de](http://www.tms.tum.de).

### **Intended Learning Outcomes:**

After the successful participation in the module, the students are able to:

- examine the relevance of a problem and develop a solution collaboratively in an interdisciplinary team.
- to discover the innovation potentials of new products / ideas, to evaluate the novelty and social relevance.
- To convert one's own ideas into a Minimum Viable Product and thus use potentials for one's own business start-up.
- To know methods of product development (from thinking to doing), to apply them independently and to evaluate the results (prototyping, design thinking, lean startup, agile, systems engineering).
- to reproduce the principles of user-centred design, to apply them independently and to evaluate them.
- Understand the context of use and analyse customer needs (where do I serve a need and what technology/method do I use).
- To quickly develop important hypotheses involving relevant stakeholders (customer, user, ...) through proper Planning with "purposeful prototyping".
- Change perspectives across disciplines and apply project management in interdisciplinary teamwork.

- To work independently, to make and justify decisions and to learn from one's own mistakes.
- To possibly lay the foundation for one's own business start-up by identifying a start-up idea or team.

**Teaching and Learning Methods:**

"THINK. MAKE. START." is a two-week, practice-oriented, interdisciplinary and competitive teaching format in which students from all faculties can participate (credits are given individually related to the study program). It is organised by the different chairs of TUM, TUM ForTe, and UnternehmerTUM. They get access to the high-tech workshop Makerspace and budget to transform their own ideas into real prototypes (mechatronic products). Learning outcomes are achieved through the following teaching and learning methods:

- Milestones to be achieved, team roles to be held and predetermined course structure provide the roadmap for the project.
- Coaching and teaching expertise in prototyping, business validation, agile development, design thinking, systems engineering, lean startup and user-centred design.
- Teaching the basics of interdisciplinary collaboration through a role concept (Business Developer, Tech Developer, Problem Expert).
- All participants work in interdisciplinary teams (10 teams of 5 students each) and are encouraged to become active themselves and learn through practical experience (hands-on learning).
- Each team pursues a real business idea chosen for the seminar. Special attention is given to really understanding the customer and verifying the solution approach, through questioning, observation, prototyping or expert discussion.
- Using prototyping to bridge the gap between thinking and doing.
- Reflecting on one's own results and approach supports project decisions.
- The teams present their projects to a jury on DemoDay and present the prototypically implemented product ideas to guests from industry, the start-up scene and research.

**Media:**

Project manual, presentations, hand-outs, posters, videos, examples.

**Reading List:**

Esch Franz-Rudolf (2012) Strategie und Technik der Markenführung, 7. Auflage, Vahlen

Faltin, Günter (2008): Kopf schlägt Kapital, Hanser

Halgrimsson (2012): Prototyping and Model Making for Product Design (2012)

Kalweit Andreas, Paul Christof, Peters Sascha, Wallbaum Reiner (2012) Handbuch für Technisches

Produktdesign, Material und Fertigung, Entscheidungsgrundlage für Designer und Ingenieure, 2. Auflage, Springer

Kelly, Tom (2016): The Art of Innovation

Lindemann, U (2007): Methodische Entwicklung technischer Produkte - Methoden flexibel und situationsgerecht anwenden. 2. Auflage

Münchener Business Plan Wettbewerb: Handbuch Businessplan-Erstellung, München  
<http://www.evobis.de/coaching/handbuch/>

Malek, Mirosław / Ibach, Peter K. (2004): Entrepreneurship, Dpunkt Verlag

Moore, Geoffrey A. (2002): Crossing the Chasm, Harpercollins

Osterwalder, Alexander / Pigneur, Yves (2010): Business Model Generation: A Handbook for

Ries, Eric (2011): The Lean Startup

Savoia, Antonio (2019): The right It

Timmons, Jeffrey A. / Spinelli, Stephen (2009): New Venture Creation, 7th edition, McGraw, Hill Professional

UnternehmerTUM (2011): Handbuch Schlüsselkompetenzen, 7. Auflage

**Responsible for Module:**

Zimmermann, Markus; Prof. Dr.

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

Think.Make.Start. (Praktikum, 4 SWS)

Zimmermann M [L], Martins Pacheco N, Bandle M, Förtsch T, Reif M, Baur C, Höller B, Thies A

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

## Module Description

### **POL00011: Politics for Rocket Scientists: An Introduction to Political Science for Non-Political Scientists | Politics for Rocket Scientists: Einführung in die Politikwissenschaft für Nicht-Politikwissenschaftler**

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> 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:**

Form of examination ("Prüfungsleistung"): Closed book final exam ("Klausur", 90 minutes), predominantly in multiple choice format ("Multiple Choice mit Einfachauswahlaufgaben"), which will provide students with an opportunity to demonstrate their mastery of the course material and the learning objectives by answering a series of questions addressing the full range of topics covered in the course. Students will thus, for instance, be able to demonstrate their familiarity with different ways of thinking systematically about politics and public policy.

Current notice in view of the restricted presence operation due to the CoViD19 pandemic: If the general conditions (hygiene, distance rules, etc.) for a presence test are not available, the planned form of examination can be switched to electronic (remote) testing in accordance with §13a APSO. The decision about this change will be announced as soon as possible, but at the latest 14 days before the examination date by the examiner after consultation with the responsible examination board.

#### **Repeat Examination:**

End of Semester

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

Open to TUM students in any field of study; no prerequisites. This is an introductory course geared toward students without prior university-level training in political science or any other social science, who seek an understanding of the systematic, scientific study of politics and public policy.

#### **Content:**

This course provides a broad introduction to the systematic study of politics from the local to the global level. We will study the sources of political preferences, as well as various forms of articulating those preferences (from public opinion polls and voting to political violence). We

compare how legislative institutions translate public preferences into law and policy in democratic and non-democratic regimes--and we will examine the role of executives and courts in the political process. Addressing these issues requires empirical analysis but also raises fundamental questions of political philosophy, such as: What is the nature of power and how is it related to expertise, authority, legitimacy, and ethics? And what does democracy mean in international politics or global governance? We will also examine the relationship between politics, economics, law, and technological innovation, asking questions such as: Why is government intervention in the development of new technologies or elsewhere in the economy sometimes considered essential and other times the source of severe problems? What are the political consequences of various kinds of inequality in a democracy? Why are technically or scientifically optimal policies often passed up for sub-optimal policies that are no more than "second-best"? Are there ways to improve upon those second-best outcomes? And why is the realization that war makes everyone worse off no guarantee against the military escalation of interstate disputes? About 2/3 of each week's class will be devoted to the conceptual, theoretical and empirical-methodological tools of political analysis; during the remaining 1/3 of each class, we will explore the application of those tools to contemporary issues at the intersection of science, technology, economy and society.

**Intended Learning Outcomes:**

The course is designed to expose students from across the TUM (especially those in the natural sciences and engineering but also students at the TUM School of Management) to different ways of thinking systematically about politics and public policy. Students will gain an understanding of the foundational questions of Political Science, acquire knowledge of key theories and core methods of political analysis, and learn how to apply some of the conceptual, theoretical and methodological tools of the social sciences to some of the big contemporary policy questions affecting science, technology, economics and society.

**Teaching and Learning Methods:**

The module consists of a single 3 hours/week highly interactive lecture, accompanied by weekly reading assignments. Close advance reading of the assigned texts for each week's lecture will be expected.

**Media:**

Various (readings, slides, etc.)

**Reading List:**

Required readings are taken from various books (including Aristotle's *The Politics*; *The Oxford Handbook of Political Economy*; *International Political Economy: Perspectives on Global Power and Wealth* (Frieden, Lake & Broz, eds.); and *The New Global Rulers: The Privatization of Regulation in the World Economy* (Büthe and Mattli), as well as academic journals (such as the *American Political Science Review*, *Antitrust Bulletin*, *International Organization*, and *West European Politics*) and occasionally from popular magazines and online publications."

**Responsible for Module:**

Büthe, Tim; Prof. Dr.

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

(POL00011) Politics for Rocket Scientists (Einführung in die Politikwissenschaft für Nicht-Politikwissenschaftler) (Vorlesung, 3 SWS)

Büthe T ( Buckley Y, Grünwaldt P, Jakob S, Schmid H )

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

## Module Description

### POL24302: The Political Economy of Technical Standards | The Political Economy of Technical Standards

Version of module description: Gültig ab winterterm 2017/18

<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 evaluation of this module will be based on: (1) A 10-12 double spaced pages (not including the bibliography) term paper, which will be worth 90% of the final grade. Students will be required to submit a research proposal that provides an introduction and a research question/topic on week four of the semester (worth 20%). Additionally, students will be required to present the status of their work in front of the class during the last two weeks for critics and feedback (worth 30%). The final version of the paper (in journal format) should be submitted before the end of the semester (worth 40%). (2) A A participation grade which is worth 10% of the grade. Students will be graded based on their level of participation discourse. This entails having carefully read and annotated the required readings before the class and active participation during the seminar.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This is an introductory course geared toward students without prior knowledge or trainings in the standardization field.

#### Content:

This seminar focuses on the interrelated themes of the political economy of standardization and certification within the context of global governance. This will naturally cover the topic of standards as they are at the center, and a main output, of the standardization process. In this course, a standard is defined as a technical document that is designed to be used as a rule or a guideline for doing something. We will cover various types of standards, such as product and management system standards. The first part of the course deals with the fundamentals of standardization and standards: different types of standards and their historical background, the economic theories behind standards, standardization and standard-setting processes, the role of standards in

innovation and their impact on the micro (organizations) and the macro (states) levels, ways of ensuring compliance, and the role of standards in market governance. In the second part we build upon what has been introduced during the first part, but now with a focus on global governance. We will examine the role of inter- and transnational standards development organizations in the global economy, the politics of standards setting, public and private stakeholders role in standards setting, standards wars.

**Intended Learning Outcomes:**

Drawing upon literature from political science, sociology and economics, this course aims to offer students conceptual tools to open the blackbox of standards/standardization. Instead of viewing standards as ready-made rules, this course is designed to help students think critically about how standards come into being, as well as the impact, power, and limitations of standards as a tool of governance from the political and social perspectives. Students who successfully complete this class will develop a critical and interdisciplinary thinking toward standardization and related policy/governance issues.

**Teaching and Learning Methods:**

The module consists of a single 2 hours/week highly interactive seminar, accompanied by weekly reading assignments. Close advance reading of the assigned texts for each week's lecture will be expected.

**Media:**

**Reading List:**

**Responsible for Module:**

Büthe, Tim; Prof. Dr.

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

Seminar:

The political economy and global governance of standardization and certification (2 SWS)

Abdel fattah Alshadafan

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



## Module Description

### POL40100: Introductory Lecture: Politics and Technology | Ringvorlesung: Politics & Technology

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> 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:

Current notice in view of the restricted presence operation due to the CoViD19 pandemic: If the general conditions (hygiene, distance rules, etc.) for a presence test are not available, the planned form of examination can be switched to electronic (remote) testing in accordance with §13a APSO. The decision about this change will be announced as soon as possible, but at the latest 14 days before the examination date by the examiner after consultation with the responsible examination board.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

The module is intended as an introduction to the questions and research being addressed in the main thematic areas of the master's program: big transformations and their environmental, technological, and social dimensions; democracy in a digital age; and global governance, ethics and technology. The links between these areas and research areas found in the TUM, such as economics and policy, digital technologies, social responsibility and corporate governance, and urbanization, mobility, and energy will be explained.

#### Intended Learning Outcomes:

After participating in the module, students will have a strong overview of the kinds of research questions being addressed by faculty in the HfP. They will be knowledgeable about some of the big questions driving the study of politics and research methods and theories which are used to address those questions: What role does the state play in technological innovation? How well

do different political systems address major challenges like climate change, biodiversity loss, and ocean acidification? How is support for democracy impacted by growing economic inequalities? How might new technologies alter forms of societal participation in governance processes?

**Teaching and Learning Methods:**

The module is offered in the form of two seminars, each dealing with different, but complementary thematic areas. One will focus on big questions for politics in a world of rapidly changing technologies, globalization, migration, and challenges to democracy. The other will look at major policy problems (the Energiewende, Resource depletion, urbanization) and how they are being addressed by governments, industrial actors, and civil society.

**Media:**

Online-Reader, PowerPoint

**Reading List:**

A reader of seminar texts with up-to-date and cutting edge scientific literature will be made available at the start of the semester.

**Responsible for Module:**

Schreurs, Miranda; Prof. Dr.

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

(POL40100) Introduction to Politics, Technology & Sustainability (Vorlesung, 4 SWS)

Schreurs M ( Mohammed N, Schmid H )

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

## Module Description

### POL61500: Global Governance, Ethics, and Technology | Global Governance, Ethics, and Technology

Version of module description: Gültig ab summerterm 2018

<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> 120	<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 grade is based on a written examination in the form of a seminar paper (13 – 15 pages). Through their seminar paper, students will document to which extent they have gained a foundational understanding in the area of global governance, ethics and technology and whether they are able to apply the introduced theories and approaches to analyze specific policy problems. Furthermore, it will be reviewed whether the students understand how the introduced theories challenge and differ from conventional theories. The seminar paper is accompanied by a presentation (15 - 30 min) to test the communicative competence of presenting scientific topics to an audience. The presentation must be supplemented by a short-written handout. The module grade consists of the seminar paper (80%) and the presentation (20%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

This module provides a foundational introduction to the area of global governance, ethics and technology. This includes seminal theories and approaches as well as their application to current policy areas with a focus on new technologies. This module explores the effects of ethics and technology within the area of global governance, its rule-making and institution-building potential, as well as the factors driving it in different issue areas such as cryptocurrencies, e-commerce, cybersecurity, global health, technical and environmental standards, intellectual property rights, as well as technology development and transfer.

**Intended Learning Outcomes:**

Upon successful completion of this module, students will understand foundational theories and approaches in the intersection of global governance, ethics and technology. They will further be able to apply the introduced theories and approaches to specific policy problems and understand how they challenge and differ from conventional theories.

**Teaching and Learning Methods:**

The module consists of two seminars. This setting allows for an intensive discussion of specific theories and policy areas of global governance, ethics and technology and it is meant to encourage in-depth exploration of the module's topics and independent study of the scientific literature.

**Media:**

Scientific literature, PowerPoint, Reader

**Reading List:**

Margetts, H. et. all (2015): Political Turbulence: How Social Media Shape Collective Action. Princeton: Princeton University Press.

A reader of seminar texts will be made available at the start of the semester.

**Responsible for Module:**

da Conceicao-Heldt, Eugenia; Prof. Dr. phil.

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

(POL61500) Global Governance, Ethics, and Technology (Seminar 1 + 2) (Seminar, 4 SWS)

Baldes P, Rios Camacho E ( Müller T )

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

## Module Description

### POL62100: Civil Society and Technological Change | Civil Society and Technological Change

Version of module description: Gültig ab winterterm 2017/18

<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:

For this module, evaluations will be based on written work and an in-class presentation. The written assignment will entail a paper of approximately 25 pages that is linked to the theoretical, empirical, and methodological approaches introduced in the module. The topic of the paper is to be developed in consultation with the seminar leader and will deal with a specific topic of the seminar, which is introduced with a precise question and then analyzed in depth. In addition, students will be expected to prepare and make a presentation of at least 20 minutes on a theme being discussed in class.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Ring lecture „Politics & Technology“

#### Content:

The module introduces theoretical debates related to such issues as the roles of society and politics in science and technology research and development, why some societies appear stronger at innovation than others, the forces contributing to system transformations, the factors which influence public acceptance and rejection of scientific and technological change and how decision making can be improved when engineers, scientists, policy makers, non-governmental organization representatives, and citizens are more strongly engaged in dialogue. Various questions will be considered: What explains why some technologies or scientific discoveries are accepted in one society but rejected in another? How do different forms of public participation in technology-related policy decisions affect the smoothness of transitions? Is the use of the precautionary principle a good idea? How do different governments attempt to promote innovation and what instruments can they use? Can civil society play a useful role in technological innovation

and diffusion? Why do some technologies diffuse easily while others go "nowhere"? What are the roles of NIMBY (Not In My BackYard) and YIMBY (Yes In My BackYard) movements? How are risks associated with technologies and science (e.g. cost benefit analysis, precautionary principle, polluter pays principle), uncertainties (knowable and unknowable) dealt with by industry, society, and governments? How does technological transition relate to societal and political transition? The module investigates these theoretical and empirical issues in the context of ever more pressing future challenges, such as rising government debt in many countries, growing global competition for innovation, and intensifying global environmental degradation and resource scarcity. Empirically based comparisons will be made (e.g. across countries and across industrial sectors).

### **Intended Learning Outcomes:**

After participating in the module, students will have a broad familiarity with relevant literatures addressing the relationships between technological and science innovation, policy formulation, and implementation and the societal and political forces that promote, accelerate, slow-down, or prevent technological/scientific change. Students will become familiar with historical cases of (attempted) technological or scientific transformations and consider what lessons these may have for the present and the future. They will understand theories explaining how and why civil society mobilizes in support or in opposition to new science or technologies as well as how new technologies/science may alter the possibilities for societal participation in policy formulation. Students will become familiar with specific relevant scientific and technology issues (e.g. supersonic transport, climate change, nanomaterials, artificial intelligence, autonomous driving cars, genetically modified organisms) and learn how these can be analysed and compared across issues and time. Students will be able to formulate strong research questions and appropriate research designs and methodologies for studying questions of technological and scientific transitions and societal and political responses. Students will become familiar with basic terms and concepts related to how societies promote, adapt to, develop, or reject major technological transitions. They will be able to distinguish among different theoretical concepts of relevance and to be able to hypothesize about why societies respond as they do to major technological and scientific developments. By the end of the course, students will be able identify typical problems facing governance of technological and scientific transitions, to analyze governance approaches, and to evaluate among governance instruments (for example legal regulation, planning, incentive design, taxes, subsidies, etc.) in various technology policy areas.

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

The module is offered in the form of two seminars, each dealing with different, but complementary thematic areas. One is focused more on challenges of acceptance and backlash, the other more on innovation and transformation by fundamental technological transformation processes. To obtain a deeper understanding of the module's topics a combination of independent work and general discussion will be used in the seminar. Seminars will include both direct input from the instructor and a wide variety of active learning methods. During the seminars, there will be in-depth discussions and inputs by students. Concrete examples will be used to practice, analyze, and evaluate the material which has been presented. The presentations developed and given by the students and ensuing discussions will contribute to the students' understanding of the seminar materials and instructor's inputs.

**Media:**

Online-Reader, PowerPoint

**Reading List:**

A reader of seminar texts with up-to-date and cutting edge scientific literature will be made available at the start of the semester.

**Responsible for Module:**

Schreurs, Miranda; Prof. Dr.

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

(POL62100) Civil Society and Technological Change (- Seminar 1) (Seminar, 2 SWS)

Jedd T ( Mohammed N )

(POL62100) Civil Society and Technological Change (- Seminar 2) (Seminar, 2 SWS)

Zambrano Gutierrez J ( Mohammed N )

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

## Module Description

### POL67001: Digital Sustainability Transformation of, by and for the TUM | Digital Sustainability Transformation of, by and for the TUM

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 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 actively contribute to the lecture by participating in the discussions and writing two policy briefs of ~5 pages each. Each policy brief has to focus on a different thematic area of the lecture (see below). Each policy brief counts 50% to the final grade.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This course is aimed at all students enrolled in a Master program at the TUM; it is thus designed as an interdisciplinary venue which brings together a range of scientific perspectives. No specific prior knowledge is required. We are highly encouraging students from other schools and departments at TUM to participate in the lecture series in order to ensure a diverse, interdisciplinary approach.

#### Content:

Sustainability and digitization are two of the key challenges of our time. Both transformations must be actively shaped, whereby it is crucial to think "sustainability" and "digitization" not only as two separate megatrends but examine their intersections and interplays. Universities like the TUM have a central role to play in shaping the digital and sustainable transformation: they are learning venues for sustainable/digital development with the goal to educate people; they serve as fora for public discussions and as hubs to connect important stakeholders; they are important incubators for innovations; and they (should) also function as role models for the society.

This course consists of a virtual lecture series that examines the question of digitizable transformations across four issue areas: 1) common good AI in smart cities, 2) intelligent sustainable mobility, 3) circular economy & smart waste management, and 4) green finance. We will devote three sessions to each thematic area, and explore it from various angles including



participatory workshops, roundtables with experts from academia, stakeholders and/or political actors. Each session will be organized in cooperation with stakeholders from Munich and beyond in order to discuss the mutual opportunities and challenges of sustainability and digitization at various levels. While the focus will be on projects in Munich and Bavaria, topics will also be addressed at a national, supranational and global level.

**Intended Learning Outcomes:**

After successful participation in this course, students are able:

- to understand and to critically discuss key aspects linked to sustainable and digital transformations;
- to analyze how they can actively shape big transformations in their immediate vicinity.

**Teaching and Learning Methods:**

The lecture combines (pre-recorded) videos and online presentations, with podcasts and interviews. To facilitate active participation with the content of the lectures, Q&A sessions, online discussions will be combined with offline workshops. Depending on the development of the Corona-pandemic, it is planned to hold 1/3 of the classes in person as participatory workshops, and 2/3 of the classes as online discussions.

**Media:**

The course is planned as a hybrid event combining online tools and in-person sessions (depending on the development of the Covid-19 pandemic). Depending on the development of the Corona-pandemic, it is planned to hold 1/3 of the classes in person as participatory workshops, and 2/3 of the classes as online discussions.

**Reading List:**

- Sterling, St. et al. 2013. The Sustainable University. London: Routledge.
- Filho, W. L. & P. Pace 2016. Teaching Education for Sustainable Development at University Level. Cham: Springer International.
- Filho, W. L. et al. (eds.). 2019. Universities as Living Labs for Sustainable Development. Cham: Springer International.
- Heinrichs, H. et al. (eds.). 2016. Sustainability Science. An Introduction. Cham: Springer International.

**Responsible for Module:**

Wurster, Stefan; Prof. Dr. rer. pol.

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

(POL67000, POL67001) Digital Sustainability Transformation of, by and for the TUM  
(Ringvorlesung) (Seminar, 2 SWS)  
Wurster S ( Mohammed N ), Siewert M  
For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### SG160053: Introduction to Health Literacy Research | Einführung in die Gesundheitskompetenzforschung

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Bachelor/Master	<b>Language:</b> German	<b>Duration:</b> one semester	<b>Frequency:</b> summer 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:

Written exam (60 minutes; 50%)

Research paper (50%)

Weighting: Weighting between paper and presentation:

paper 60%, presentation 40%

Further details will be announced soon.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

- Health literacy basics: conceptual insights, historical roots, disciplines, and measurement methods.
- Health literacy evidence: international state of the art and health inequalities.
- Health literacy in childhood and adolescence
- Health literacy in schools
- Health literacy and organizational development
- Digitalization, media and infodemiology
- Health literacy and societal challenges: pandemics and crises
- Health literacy and recent developments in research, practice and politics

#### Intended Learning Outcomes:

Participation in this module will enable students to

- describe definitions, concepts and models of health literacy

- distinguish between general, digital and mental health literacy
- understand the differences between personal health literacy and organizational health literacy and understand health literacy as a relational concept
- identify strengths and weaknesses of the different models
- understand health literacy as an approach that is both behavioral and structural
- contextualize health literacy historically and understand its relevance for public health and health sciences
- relate health literacy to health promotion, health education and other concepts and differentiate between them
- distinguish health literacy and the scientific discourse by different population groups and settings
- name relevant professional fields, settings and areas of society for health literacy
- be familiar with the different measurement tools used to assess health literacy and understand how the function methodologically.

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

The module consists of a lecture and a seminar, including an exercise/ tutorial. The lecture serves the purpose to introduce into the topic via multi-perspective presentations. The seminar will deepen the topics of the lecture, while the focus is on student driven activities with a focus on interaction. Exercises serve the purpose of repetition and deepening the understanding. Students are encouraged to study relevant literature and to engage with the content of the topics.

### **Media:**

Microsoft Powerpoint or similar applications

### **Reading List:**

1. Okan, O., Bauer, U., Pinheiro, P., Levin-Zamir, D., Sørensen, K. (Hrsg.) (2019). International Handbook of Health Literacy. Research, Practice and Policy across the Lifespan. Bristol: Policy Press.
2. Saboga Nunes, L., Bittlingmayer, U.H., Okan, O., Sahrai, D., (2020). Health Literacy Anthology New Approaches, New Insights on Health Literacy Research. Wiesbaden: Springer VS. Doi: 10.1007/978-3-658-30909-1.
3. Rathmann, K., Dadaczynski, K., Okan, O., Messer, M. (2021). Gesundheitskompetenz. Springer Reference. Springer. Doi: 10.1007/978-3-662-62800-3.
4. Bollweg, T.M., Bröder, J., Pinheiro, P. (2020). Health Literacy im Kindes- und Jugendalter. Ein- und Ausblicke. Springer VS. <https://doi.org/10.1007/978-3-658-29816-6>.
5. Schaeffer, D., Pelikan, J. (2017). Health Literacy. Forschungsstand und Perspektiven. Hogrefe.

Additional literature will be provided in the seminar.

### **Responsible for Module:**

Okan, Orkan; Prof. Dr. phil.

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

Einführung in die Gesundheitskompetenzforschung (Seminar) (Seminar, 2 SWS)

Okan O

Einführung in die Gesundheitskompetenzforschung (Vorlesung) (Vorlesung, 2 SWS)

Okan O

Einführung in die Gesundheitskompetenzforschung (Übung) (Übung, 1 SWS)

Okan O

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

## Module Description

### SG160432: Health-promoting physical activity in action | Erfahrungsorientierte Bewegungsangebote zur Gesundheitsförderung

Version of module description: Gültig ab winterterm 2021/22

<b>Module Level:</b> Bachelor	<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> 56	<b>Contact Hours:</b> 34

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

#### Description of Examination Method:

Examination parcours (10-20 minutes). The examination of the ability to demonstrate and realize a predefined health-oriented physical activity and the ability to perform a structured self-reflection and external reflection using (sports) scientific terminology takes place in the form of a test course as a single or group examination (depending on the selected movement activity):

- 1) Exercise: Technique demonstration of selected elements of selected movement activity (2-5 minutes, 20%)
- 2) Exercise: demonstration of a lesson sequence (5-10 minutes, 40%)
- 3) Oral Examination: Answering movement-specific questions using scientific terminology and demonstrating the ability of self-reflection / external reflection (3-5 minutes, 40%)

The overall grade results from the above weights. The approved aids are limited to the materials used for the respective normal physical activity.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

Students choose from the following topics: (1) self-defense against the background of recognizing and avoiding dangers; (2) Paddle boarding against the background of natural and experiential education aspects; (3) device and functional training against the background of current fitness trends; (4) mindful yoga against the background of health and stress reduction; (5) trail running against the background of natural and experiential education aspects; and (6) Health-oriented endurance and fitness training against the background of current fitness trends.

**Intended Learning Outcomes:**

After participating in the module, the students will be able to a) experience from different case studies the health access to a movement activity - in connection with further sense perspectives of the physical activity – through independent working; b) develop a lesson sequence with parts of the demonstration as well as self-reflection and the reflection of others; (c) understand and assess the contribution of physical activity to a preventive health-promoting lifestyle.

**Teaching and Learning Methods:**

The module consists of a kick-off seminar (block session, four hours) and an exercise (2 SWS). The exercise can also be held as a block event. Students are encouraged to study literature and the content of the topic. Independent work, self-awareness as well as methods of self-reflection and reflection of others are used.

**Media:**

PowerPoint, flipchart, movies, course reserve collection, practical units

**Reading List:**

Will be announced during the module.

**Responsible for Module:**

Olufemi, Carolina; Dr. phil.

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

Eigenrealisation in einer ausgewählten Bewegungsaktivität (Übung, 2 SWS)  
Borucker T, Gärtner D, Herdener L, Hoffmann C, Olufemi C, Plank T, Stortz S

Auftaktveranstaltung: Gesundheitsförderliche Bewegung (Vorlesung, ,25 SWS)  
Olufemi C

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

## Module Description

### SG160439: VHB - English Competence and Research Training for Health Professionals | VHB - English Competence and Research Training for Health Professionals

*vhb-course*

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> 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:**

Written exam 90 minutes

#### **Repeat Examination:**

Next semester

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

Dealing with literature research, basic statistical knowledge, English level B2

#### **Content:**

The course will cover topics from the nursing, social, health, medical and physiotherapy fields and will highlight them in different settings.

1. International Health Systems
2. Evidence-Based Health Care
3. Physical Health and the Way towards It
4. The Challenges of an Aging Society
5. The Importance of Understanding Pain
6. Health Promotion - Starting before Health Stops

Each individual chapter contains

- a case study
- two scientific articles
- a specialist video
- exercises and tests
- bibliography and further literature

### **Intended Learning Outcomes:**

At the end of the module students to understand English-language specialized and research articles and to develop their scientific methodological competency. This happens for example from editing articles with different study designs and by practical tips for literature research. This course also allows students to acquire specialized terminology of different health areas and thereby to expand English vocabulary.

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

Virtual course (VHB)

The course is divided into six chapters which build on each other. Chapter 1 highlights three classic models of health as a basis for understanding the following content. Chapter 2 repeats statistical terminology which is commonly used in English-language literature. Chapters 3 to 6 deal with content-related topics in various settings in the health sector. Each begins with a practical case study which facilitates the introduction to the chosen topic and highlights the learning objectives of the respective chapter. Afterwards, the students receive two scientific texts with which the exercises and tests of the chapter can be edited. In addition, each content chapter provides a video that highlights a selected methodological or health-related aspect. Four exercises for each chapter help to understand and critically scrutinize scientific methods and to promote the understanding of text and reading. At the end of each chapter, the students can check their learning status by showing the learning objectives again. The conclusion of the chapter is completed by the completion of the case study. Bibliography gives students the opportunity to search for further subject material.

### **Media:**

Forms of interaction with the system/maintainer: e-mail, exercises, self-study exercises, video/web conferencing

Forms of interaction with fellow learners: video/web conferencing, e-mail, forum, shared task processing

### **Reading List:**

will be announced in the course, e.g.:

Waters, E. & de Silva-Sanigorski, A. & Burford, B.J. & Brown, T. & Campbell, K.J. & Gao, Y. & Armstrong, R. & Prosser, L & Summerbell, C. D. (2011). Interventions for preventing obesity in children. Cochrane Database of Systematic Reviews: 12 (CD001871).

### **Responsible for Module:**

Claudia Meßli studienberatung.sg@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

### **SG160440: VHB - Leadership and Communication in Global Business | VHB - Leadership and Communication in Global Business**

*vhb-course - previously "Leadership and Communication in a Global World"*

Version of module description: Gültig ab winterterm 2020/21

<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:**

written exam

In order to receive the ECTS for this course, participants need to hand in a group task every week (group size 4-6 students) and pass the exam at the end of the semester.

#### **Repeat Examination:**

Next semester

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

Very good English language skills

#### **Content:**

Chapter 1: Leadership and Communication in a global world - an Introduction

- What is leadership and why is it important?
- What are the most important leadership theories and models?

Chapter 2: Introduction to communication and intercultural differences

- What are the basic principles of communication?
- Which role does communication have for leaders?
- What is culture? And does it really matter?
- What are the cultural dimensions explaining the differences?
- How can leaders consider different cultures in their work?

Chapter 3: Leadership and communication in an intercultural setting ? basic principles

- What do different cultures expect from a good leader?
- Are there leadership similarities or differences across cultures?
- What is the magnitude of cultural effects on leadership?
- Which consequences do those similarities and differences have for leaders?

#### Chapter 4: Leadership tasks and tools from an intercultural perspective

- What are the most important leadership tasks (e.g. goal-setting, performance appraisal, giving feedback, developing employees)?
- How can leaders fulfill these tasks successfully in practice?
- What are relevant intercultural differences in accomplishing the tasks and using the tools?

#### Chapter 5: Ethical Leadership

- What is ethical leadership and why is it relevant?
- How can leaders lead in an ethic-oriented way?

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

At the end of the module students are able to

- explain the role of leadership in theory and in practice
- define the most important tasks and tools of a leader
- understand the importance of communication for leaders
- illustrate the principles of communication
- understand cultural differences and the influence of culture on leadership
- describe an ethic-oriented leadership.

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

Virtual course (VHB)

#### **Media:**

Interaction forms with the system/ maintainer: e-mail, exercises, cooperation learner/ maintainer in the task processing

Interaction forms with fellow learners: e-mail, chat, forum, shared task processing

#### **Reading List:**

Will be announced in the course, e.g.:

Blake, R., Mouton, J., Bidwell, A. (1962): Managerial grid. In: Advanced Management - Office Executive, Vol 1 (9), 1962, 12-15

Isaacson, W. (2012): The real leadership Lessons of Steve Jobs. In Harvard Business Review, April 2012. <http://hbr.org/> (2014-08-04)

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

Claudia Meßli studienberatung.sg@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

### SG160441: VHB - Advanced Occupational Safety and Health | VHB - Advanced Occupational Safety and Health

*vhb-course*

Version of module description: Gültig ab winterterm 2020/21

<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:

Online test cases, more detailed information can be obtained from the provider university

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

basic knowledge occupational medicine  
English skills

#### Content:

Structure of the course:

- 1 Part I - BIOLOGICAL MONITORING IN OCCUPATIONAL HEALTH
- 2 Fundamentals of Human Anatomy and Physiology
- 3 Fundamentals of Toxicology
- 4 Fundamentals of Biomonitoring in Occupational Health
- 5 The German Practice of Biomonitoring
- 6 Materials and Methods in Biomonitoring
- 7 Quality Assurance
- 8 Biomonitoring in Lead Poisoning
- 9 Biomonitoring in Mercury Poisoning
- 10 Biomonitoring in DMF Exposure
- 11 Biomonitoring in the Case of Accidental Exposure
- 12 Ambient Monitoring
- 13 No Smoking, Please!
- 14 Biomonitoring - A Global Comparison

## 15 Part II - OCCUPATIONAL SKIN DISEASES

- 16 The Skin
- 17 Protection of the Skin
- 18 Principles of Allergology
- 19 Atopic Eczema
- 20 Irritant and Allergic Eczema
- 21 Urticaria
- 22 Photodermatoses
- 23 UV Rays and Skin Cancer
- 24 Chemicals and Skin Cancer
- 25 Pigment Disorders
- 26 Chloracne
- 27 White Fingers
- 28 Hereditary Skin Diseases
- 29 Infectious Skin Diseases
- 30 Physically Induced Skin Conditions

### **Intended Learning Outcomes:**

At the end of the module students are able to explain the basic concepts and methods in biological monitoring and to recognize different skin diseases that are occupationally-induced.

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

Virtual course (VHB)

The course is divided into two parts, Part I: Biological Monitoring in Occupational Health and Part II: Occupational Skin Diseases.

Part I begins with the basic aspects of Anatomy, Physiology, und Toxicology. The knowledge of these is a fundamental pre-requisite for understanding the concept of "Biological Monitoring in Occupational Medicine". The most important aspects of biological monitoring are then explained with the help of realistic cases.

Part II deals with skin diseases that are occupationally-induced. After an introduction of the fundamental aspects of the structure and functions of the skin, the most common occupationally-induced skin diseases are presented using realistic cases.

The cases are presented with the help of case stories, photographs, and expert-comments. The case stories illustrate the causes, symptoms, clinical picture, diagnoses, biomonitoring methods, lines of therapy, and the preventive measures. The user-friendly learning tool, CASUS, provides the learning platform for the cases.

### **Media:**

Interaction forms with the system/maintainer: e-mail, exercises; learning tool CASUS

### **Reading List:**

eg: Feasibility of activity-promoting video games among obese adolescents and young adults in a clinical setting. Radon K, Fürbeck B, Thomas S, Siegfried W, Nowak D, von Kries R. J Sci Med Sport. 2011 Jan;14(1):42-5

furhter literature will be announced in the course

**Responsible for Module:**

Claudia Meßli studienberatung.sg@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

### SG160442: VHB - Performance Management in Teams | VHB - Performance Management in Teams

*vhb-course*

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> 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:

Written exam 60 minutes

The final grade consists of self-study and group assignments as well as a final exam.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

basic knowledge on social science survey methods, basics of scientific working, be willing to read through extensive English-language materials, English skills at least level UNICERT II

#### Content:

The students learn about fundamental theories related to motivation, especially the NPI theory by Naylor, Pritchard, and Ilgen. These theories form the foundation for the management method imparted in this online course: the Productivity Measurement and Enhancement System - ProMES (Pritchard et al., 2012). Furthermore, basic principles of effective performance management systems are imparted, considering contextual conditions and specific challenges in the development of individual, group-based, and organizational performance management systems. Performance-related payment is discussed, as well.

Structure:

1. Motivational Theories
2. Performance Evaluation
3. Productivity Measurement and Enhancement System (ProMES)
4. Case Study
5. Developing a Team Vision
6. Developing Objectives

7. Developing Indicators
8. Developing Contingencies
9. Developing a Feedback Report

**Intended Learning Outcomes:**

At the end of the module students are able to understand and analyze:

- psychological theories of (work-related) motivation,
- methods and techniques of group moderation,
- methods and techniques of performance measurement and performance feedback in work groups,
- result and process indicators in organizations,
- management method ProMES for implementing performance measurement systems and feedback systems in organizations, especially in work groups.

In addition, students acquire specialized competences in the English language.

**Teaching and Learning Methods:**

Virtual lecture (VHB)

The students apply an evidence-based management method to foster motivation and productivity in working teams. Subsequent to a theoretical introduction, a video-based case study is discussed and the current state of research in the field of ProMES is outlined. Continuing the case study, the students develop and apply their own ProMES in groups (using effecteev). In addition to gaining content-related competencies, the focus is on techniques and methods of group moderation, the development of process- and result-centered KPIs, and the acquisition of feedback rules and techniques. Moreover, the students learn how to use actively the English language in a professional context.

**Media:**

Interaction forms with the system/supervisor: e-mail, exercises

Interaction forms with fellow learners: forum, shared task processing, e-mail

**Reading List:**

Will be announced in the course, e.g.: Offergelt F., Spörrle M., Moser K., Shaw JD.: Leader# signaled knowledge hiding: Effects on employees' job attitudes and empowerment In: Journal of organizational behavior (2018)

**Responsible for Module:**

Claudia Meßli studienberatung.sg@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

### SG160443: VHB - Fundamentals of Project Management | VHB - Fundamentals of Project Management

*vhb-course*

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> 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:

Written exam

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

The course "Fundamentals of Project Management" introduces you to the main concepts, standards, methods and approaches relevant to project management from a managerial perspective. The course requires no specific prerequisites. Examples are geared towards IT and business projects. Apart from covering the fundamental concepts, the courses focuses on the most important activities in project management as illustrated in the syllabus from chapter 3 to 13.

Structure:

1. Introduction
2. Organizational Aspects of Projects
3. Project Selection
4. Leadership and the Project Manager
5. Scope Management
6. Project Team Building, Conflict, and Negotiation
7. Risk Management
8. Cost Estimation and Budgeting
9. Project Scheduling
10. Agile Project Management



11. Resource Management
12. Project Evaluation and Control
13. Project Closeout and Termination

**Intended Learning Outcomes:**

Upon completion of the module, students are able to understand:

- how project management contributes to achieving strategic objectives
- financial concepts and financial analyses to evaluate the potential for new project investments
- the principles of project management in international settings,
- response methods and importance of negotiation skills in project management.

Furthermore, they acquire specialized competences in the English language.

**Teaching and Learning Methods:**

Virtual lecture (VHB)

**Media:**

Interaction forms with the system/supervisor: e-mail, exercises for self-learning

Interaction forms with fellow learners: forum

**Reading List:**

Pinto, Jeffrey K. (2015): Project management - Achieving competitive advantage. Upper Saddle River, NJ, USA: Pearson/Prentice, 4th Edition.

Project Management Institute (2013): A Guide to the Project Management Body of Knowledge. PMI: Newtown Square, 5th Edition.

**Responsible for Module:**

Claudia Meßli studienberatung.sg@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

### SG160445: Introduction to Programming for Digital Health | Introduction to Programming for Digital Health

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Bachelor	<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> 90	<b>Contact Hours:</b> 90

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 exam (with practical aspects) with a duration of 90 minutes. A theoretical 60-minute long part of the study will cover the learned fundamental knowledge and the learning outcome of understanding basic programming tasks and database setup. The practical 30-minute long part will deal with the manipulation of data through small programming tasks.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

None

#### Content:

- 1) Fundamental knowledge: relationale Databases, object-oriented programming, programming languages
- 2) Specific knowledge: curating health data, information and knowledge-retrieval from health data
- 3) Application of learned knowledge for development of a basic business-intelligence tool.

#### Intended Learning Outcomes:

After a successful completion of the module, the students are able to: a) understand and perform basic programming tasks; b) set up a relational database matching their data content structure; and c) assess and analyze health-related data.

#### Teaching and Learning Methods:

The module consists of a lecture and practical exercises. During the lecture, the students will learn basic programming techniques and concepts. Specifically, the students should learn to interpret data and transform it for their intended purpose using self-created applications and scripts.

During practical exercises, the students will apply the learning techniques and acquire the necessary skills for basic scientific programming. The students will create their own database, extract, transform and load data and visualize it using plotting libraries.

**Media:**

**Reading List:**

**Responsible for Module:**

Jonas, Stephan; 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

### SG8000160: Sponsorship-linked Marketing (Online-course) | Sponsorship-linked Marketing (Online-Kurs)

*vhb-course*

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> 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:

The module examination consists of a written test (60 min). The exam is to verify that the students are able to properly select and apply appropriate conceptual bases and methodological procedures (within a limited time and without aids) in the light of various challenges of sponsorship. Firstly, the questions include answers to each question from a set of predetermined multiple answers. Secondly, open-end questions are asked so that we can find out whether students are able to demonstrate the use of strategies and implementation steps as part of sponsorship.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic skills in Marketing

#### Content:

- Introduction and Overview of the Sponsorship-linked Marketing Management Process
- Introduction to Sponsorship and Sponsorship-linked Marketing
- The Sponsorship-linked Marketing Management Process
- How Sponsorship-linked Marketing Activities Influence Stakeholders
- The Effects of Sponsorship-linked Marketing Activities on Recipients
- Theories on the Processing of Sponsorship Messages (I)
- Theories on the Processing of Sponsorship Messages (II)
- Visual Attention to Sponsors at the Site of Events and in the Media
- Outcome Measurement and Controlling in Sponsorship-linked Marketing
- Measuring and Interpreting Sponsorship Outcome Variables
- Sponsorship-linked Marketing and the Financial Success of Brands

- Sponsorship-linked Marketing Implementation
- Leveraging Tools in Sponsorship-linked Marketing
- Non-sponsor Brand Behaviors: Official Sponsorship versus Ambush Marketing
- The Sponsor Perspective: How to Create Unique Sponsorship Portfolios
- The Sponsored Property Perspective: How to Recruit and Retain Sponsors

### **Intended Learning Outcomes:**

At the end of the module students understand how sponsorship portfolios are created from the perspective of different stakeholders (sponsors and ambushers, event organizers, individuals, media). This includes sponsorship in sports, arts and culture, social causes, science and education, ecological causes, as well as the media. The students understand the basics in sponsorship and sponsorship-linked marketing, including recent developments and the chain of effects of the sponsorship-linked marketing management process. The students also understand the mechanisms of how recipients process sponsorship messages. They are able to use different methodological concepts in order to quantify the effects of sponsorship messages on recipients and relate these measures to the predefined goals of the stakeholders. The students are able to identify success factors of sponsorship-linked marketing and they can use methods that measure the success of sponsorship. The students are able to create both innovative sponsorship strategies as part of the sponsorship portfolio management and strategies that help sponsors protect the sponsorship rights against ambushers.

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

Online lectures that cover the state of the art in the field of sponsorship and its implementation are provided using software technology. Students can access the materials using Internet technology. Learning progress monitoring questions are asked when students go through the content of the class. Students also take part in online training using case studies. They are provided with the relevant material to work on the cases, solve problems, and find solutions. They do so in the form of homework. Answers to the case studies are presented to the students after they have handed in their homework.

### **Media:**

Online lectures

### **Reading List:**

[https://www.researchgate.net/profile/David\\_Woissetschlaeger/publication/317035913\\_Inferred\\_Corporate\\_Motives\\_How\\_Deal\\_Characteristics\\_Shape\\_Sponsorship\\_Perceptions/links/59916244458515b87b4d6b40/Inferred-Corporate-Motives-How-Deal-Characteristics-Shape-Sponsorship-Perceptions.pdf](https://www.researchgate.net/profile/David_Woissetschlaeger/publication/317035913_Inferred_Corporate_Motives_How_Deal_Characteristics_Shape_Sponsorship_Perceptions/links/59916244458515b87b4d6b40/Inferred-Corporate-Motives-How-Deal-Characteristics-Shape-Sponsorship-Perceptions.pdf)

### **Responsible for Module:**

Königstorfer, Jörg; Prof. Dr. rer. oec.

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

Sponsorship-linked marketing (Online-Kurs) (Seminar, 2 SWS)

Yang Y

Sponsorship-linked marketing (Online-Kurs) (Vorlesung, 2 SWS)

Yang Y

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

## Module Description

### SG800051: Motion analysis in sports and medicine | Bewegungsanalyse in Sport und Medizin

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> 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:

Prüfungsdauer: 15 Minuten

Kolloquium

#### Repeat Examination:

#### (Recommended) Prerequisites:

Keine

#### Content:

Grundlagen der Analyse menschlicher Bewegungsabläufe in Sport und Medizin:

- Kinetik (Bodenreaktionskräfte)
- Druckverteilungsanalysen
- Kinematik
- Inertialsensoren
- Einführung in Biosignalverarbeitung
- Sonstige Systeme

#### Intended Learning Outcomes:

Durch die Teilnahme an dem Seminar sollen den Studenten sowohl theoretisches Wissen als auch praktische Erfahrungen über gängige Methoden der wissenschaftlichen Bewegungsanalyse menschlicher Bewegungsabläufe vermittelt werden. Dieses Wissen sollen die Studierenden im Sinne ihrer selbstständigen Gestaltung von Lernprozessen u.a. wiedergeben und präsentieren. Weiterhin sollen die Studenten den Umgang mit aktuellen Bewegungsanalyse-Systemen erlernen, um selbstständig menschliche Bewegungsabläufe erfassen, auswerten und analysieren zu können.

**Teaching and Learning Methods:**

Seminar, Labor

**Media:**

Präsentationen, Handouts, praktische Übungen

**Reading List:**

Wird in der Veranstaltung bekanntgegeben.

**Responsible for Module:**

Pohl, Torsten; M.Sc.

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

Bewegungsanalyse in Sport und Medizin (Seminar, 2 SWS)

Horstmann T, Pohl T

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



## Module Description

### SG800080: Anxiety and Stress in Sport Performance | Anxiety and Stress in Sport Performance

Version of module description: Gültig ab winterterm 2015/16

<b>Module Level:</b> Bachelor	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> one-time
<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 examination consists of a laboratory assignment. The laboratory assignment consists of a 30 min group presentation including a discussion and a 30 min exercise. In the presentation students present the underlying theoretical principles including the relevant literature and describe research and practical (intervention) procedures. Students can show the ability to practically implement a respective sport psychology intervention by running a sort exemplary intervention addressed at stress and/or anxiety in a small group setting.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

- \* theories of emotion, stress and anxiety
- \* models of the stress/ anxiety and performance in sport relationship
- \* empirical approaches to the study of the relation anxiety and performance
- \* psychological interventions for anxiety and stress

#### Intended Learning Outcomes:

Upon completion of the module, students are able to describe theories and models of emotion and stress in general, about the anxiety-performance relationship in particular. They are able to put current empirical studies into this context and discuss the different approaches. They can report different interventions addressed at anxiety in sport and can apply short forms of these interventions in a group setting.

**Teaching and Learning Methods:**

The teaching methods comprise short presentations by the lecturer and the students, short sport psychology exercises, and group work for the preparation of presentations discussions and the short exercises.

**Media:**

PowerPoint slides, exercise sheets, scientific papers, whiteboard and flipchart

**Reading List:**

**Responsible for Module:**

Ehrlenspiel, Felix; PD Dr. phil. 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

### SG800081:

Version of module description: Gültig ab winterterm 2015/16

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> one-time
<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 examination consists of a 40min presentation and a 3 page summary. In the presentation students ability is tested to understand a complex empirical paper, present the content to an audience and stand a discussion on the paper. In the written summary, students show the ability to summarize a research paper, put it into a greater context and reflect on the discussion after presentation.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

- description and definitions of the phenomenon of "Choking Under Pressure"
- Overview over seminal and current studies relevant to the topic
- Theoretical approaches, models and neighbouring concepts (e.g. stereotype threat)

#### Intended Learning Outcomes:

Upon completion of the module, students are able to critically read and evaluate scientific papers, and have the competence to describe the history of research on choking under pressure and relate different theoretical backgrounds to different periods. Students are able to discuss different definitions and forms of choking under pressure and defend their argument based on scientific evidence. Students can also explain and discuss the current debate on theoretical models related to choking and describe relevant empirical studies. They can evaluate possible contributions of different sport science disciplines for the explanation and investigation of choking under pressure.

**Teaching and Learning Methods:**

The teaching methods comprise short presentations by the lecturer and the students, group work for the preparation of discussions and open discussions.

**Media:**

PowerPoint slides, exercise sheets, scientific papers, whiteboard and flipchart

**Reading List:**

**Responsible for Module:**

Ehrlenspiel, Felix; PD Dr. phil. 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

### SG810018: VHB - Introduction to Human Resource Management | VHB - Einführung in das Personalmanagement

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> 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:

The examination takes place on the basis of an examination (90 min.) in which the students prove that they can evaluate digitisation and new work from a personnel management perspective, that they can evaluate essential communication and motivation theories and apply them to practical cases and that they are able to reflect and shape upcoming change processes and leadership roles.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

Chapter 1 - Introduction, terminology, development of human resources management

Chapter 2 - Personnel capacity management

Chapter 3 - Personnel Recruitment and Selection

Chapter 4 - Personnel development

Chapter 5 - Staff adjustment

Chapter 6 - Labour law

Chapter 7 - Digitisation and New Work

Chapter 8 - Change Management

Chapter 9 - Organizational Behaviour I: Roles and tasks of a manager

Chapter 10 - Organizational Behaviour II: Development of Leadership Research

Chapter 11 - Organizational Behaviour III: Motivation and Group Work

**Intended Learning Outcomes:**

- The students are familiar with the life cycle of employees in organizations and can classify the individual functions of personnel management in these
- They have gained an overview of employment law constellations
- Students can evaluate digitization and new work from a personnel management perspective
- They have reflected on the necessity for upcoming change processes and have dealt with the typologies of employees
- They have gained the competence to reflect on and shape your leadership role and are familiar with important leadership theories and models
- They have dealt with essential communication and motivation theories. They can evaluate these theories and apply them to practical cases
- They are familiar with the delegation process and with levels and dimensions of responsibility

**Teaching and Learning Methods:**

Virtual lecture

**Media:**

Online course of the VHB -

Reading scripts, learning videos, chats and forum

Required technology:

current browser (e.g. Internet Explorer, Firefox, Chrome) in a current version

**Reading List:**

Reading scripts, learning videos and hints for a suitable literature search are provided in the respective chapter.

Bartscher, T., Nissen, R. (2017). Personalmanagement - Grundlagen, Handlungsfelder, Praxis. London: Pearson Verlag.

**Responsible for Module:**

Claudia Meßli studienberatung.sg@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

### SG810021: VHB - Cross-border Health Care Management | VHB - Cross-border Health Care Management

*vhb-course*

Version of module description: Gültig ab winterterm 2016/17

<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> 90	<b>Contact Hours:</b>

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

#### Description of Examination Method:

The module examination consists of a project work in which the students work out a thematic map or a plan from a subject area of their choice under tutorial guidance on the Internet (forums, chat). Using the thematic map, connections and data of a selected topic are to be graphically represented on a map (e.g. representation of average life expectancy in different areas of a country).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

- Supply and demand in medical tourism and cross-border health care: definition of medical tourism, driving forces in medical tourism, basic concepts and terms, international comparison of health care systems
- Countries of origin and destination in medical tourism: foreign patients on german hospitals, outgoing german patients for medical treatment, US as a country of origin of medical tourists
- Legal issues of cross-border health care management: EU patient mobility act, protection and safety of patient data
- Marketing in medical tourism: webportal solutions, the role of patient facilitator
- Transcultural features of international patients: language, culture and religion as a barrier, demands of foreign patients
- Processes in medical tourism: processes and interfaces, eHealth and telemedicine, finance and controlling, risk analysis
- Ethics and morals: basic right for best medical treatment, foreign patients versus local patients

- Case studies: BAVARIA - a better state of health, International department of university hospital Hamburg Eppendorf, KHIDI - korean health industry development institute, Bumrungrad Hospital Bangkok

**Intended Learning Outcomes:**

After completion of the course, students will be able to identify the impact of globalization in health care, to differentiate target and source markets for medical tourism, to design and economically evaluate offers for foreign patients. They are able to work with web portals as well as to advise companies in the healthcare industry.

**Teaching and Learning Methods:**

Virtual lecture (VHB): Forms of interaction with the system / supervisor via e-mail, exercises, exercises for self-learning, videoconference, cooperation learner / supervisor in the task processing; Interaction forms with fellow learners via e-mail, forums, videoconferencing. For all areas of application of the study programs in question, case-related exercises and individual tasks as well as several subjects are combined in an illustrative form (eg PowerPoint animation).

**Media:**

Email, forum, video and web conferences

Required technique

Browser: every popular internet browser

Special software: DICOM viewer (specified in the course)

Communication platform used: Moodle

**Reading List:**

A glossary of the most important technical terms as well as a list of the relevant technical literature and original works are available online, e.g.:

Schmaus-Klughammer, A., Kunhardt, H., Einsatz der Telemedizin im Cross Border Health Care Management und für eLearning, Spektrum Telemedizin Bayern, Verlag Bayerische Anzeigenblätter GmbH, Ingolstadt, 2014, S. 125-128

**Responsible for Module:**

Claudia Meßli studienberatung.sg@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

### SG810023v2: Health, (Dis)ability and Participation in a Global Perspective | Health, (Dis)ability and Participation in a Global Perspective

Version of module description: Gültig ab summerterm 2019

<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:

A presentation will show the students' ability to demonstrate their work on a given topic in a particular time. The presentation shows the ability to understand the context and complexity of global processes and structures in the area of health, (dis)ability and participation. Thereby they have to prepare and deliver a well-researched oral presentation (30-45 minutes; 40%) and a written essay (3000 words; 60%). The presentation will be given in one of the two seminars.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge and understanding of scientific research methods and social science approaches towards health

#### Content:

- Determinants of health from a global perspective
- Health, global development and (in)equalities
- Socio-cultural aspects in health, (dis)ability and participation
- International agenda processes (e.g. Sustainable Development Goals) and their relevance for health, (dis)ability and participation
- In-depth examination of selected international strategies in the context of health promotion and inclusive development (e.g. Community-Based Rehabilitation/ Community-Based Inclusion)
- Critical analysis of implementation processes
- Analysis of case examples
- Active participation in faculty research projects, i.a.

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able to:

- Reflect upon social and political factors that influence health, (dis)ability and participation in an internationally comparative perspective
- Systematically analyze concepts, structures and systems on both personal and institutional levels (role of the state in health promotion and rehabilitation, provider structure, social services, role of informal care and support structures, participation and empowerment etc.)
- Critically assess international strategies in the areas of health promotion and (disability-)inclusive development.

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

The module consists of 2 classes. The contents of both seminars are transmitted live and through multi-perspective presentations. However, blended learning components may complement the live presentations and discussions.

### **Media:**

PowerPoint, video clips, reader, Moodle

### **Reading List:**

Koplan, Jeffrey P.; Bond, T. Christopher; Merson, Michael H.; Reddy, K. Srinath; Rodriguez, Mario Henry; Sewankambo, Nelson K.; Wasserheit, Judith N. (2009): Towards a common definition of global health. In: The Lancet 373 (9679), p. 1993–1995.

Swartz, Leslie; Bantjes, Jason (2016): Disability and Global Health. In: Shaun Grech und Karen Soldatic (Hg.): Disability in the Global South. The Critical Handbook. Cham: Springer (International Perspectives on Social Policy, Administration, and Practice), p. 21–33.

Farmer, Paul; Kleinman, Arthur; Kim, Jim; Basilio, Matthew (Hg.) (2013): Reimagining Global Health. An introduction. Berkeley, Los Angeles, London: University of California Press.

### **Responsible for Module:**

Bertmann-Merz, Isabella; Dr. phil.

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

Health, (Dis)ability and Participation in a Global Perspective - An Introduction (Seminar, 2 SWS)  
Shukla S, Bergmann M, Fettke U

International strategies in the areas of health promotion and inclusive development (Seminar, 2 SWS)

Shukla S, Bergmann M, Fettke U

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

## Module Description

### SG810024v2: Mountain Sports: Practice, Physiology & Technology | Mountain Sports: Practice, Physiology & Technology

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> 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:

Students are examined through a 5000 word written assessment that has two parts. Part 1 is a 2000 word scientific essay on an essay question related to the lectures. Part 2 is a 3000 word scientific report (introduction, methods, results, discussion, references) that reports data generated during a field experiment carried out during the mountain expedition.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

No contraindication for strenuous exercise. Students should have at least a basic understanding of human biology.

#### Content:

The module covers the practice, physiology molecular biology and health aspects of different mountain sports including mountain walking/running, bouldering, rock climbing, winter/ice climbing, ski mountaineering, Alpine mountaineering and expeditions.

This module has different components.

Mountain sport practice: Students will have practical experience in the following mountain sports:

- Bouldering, climbing
- Mountain walking, mountaineering at a moderate altitude

Classical, molecular physiology and health aspects of mountain sports and life at altitude. In relation to this area students will have knowledge and will be able to apply knowledge in relation to the following topics:

- Performance-limiting factors for the different mountain sport disciplines
- Mountain sport training methods
- Environmental physiology: cold & altitude

- Health issues such as delayed onset of muscle soreness and altitude sickness
- Genetics of strength, endurance, and altitude performance
- Signal transduction mechanisms that mediate adaptation to endurance, strength & altitude (HIF1-EPO-haematopoietic system signalling)
- Health issues at altitude: acute and chronic altitude sickness, pulmonary and cerebral oedema, weight loss.

### **Intended Learning Outcomes:**

Students that successfully pass this module will be able to:

- 1) demonstrate basic climbing and mountaineering skills
- 2) explain the performance-limiting factors for several mountain sports
- 3) use appropriate performance testing methods and apply training methods and nutrition to improve performance in different mountain sports
- 4) calculate the energy requirements during expeditions, explain adaptation to altitude and problems such as altitude sickness
- 5) explain the effect of genetics and signal transduction on performance-limiting factors and discuss molecular mechanisms of high altitude adaptation
- 6) Plan, design, carry out and report a relevant scientific experiment during the mountaineering expedition.

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

The teaching methods will be:

- Lecture (1 SWS): One weekly 1 h lecture will introduce the theoretical topics covered in this module

- Seminar (1 SWS): This is a 2 h seminar/practical slot every other week with an active learning approach where students learn to gather, interpret and use scientific information.

Learning methods will involve internet searches/tools, mathematical problem solving, conference presentations, debates and the interpretation of scientific publications

- Practical sports (2 SWS): Practical mountain sports sessions. During these sessions, students will be practically introduced to climbing and learn bouldering and climbing and abseiling.

Additionally, students will take part in a high altitude expedition typically during the Wildpitzze.

During this expedition, students will plan, design, carry out and report an altitude physiology scientific experiment.

### **Media:**

PowerPoint

### **Reading List:**

Wackerhage H. Molecular Exercise Physiology. Routledge 2014.

McArdle WD, Katch FI & Katch VL. Exercise physiology. Nutrition, energy and human performance. 8th edition. Wolters Kluwer 2014.

### **Responsible for Module:**

Wackerhage, Henning; Prof. Dr. Sportwiss.

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

Mountain Sports (Seminar) (Seminar, 1 SWS)

Schönfelder M, Wackerhage H

Mountain Sports: Praxis, Physiologie & Technik Übung (Übung, 2 SWS)

Thomann A, Wackerhage H, Weikert-Schmidt G

Mountain Sports (Vorlesung, 1 SWS)

Wackerhage H

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

## Module Description

### SG810032v2: Scientific Writing | Scientific Writing

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> 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:

Research paper:

Students will submit a written scientific paper on a topic of their interest. The scientific paper should follow the guidelines of a scientific journal selected by the student. A minimum of 2500 words (excluding references and annexes) is required. The assignment will assess the key skills addressed during the course.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This course is intended for Master students who wish to develop their scientific writing skills further.

#### Content:

- Key principles of effective scientific communication
- Reporting guidelines for scientific findings
- Structuring of original scientific manuscripts
- Structuring of literature reviews and meta-analyses
- Structuring of conference abstracts and posters
- Peer review and academic publishing.

#### Intended Learning Outcomes:

After successfully completing the module, students will be able:

- to effectively communicate their scientific findings
- to structure a standard scientific manuscript for submission to a peer-reviewed journal
- to present their research results in a way that will convince editors and reviewers that their work is important and reliable
- to understand the scientific review process

- to structure other types of scientific communication.

**Teaching and Learning Methods:**

The module consists of a taught seminar series and supplementary exercises. In the interactive exercise, students will apply the skills learnt in the seminar by completing practical writing exercises and critically reviewing examples of scientific writing.

**Media:**

Slides, Moodle, Zoom

**Reading List:**

Glasman-Deal H. Science Research Writing for Non-native Speakers of English. London: Imperial College Press; 2010.

Skern T. Writing Scientific English: A Workbook. Stuttgart: UTB; 2009.

**Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Scientific Writing (Seminar, 2 SWS)

Fiengo Tanaka L

Scientific Writing in Practice (Übung, 2 SWS)

Klug S

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

## Module Description

### SG810033: Inclusive Settings in University Teaching | Inklusive Settings in der Hochschullehre

Version of module description: Gültig ab winterterm 2021/22

<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> 15	<b>Contact Hours:</b> 45

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

#### Description of Examination Method:

The module examination is carried out on the basis of a graded (at least 4-sided - at most 6-sided) report. It will describe the respective activities performed before and during the event (for example, participation in the Special Olympics health program), as well as a reflection of the seminar dates. Specific tasks that arise in the context of the event are outlined and determined in advance by the lecturer.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

During a one-time event in the form of a lecture, students should be sensitized to the topic of people with disabilities and sport.

The main component of the module is the accompaniment of a multi-day sporting event for e.g. mentally disabled people. A possible setting is provided by the Special Olympics, which are organized in the form of regional, national or international games.

This includes the preparation and follow-up of the event:

- Task distribution (organization arrival, departure)
- Independent training in the topic: Sport for people with a disability
- Reflection of the event in the form of a report.

Possible tasks during the event can be:

- Accompaniment of a survey
- Media - Documentation



- Participation in the Special Olympics Health Program.

### **Intended Learning Outcomes:**

After successfully completing the module, students have gained new insights into sports and health for people with disabilities and are able :

- To specifically recognize and reduce barriers between people with and without disabilities
- To accompany, support and implement a large sports event or health days with specific tasks
- To reflect disassembly with own values and norms
- To sharpen the view on personal and professional goals

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

Lecture and presentation: Specific contents are presented briefly and succinctly to the students in the form of lectures and presentations in order to provide them with the necessary specialist knowledge economically. Group work: the students should consciously work on the relevant learning content in small groups themselves. Team teaching: Competence of the students is required to teach and to learn different learning contents and thus promotes the increasing independence in terms of presentation and reflective skills.

### **Media:**

Presentations, slides, exercise sheets

### **Reading List:**

M. J. Cuypers, B. W. M. Schalk, M. C. J. Koks-Leensen, M. E. Nägele, E. J. Bakker-van-Gijssel, J. Naaldenberg, G. L. Leusink (2020) Mortality of people with intellectual disabilities during the 2017/2018 influenza epidemic in the Netherlands: potential implications for the COVID-19 pandemic, *Journal of Intellectual Disability Research* - Bd.:64 H.:7 S.:482 -488, DOI: 10.1111/jir.12739

Darlington, E. J. Violon, N. and Jourdan, D. (2018) Implementation of health promotion programmes in schools: an approach to understand the influence of contextual factors on the process? *BMC Public Health*18:163, DOI: 10.1186/s12889-017-5011-3

Kiuppis, F. (2018) (Ed.) *Sport and Disability: From Integration Continuum to Inclusion Spectrum*. London: Routledge

Kiuppis, F. (2018) Inclusion in sport: disability and participation, *Sport in Society*, 21:1, 4-21, DOI: 10.1080/17430437.2016.1225882

McConkey, R. Pochstein, F. Carlin, L. and Menke, S. (2019) Promoting the social inclusion of players with intellectual disabilities: an assessment tool for sport coaches, *Sport in Society*, DOI: 10.1080/17430437.2019.1673369

Peters, S. (2003) Inclusive education: Achieving education for all by including those with disabilities and special education needs, [https://www.researchgate.net/publication/228606295\\_Inclusive\\_education\\_Achieving\\_education\\_for\\_all\\_by\\_including\\_those\\_with\\_disabilities](https://www.researchgate.net/publication/228606295_Inclusive_education_Achieving_education_for_all_by_including_those_with_disabilities) (last access: 13.1.2021)

Scott, L.A. and Bruno, L., 2018. Universal design for transition: A conceptual framework for blending academics and transition instruction. *The Journal of Special Education Apprenticeship*, 7(3), p.1.

Smith, S.J. and Lowrey, K.A., 2017. Making the UDL framework universal: Implications for individuals with intellectual disability. *Intellectual and developmental disabilities*, 55(1), pp.2-3.

Smith, S.J. and Lowrey, K.A., 2017. Applying the universal design for learning framework for individuals with intellectual disability: The future must be now. *Intellectual and Developmental Disabilities*, 55(1), pp.48-51.

Special Olympics (2018) Special Olympics Health Annual Report, <https://dotorg.brightspotcdn.com/e2/95/3dbfbf134796bdf395d873109cb3/special-olympics-golisano-report-2018.pdf> (last access: 13.1.2021)

**Responsible for Module:**

Schwarz, Daniela Maria; Ph.D.

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

Inklusive Settings in der Hochschullehre (Vorlesung, 2 SWS)

Langbein E, Schwarz D

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

## Module Description

### SG810036: Global Health Epidemiology | Global Health Epidemiology

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> 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:

Presentation. A case study will be orally presented by students at the end of the semester, focusing on one of the important topics within Global Health and includes a peer discussion of the results. The presentation should fulfill the targeted learning outcomes described in this module.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge of epidemiological concepts

#### Content:

- Global health as a concept
- Basics of communicable diseases
- Epidemiology of major communicable and non-communicable diseases
- Globalisation and travel medicine – health beyond boundaries
- Impact of climate change, urbanisation, agricultural practices and the environment
- Governance, security, economics, systems and health
- Preventative measures, interventions and measures of global health
- Services and diagnostics including global surgery

#### Intended Learning Outcomes:

At the end of this module, students in this course will be able:

- To understand what is global health and the epidemiology behind it
- To understand social and environmental determinants of global health
- To discuss major global health topics and various disease control/surveillance/intervention methods to counter these issues
- To comprehend governance, policies and implementation research

- To acknowledge and discuss ethical considerations behind global health.

**Teaching and Learning Methods:**

This module will consist of a weekly lecture and seminar where discussions of the presented topics will be undertaken. Group case studies will also be included in some seminar sessions.

**Media:**

PowerPoint, Moodle

**Reading List:**

Kelleher D, Kappas M, Groß U. Global Health - A Challenge for Interdisciplinary Research. Göttingen, Germany: Universitätsverlag Göttingen; 2012.

Crisp N. One World Health: An Overview of Global Health. Boca Raton, Florida: CRC Press; 2016.

Krämer A, Kretzschmar M, Krickeberg K. Modern Infectious Disease Epidemiology. New York, NY: Springer; 2010.

DeLaet DL, DeLaet DE. Global Health in the 21st Century: The Globalization of Disease and Wellness. New York, NY: Routledge; 2015.

**Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Global Health Epidemiology (Vorlesung, 2 SWS)

Liang L

Global Health Epidemiology (Seminar, 2 SWS)

Liang L

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

## Module Description

### SG810040: Inclusive Physical Education – Summer School | Inclusive Physical Education – Summer School

Version of module description: Gültig ab winterterm 2019/20

<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> 30	<b>Contact Hours:</b> 120

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

#### Description of Examination Method:

Project work. The examination performance comprises of three parts. First, a group project with several phases: identification of the problem, development of solutions, decision-making and elaboration of an idea with the aim of a group pitching session in front of an expert committee. The second part will then be a systematic, structured oral presentation, visually supported by suitable media (such as beamers, slides, posters, videos). The results and insights gained will be presented in a way that is limited to their summarized, complex subject matter. The lecturers, following the presentation, will evaluate several acquired or trained competences in an oral interview. These competences include the openness to new target groups, didactic and methodological inventory such as easy language and virtually simplified forms of presentation, and the use of barrier-free online resources. Presentation and discussion are equally weighted. Finally, an individual written assignment (5-6 pages) is the third examination component.

The weighting of the oral examination is as follows (1 pitch): (2 presentation and debate) : (3 written paper) - 40% : 30% : 30%.

Preparation time = 5 x 45 minutes, Pitch = 15 minutes

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

The Summer School is held with international participation. Therefore, the participants must have very good English skills. Interest in designing innovative teaching/learning content and ideas in the fields of physical education, health, exercise and inclusion should be present.

#### Content:

InPhysEd – making physical education inclusive and open to all is a two-week international summer school. TUM students come together with students from other countries and develop

ideas. The topic/challenge: Making physical education lessons inclusive - in school and leisure time as well as developing conceptual training and support ideas that prepare and support for inclusive teaching. Inclusive teaching and learning is an essential component: Experts on their own behalf - people with special needs, especially people with an intellectual disability are also participants of the Summer School. Together, the challenges are questioned, problem solutions are developed, concrete ideas are worked out, tried out in practice and presented.

Lecturers from cooperating national and international universities as well as experts from health care, sports and education share their expertise and support the participants in the development process.

### **Intended Learning Outcomes:**

Targeted student learning outcomes includes:

- detailed understanding of the challenges to inclusion - historical, social, cultural, how these impact on health and education experience of people with special needs, especially people with an intellectual disability
- participation in idea generation and applied skills to critically appraise and select best idea for development to inform the design of targeted approach to inclusive physical education
- foundational understanding in entrepreneurial thinking and approaches to idea generation and problem solving
- an understanding of core concepts of universal design for learning, practiced co-learning and co-teaching
- critical reflect on the work undertaken of other groups and projects
- improved communication skills through discussion and presentations
- ability to present / pitch ideas in front of a jury.

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

Combination of input lectures, workshops, case studies, role play, group work, pair peer review and independent study and reflective practice will be utilized. The co-learning environment, incorporates inclusive teaching strategies addressing needs of all participants from diverse backgrounds, learning styles, languages and abilities. People with special needs, intellectual disability will co-teach and also participate in the problem solving exercises as co-learners.

### **Media:**

Presentations, script, work sheets, case studies, articles

### **Reading List:**

Kiuppis, F. (2018) (Ed.) Sport and Disability: From Integration Continuum to Inclusion Spectrum. London: Routledge

Kiuppis, F. (2018) Inclusion in sport: disability and participation. Sport in Society – Cultures, Commerce, Media, Politics 21(1), 4-21

McConkey, R. Pochstein, F. Carlin, L & Menke, S. (2019): Promoting the social inclusion of players with intellectual disabilities: an assessment tool for sport coaches, Sport in Society <https://doi.org/10.1080/17430437.2019.1673369>

**Responsible for Module:**

Schwarz, Daniela Maria; Ph.D.

**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

### SG810042: Seminar in Health Care Management | Seminar Health Care Management

Version of module description: Gültig ab summerterm 2020

<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:

Oral presentation (20 minutes) and written assignment (22.200 signs):

Students give a presentation and write a research essay on a topic in the area of health care management. They demonstrate that they are able to synthesise, reflect and critically assess research findings in the area of health care management. The oral presentation gives the students the opportunity to present their results and to critically discuss their research essay in a group.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Basic knowledge in statistics
- Participation in the lecture to health economics or health care management
- Basic knowledge in scientific literature search methods
- Basic knowledge of health care systems

#### Content:

The seminar addresses students who have already attended courses in health care management and want to deepen their knowledge in this subject. The seminar topics focus on current topics in the research field such as the implications of innovations in the health care market or the management in specific health care sectors, e.g. the hospital market. Students will work on questions, as for example, how new drugs enter the market or how new technologies can be integrated into health care. Other possible topics address how hospitals or medical practices can act in competition with each other within the legal regulations. Beside a comprehensive introduction to important theories, principles, and methods of health care management, the participants will get to know individual topics in depth and will be able to apply and implement their knowledge in scientific seminar papers.



**Intended Learning Outcomes:**

By the end of the module, students will:

- have developed transferrable skills of independent research for a research paper;
- have developed written and verbal communication and small group work and visual/verbal presentation;
- be able to critically assess and synthesize research findings in health care management.

**Teaching and Learning Methods:**

- lecture with interactive elements
- workshop reflecting provision results
- presentation of the written essay in a short talk
- present a written essay to professional standards, including appropriate graphical and text presentation skills

**Media:**

- PowerPoint
- supplementary literature
- electronic textbook collection of the library

**Reading List:**

- Breyer, Zweifel, Kifmann (2013): Gesundheitsökonomik. Springer: 6. Auflage
- Schulenburg, Greiner (2013): Gesundheitsökonomik. Siebeck: 3. Auflage.
- Busse, Schreyögg, Gericke (2010): Management im Gesundheitswesen. Springer: 2. Auflage
- Busse, Blümel & Ognyanova (2013): Das deutsche Gesundheitssystem – Akteure, Daten und Analysen. MWV

**Responsible for Module:**

Sundmacher, Leonie; Prof. Dr. rer. oec.

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

Seminar Health Care Management (Seminar, 3 SWS)

Flothow A, Franke S, Iashchenko I, Sundmacher L

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

## Module Description

### **SG810043: Public Health and Socio-economic Aspects in the Prevention of Non-communicable Diseases (NCDs) | Public Health and Socio-economic Aspects in the Prevention of Non-communicable Diseases (NCDs)**

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/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:**

Research Paper consisting of a

- a) Scientific essay/seminar paper of around 2000-3000 words
- b) Presentation, 30 minutes:

The module examination consists of a scientific essay/seminar paper (60% of the grade) and a scientific presentation (40% of the grade). Students will prove that they can describe, analyze and evaluate socioeconomic concepts in the prevention of non-communicable diseases.

#### **Repeat Examination:**

Next semester

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

Basic knowledge in the field of prevention and health promotion

#### **Content:**

- Socioeconomic determinants of NCDs
- Consequences of NCDs and related life style factors
- Concepts of individual-level prevention
- Concepts of population-level prevention
- Effectiveness of prevention measures
- Cost-Effectiveness of prevention measures
- Population-impact of prevention measures
- Equity aspects of prevention measures

**Intended Learning Outcomes:**

After participation in the seminar students will be able to:

- Describe socioeconomic determinants and consequences of non-communicable diseases
- Analyze individual-level and population-level prevention concepts for NCDs
- Evaluate prevention measures concerning their effectiveness, cost-effectiveness, population impact and equity impact.

**Teaching and Learning Methods:**

- 30% introduction to the thematic field by the lecturer
- 30% one to one meetings between the lecturer
- 40% presentations and discussions in the plenum

**Media:**

PowerPoint-Präsentation, Flipchart

**Reading List:**

Oxford Textbook of Public Health, edited by Roger Detels et al. 2011

Promoting Health, Preventing Disease: The economic case. edited by David McDaid et al. 2015

The Heavy Burden of Obesity. The economics of prevention. OECD Health Policy Studies 2019

Further literature will be announced in the course.

**Responsible for Module:**

Laxy, Michael; Prof. Dr.

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

Public Health und Sozioökonomische Aspekte in der Prävention von Nichtübertragbaren Krankheiten (Seminar, 3 SWS)

Laxy M

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

## Module Description

### SG810044v2: Global Health Challenges and One Health | Global Health Challenges and One Health

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> 105	<b>Contact Hours:</b> 45

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

#### Description of Examination Method:

Semester project:

The graded activity is a semester project to be developed by students over the semester. This semester project should be orally presented and submitted in written form by the end of the course. Students are expected to apply the content covered in the core modules to the semester project. Additionally, student's completion of assignments and participation in synchronous sessions will be assessed.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

Intercultural competencies; Interprofessional and collaborative practice in One Health; Principles of One Health; Healthcare, Surveillance, and One Health; Bioethics and One Health; Careers in Global Health.

#### Intended Learning Outcomes:

After successfully completing the module, students will be able to:

- understand the importance of collaborative skills in interprofessional work in One Health
- describe the role of each professional in the One Health teams
- define the importance of One Health in addressing communicable and non-communicable diseases
- recognize aspects of human, animal and environmental interconnection in One Health

- describe the importance of universal health coverage, surveillance systems and the International Health Regulations in One Health
- recognize the bioethical aspects in One Health and its paradigms
- apply One Health principles in projects addressing health issues.

**Teaching and Learning Methods:**

Pre-recorded videos of experts from several institutions; group activities, discussions, debate

**Media:**

Moodle, videos, powerpoint, zoom.

**Reading List:**

Mackenzie JS, Jeggo M, Daszak P, Richt JA, editors. One Health: The Human-Animal-Environmental Interfaces in Emerging Infectious Diseases: The Concept and Examples of a One Health Approach (Current Topics in Microbiology and Immunology). Springer; 2013.

World Health Organization. Taking a multisectoral, one health approach: a tripartite guide to addressing zoonotic diseases in countries. Geneva: WHO. 2019.

Deem, S.L., Lane-deGraaf, K., and Rayhel, E. Introduction to One Health: An Interdisciplinary Approach to Planetary Health. Wiley-Blackwell; 2019.

**Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Global Health Challenges and One Health (Seminar, 3 SWS)

Fiengo Tanaka L

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

## Module Description

### **SG810048: The effects of light on human health: Practical course on measuring illumination (residential summer school) | The effects of light on human health: Practical course on measuring illumination (residential summer school)**

*Practical course on measuring illumination (residential summer school)*

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> 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:**

Project work:

Literature search and brainstorming for the project (before the summer school), Project protocol/ plan, project development and oral presentation (during the summer school) and final report (after the summer school).

During the 1-week practical course, students will be working on a specific project in the area of light measurement for human health (group work). This project can be empirical (collection of new data) or theoretical/computational (analysis of existing data). Project topics will be suggested prior to the summer school or developed by the group. Students will conduct a literature search prior to the school (10%), write a protocol/plan for the project (15%), present the work in an oral presentation supported by slides (25%) and individually prepare a written, fully referenced report (50%).

#### **Repeat Examination:**

Next semester

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

None

#### **Content:**

Light exposure is a key modulator of human health and well-being by synchronizing our biological clock to the external light-dark cycle. Light exposure at the wrong time, specifically at night, can disrupt the clock and suppress the production of melatonin. Understanding the impact of light on human health requires systematic approaches to measuring light.

This practical course involves participating in the 1-week intensive residential summer school “Measuring Light and Illumination” in Chexbres, Switzerland (15-19 August 2022). The summer school will provide a combination of lectures and practical workshops on measuring light, colour and spectrum, with a specific focus on understanding the human response to light. The summer school is financially supported by the Daylight Academy, and room and board are provided.

### **Intended Learning Outcomes:**

At the end of the module students are able to:

- to understand the relationship between light exposure and human health from a physiological and behavioural perspective
- to understand the difference between photometric, colorimetric, radiometric and spectral measurements of light for a human perspective
- to evaluate reports of light measurements in the literature
- to apply different light measurement and dosimetry techniques
- to apply newly gained knowledge and techniques in research applications.

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

Literature search, Lectures, practical demonstration, project work

### **Media:**

Summerschool in Switzerland

### **Reading List:**

Blume, C., Garbazza, C., & Spitschan, M. (2019). Effects of light on human circadian rhythms, sleep and mood. *Somnologie (Berl)*, 23(3), 147-156. doi:10.1007/s11818-019-00215-x

Knoop, M., Broszio, K., Diakite, A., Liedtke, C., Niedling, M., Rothert, I., . . . Weber, N. (2019). Methods to describe and measure lighting conditions in experiments on non-image-forming aspects. *Leukos*, 15(2-3), 163-179. doi:10.1080/15502724.2018.1518716

Knoop, M., Stefani, O., Bueno, B., Matusiak, B., Hobday, R., Wirz-Justice, A., . . . Norton, B. (2019). Daylight: What makes the difference? *Lighting Research & Technology*, 52(3), 423-442. doi:10.1177/1477153519869758

Lilienfeld, P. (2004). A Blue Sky History. *Optics and Photonics News*, 15(6). doi:10.1364/opn.15.6.000032

Munch, M., Wirz-Justice, A., Brown, S. A., Kantermann, T., Martiny, K., Stefani, O., . . . Skene, D. J. (2020). The role of daylight for humans: gaps in current knowledge. *Clocks Sleep*, 2(1), 61-85. doi:10.3390/clockssleep2010008

Schlangen, L. J. M., & Price, L. L. A. (2021). The lighting environment, its metrology, and non-visual responses. *Front Neurol*, 12, 624861. doi:10.3389/fneur.2021.624861

SG810048: The effects of light on human health: Practical course on measuring illumination (residential summer school)  
| The effects of light on human health: Practical course on measuring illumination (residential summer school)

Spitschan, M., Aguirre, G. K., Brainard, D. H., & Sweeney, A. M. (2016). Variation of outdoor illumination as a function of solar elevation and light pollution. *Sci Rep*, 6, 26756. doi:10.1038/srep26756

Spitschan, M., Stefani, O., Blattner, P., Gronfier, C., Lockley, S. W., & Lucas, R. J. (2019). How to report light exposure in human chronobiology and sleep research experiments. *Clocks Sleep*, 1(3), 280-289. doi:10.3390/clockssleep1030024

Webler, F. S., Spitschan, M., Foster, R. G., Andersen, M., & Peirson, S. N. (2019). What is the 'spectral diet' of humans? *Curr Opin Behav Sci*, 30, 80-86. doi:10.1016/j.cobeha.2019.06.006

**Responsible for Module:**

Spitschan, Manuel; Prof. Dr.

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

The effects of light on human health: Practical course on measuring illumination (residential summer school) (Vorlesung, 2 SWS)

Spitschan M

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



## Module Description

### **SG810049: Interdisciplinary research seminar: Current topics in chronobiology and circadian health | Interdisciplinary research seminar: Current topics in chronobiology and circadian health**

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> 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:**

Presentation, research paper (essay):

- Final synthesis (research paper) of the interdisciplinary research topics presented in the seminars (85%) in an 8,000-word essay
- Literature search and 20-minute presentation (15%) of a topic presented by one of the external guest lecturers

#### **Repeat Examination:**

Next semester / End of Semester

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

Basic knowledge of psychology, sensory processing, sleep and/or circadian rhythms

#### **Content:**

This course will follow the online weekly research lecture series "Integrative Seminar in Chronobiology & Visual Neuroscience" organised by the Professorship "Chronobiology & Health" at TUM and the Max Planck Research Group "Translation Sensory & Circadian Neuroscience" at the Max Planck Institute for Biological Cybernetics. The lecture series' focus on understanding the interplay between light exposure, the eye and the retina, the circadian system, and how it all comes to together, through the lens of a group of internationally renowned researchers presenting their current research. The lectures will be accompanied by a seminar to offer and develop a deeper view into the topics discussed by the researchers.

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

At the end of the module students are able to:

- understand diverse state-of-the-art methods from psychology, vision science, and chronobiology

- apply diverse state-of-the-art knowledge from psychology, vision science, and chronobiology
- evaluate scientific presentations and presentation styles
- create syntheses of interdisciplinary research areas.

**Teaching and Learning Methods:**

Lectures, student-led presentations

**Media:**

Zoom

Webcam and microphone

PowerPoint presentation via Zoom

**Reading List:**

Blume, C., Garbazza, C., & Spitschan, M. (2019). Effects of light on human circadian rhythms, sleep and mood. *Somnologie (Berl)*, 23(3), 147-156. doi:10.1007/s11818-019-00215-x

**Responsible for Module:**

Spitschan, Manuel; Prof. Dr.

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

Interdisciplinary research seminar: Current topics in chronobiology and circadian health

(Vorlesung, 2 SWS)

Spitschan M

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

## Module Description

### SG810050: Global Health Policy | Global Health Policy

Version of module description: Gültig ab winterterm 2021/22

<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:

One 3-4 page policy report.

Students will write a brief 3-4 page policy report that provides a summary of the major health challenges faced by a particular population and an evidence-informed set of intervention recommendations with cost-effectiveness comparisons.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

English-language skills and an interest in population health topics outside of Western countries. Coursework in quantitative methods would be helpful but are not required.

#### Content:

We will briefly cover theories of global health (the epidemiological and demographic transitions), global patterns of morbidity and mortality, and major development frameworks (Sustainable Development Goals). However, the content will focus less on memorizing facts and more on developing the knowledge and skills needed to digest available evidence and engage in evidence-informed discussions on global health needs and solutions. This includes learning and understanding common measures of population health, sources of data, study designs, and methods of comparing different interventions to one another. We will also cover pragmatic skills such as how to conduct a literature review, where to go for global health data sources, and how to write clearly and effectively for a global policy audience.

#### Intended Learning Outcomes:

The aim of this course is to prepare students to be competitive for bachelors- to masters-level global health policy jobs (e.g. in an NGO or multilateral organization) by equipping them with background foundational knowledge in global health and the skills to conduct practical global

health policy analyses. At the end of the course, students should be able to prepare and present 2-4 page policy reports that answer the question of “What are the main health challenges faced in population X and what are some potential evidence-informed solutions to address them?” This class will have a particular focus on measuring health priorities and identifying feasible solutions for populations in low- and middle-income countries.

Specifically, students will be able to:

1. Recall major theories of global health, general global patterns of morbidity and mortality, global health frameworks, and “best buy” global health interventions.
2. Describe the different measures of population health that are used to inform policy priorities.
3. Compare the strengths and weaknesses of different global health data sources.
4. Carry out reviews of grey and scientific literature to identify information on the current health status of different populations and the key challenges they face.
5. Carry out reviews of empirical scientific literature to identify, interpret, and evaluate the quality of evidence-based health policy solutions and determine which solutions are most promising for a given population.
6. Generate clear and brief policy reports that synthesize the prior steps to help decision makers identify health priorities and some potential evidence-informed solutions to address them.

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

The class will consist of one lecture and one exercise/tutorial per week. Students will use the exercise/tutorial session to get practice applying the skills and concepts learned during the lecture. Since the class involves more in-person time than a typical 3-unit course, we will balance the workload by having less homework and self-study requirements (reflected in the time breakdown for the class).

### **Media:**

Presentations, e-learning materials, and videos

### **Reading List:**

Isaranuwatthai W. et al. (2020). Prevention of non-communicable disease: best buys, wasted buys, and contestable buys. *Thebmj*, 368(m141).

Suzman R. et al. (2014). Health in an ageing world – what do we know?. *The Lancet*, 385(9967).

A further reading list will be provided at the start of the class.

### **Responsible for Module:**

Prof. Nikkil Sudharsanan

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

Global Health Policy (exercise) (Vorlesung, 2 SWS)

Favaretti C, Sudharsanan N

Global Health Policy (Vorlesung, 2 SWS)

Sudharsanan N

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

## Module Description

### SG811037: Systematic Literature Reviews and Meta-Analysis | Systematic Literature Reviews und Meta-Analysen

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> 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:

Scientific work:

Students will write parts of a systematic literature review and present their results in an oral presentation.

Presentation will be weighted 30% and the written report 70% of the final grade.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This course is intended for Master students who are experienced in reading and critically appraising scientific literature. It is a prerequisite to be familiar with the common types of epidemiological study designs and potential biases.

#### Content:

- Introduction to the module
- Defining a review question
- Literature Search and Publication Screening
- Eligibility Assessment
- Study Quality and Bias Assessment
- Data Extraction and Data Synthesis
- Planning Meta-Analysis
- Preregistration of Systematic Reviews
- Statistical Methods for Meta-Analysis
- Summary of results and Publication
- Reading and appraising existing reviews

### **Intended Learning Outcomes:**

After successfully completing the module, students will be able to :

- Understand the role of systematic reviews and meta-analyses in health research
- Define the review question
- Plan and conduct the literature search and publication screening
- Create eligibility criteria and conduct eligibility assessment
- Understand the importance of bias assessment and learn how to apply risk of bias tools
- Extract and synthesize data from reviewed publications
- Plan a meta-analysis
- Preregister a systematic review
- Understand the statistical methods for meta-analysis
- Draw the appropriate conclusions from systematic reviews
- Know the items to present a review in an academic publication.

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

The module consists of a weekly seminar and exercise. In the interactive exercise, students will apply the skills learnt in the seminar by completing practical research exercises.

### **Media:**

Presentation slides, internet research

### **Reading List:**

Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). Cochrane Handbook for Systematic Reviews of Interventions [Internet]. Version 6.1.0 (updated September 2020). Cochrane; 2020. Available from: [www.training.cochrane.org/handbook](http://www.training.cochrane.org/handbook)

IOM (Institute of Medicine). Finding What Works in Health Care: Standards for Systematic Reviews [Internet]. Eden J, Berg A, Morton S, editors. Washington, D.C.: National Academies Press; 2011 [cited 2018 Nov 23]. Available from: <http://www.nap.edu/catalog/13059>

### **Responsible for Module:**

Klug, Stefanie; Prof. Dr. rer. nat.

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

Systematic Literature Reviews and Meta-Analysis (Übung, 2 SWS)

Klug S

Systematic Literature Reviews and Meta-Analysis (Seminar, 2 SWS)

Klug S

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

## Module Description

### SG860017: Participation and Inclusion | Participation and Inclusion

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:

To demonstrate their ability to organize and conduct inclusive sport events by implementing the current state of research in disability and health related diversity studies students have to prepare a presentation (30-45 minutes) that will be discussed during the seminar under consideration of social policy frameworks (20%). In a term paper (5-10 pages) students reflect their elaboration, considering the feedback of the seminar (80%).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of social theory and interest in working on issues of social (in-)equality

#### Content:

- Body, functioning and disability in historical perspective
- Diversity and Disability Studies
- The International Classification and Disability, Functioning and Health
- The Convention on the Rights of Persons with Disabilities
- Participation and Inclusion through sport
- Challenges of organizing and conducting inclusive sport events
- Special Olympics and Unified Sports
- Development of inclusive exercises

#### Intended Learning Outcomes:

Candidates that have successfully completed this module, will be able to:

- understand and critically assess the current state of research in disability and health related diversity studies as well as comprehend and apply social policy frameworks



- implement the theoretical context achieved in a) the lecture and b) other modules, into the praxis of inclusive sport events (e.g. Special Olympics, sport events for children and elderly etc.)
- organize and conduct inclusive sport events.

**Teaching and Learning Methods:**

The module consists of a seminar and an exercise. The Seminar, “(Dis-)ability, Diversity and Inclusion”, will convey state of the art research from within the study of disability, diversity and social politics. The Students will work with current literature und studies and will give oral presentations.

In the exercise, “Inclusive Sport Events”, students will learn how to implement theoretical aspects, policy frameworks and evidenced-based criteria of inclusion into practical fields of organizing and conducting sporting events.

**Media:**

Multimedia presentations (PowerPoint), exercises on online platform (Moodle)

**Reading List:**

Kiuppis, F., & Kurzke-Maasmeier, S. (2012). Sport im Spiegel der UN-Behindertenrechtskonvention. Interdisziplinäre Zugänge und politische Positionen. Stuttgart: Kohlhammer.

**Responsible for Module:**

Schwarz, Daniela Maria; Ph.D.

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

Inclusive Sport Events (Seminar, 2 SWS)

Langbein E, Schwarz D

(Dis-)ability, Diversity and Inclusion (Seminar, 2 SWS)

Langbein E, Schwarz D

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

## Module Description

### SOT86700: EuroTeQ Collider - Leave no Waste Behind (Master) | EuroTeQ Collider - Leave no Waste Behind (Master)

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> 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:

During this module, students must complete following tasks: producing a presentation that provides information on the project concept development and implementation, as well as a final report, charting the progress of their work/research over time. These assessments will evaluate a) the success of the project and b) the learning success of the students in oral and written form.

Students will be graded based on the active participation in a group project (20%), a final presentation of project results (60%) and a final project report (20%). These examination requirements will assess the success of the project, but also examine the learning success of the students in oral and written form.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

This module is aimed at all students enrolled in a Bachelor or Master program at the TUM; it is thus designed as an interdisciplinary venue which brings together a range of scientific perspectives. No specific prior knowledge is required; however, its project-based character requires high levels of intrinsic motivation and the willingness to actively participate in a project.

#### Content:

The way we live today produces a lot of waste. Aware of this fact, many initiatives try to stop this trend and reduce the amount of waste left by mankind. But there is still a lot to do! Waste is everywhere, not only in the use of packaging, in the over-use of natural resources, in the unuse of surplus or in the non-management of certain types of waste (chemical, nuclear). It also results from non-optimization of certain processes (energy loss during electricity production, extraction efficiency of certain materials), in our inability to find sustainable alternatives (fossil fuels) or to

consume differently (buy rather than repair). The process of waste reduction just began, and in order to succeed in leaving no waste behind, what will your contribution be?

The Technical University of Munich (TUM) joint forces with six leading universities of science and technology to foster the European spirit in a EuroTeQ format to promote innovative engineering education across Europe. Together we are creating the first EuroTeQ Collider in 2022. The Collider is an innovative learning format with the aim of bringing students together with vocational trainees and professionals to tackle challenges around the theme “Leave no waste behind”. The goal is to connect participants with different profiles and personalities to boost creativity, innovation, shared understanding, enabling participants to imagine new approaches and design disruptive solutions. The module is a seminar which gives students the opportunity to apply their knowledge on topics related to the theme “Leave no waste behind”. Within this overarching theme, we are offering challenges on three different topic-domains, namely:

- Cities (eg. construction/ building, public lighting, streets (trash bins))
- Energy (eg. renewable resources, transport, data (storing))
- Consumption (eg. food, plastics, fashion).

Within every topic domain, interdisciplinary (and international) teams of students, vocational trainees and professional learners are formed to develop solutions towards a desirable future, test and validate tools and create prototypes of their solutions.

A selection of the best projects will be presented in a major high-level event, the EuroTeQaThon. The winner teams of the EuroTeQaThon will be invited to present their projects at the European Commission.

### **Intended Learning Outcomes:**

After completion, all EuroTeQ Collider participants will be able to:

- Select and apply appropriate design, engineering and business approaches and tools to create an innovative and science-based solution to a real-life challenge.
- Develop a profound interpretation of a complex, real-life problem and its context using a system-thinking approach, considering multiple perspectives.
- Develop a problem-driven, creative, and integrative design, demonstrated by a concrete prototype that balances desirability, feasibility, and viability.
- Use disciplinary knowledge and expertise in an inter-disciplinary team to develop an innovative and scientifically sound solution in a European context.
- Communicate your ideas, at different levels of elaboration, via several mediums in an international context to a diverse set of stakeholders.
- Define and regularly reflect on personal and team development

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

A range of teaching & learning techniques will be applied:

- (pre-recorded) videos and online presentations, with podcasts and interviews, Q&A Sessions with experts
- This module is focusing on service-learning and project-based learning
- After a set of introductory sessions which provide input on the core topics but also project management, students will work on their projects in groups. Progress will be determined through

project presentations during the semester, continuous feedback from the instructors, as well as peer-to-peer feedback. –

- Presentational skills will be further facilitated through the requirement to present the final results
- As students and professionals will work together in a joint effort, all participants will not only improve their technical skills but also enhance their soft skills such as team spirit, flexibility to work in multicultural environments, and design thinking, which are also very important in professional life.

**Media:**

**Reading List:**

**Responsible for Module:**

Wurster, Stefan; Prof. Dr. rer. pol.

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

(SOT82700, SOT86700) EuroTeQ Collider - Leave no Waste Behind (Seminar, 4 SWS)

Becker V, Siewert M, Wurster S

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

## Module Description

### WI001121: International Management & Organizational Behavior | International Management & Organizational Behavior

Version of module description: Gültig ab winterterm 2018/19

<b>Module Level:</b> Bachelor	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 60	<b>Self-study Hours:</b> 180	<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 the performance in a 120min written examination. The examination consists of single-choice-questions, which aim at testing knowledge on different levels: Knowledge questions aim at the recall of the learned concepts, e.g. by reproducing different change management models; decision items aim at classifying or interpreting the module contents, e.g. by contrasting and comparative analysis of different strategies of multinational enterprises; application and scenario questions aim at testing the ability to transfer the learned concepts to real-life settings, e.g. by identifying solutions to short practical cases in conflict management. It is allowed to bring one hard-copy dictionary (English - first language) or English thesaurus. Furthermore, no aids such as lecture slides, personal notes, etc. are allowed.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basics of business administration

#### Content:

According to the intended learning outcomes of this module, the lectures cover the most important theories and methods of strategic and international management and organizational psychology. In the course of the increasing globalization, companies of almost all industries and sizes have to include an international dimension in their strategic considerations. Strategic and international management skills are important for formulating and implementing competitive strategies. Therefore, the module puts special emphasis on strategic and international management topics. Furthermore, basic approaches and models of work and organizational psychology are presented. They serve to understand behavior on the individual, team, and organizational level of business

organizations. In detail, the module will focus on theoretical explanations and practical implications of the following contents:

- Fundamental principles of leadership;
- fundamentals and characteristics of strategic and international management;
- general conditions of strategic and international management;
- effects of individual personality characteristics and motivation in organizations;
- ethical behavior in organizations;
- team structures and processes;
- change management in national and international organizations;
- theories and strategies of multinational enterprises;
- international dimension of certain functional areas of business;
- national and international organizational culture.

### **Intended Learning Outcomes:**

Upon successful completion of this module, students are able to reproduce basic knowledge of strategic and international management and organizational behavior. Moreover, students can recall, understand, and explain basic concepts of strategic and international management and organizational behavior. They can apply their knowledge to practical problems and challenges. Furthermore, students are able to explain theories, models, and methods related to strategic and international management and organizational behavior. In addition, students are able to identify and analyze challenges and problems related to strategy and management, motivation, teamwork, decision making, and communication in business organizations, especially in multinational enterprises. Finally, they are able to outline practical solutions to strategy and management challenges, conflict management, organizational change, and ethical issues by applying the acquired theoretical concepts.

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

In the interactive as well as online video-based lectures, the most important concepts, approaches, theories, and empirical studies in the field of strategic and international management and organizational behavior are introduced and discussed. Practical examples and case studies serve to illustrate the relevant theories and methods. Moreover, students are encouraged to engage in individual exercises and/or small group assignments during the lectures as well as video analyses in order to look deeper into the course contents and to support transfer of the acquired theories and methods. Finally, the self-study of literature is part of the module.

This module is also offered at TUM Campus Straubing.

As part of the module, students are able to participate in two 60-120 min long psychological studies/psychological experiments as a mid-term examination. Participation is voluntary and can, in accordance to APSO regulations, be used to improve the grade on the final exam. This mid-term examination illustrates parts of the learning content and allows students to gain experience with scientific (psychological) methodology. Available experiments are listed on <http://motivatum.wi.tum.de/EN/>.

**Media:**

Slides (download)

Online video lectures (download)

if applicable, present scientific international literature (English)

if applicable, case studies

**Reading List:**

Cavusgil, S.T., Knight, G., Riesenberger, J. R. (2008), International Business: strategy, management, and the new realities

Hill, C.W.L. (2014), International business: Competing in the Global Marketplace

Landy, F.J., & Conte, J.M. (2013). Work in the 21st century. Hoboken, NJ: Wiley.

Wood, J. M. (2016). Organisational behavior: Core concepts and applications. Milton, Australia: Wiley.

**Responsible for Module:**

Kehr, Hugo; Prof. Dr. phil.

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

Organizational Behavior (WI001121) (Vorlesung, 2 SWS)

Bakac C, Kehr H

Organizational Behavior (WI001121) am Campus Straubing (Vorlesung, 2 SWS)

Benzinger D

Strategic and International Management (WI001121) (Bachelor TUM-BWL) am Campus Straubing (Vorlesung, 2 SWS)

Doblinger C [L], Doblinger C, Kurowski S

Strategic and International Management (WI001121) (Bachelor TUM-BWL) (Vorlesung, 2 SWS)

Hutzschenreuter T [L], Hutzschenreuter T

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

## Module Description

### WI001293: Theoretical and applied basics of mindfulness practice | Theoretische und anwendungsbezogene Grundlagen der Achtsamkeitspraxis

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> 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 Prüfungsleistung wird in Form eines elektronischen Lernportfolios erbracht und nach vorher festgelegten Kriterien benotet. In diesem Lernportfolio weisen die Studierenden nach, dass sie sich mit den Inhalten des Moduls vertieft und über das Modul hinaus auseinandergesetzt haben. Dafür müssen die Studierenden nachweisen, dass sie sowohl die Pflichtliteratur als auch weiterführende Literatur gelesen, zusammengefasst, verstanden und kritisch hinterfragt haben. Hierfür stehen den Studierenden eine Reihe unterschiedlicher Leitfragen (inkl. Transferfragen) und Materialien (überwiegend wissenschaftliche Artikel) zur Verfügung. Weiterhin dient das Lernportfolio zur Unterstützung der Integration und Umsetzung der Achtsamkeitspraxis in den Alltag. Das Lernportfolio bietet somit eine optimale Kontrollmöglichkeit des Lernfortschritts- und ergebnisses durch die Lehrenden.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

Gemessen an den mittlerweile über 1.000 wissenschaftlichen Publikationen (Van Dam et al., 2018), hat sich die Achtsamkeitsforschung in den letzten zwanzig Jahren zu einem "hot topic" entwickelt. Es scheint kaum ein Problem zu geben, dass mit Achtsamkeit nicht gelöst werden kann.

Ein solcher makelloser Ruf der Achtsamkeit nährt jedoch den Verdacht auf Übertreibung. Ein wesentlicher Bestandteil dieser Lehrveranstaltung stellt daher die kritische Auseinandersetzung



mit den wichtigsten aktuellen Forschungsbefunden der Achtsamkeitspraxis dar: Wo liegen die Herausforderungen und Limitationen bei der empirischen Untersuchung von Achtsamkeit? Was wissen wir und was wissen wir nicht? Diese kritische Auseinandersetzung erfolgt sowohl im Rahmen der Lehrveranstaltung als auch im Rahmen des Lernportfolios.

Darüber hinaus erhalten die Studierenden die Möglichkeit, unter Anleitung eines erfahrenen und zertifizierten Achtsamkeitstrainers (Günter Bubbnik) Praktiken und Techniken der Achtsamkeit zu erlernen und damit ihre eigenen Kompetenzen weiterzuentwickeln. Studierende stellen eine vulnerable Gruppe dar, die unter erhöhter Stressbelastung steht (Stichwort: Burnout). Leistungsdruck und Prüfungssituationen u.ä. gehören zum Alltag der Studierenden. Durch die Vermittlung und das Praktizieren von Achtsamkeitsübungen werden den Studierenden validierte Methoden zur Stressreduktion, Prüfungsangstbewältigung und Konzentrationssteigerung vermittelt und Sozialkompetenzen gestärkt. Im Vordergrund steht dabei:

- Achtsamkeit ins Alltagsleben integrieren
- Methoden zur Stressreduktion
- Methoden zur Prüfungsangstbewältigung
- Methoden zur Konzentrationssteigerung
- Reflexion eigener Verhaltensmuster
- Persönlichkeitsentwicklung
- Entspannungstechniken
- Stärkung des Umgangs mit Gefühlen
- Selbstmanagement
- Zeitmanagement

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

Nach der Teilnahme an der Lehrveranstaltung kennen die Studierenden die wichtigsten und aktuellen Forschungsbefunde der Achtsamkeitspraxis. Damit sind sie in der Lage, wissenschaftlich fundierte Modelle, Befunde und Techniken der Achtsamkeitspraxis abzurufen, zu verstehen und sowohl in Hinblick auf die Theorie als auch die Praxistauglichkeit kritisch zu hinterfragen ("Mind the Hype").

Des Weiteren sind die Studierenden in der Lage, neu erlernte Kompetenzen und Techniken der Achtsamkeitspraxis selbst anzuwenden. Sie können Stress in seinen verschiedenen Ausführungen bewusst wahrnehmen und eigene Reduzierungsmöglichkeiten sowie Selbststrukturierungsmechanismen entwickeln. Dies umfasst die...

- Integration von Achtsamkeit in den Studienalltag
- Auseinandersetzung mit stressbedingten Ängsten
- Anregung und Ermutigung zu stetigen Reflexionen
- Stärkung von Sozialkompetenzen (insbes. der Emotionsregulation)

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

Zur Erreichung der angestrebten wissenschaftlichen Kenntnisse werden theoretische Inhalte über Präsentationen vermittelt und in Plenum/Kleingruppen diskutiert. Praktische Kompetenzen

werden über deduktive Achtsamkeitsübungen und induktiven Methoden veranschaulicht und vermittelt. Schwerpunkt liegt auf dem Erfahrungsaustausch in der sensiblen Umgebung der Lehrveranstaltung und der Ausarbeitung konkreter Fragestellungen in Form von Gruppen- und Zweierübungen. Die Vermittlung der relevanten Inhalte erfolgt zudem über die Erstellung eines Lernportfolios (Prüfungsleistung).

**Media:**

Zoom, PowerPoint, SosciSurvey (Online Umfragen zur Reflexion), OnlineTED, Reader, Filme, Tagebuch

**Reading List:**

- Donald et al. (2020): Mindfulness and Its Association With Varied Types of Motivation
- Leyland et al. (2019): Experimental Effects of Mindfulness Induction on Self-Regulation: Systematic Review and Meta-Analysis
- van Dam et al. (2018): Mind the Hype
- Hanley et al. (2021): Modeling the Mindfulness-to-Meaning Theory's Mindful Reappraisal Hypothesis

**Responsible for Module:**

Kehr, Hugo; Prof. Dr. phil.

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

Theoretische und anwendungsbezogene Grundlagen der Achtsamkeitspraxis (WI001293)  
(Seminar, 2 SWS)

Bubbnik G, Jais M

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

## Modules by Carl-von-Linde-Akademie | Module Carl-von-Linde-Akademie

### Module Description

#### ED0179: Technology, Nature and Society | Technik, Natur und Gesellschaft

Version of module description: Gültig ab summerterm 2011

<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 Abelshäuser (Hg.), Umweltgeschichte. Umweltverträgliches Wirtschaften in historischer Perspektive; acht Beiträge, Göttingen 1994, S. 29-56 pp.

**Responsible for Module:**

Karin Zachmann (karin.zachmann@mytum.de)

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

Technik, Natur und Gesellschaft (Vorlesung, 2 SWS)

Zachmann K [L], Zachmann K, Zetti D

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

## Module Description

### CLA10510: Change in the German System of Science | Der Wandel des deutschen Wissenschaftssystems

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> 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:

Präsentation (20 min)

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

Die Veranstaltung führt in die Strukturen und Hauptakteure des deutschen Wissenschaftssystems ein. Dabei wird ein Überblick über dessen historische Grundlagen, die deutsche Hochschullandschaft, die Rolle der außeruniversitären Forschung sowie ein Abriss der gegenwärtigen, wissenschaftspolitisch motivierten Debatten, Reformen und Instrumente (Exzellenzstrategie, Pakt für Forschung und Innovation etc.) geboten. Ebenso werden maßgebliche Analysen dieser Reformprozesse durch die empirischen Sozialwissenschaften diskutiert.

#### Intended Learning Outcomes:

Nach der Teilnahme verfügen die Studierenden über grundlegende Kenntnisse des deutschen Wissenschaftssystems, seiner historischen Fundamente, seiner Akteure, Instrumente und Perspektiven sowie seiner Beziehungen zu Öffentlichkeit, Politik und Wirtschaft. Sie sind in der Lage zu exemplarischen wissenschaftspolitischen Problemen eine eigene, fundierte Position zu formulieren.

#### Teaching and Learning Methods:

Vorträge, Gruppenarbeit, Fallstudien, Präsentationen, Selbstreflexion

**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

### 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	<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 (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 einem Referat oder einer Präsentation (25-35 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:**

Wird im Rahmen der Veranstaltung zur Verfügung gestellt.

**Responsible for Module:**

PD Dr. Jörg Wernecke

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

Einführung in die Angewandte Ethik: aktuelle Problemfelder (Seminar, 2 SWS)

Wernecke J

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)

Stadler K, Wernecke J

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

## Alphabetical Index

---

<b>[SGAKAL02]</b>   Anerkennung im Ausland erbrachter Leistungen II	40 - 41
<b>[SG810015]</b>   Neurological Health	44 - 45
<b>[SG800081]</b>   Psychology of Choking Under Pressure	115 - 116

## A

---

<b>[SG810003] Advanced Statistics</b>   Advanced Statistics	13 - 14
<b>[SG800080] Anxiety and Stress in Sport Performance</b>   Anxiety and Stress in Sport Performance	113 - 114

## B

---

<b>[SG810025] Behavioral Science, Behavior Change and Health</b>   Behavioral Science, Behavior Change and Health	46 - 47
---	---------

## C

---

<b>[SG810030] Cancer</b>   Cancer	48 - 49
<b>[SG810012] Cardiovascular/Metabolic Disorders</b>   Cardiovascular/Metabolic Disorders	42 - 43
<b>[CLA10510] Change in the German System of Science</b>   Der Wandel des deutschen Wissenschaftssystems	165 - 166
<b>[POL62100] Civil Society and Technological Change</b>   Civil Society and Technological Change	85 - 87

## D

---

<b>[POL67001] Digital Sustainability Transformation of, by and for the TUM</b>   Digital Sustainability Transformation of, by and for the TUM	88 - 89
---	---------

## E

---

<b>[SG810047] Economic Evaluations of Health Care Programmes</b>   Economic Evaluations of Health Care Programmes	53 - 55
---	---------

<b>Electives: Applied Research</b>   Wahlbereich Applied Research	40
<b>Electives: Complementary Subjects</b>   Wahlbereich Complementary Subjects	61
<b>Electives: Health Science Research</b>   Wahlbereich Health Science Research	19
<b>Electives: Health Science Research II</b>   Wahlbereich Health Science Research II	30
<b>Elective Modules</b>   Wahlmodule	19
<b>[CLA30230] Ethics and Responsibility</b>   Ethik und Verantwortung	167 - 168
<b>[CLA31601] Ethics and Responsibility II</b>   Ethik und Verantwortung II	169 - 170
<b>[SOT86700] EuroTeQ Collider - Leave no Waste Behind (Master)</b>   EuroTeQ Collider - Leave no Waste Behind (Master)	154 - 156
<b>[SG810046] Evaluation Methods in Public Health and Health Care</b>   Evaluation Methods in Public Health and Health Care	50 - 52

## G

---

<b>[POL61500] Global Governance, Ethics, and Technology</b>   Global Governance, Ethics, and Technology	83 - 84
<b>[SG810044v2] Global Health Challenges and One Health</b>   Global Health Challenges and One Health	140 - 141
<b>[SG810036] Global Health Epidemiology</b>   Global Health Epidemiology	131 - 132
<b>[SG810050] Global Health Policy</b>   Global Health Policy	147 - 149

## H

---

<b>[SG810001] Health and Society</b>   Health and Society	9 - 10
<b>[SG810041] Health Economics</b>   Gesundheitsökonomie	27 - 29
<b>[SG810045] Health Economics 2</b>   Gesundheitsökonomie 2	34 - 36
<b>[SG810023v2] Health, (Dis)ability and Participation in a Global Perspective</b>   Health, (Dis)ability and Participation in a Global Perspective	121 - 122
<b>[SG160432] Health-promoting physical activity in action</b>   Erfahrungsorientierte Bewegungsangebote zur Gesundheitsförderung	93 - 94

## I

---

<b>[SG810040] Inclusive Physical Education – Summer School</b>   Inclusive Physical Education – Summer School	133 - 135
<b>[SG810033] Inclusive Settings in University Teaching</b>   Inklusive Settings in der Hochschullehre	128 - 130

<b>[IN9048] Innovation Generation in the Healthcare Domain  </b> Innovationsentwicklung in der Gesundheitsbranche	66 - 68
<b>[SG810049] Interdisciplinary research seminar: Current topics in chronobiology and circadian health  </b> Interdisciplinary research seminar: Current topics in chronobiology and circadian health	145 - 146
<b>[WI001121] International Management &amp; Organizational Behavior  </b> International Management & Organizational Behavior	157 - 159
<b>[SG160053] Introduction to Health Literacy Research  </b> Einführung in die Gesundheitskompetenzforschung	90 - 92
<b>[SG160445] Introduction to Programming for Digital Health  </b> Introduction to Programming for Digital Health	106 - 107
<b>[POL40100] Introductory Lecture: Politics and Technology  </b> Ringvorlesung: Politics & Technology	81 - 82

## M

---

<b>Mandatory Modules  </b> Pflichtmodule	9
<b>Master's Thesis  </b> Master's Thesis	7
<b>[SG850010] Master's Thesis  </b> Master's Thesis	7 - 8
<b>[SG811014] Mental Health and Well-Being  </b> Mental Health and Well-Being	56 - 57
<b>Modules by Carl-von-Linde-Akademie  </b> Module Carl-von-Linde-Akademie	163
<b>[SG800051] Motion analysis in sports and medicine  </b> Bewegungsanalyse in Sport und Medizin	111 - 112
<b>[SG810024v2] Mountain Sports: Practice, Physiology &amp; Technology  </b> Mountain Sports: Practice, Physiology & Technology	123 - 125

## N

---

<b>[SG810006] Nutrition - Health Science Research  </b> Nutrition - Health Science Research	19 - 21
<b>[SG810009] Nutrition - Health Science Research II  </b> Nutrition - Health Science Research II	30 - 31

## O

---

<b>[SG811016] Orthopedic Health  </b> Orthopedic Health	58 - 60
---	---------

## P

---

<b>[SG860017] Participation and Inclusion</b>   Participation and Inclusion	152 - 153
<b>[SG810007] Physical Activity - Health Science Research</b>   Physical Activity - Health Science Research	22 - 24
<b>[SG810010] Physical Activity - Health Science Research II</b>   Physical Activity - Health Science Research II	32 - 33
<b>[POL00011] Politics for Rocket Scientists: An Introduction to Political Science for Non-Political Scientists</b>   Politics for Rocket Scientists: Einführung in die Politikwissenschaft für Nicht-Politikwissenschaftler	76 - 78
<b>[SG810035] Psychology - Health Science Research</b>   Psychology - Health Science Research	25 - 26
<b>[SG812011] Psychology - Health Science Research II</b>   Psychology - Health Science Research II	37 - 39
<b>[SG810043] Public Health and Socio-economic Aspects in the Prevention of Non-communicable Diseases (NCDs)</b>   Public Health and Socio-economic Aspects in the Prevention of Non-communicable Diseases (NCDs)	138 - 139

## Q

---

<b>[SG810005] Qualitative Research Methods</b>   Qualitative Research Methods	17 - 18
---	---------

## S

---

<b>[ED0218] Science and Technology Communication</b>   Wissenschafts- und Technikkommunikation	61 - 62
<b>[SG810004] Scientific Data Processing</b>   Scientific Data Processing	15 - 16
<b>[SG810032v2] Scientific Writing</b>   Scientific Writing	126 - 127
<b>[SG810042] Seminar in Health Care Management</b>   Seminar Health Care Management	136 - 137
<b>[SG8000160] Sponsorship-linked Marketing (Online-course)</b>   Sponsorship-linked Marketing (Online-Kurs)	108 - 110
<b>[SG810002] Study Design; Ethics - Research Methods</b>   Study Design; Ethics - Research Methods	11 - 12
<b>[SG811037] Systematic Literature Reviews and Meta-Analysis</b>   Systematic Literature Reviews und Meta-Analysen	150 - 151

## T

---

<b>[ED0179] Technology, Nature and Society</b>   Technik, Natur und Gesellschaft	163 - 164
<b>[WI001293] Theoretical and applied basics of mindfulness practice</b>   Theoretische und anwendungsbezogene Grundlagen der Achtsamkeitspraxis	160 - 162
<b>[SG810048] The effects of light on human health: Practical course on measuring illumination (residential summer school)</b>   The effects of light on human health: Practical course on measuring illumination (residential summer school)	142 - 144
<b>[POL24302] The Political Economy of Technical Standards</b>   The Political Economy of Technical Standards	79 - 80
<b>[MW2245] Think. Make. Start.</b>   Think. Make. Start. [TMS]	72 - 75
<b>[MA8113] TUM Data Innovation Lab</b>   TUM Data Innovation Lab [TUM-DI-LAB]	69 - 71
<b>[BGU62062] TUM.city</b>   TUM.stadt	63 - 65

## V

---

<b>[SG160441] VHB - Advanced Occupational Safety and Health</b>   VHB - Advanced Occupational Safety and Health	99 - 101
<b>[SG810021] VHB - Cross-border Health Care Management</b>   VHB - Cross-border Health Care Management	119 - 120
<b>[SG160439] VHB - English Competence and Research Training for Health Professionals</b>   VHB - English Competence and Research Training for Health Professionals	95 - 96
<b>[SG160443] VHB - Fundamentals of Project Management</b>   VHB - Fundamentals of Project Management	104 - 105
<b>[SG810018] VHB - Introduction to Human Resource Management</b>   VHB - Einführung in das Personalmanagement	117 - 118
<b>[SG160440] VHB - Leadership and Communication in Global Business</b>   VHB - Leadership and Communication in Global Business	97 - 98
<b>[SG160442] VHB - Performance Management in Teams</b>   VHB - Performance Management in Teams	102 - 103