Faculty of Science
(Please see also http://www.uni-tuebingen.de/en/11820)

Courses taught in English, Winter Semester 15/16

Applied Environmental Geoscience AEG – Master ...................................................................................................... 2
Biochemistry – Bachelor............................................................................................................................................... 4
Bioinformatics – Bachelor ............................................................................................................................................ 5
Bioinformatics – Master ............................................................................................................................................... 6
Biology – Bachelor of Science....................................................................................................................................... 9
Biology – Master......................................................................................................................................................... 15
Geoeoclogy – Master .................................................................................................................................................. 31
Geosciences – Bachelor.............................................................................................................................................. 32
Geosciences – Master .................................................................................................................................................. 32
Computer Science – Bachelor....................................................................................................................................... 33
Computer Science – Master ......................................................................................................................................... 33
Cognition Science – Bachelor ..................................................................................................................................... 36
Cognition Science – Master ........................................................................................................................................ 39
Information and Media Technologies – Master ......................................................................................................... 42
Medicineinformatics – Bachelor.................................................................................................................................. 44
Nanoscience – Bachelor ............................................................................................................................................. 44
Nanoscience – Master ................................................................................................................................................ 46
Scientific Archaeology – Bachelor .............................................................................................................................. 49
Scientific Archaeology – Master ................................................................................................................................. 49
Palaeoanthropology – Bachelor .................................................................................................................................. 52
Pharmacy – state exam .............................................................................................................................................. 53
Physical Geography/ Landscape System Sciences – Master ...................................................................................... 55
Psychologie – Bachelor............................................................................................................................................... 56
Environmental Sciences – Bachelor............................................................................................................................ 56
Applied Environmental Geoscience AEG – Master

Course title: Aquatic and Environmental Chemistry (Sorption and Partitioning Processes)
Link: http://campus.uni-tuebingen.de/20152e121433
Course type: Lecture/Excercises
Contact hours: 2
Course coordinator: Prof. Dr. sc. nat. Stefan Haderlein, Jun.-Prof. Dr. rer. nat. Christiane Zarfl

Course title: Atmospheric Physics (S)
Link: http://campus.uni-tuebingen.de/20152e121516
Course type: Seminar
Contact hours: 1
Course coordinator: N.N.

Course title: Case Studies in Environmental Geoscience
Link: http://campus.uni-tuebingen.de/20152e121476
Course type: Projekt
Contact hours: 2
Course coordinator: Prof. Dr.-Ing. Olaf A. Cirpka, Ph.D. Chuanhe Lu

Course title: Earth Processes (V)
Link: http://campus.uni-tuebingen.de/20152e121504
Course type: Lecture
Contact hours: 2
Course coordinator: Dr. rer. nat. Renate Kostrewa

Course title: Environmental Analytical Chemistry
Link: http://campus.uni-tuebingen.de/20152e121492
Course type: Lecture/Excercises
Contact hours: 3
Course coordinator: Prof. Dr. rer. nat. Christian Zwiener

Course title: Environmental Analytical Chemistry Lab
Link: http://campus.uni-tuebingen.de/20152e121478
Course type: Block Course
Contact hours:
Course coordinator: N.N., Prof. Dr. rer. nat. Christian Zwiener

Course title: Environmental Modelling I (VÜ)
Link: http://campus.uni-tuebingen.de/20152e121437
Course type: Lecture/Excercises
Contact hours: 6
Course coordinator: Prof. Dr.-Ing. Olaf A. Cirpka, Ph.D. Chuanhe Lu

Course title: Environmental Risk Assessment
Link: http://campus.uni-tuebingen.de/20152e121510
Course type: Lecture/Excercises
Contact hours: 3
Course coordinator: Prof. Dr. sc. nat. Beate Escher

Course title: Geo-Information Systems/Remote Sensing (VÜ)
Link: http://campus.uni-tuebingen.de/20152e125217
Course type: Lecture/Excercises
Contact hours: 4
Course coordinator: Dr. rer. nat. Gerhard Lörcher, Prof. Dr.-Ing. Dietrich Schröder

Course title: Geotechnical Engineering (Soil Mechanics Lab)
Link: http://campus.uni-tuebingen.de/20152e121498
Course type: Exercises
Contact hours: 3
Course coordinator: Dr. rer. nat. Carsten Leven-Pfister

Course title: Geotechnical Engineering (V)
Link: http://campus.uni-tuebingen.de/20152e121439
Course type: Lecture
Contact hours: 2
Course coordinator: Dipl.-Ing. Johannes Rudolf Giere

Course title: Hydrogeology (Ü)
Link: http://campus.uni-tuebingen.de/20152e121503
Course type: Lecture/Excercises
Contact hours: 2

Course title: Hydrogeology (V)
Link: http://campus.uni-tuebingen.de/20152e121431
Course type: Lecture
Contact hours: 4
Course coordinator: Prof. Dr.-Ing. Olaf A. Cirpka

Course title: Lab Course Environmental Chemistry
Link: http://campus.uni-tuebingen.de/20152e121508
Course type: Practical Course
Contact hours: 5
Course coordinator: Dr. rer. nat. Silvia Orsetti, Prof. Dr. rer. nat. Christian Zwiener

Course title: Soil Hydrology
Link: http://campus.uni-tuebingen.de/20152e121474
Course type: Lecture/Excercises
Contact hours: 2
Course coordinator: PD Dr. rer. nat. Benny Selle

Course title: Water Treatment (Module Water Treatment and Remediation)
Link: http://campus.uni-tuebingen.de/20152e121440
Course type: Lecture/Excercises
Contact hours: 3
Course coordinator: Prof. Dr. rer. nat. Christian Zwiener
Biochemistry – Bachelor

Course title: Biochemie III  (Course number: BSCBC300)
Link: http://campus.uni-tuebingen.de/20152e124591
Course type: Lecture
Contact hours: 4
Course coordinator: Prof. Dr. rer. nat. Gabriele Dodt, Prof. Ph. D. Ana Jesús Garcia Sáez, PD Dr. rer. nat. Elisabeth Fuß, Prof. Dr. Dirk Schwarzer

Course title: Modern Genetic Engineering  (Course number: S1WPM15J)
Link: http://campus.uni-tuebingen.de/20152e124378
Course type: Block Course
Course coordinator: Dr. rer. nat. Andrea Gust, PD Dr. rer. nat. Elisabeth Fuß
Prerequisites
Biochemie I* (basic knowledge in chemistry, relevant for biochemistry) Biochemie II* (biochemistry of proteins and nucleic acids) Allgemeine Biologie* (basic knowledge in microbiology, genetics and plant biology and biochemistry) (*or equivalent)

Course description
Contents: Practical course: (model organism: plant) PCR: primer design, mutagenesis; cloning techniques (Gateway); sequencing and analysis of results; transient expression of proteins in Nicotiana benthamiana; transformation of Arabidopsis and analysis Lectures and Seminar: gene cloning techniques (classical, Gateway, synthesis of genes), PCR and mutagenesis, sequencing techniques, generation of genetically modified organisms (Virus-induced-gene-silencing, amiRNA-technology, ZFN, TALEN, CRISPR), ….. In the seminar the topics of the lectures will be discussed in more detail based on talks to be given by the participants.

Course title: Science of cooking  (Course number: S1WPM15O)
Link: http://campus.uni-tuebingen.de/20152e126719
Course type: Block Course
Course coordinator: Prof. Ph. D. Ana Jesús Garcia Sáez, Dr. rer. nat. Jakob Suckale
Target audience
B. Sc. Biochemistry, 3. year
Prerequisites
The participants should have basic knowledge of mathematics, physics and biochemistry.

Course description
History of science and cooking, Food components, Basic transformation processes during cooking: phase transitions, Energy, temperature and heat transfer; Elasticity and texture; Diffusion and spherification; Viscosity and polymers; Emulsions and foams; Baking and Fermentation. Applications in Haute Cuisine and food industry.

Course title: Neurodegenerative diseases and protein aggregation  (Course number: S3WPM16N)
Link: http://campus.uni-tuebingen.de/20152e126784
Course type: Block Course
Contact hours: 6
Course coordinator: N.N.
Prerequisites
completed module BCII
Course description
instructor: Dr. Della David Protein Aggregation and Aging German Center for Neurodegenerative Diseases (DZNE) Paul-Ehrlich-Str. 17 D-72076 Tuebingen Germany Tel:
Course title: Seminar zur Vorlesung Biochemie III  (Course number: BSCBC301)
Link: http://campus.uni-tuebingen.de/20152e124592
Course type: Seminar
Contact hours: 1
Course coordinator: Prof. Dr. rer. nat. Gabriele Dodt, Prof. Ph. D. Ana Jesús Garcia Sáez, PD Dr. rer. nat. Elisabeth Fuß, Prof. Dr. Dirk Schwarzer, Dr. rer. nat. Thorsten Stafforst
Course description
Stoffwechsel

Course title: Vorlesung Proteinexpression und Proteinreinigung  (Course number: SCH15EV)
Link: http://campus.uni-tuebingen.de/20152e126135
Course type: Lecture
Contact hours: 2
Course coordinator: o. Prof. Dr. rer. nat. Thilo Stehle

Course title: W2 Molecular and Cellular Proteomics (3037)
Link: http://campus.uni-tuebingen.de/20152e124156
Course type: Block Course
Contact hours:
Course coordinator: Prof. Dr. rer. nat. Boris Macek, Dr. rer. nat. Karsten Krug
Target audience
Bachelor - 3rd years students: Biology, Biochemistry, Bioinformatics
Course description
Proteomics investigates global qualitative und quantitative changes of protein expression in cells, tissues or whole organisms and represents one ot the youngest fields of molecular biology and medicine. Lecture: The aim of this course is to introduce the student to the basic principles of proteomics and most common methods currently used in global analysis of proteins. Practical Course: Students will get a hands-on experience in sample preparation for mass spectrometry; work on the state-of-the-art equipment for proteome analysis: nanoliquid chromatography (HPLC) coupled to a mass spectrometer, and will be introduced to basic bioinformatics analysis of proteomics data. Seminar: Seminars will cover and discuss the key literature from the field of proteomics which will include both the historical milestone articles and the current research. Topics will correlate to those covered by the lecture courses.
Additional information
http://www.pct.uni-tuebingen.de/

Bioinformatics – Bachelor

Course title: Drug Design 1  (Course number: BIOINF4371)
Link: http://campus.uni-tuebingen.de/20152e126648
Course type: Lecture/Excercises
Contact hours:
Course coordinator: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel

Course title: Evolution und Phylogenie  (Course number: BIOINF3310)
Link: http://campus.uni-tuebingen.de/20152e126090
Course type: Lecture/Excercises  
Contact hours: 4  
Course coordinator: o. Prof. Dr. math. Daniel Huson  
Additional information  
http://ab.inf.uni-tuebingen.de/teaching/ws2015/phylogeny  

Course title: Grundlagen der Bioinformatik (AB)  (Course number: BIOINF2110AB)  
Link: http://campus.uni-tuebingen.de/20152e126094  
Course type: Proseminar  
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter  
Prerequisites  
Bachelor-Studenten Bioinformatik im 4. Semester oder Diplomstudenten Bioinformatik, denen noch ein Schein für das Proseminar fehlt.  
Additional information  
http://ab.inf.uni-tuebingen.de/teaching/ws2015/proseminar  

Bioinformatics – Master  

Course title: Advanced Neural Networks Practicum  
Link: http://campus.uni-tuebingen.de/20152e126643  
Course type: Internship  
Contact hours:  
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. rer. nat. Jan Kneissler, M.Sc. Tobias Fabian Schrodt  

Course title: Advanced Sequence Analysis  (Course number: BIOINF4361)  
Link: http://campus.uni-tuebingen.de/20152e126091  
Course type: Lecture/Excercises  
Contact hours: 4  
Course coordinator: o. Prof. Dr. math. Daniel Huson  
Additional information  
http://ab.inf.uni-tuebingen.de/teaching/ws2015/seqan  

Course title: Algorithms of Bioinformatics  (Course number: BIOINF4362)  
Link: http://campus.uni-tuebingen.de/20152e126092  
Course type: Seminar  
Contact hours:  
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter  
Course description  
mit Dr. Richard Neher, MPI  
Additional information  
http://ab.inf.uni-tuebingen.de/teaching/ws2015/seminar  

Course title: Bioinformatics I  (Course number: BIOINF4110)  
Link: http://campus.uni-tuebingen.de/20152e126654  
Course type: Lecture/Excercises  
Contact hours: 6  
Course coordinator: Mitarbeiter, PD Dr. math. Katja Nieselt  
Prerequisites  
Grundlagen der Bioinformatik, Programmierkenntnisse (Java)
Course description
The lecture “Bioinformatics I” is the first in the series on “Bioinformatics”, which are mandatory for all bioinformatics Master students. Sequence-based and machine learning algorithms and applications are the focus of this lecture.

Course title: Bioinformatics Tools  (Course number: BIOINF4240)
Link: http://campus.uni-tuebingen.de/20152e126093
Course type: Internship
Contact hours:
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/tools

Course title: Cognitive Modeling
Link: http://campus.uni-tuebingen.de/20152e126641
Course type: Lecture/Excercises
Contact hours:
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. Anna Belardinelli
Additional information
http://www.cm.inf.uni-tuebingen.de/teaching/teaching-overview/wise-2015/vorlesung-cognitive-modeling.html

Course title: Displays  (Course number: INF4177)
Link: http://campus.uni-tuebingen.de/20152e126783
Course type: Lecture/Excercises
Contact hours:
Course coordinator: o. Prof. Dr.-Ing. Hendrik Lensch, Dipl.-Inform. Katharina Schwarz

Course title: Drug Design 1  (Course number: BIOINF4371)
Link: http://campus.uni-tuebingen.de/20152e126648
Course type: Lecture/Excercises
Contact hours:
Course coordinator: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel

Course title: Intelligent Systems - Artificial Intelligence for Robotics
Link: http://campus.uni-tuebingen.de/20152e126095
Course type: Lecture/Excercises
Contact hours:
Target audience
Master students in Computer Science, Mathematics and Physics and associated fields.
Course description
The goal of this class is to go over artificial intelligence techniques in the context of robotics. Robots are artificial agents acting on the physical world through motion; hence a special emphasis will be put on robotic motion generation. We will study multiple components of the action-perception loop in navigation and manipulation tasks. How can robots perceive the environment and localize themselves in it? How can they autonomously generate their motion and construct sophisticated plans to perform complex tasks? We will see how different levels of representations (i.e., symbolic, geometric and dynamic) allow to reason efficiently about their capabilities and the environment. Finally, we will see reinforcement and imitation learning techniques allowing robots to learn new behaviors from humans and improve their behavior over time.
Course title: Logik und Sprachtheorie/Mathematical Logic  
Link: http://campus.uni-tuebingen.de/20152e126079  
Course type: Oberseminar  
Contact hours: 2  
Course coordinator: o. Prof. Dr. phil. Peter Schroeder-Heister  
Course description  
For the programme see http://www.uni-tuebingen.de/en/30477. Colloquium with guest lectures from various areas of mathematical logic and philosophy of language. If you would like to receive announcements of talks, please send an email to thomas.piecha@informatik.uni-tuebingen.de.

Course title: Machine Learning and Artificial Neural Networks in Biomedical Applications  
(Course number: INF4192)  
Link: http://campus.uni-tuebingen.de/20152e126039  
Course type: Seminar  
Contact hours: 2  
Course coordinator: Dr. rer. nat. Martin Spüler  
Course description  
The seminar "Machine Learning" and Artificial Networks in Biomedical Applications" covers current topics of signal processing on neural signals (e.g., fMRI, EEG or MEG) for their use in biomedical applications (e.g., neuroprosthetics of brain-computer interfaces, BCIs) and related topics, as well as methods and algorithms applied in those fields..  
Additional information  
http://www.embedded.uni-tuebingen.de/Seminar-Machine-Learning-and-Artificial-Neural-Ne.1883.0.html

Course title: Mathematical Logic  
(Course number: INF4654)  
Link: http://campus.uni-tuebingen.de/20152e126078  
Course type: Seminar  
Contact hours:  
Course coordinator: o. Prof. Dr. phil. Peter Schroeder-Heister  
Prerequisites  
Solid knowledge of first-order logic.  
Course description  
Selected topics from mathematical and philosophical logic. Solid knowledge in first-order logic is presupposed. Presentations of the participants will take place at several full-day sessions towards the end of the winter semester. Depending on the subject and course studied, this seminar counts for either philosophy or computer science. If (and only if!) all participants are German speaking, presentations can be given in German.

Course title: Rendering  
(Course number: INF4165)  
Link: http://campus.uni-tuebingen.de/20152e126782  
Course type: Lecture/Excercises  
Contact hours: 4  
Course coordinator: o. Prof. Dr.-Ing. Hendrik Lensch, Dipl.-Inf. Fabian Groh, M.Sc. Sebastian Herholz
Biology – Bachelor of Science

Course title: Advanced Animal Evolutionary Ecology I (3116)
Link: http://campus.uni-tuebingen.de/20152e124169
Course type: Block Course
Contact hours:
Course coordinator: o. Prof. Dr. rer. nat. Nico K. Michiels, Dr. rer. nat. Nils Anthes, Ph.D.
Pierre-Paul Bitton, M.Sc. Ulrike Harant
Target audience
MSc - Evolution und Ökologie
Course description
This 6CP (ECTS) module is available to 3rd year Bachelor students to combine multiple small
courses or seminars that by themselves cannot be accepted as individual modules within the
current BSc Biology system. These small courses must in total comply to the requirements for 6
credit points. Generally, we can accept courses offered (i) within the Animal Evolutionary
Ecology group, (ii) within the Institute for Evolution and Ecology or the Evolution and Ecology
Forum Tübingen, (iii) within the university of Tübingen, or (iv) from other national or international
universities. Courses should generally be marked, and connected to an explicit work load
expressed in credit points (ECTS). Moreover, it is required that the courses show connetions to
thereasearch or teaching that is usually offered within our group. Hence, if interested in
combining several small courses into our Advanced module, please contact any of the indicated
supervisors well in time.
Additional information
http://www.evoeco.uni-tuebingen.de

Course title: Colour Vision across Species (Fr) (4084)
Link: http://campus.uni-tuebingen.de/20152e120947
Course type: Seminar
Contact hours: 1
Course coordinator: Dr. rer. nat. Annette Werner
Target audience
For students interested in the field of biology, neuroscience, bioinformatics and medicine
Course description
Colour is an important aspect of vision since it provides reliably information for the fast detection
and identification of objects (e.g. food), for communication, and signaling. Colour vision is
therefore found not only in humans but in all classes of vertebrates and invertebrates. This
seminar will introduce you to the basics of colour research and the evolution of colour vision
across the different species.
Additional information
http://www.annettewerner.com/index.html

Course title: Info Master ZMBP 2015/16
Link: http://campus.uni-tuebingen.de/20152e127715
Course type: Informationsveranstaltung
Contact hours:
Course coordinator: apl. Prof. Dr. rer. nat. Ulrike Zentgraf

Course title: Introduction to Computational Neuroscience / Seminar (3028) (Fr / Mo)
Link: http://campus.uni-tuebingen.de/20152e120948
Course type: Seminar
Contact hours: 2
Course coordinator: o. Prof. Dr. rer. nat. Hanspeter Mallot
Target audience
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.

Course description
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgkin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessable with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar. Please note that for the lecture you have to register separately!

Additional information
http://www.cog.uni-tuebingen.de/

Course title: Introduction to Computational Neuroscience / Vorlesung (3028) (Fr)
Link: http://campus.uni-tuebingen.de/20152e124295
Course type: Lecture
Contact hours: 4
Course coordinator: o. Prof. Dr. rer. nat. Hanspeter Mallot

Target audience
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.

Course description
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgkin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessable with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar.

Additional information
http://www.cog.uni-tuebingen.de/

Course title: Projektmodul Mass Spectrometry-Based Proteomics
Link: http://campus.uni-tuebingen.de/20152e124157
Course type: Block Course
Contact hours:
Course coordinator: Prof. Dr. rer. nat. Boris Macek

Target audience
Bachelor - 3rd year students: Biology, Biochemistry, Bioinformatics

Course description
Practical course in preparation for a Bachelor Thesis. Duration: 8 weeks, by appointment

Additional information
http://www.proteom-centrum.de/index.php?id=9

Course title: W1 Landscape Genetics (3143)
Link: http://campus.uni-tuebingen.de/20152e124229
Course type: Block Course
Contact hours:
Course coordinator: Ph.D. Henri Thomassen

Course description
How are populations different from each other and why? These are questions that have wide relevance to both fundamental evolution and ecology, as well as to conservation issues. Landscape genetics studies these types of questions at the 'landscape scale' in natural populations. It is a rapidly emerging field, investigating the influence of environmental conditions on shaping the spatial patterns of biodiversity. This course will introduce the concepts and approaches important in spatially explicit analyses of evolutionary and ecological mechanisms and conservation efforts. The main course elements and objectives are: 1) to provide a basic understanding of the ecological, evolutionary, and genetic principles necessary to understand biological diversity, and 2) to explore the tools and approaches available in studying spatial patterns of biodiversity. Concepts and recent research results are discussed in theoretical and applied contexts.

Course title: W2 Global Change Ecology (3173)
Link: http://campus.uni-tuebingen.de/20152e125641
Course type: Block Course
Contact hours: 4
Course coordinator: Dr. sc. nat. Madalin Parepa, Prof. Dr. sc. nat. Oliver Bossdorf

Target audience
Biology Bachelor, 3rd year Biology Master, Ecology & Evolution Geoökologie Master

Course description
This course is about the ecological and evolutionary impact of global environmental change: about different kinds of observations (e.g. phenological changes, range shifts, extinctions, evolutionary changes) and different ways of making predictions through models or experiments. We also examine interactions between different drivers of global change, and we discuss some of the ways how humans attempt to fix ecological problems caused by global change. Students thus learn about some fundamental ecological questions, but also about the methods and some of the most controversial debates in current global change research. The seminar is organised as an interactive discussion group, with occasional regular lectures. The course language is English.

Course title: W2 Molecular and Cellular Proteomics (3037)
Link: http://campus.uni-tuebingen.de/20152e124156
Course type: Block Course
Contact hours:
Course coordinator: Prof. Dr. rer. nat. Boris Macek, Dr. rer. nat. Karsten Krug

Target audience
Bachelor - 3rd years students: Biology, Biochemistry, Bioinformatics

Course description
Proteomics investigates global qualitative und quantitative changes of protein expression in cells, tissues or whole organisms and represents one of the youngest fields of molecular biology and medicine. Lecture: The aim of this course is to introduce the student to the basic principles of proteomics and most common methods currently used in global analysis of proteins. Practical Course: Students will get a hands-on experience in sample preparation for mass spectrometry; work on the state-of-the-art equipment for proteome analysis: nanoliquid chromatography (HPLC) coupled to a mass spectrometer, and will be introduced to basic bioinformatics analysis of proteomics data. Seminar: Seminars will cover and discuss the key literature from the field of proteomics which will include both the historical milestone articles and the current research. Topics will correlate to those covered by the lecture courses.

Additional information
http://www.pct.uni-tuebingen.de/

Course title: W3 Macroevolutionary and Microevolutionary Analysis (4007)
Link: http://campus.uni-tuebingen.de/20152e124233
Course type: Block Course
Contact hours:
Course coordinator: Prof. Dr. rer. nat. Katharina Foerster
Target audience
MSc Biologie / Biologie Diplom, BSc Biologie
Prerequisites
none
Course description
1) Macroevolution: This is an introduction to phylogenetic inference from morphological and molecular data. It deals with basic principles such as maximum parsimony, genetic distances and probabilistic methods. 2) Microevolution: This part introduces to the basics of population genetics and quantitative genetics. It deals with population and individual genetic variation, the causes of allele frequency changes, selection, heritability, and adaptation.

Course title: W3 Visual Ecology I (4118)
Link: http://campus.uni-tuebingen.de/20152e124176
Course type: Block Course
Contact hours: 4
Course coordinator: Ph.D. Pierre-Paul Bitton, o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
This course is intended for advanced undergraduates (3rd-Year Bachelor) and Master students. PhD students are also welcome to attend.
Prerequisites
Background in basic zoology is mandatory. A background in ecology, evolution, neurobiology or physics is advantageous.
Course description
The goal of this course is to provide a good background in the evolution of animal visual systems in complex light environments, the role of vision in communication, how animal colouration coevolves with the light environment and more. The focus will be on terrestrial as well as aquatic (marine) systems, with an emphasis on vertebrates. This is a new course which is part of a larger programme in visual ecology. Complementary courses will be developed in the future - in cooperation with other groups in evolutionary ecology and neurobiology. The course will be taught by Dr. Pierre-Paul Bitton, an Canadian scientist with a background in bird visual ecology. The 2-hour lecture will be based on the books listed under “literature”. The 2-hour practical part will offer hands-on experience in spectrophotometry, eye anatomy, eye diversity,
types pigments, structural colours, as well as discussion of current literature and the design of experiments in this field.

Additional information
http://www.evoeco.uni-tuebingen.de/

Course title: W-Schiene (Di, Mi, Do): Introduction to Biostatistics (Einführung in die Biostatistik) (3010)
Link: http://campus.uni-tuebingen.de/20152e124173
Course type: Block Course
Contact hours:
Course coordinator: o. Prof. Dr. rer. nat. Nico K. Michiels, Dr. rer. nat. Nils Anthes

Target audience
MSc 1st year, BSc 3rd year. Students in Biology, Geoecology, Medicine, Biochemistry, Naturwissenschaftliche Archäologie, ...

Prerequisites
Participants will need a laptop with the latest version of JMP, which can be downloaded from the Rechnenzentrum (ZDV) with your usual university user details.

Course description
The content of this module (taught in English) is identical to the W2 Block module “Einführung in die Biostatistik” (taught in German); Both courses are targeted at BSc and MSc students of Biology, Geoecology and other Life Sciences, but the English version more explicitly invites first year MSc students who wish to better prepare for the obligatory Advanced Biometry course (then to be attended in the second year MSc). How do I optimally collect, organise, and analyse biological and ecological datasets? Which problems and pitfalls occur when preparing data for statistical analysis? How to identify the appropriate statistical test for my current dataset? How to interpret and report statistical output? Using the user-friendly software JMP, this course offers an applied introduction to Biostatistics with applications to all quantitative fields of Biology and Ecology. This course is composed of (i) two introductory lectures (1h each) on Wednesday and Thursday, (ii), individual computer tasks where participants apply the acquired knowledge to real statistical datasets, and (iii) a 2h rehearsal seminar of each week’s tasks on Tuesday.

Additional information
http://www.evoeco.uni-tuebingen.de

Course title: W-Schiene (Do) Biotic Interactions: Plant-Animal-Interactions (3132) (will take place in SS 16)
Link: http://campus.uni-tuebingen.de/20152e124625
Course type: Block Course
Contact hours: 3
Course coordinator: Ph.D. Michal Gruntman

Target audience
MSc Biologie, MSc Geoökologie, Diplom und Bachelor Biologie, Geoökologie, Geographie

Course description
What is the role of herbivory in shaping the world around us? How do plants respond to the presence of herbivores? What are the differences between domestic grazing and natural herbivory? Is herbivory always bad for the plants? The course presents the huge variability in plant-herbivore interactions focusing on response at different organization levels, different animal groups and different ecosystems. The course is divided into three parts: The first part concerns with herbivore effects on plants from the individual plant (e.g. defense mechanisms) to the plant community level, introducing theoretical models and case studies on the subjects. The second part studies the differences between various herbivore groups (e.g. large mammals vs. insect herbivory; domestic grazing vs. wild animals). The third part presents the interactions
between herbivory and several other environmental factors in shaping specific landscapes and ecosystems such as the savannah or the Mediterranean region.

**Course title:** W-Schiene (Fr) Advanced Methods in Molecular Biology (3161)  
**Link:** [http://campus.uni-tuebingen.de/20152e124937](http://campus.uni-tuebingen.de/20152e124937)  
**Course type:** Lecture  
**Contact hours:**  
**Course coordinator:** Dr. rer. nat. Edda Roepenack-Lahaye, Dr. rer. nat. Annett Strauß, o. Prof. Dr. rer. nat. Thomas Lahaye  
**Target audience**  
Bachelorstudierende (3. Studienjahr)  
**Course description**  
This module aims at providing an overview of modern methods in Molecular Biology. Advanced methods used e.g. for gene cloning, gene expression analysis, genome editing, protein-DNA as well as protein-protein interaction studies will be presented. In the seminar, selected aspects will be discussed in more detail in the context of a Journal club. The lectures, discussions and presentations will be given in English. At the end of the module an exam will be written covering the content of lectures.

**Course title:** W-Schiene (Fr) Biomimetics of Animal Constructions (3098)  
**Link:** [http://campus.uni-tuebingen.de/20152e124251](http://campus.uni-tuebingen.de/20152e124251)  
**Course type:** Block Course  
**Contact hours:** 4  
**Course coordinator:** Prof. Dr. rer. nat. Oliver Jörg Betz, Prof. Dr. rer. nat. James Nebelsick  
**Target audience**  
Master, Diplom, Lehramt, Biologie, Geologie, Umweltwissenschaften, NWT  
**Prerequisites**  
Bachelor, Grundlagenkenntnisse der Speziellen Zoologie, Kenntnisse in der Literaturrecherche  
**Course description**  

**Course title:** W-Schiene (Fr) Evolutionäre Ökologie der Pflanzen (3154)  
**Link:** [http://campus.uni-tuebingen.de/20152e125639](http://campus.uni-tuebingen.de/20152e125639)  
**Course type:** Block Course  
**Contact hours:** 4  
**Course coordinator:** Ph.D. Johannes Scheepens, Prof. Dr. sc. nat. Oliver Bossdorf  
**Target audience**  
**Course description**  
Der Kurs bietet einen vertieften Einblick in die evolutionäre Ökologie und Populationsbiologie der Pflanzen. Schwerpunkte des Kurses sind u.a. die innerartliche Vielfalt von Pflanzen, ihre verschiedenen Ursachen (phänotypische Plastizität, Mikroevolution, epigenetische Variation, maternale Umwelteffekte) und ihre Bedeutung für Anpassung und Überleben von Pflanzenpopulationen und deren ökologischen Wechselwirkungen, die Evolution verschiedener

**Course title:** W-Schiene (Mi, Fr) Behavioural Ecology I (4052)
**Link:** [http://campus.uni-tuebingen.de/20152e124237](http://campus.uni-tuebingen.de/20152e124237)
**Course type:** Block Course
**Contact hours:**
**Course coordinator:** Prof. Dr. rer. nat. Katharina Foerster
**Target audience**
BSc Bio MSc Bio
**Course description**
The lecture offers a broad introduction to the main topics in behavioural ecology. The participants will deepen their knowledge on selected topics in the seminar. Each participant will prepare an essay (review) and an oral presentation.

**Biology – Master**

**Course title:** Advanced Animal Evolutionary Ecology II (4064)
**Link:** [http://campus.uni-tuebingen.de/20152e124170](http://campus.uni-tuebingen.de/20152e124170)
**Course type:** Block Course
**Contact hours:**
**Course coordinator:** o. Prof. Dr. rer. nat. Nico K. Michiels, Dr. rer. nat. Nils Anthes, Ph.D. Pierre-Paul Bitton, M.Sc. Ulrike Harant
**Target audience**
MSc - Evolution und Ökologie
**Course description**
This 6CP (ECTS) module is available to Master students in Evolution &Ecology to combine multiple small courses or seminars that by themselves cannot be accepted as individual modules within the current MSc system. These small courses must in total comply to the requirements for 6 credit points. Generally, we can accept courses offered (i) within the Animal Evolutionary Ecology group, (ii) within the Institute for Evolution and Ecology or the Evolution and Ecology Forum Tübingen, (iii) within the university of Tübingen, or (iv) from other national or international universities. Courses should generally be marked, and connected to an explicit work load expressed in credit points (ECTS). Moreover, it is required that the courses show connections to their research or teaching that is usually offered within our group. Hence, if interested in combining several small courses into our Advanced module, please contact any of the indicated supervisors well in time.

**Additional information**
http://www.evoeco.uni-tuebingen.de

**Course title:** Advanced Concepts of Cell Biology (4076)
**Link:** [http://campus.uni-tuebingen.de/20152e124263](http://campus.uni-tuebingen.de/20152e124263)
**Course type:** Lecture
**Contact hours:**
Course coordinator: PD Dr. rer. nat. habil. Bernard Moussian, o. Prof. Dr. rer. nat. Alfred Nordheim, apl. Prof. Dr. rer. nat. Tassula Proikas-Cezanne, o. Prof. Dr. rer. nat. Hans-Georg Rammensee, Prof. Dr. rer. nat. Rolf Reuter, Prof. Dr. rer. nat. Stefan Stevanovic, Jun.-Prof. Ph.D. Alexander Weber, Prof. Dr. rer. nat. Boris Macek

Target audience
Studierende des Masters Curriculum “Biologie” Spezielle Zielgruppe: Studierende des MCs Vertiefungsfaches “Molecular Cell Biology & Immunology”

Prerequisites

Course description
The content of this lecture course builds on the fore-running lecture ‘Concepts in Cell Biology’. Recent progress in essential topics of cell biology will be presented by the lecturers. Topics include: nuclear organisation, cell shape regulation, cell polarity, signal transduction, innate immunity, cancer &immunity, viral infection, cell cycle control, regulatory RNAs, vascular cell biology, stem cell biology and autophagy.

Additional information
http://www.pct.uni-tuebingen.de

Course title: Advanced Plant Ecology II (4062)
Link: http://campus.uni-tuebingen.de/20152e124039
Course type: Block Course
Contact hours:
Course coordinator: Prof. Dr. rer. nat. Katja Tielbörger, Ph.D. Mark Bilton, Ph.D. Michal Gruntman

Target audience
MSc Bio / Major Evolution and Ecology

Course description
This module offers the opportunity to combine several small courses, the combined amount of earned credit points should equal 6 ECTS. Only courses with earned credit points (ECTS) can be included. These can be courses (or parts of larger courses) of this group or department, of the EvE (Evolution and Ecology Forum Tübingen), or of other faculties and universities in Germany or abroad. All combinations of course forms are allowed (e.g., lecture, seminar, practical, excursion). As an important prerequisite, all courses that are proposed to be included in this module have to match the general themes of the research and teaching currently done at the Plant Ecology group.

Course title: Advanced Seminar “Meet the Expert” Biol. ModNr: (4003) (Course number: S00SIMMU04)
Link: http://campus.uni-tuebingen.de/20152e124752
Course type: Seminar
Contact hours: 2
Course coordinator: o. Prof. Dr. rer. nat. Hans-Georg Rammensee, Prof. Dr. rer. nat. Stefan Stevanovic

Target audience
Masterstudiengänge Biochemie, Bioinformatik, Biologie, Molekulare Medizin

Prerequisites
Abgeschlossenes Bachelorstudium

Course description
Das Seminar findet begleitend zum Institutsseminar des Interfakultären Instituts für Zellbiologie (gleichzeitig Kolloquium des SFB 685 “Immuntherapie”) statt (dienstags, 17 ct). Jeweils 1 - 2
Studierende betreuen einen Seminartermin (Vorstellung des Gastredners, Diskussion einer Veröffentlichung des Redners, Teilnahme am Vortrag im Rahmen des “Zellbiologisch-Immunologisches Kolloquiums”, Fragerunde, Nachsitzung). Die Vorträge finden im Seminarraum 2.033/2.034, Verfügungsgebäude, Auf der Morgenstelle 15, statt. The seminar accompanies the SFB-seminar series that is organized by the Institute of Cell Biology (Department of Immunology). Pairs of students are responsible for presenting the work of the guest speaker in advance. They are expected to participate actively in the discussion of the lecture.

Course title: Aktuelle Themen der Zell- und Entwicklungsbiologie - Current Topics in Developmental Genetics (4016)
Link: http://campus.uni-tuebingen.de/20152e121036
Course type: Block Course
Contact hours: 2
Course coordinator: Dr. rer. nat. Anke Beermann, Dipl.-Agrarbiol. Simone Früholz, Dr. rer. nat. Christopher Grefen, PD Dr. rer. nat. habil. Bernard Moussian, Dr. rer. nat. Sabine Müller, N.N., N.N., Dr. rer. nat. Peter Pimpl, Dr. rer. nat. Laura Ragni, Prof. Dr. rer. nat. Rolf Reuter, Dr. rer. nat. Sandra Richter, Hon.-Prof. Dr. rer. nat. Ralf Sommer, Dr. rer. nat. Detlef Weigel, o. Prof. Dr. rer. nat. Peter Pimpl, Dr. rer. nat. Laura Ragni
Target audience
Themenmodul im Masterprogramm des ZMBP. Diplomanden und Doktoranden werden ebenfalls zugelassen, Masterstudenten haben aber Vorrang.

Prerequisites
Bachelor

Course description
Überblick über den Stand der Forschung und aktuelle Forschungsthemen in der molekularen Zellbiologie.

Course title: Analysing Publications: Literature Seminar of Molecular Cell Biology (4114)
Link: http://campus.uni-tuebingen.de/20152e124840
Course type: Seminar
Contact hours: 2
Course coordinator: o. Prof. Dr. rer. nat. Alfred Nordheim, apl. Prof. Dr. rer. nat. Tassula Proikas-Cezanne
Target audience
Studierende des MSc Studienganges “Molecular Cell Biology & Immunology”.

Prerequisites
Grundkenntnisse der molekularen Zellbiologie.

Course description

Course title: Colour Vision across Species (Fr) (4084)
Link: http://campus.uni-tuebingen.de/20152e120947
Course type: Seminar
Contact hours: 1
Course coordinator: Dr. rer. nat. Annette Werner
Target audience
For students interested in the field of biology, neuroscience, bioinformatics and medicine

Course description
Colour is an important aspect of vision since it provides reliably information for the fast detection
and identification of objects (e.g. food), for communication, and signaling. Colour vision is therefore found not only in humans but in all classes of vertebrates and invertebrates. This seminar will introduce you to the basics of colour research and the evolution of colour vision across the different species.

**Additional information**
http://www.annettewerner.com/index.html

**Course title:** Comparative innate immunity in animals and plants, Themenmodul 4026  
**Link:** http://campus.uni-tuebingen.de/20152e124380  
**Course type:** Lecture/Excercises  
**Contact hours:** 3  
**Course coordinator:** o. Prof. Dr. rer. nat. Thorsten Nürnberg, Prof. Dr. rer. nat. Georg Felix, Dr. rer. nat. Andrea Gust, Dr. rer. nat. Birgit Kemmerling  
**Target audience**  
M.Sc. in Biochemistry or Biology  

**Course description**  
Module comprises a lecture, seminar and tutorial. The lecture concerns current topics of innate immunity in animals and plants. The seminar consolidates the topics covered in the lecture by using original publications. Content of the tutorial will be writing of a research proposal based on the original publications covered in the seminar. The seminar and tutorial will take place in the summer semester. Final schedule for the seminar and the discussion of proposals within the tutorial will be according to agreement.

**Course title:** Current Topics in Proteome Research  
**Link:** http://campus.uni-tuebingen.de/20152e124155  
**Course type:** Seminar  
**Contact hours:**  
**Course coordinator:** Prof. Dr. rer. nat. Boris Macek, Dr. rer. nat. Karsten Krug  
**Target audience**  
The target group are M.Sc. students (NOT those from Cell Biology/Immunology) and Ph.D. students.  

**Course description**  
Proteomics investigates global qualitative and quantitative changes of protein expression in cells, tissues or whole organisms and represents one of the youngest fields of molecular biology and medicine. Aim of this course is to acquaint the participants with current, high-impact research literature from the field of proteome research and biology. The participants will take turns with active researchers from the field (PCT group members) and will have to present and discuss a research paper from one of the fields: proteogenomics, phosphoproteomics, global analysis of signal transduction, key technology developments, sample preparation and enrichment protocols, microbial proteomics. The target group are M.Sc. students (NOT those from Cell Biology/Immunology) and Ph.D. students.

**Course title:** Evolution and Ecology Seminar  
**Link:** http://campus.uni-tuebingen.de/20152e124041  
**Course type:** AG/Kolloquium  
**Contact hours:** 2  
**Course coordinator:** Ph.D. Mark Bilton, Prof. Dr. rer. nat. Katja Tielbörger  
**Target audience**  
This seminar specifically targets all Tübingen students (undergrad, postgrad) interested in Ecology and Evolution - this is your direct access to learn more about ongoing local research and establish contacts.  

**Course description**
This is the scientific colloquium of the Institute for Evolution and Ecology. Speakers are early career researchers as well as senior scientists in the broad fields of Ecology, Biodiversity and Evolution. On the one hand, this is the platform where scientists from within Tübingen (University, Max Planck Institutes) disseminate and share their research topics with a broader audience. On the other hand, we frequently invite external guest speakers to present novel findings and research perspectives. Moreover, it is the place where scientists working in the fields of ecology and evolution meet and discuss their most recent findings.

**Course title**: Frontiers in Systems Neurophysiology  
**Link**: [http://campus.uni-tuebingen.de/20152e125818](http://campus.uni-tuebingen.de/20152e125818)  
**Course type**: Seminar  
**Contact hours**:  
**Course coordinator**: Prof. Dr. rer. nat. Andreas Nieder

**Course title**: Introduction to Computational Neuroscience / Seminar (3028) (Fr / Mo)  
**Link**: [http://campus.uni-tuebingen.de/20152e120948](http://campus.uni-tuebingen.de/20152e120948)  
**Course type**: Seminar  
**Contact hours**: 2  
**Course coordinator**: o. Prof. Dr. rer. nat. Hanspeter Mallot  
**Target audience**  
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.  
**Course description**  
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgkin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessible with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar. Please note that for the lecture you have to register separately!  
**Additional information**  
[http://www.cog.uni-tuebingen.de/](http://www.cog.uni-tuebingen.de/)

**Course title**: Introduction to Computational Neuroscience / Vorlesung (3028) (Fr)  
**Link**: [http://campus.uni-tuebingen.de/20152e124295](http://campus.uni-tuebingen.de/20152e124295)  
**Course type**: Lecture  
**Contact hours**: 4  
**Course coordinator**: o. Prof. Dr. rer. nat. Hanspeter Mallot  
**Target audience**  
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional)
NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.

Course description
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgekin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessible with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar.

Additional information
http://www.cog.uni-tuebingen.de/

Course title: Journal Club in Plant Ecology (Group Tielbörger)
Link: http://campus.uni-tuebingen.de/20152e124034
Course type: AG/Kolloquium
Contact hours:
Target audience
The journal club is suited for BSc, MSc and PhD students in ecology and evolution
Course description
In this journal club, we will read and discuss articles from the primary plant ecological literature. The articles may cover a broad range of topics, from fundamental population and community ecology, to evolutionary or genetic questions, or more applied areas such as global change and plant conservation. We will discuss the biology and critically assess the methods used. Participants will thus learn about a range of scientific questions and methods, and at the same time keep track of some of the key research frontiers in this field. Participants will in turn act as presenters and critics.

Course title: Lab Methods in Microbiological Research (4124)
Link: http://campus.uni-tuebingen.de/20152e125826
Course type: Internship
Contact hours:
Course coordinator: apl. Prof. Dr. rer. nat. Christoph Mayer, o. Prof. Dr. rer. nat. Wolfgang Wohlleben
Prerequisites
Basics in biology, chemistry and biochemistry. Participation in the Module “Microbiology”
Course description
Module Content Investigation of microbial physiology Quantification of microbial activities Active participation in a current research project and to the colloquium of the department

Course title: Laborpraktikum Innate & Adaptive Immunity  (Course number: S07PIMMU01)
Link: http://campus.uni-tuebingen.de/20152e124738
Course type: Internship
Contact hours: 16
Course coordinator: o. Prof. Dr. rer. nat. Hans-Georg Rammensee, Prof. Dr. rer. nat. Stefan Stevanovic, Dr. rer. nat. Cécile Gouttefangeas, Prof. Dr. med. Dipl.-Phys. Gundram Jung, apl. Prof. Dr. rer. nat. Oliver Planz, Jun.-Prof. Ph.D. Alexander Weber
Target audience

**Prerequisites**
Abgeschlossenes Bachelorstudium

**Course description**
Laborpraktikum Immunologie als Arbeitsgruppenpraktikum mit begleitenden Mitarbeiterseminaren

**Course title**: Laborpraktikum Mikrobiologie
**Link**: [http://campus.uni-tuebingen.de/20152e124549](http://campus.uni-tuebingen.de/20152e124549)
**Course type**: Practical Course
**Contact hours**: 16
**Course coordinator**: Prof. Dr. rer. nat. Karl Forchhammer, Dipl.-Biol. Andreas Jan Bornikoel, Dipl.-Biol. Waldemar Hauf, MA Philip Spät

**Course description**
Laboratory manuals for fortgeschrittenen students of microbiology / molecular biology / biochemistry. Training in independent scientific method and deepening of molecular biological, microbiological methods. Laborpraktikum für fortgeschrittene Studenten der Mikrobiologie/Molekularbiologie/Biochemie. Einarbeitung in selbständige wissenschaftliche Arbeitsweise und Vertiefung molekularbiologisch-mikrobiologischer Methoden.

**Course title**: Laborpraktikum Tumor Immunology (Biol.-Modulnr. 4051) (Course number: S07PIMMU02)
**Link**: [http://campus.uni-tuebingen.de/20152e124737](http://campus.uni-tuebingen.de/20152e124737)
**Course type**: Internship
**Contact hours**: 8
**Course coordinator**: o. Prof. Dr. rer. nat. Hans-Georg Rammensee, Prof. Dr. rer. nat. Stefan Stevanovic, Dr. rer. nat. Cécile Gouttefangeas, apl. Prof. Dr. rer. nat. Oliver Planz, Jun.-Prof. Ph.D. Alexander Weber

**Target audience**
Studierende der Masterstudiengänge Biologie, Biochemie, Bioinformatik und Molekulare Medizin (1. oder 2. Studienjahr)

**Prerequisites**
Abgeschlossenes Bachelorstudium

**Course description**
Arbeitsgruppenpraktikum mit begleitenden Mitarbeiterseminaren Anfragen an: stefan.stevanovic@uni-tuebingen.de

**Course title**: Lecture “Advanced Immunology” (Immunologie für Fortgeschritten; nur im WS) Biol ModNr: (4002)
**Link**: [http://campus.uni-tuebingen.de/20152e124731](http://campus.uni-tuebingen.de/20152e124731)
**Course type**: Lecture
**Contact hours**: 2
**Course coordinator**: Dr. rer. nat. Stella E. Autenrieth, Dr. rer. nat. Cécile Gouttefangeas, Prof. Dr. med. Dominik Hartl, Prof. Dr. med. Dipl.-Phys. Gundram Jung, o. Prof. Dr.-Ing. Oliver Kohlbacher, o. Prof. Dr. rer. nat. Thorsten Nümberger, apl. Prof. Dr. rer. nat. Oliver Planz, Prof. Dr. rer. nat. Stefan Stevanovic, Prof. Dr. med. Dr. rer. nat. Ghazaleh Tabatabai, Jun.-Prof. Ph.D. Alexander Weber, Prof. Dr. med. Lars Zender, o. Prof. Dr. rer. nat. Hans-Georg Rammensee

**Target audience**
Studierende der Masterstudiengänge Biologie, Bioinformatik, Biochemie und Molekulare Medizin sowie Studierende des Fachs Humanmedizin. The lecture “Advanced Immunology” is intended for Master students of biology, bioinformatics, biochemistry and molecular medicine. It
is also of interest for students of medicine.

**Prerequisites**
Abgeschlossenes Bachelorstudium

**Course description**
Fortgeschrittene Vorlesung für Masterstudiengänge Biologie, Biochemie, Bioinformatik und Molekularmedizin sowie Studierende des Fachs Humanmedizin. Advanced Immunology (Vorlesung) findet nur im WS statt.

**Course title**: Mikrobiologisches Großpraktikum/Organism. Interaktionen  
**Link**: http://campus.uni-tuebingen.de/20152e124548  
**Course type**: Großpraktikum  
**Contact hours**: 30  
**Course coordinator**: Prof. Dr. rer. nat. Karl Forchhammer, Dipl.-Biol. Andreas Jan Bornikoel, Dipl.-Biol. Waldemar Hauf, PD Dr. rer. nat. Iris Maldener, MA Philip Spät  
**Target audience**: Master Biologie

**Course description**
Erlernen allgemeiner und spezieller Techniken der Mikrobiologie und Molekularbiologie der Prokaryoten. Erlernen des eigenständigen wissenschaftlichen Arbeitens und wissenschaftlicher Dokumentation. Vorbereitung zur Masterarbeit

**Course title**: Moderne Methoden der Durchflusszytometrie (4033)  
**Link**: http://campus.uni-tuebingen.de/20152e124637  
**Course type**: Block Course  
**Contact hours**:  
**Course coordinator**: Dr. Kenneth Berendzen  
**Target audience**: MSc. 1. - 3. Semester

**Course description**
Introduction to flow cytometry . Introduction to independent work with a flow cytometer  
Introduction to sample preparation and measurement, as well as analysis and interpretation of results

**Course title**: Modul Project Conceptualization (4012) MEEMS  
**Link**: http://campus.uni-tuebingen.de/20152e124175  
**Course type**: Block Course  
**Contact hours**:  
**Course coordinator**: o. Prof. Dr. rer. nat. Nico K. Michiels  
**Target audience**: Pflichtmodul MSc Biologie - Schwerpunkt Evolution und Ökologie Compulsory module MSc Biology - Major in Evolution and Ecology

**Course description**
In this module, MSc students present the details of their MSc thesis project in two separate presentations. Presentation 1 ideally takes place before the practical work for the thesis project has actually started. In this presentation, the candidate presents his/her planned project as if it were a grant application. The emphasis is on background information (literature, previous work), the envisaged sampling or experimental design or any other relevant methodology, expected outcome and future perspectives. Presentation 2 ideally takes place after data collection and analysis for the Msc thesis has finished, shortly before or after thesis submission. There are four opportunities to give these presentations each year: On the last Friday before a semester term starts and on the first Monday after a semester term has finished, both for the summer and winter term. The event is called “MEEMS” (Meeting of the Ecology and Evolution Master
Students). The organizer of the module contacts ALL MSc students who have not yet present both talks EVERY time a MEEMS is coming up and offers the option to register for a presentation (1st or 2nd). The final programme of a MEEMS is sent to all members of the Institute for Evolution and Ecology. All PhD students and scientists contribute to the evaluation of the talks. These evaluations are used to determine the mark. After both presentations have been presented, the average mark determines the mark for the module. It is recommended to register for this module in CAMPUS. The module organizer (N. Michiels) will check and do this for all students who present their second talk in a MEEMS.

Course title: Principles of Molecular Cell Biology (4138/4039)
Link: http://campus.uni-tuebingen.de/20152e124846
Course type: Lecture
Contact hours:
Course coordinator: PD Dr. rer. nat. Wolfram Antonin, Prof. Dr. rer. nat. Boris Macek, apl. Prof. Dr. rer. nat. Tassula Proikas-Cezanne, Prof. Dr. rer. nat. Rolf Reuter, o. Prof. Dr. rer. nat. Alfred Nordheim
Target audience
Alle Studierende des MSc Curriculums. Pflichtmodul für alle Teilnehmer des MSc Curriculums "Molecular Cell Biology &Immunology".
Prerequisites
Aufnahme in den MSc Studiengang “Molecular Cell Biology &Immunology”. Diese Veranstaltung (bestehend aus beiden zusammen gehörigen Teilen: Vorlesung + Seminar) ist ein Pflichtmodul des MSc Curriculums “Molecular Cell Biology &Immunology”.
Course description
Die Vorlesung behandelt wichtige ausgewählte Problemstellungen der Zellbiologie, die von genereller Bedeutung für ein Verständnis der eukaryontischen Zelle sind. Das zugehörige Seminar greift die in der Vorlesung behandelten Themen auf, indem jeweils eine aktuelle Veröffentlichung aus dem Bereich der Molekularen Zellbiologie von den Studierenden präsentiert werden.

Course title: Project Module MSc Molecular Cell Biology &Immunology (W3+W4) (4105)
Link: http://campus.uni-tuebingen.de/20152e124836
Course type: Block Course
Contact hours:
Course coordinator: PD Dr. rer. nat. Wolfram Antonin, Prof. Dr. rer. nat. Boris Macek, PD Dr. rer. nat. habil. Bernard Moussian, apl. Prof. Dr. rer. nat. Tassula Proikas-Cezanne, o. Prof. Dr. rer. nat. Hans-Georg Rammensee, Prof. Dr. rer. nat. Rolf Reuter, Prof. Dr. rer. nat. Stefan Stevanovic, o. Prof. Dr. rer. nat. Alfred Nordheim
Target audience
Studierende des MSc Curriculums “Biologie” mit dem Vertiefungsfach “Molecular Cell Biology &Immunology”.
Prerequisites
Pflichtmodule 4138, 4139 und 4051 erfolgreich abgeschlossen.
Course description
This practical course (4105) prepares for the subsequent MSc thesis project. Module 4105 will be oriented on the research topic to be addressed during the MSc thesis project. Accordingly, the course is intended to be supervised by the instructor who will also supervise the MSc thesis project.

Course title: Research Module MSc Molecular Cell Biology &Immunology (W1+W2) (4104)
Link: http://campus.uni-tuebingen.de/20152e124837
Course type: Block Course
Contact hours:
Course coordinator: o. Prof. Dr. rer. nat. Alfred Nordheim, PD Dr. rer. nat. Wolfram Antonin, Prof. Dr. rer. nat. Boris Macek, PD Dr. rer. nat. habil. Bernard Moussian, apl. Prof. Dr. rer. nat. Tassula Proikas-Cezanne, o. Prof. Dr. rer. nat. Hans-Georg Rammensee, Prof. Dr. rer. nat. Rolf Reuter, Prof. Dr. rer. nat. Stefan Stevanovic

Target audience
Studierende des MSc Curriculums “Molecular Cell Biology & Immunology”.

Prerequisites
Teilnahmevoraussetzung: Pflichtmodule 4138, 4139 und 4051 erfolgreich abgeschlossen.

Course description
This practical course offers the student the opportunity to gain comprehensive practical experience in pursuing a research-directed project in the field of cell biology and immunology.

Course title: Scientific Writing (in englischer Sprache) (Ferienveranstaltung)
Link: http://campus.uni-tuebingen.de/20152e121025
Course type: Seminar
Contact hours: 2
Course coordinator: Dr. rer. nat. Laura Ragni, o. Prof. Dr. rer. nat. Gerd Jürgens

Target audience
Master (summer semester) and PhD students (winter semester)

Prerequisites
Requirement: laboratory experience in biology (better plant biology)

Course description
How to write scientific manuscripts, grant proposals and reports Lectures + exercises

Course title: The Hilgendorf Lecture
Link: http://campus.uni-tuebingen.de/20152e124166
Course type: Colloquium
Contact hours: 2
Course coordinator: Dr. rer. nat. Christine Hein, o. Prof. Dr. rer. nat. Nico K. Michiels

Target audience
Die EvE Hilgendorf Lecture is open for all interested persons.

Course description
Internationally acclaimed external guests present their latest work in the field of Evolutionary Biology and Ecology.

Additional information

Course title: W1 Landscape Genetics (3143)
Link: http://campus.uni-tuebingen.de/20152e124229
Course type: Block Course
Contact hours:
Course coordinator: Ph.D. Henri Thomassen

Course description
How are populations different from each other and why? These are questions that have wide relevance to both fundamental evolution and ecology, as well as to conservation issues. Landscape genetics studies these types of questions at the ‘landscape scale’ in natural populations. It is a rapidly emerging field, investigating the influence of environmental conditions on shaping the spatial patterns of biodiversity. This course will introduce the concepts and approaches important in spatially explicit analyses of evolutionary and ecological mechanisms and conservation efforts. The main course elements and objectives are: 1) to provide a basic
understanding of the ecological, evolutionary, and genetic principles necessary to understand biological diversity, and 2) to explore the tools and approaches available in studying spatial patterns of biodiversity. Concepts and recent research results are discussed in theoretical and applied contexts.

**Course title:** W1 Molecular Mechanisms of Mechanosensing (4190)
**Link:** http://campus.uni-tuebingen.de/20152e126669
**Course type:** Lecture/Exercises
**Contact hours:**
**Course coordinator:** Dr. rer. nat. Sven Hülsmann

**Target audience**
This course targets master students (semester 1 and 3) with an interest in developmental cell biology.

**Course description**
In this course students will learn and apply principle cell biological and genetic techniques to elucidate general molecular mechanisms that regulate the behaviour of cells during Drosophila development. In particular, we are investigating how an actin-binding protein might function as a cellular mechanosensor. The learning approach is problem-based, i.e. students develop small projects, which they test experimentally. The course comprises lectures and seminars, in which students acquire the theoretical background, and practical classes, in which students test their hypotheses experimentally. The results will be analysed and presented in a short report (with the format of a scientific paper).

**Course title:** W2 Advanced Biometry (4008)
**Link:** http://campus.uni-tuebingen.de/20152e124098
**Course type:** Block Course
**Contact hours:**
**Course coordinator:** Prof. Dr. rer. nat. Katja Tielbörger, Ph.D. Mark Bilton

**Target audience**
Pflichtmodul für Masters mit Schwerpunkt Evolution und Ökologie, empfohlen fürs 2. Jahr
Master Obligatory course for Masters in Evolution and Ecology recommended for the 2nd year
Master open for others

**Prerequisites**
Preconditions for participation are a basic knowledge in statistics and experimental design.

**Course description**
This course introduces to state-of-the art methods in the statistical analysis of data deriving from biological experiments and observations. It will also touch upon aspects of experimental design. The aim of the course is to provide a toolbox of statistics and thus enable students in Evolution and Ecology and other subjects to decide independently which methods are the most appropriate to use for a particular dataset and how to practically apply some of them. The course is composed of lectures introducing the theoretical background and plenty of coursework for getting hands-on experience with the methods.

**Course title:** W2 Global Change Ecology (3173)
**Link:** http://campus.uni-tuebingen.de/20152e125641
**Course type:** Block Course
**Contact hours:** 4
**Course coordinator:** Dr. sc. nat. Madalin Parepa, Prof. Dr. sc. nat. Oliver Bossdorf

**Target audience**
Biology Bachelor, 3rd year Biology Master, Ecology &Evolution Geoökologie Master

**Course description**
This course is about the ecological and evolutionary impact of global environmental change:
about different kinds of observations (e.g. phenological changes, range shifts, extinctions, evolutionary changes) and different ways of making predictions through models or experiments. We also examine interactions between different drivers of global change, and we discuss some of the ways how humans attempt to fix ecological problems caused by global change. Students thus learn about some fundamental ecological questions, but also about the methods and some of the most controversial debates in current global change research. The seminar is organised as an interactive discussion group, with occasional regular lectures. The course language is English.

**Course title:** W3 “Synthetische Biologie” (4135)  
**Link:** [http://campus.uni-tuebingen.de/20152e124936](http://campus.uni-tuebingen.de/20152e124936)  
**Course type:** Block Course  
**Contact hours:**  
**Course coordinator:** o. Prof. Dr. rer. nat. Thomas Lahaye, Dr. rer. nat. Robert Morbitzer, Dr. rer. nat. Annett Strauß  
**Target audience**  
Master Biologie (1.-3. Fachsemester)  
**Course description**  
This module give an introduction into methods used in synthetic biology. Topics of our course will be the generation and use of so-called designer TALEs (Transcription Activator-Like Effectors; dTALEs) and TAL nucleases in in vitro and in planta assays. We will demonstrate their function as transcriptional activators and tools for genome engineering, respectively. Moreover, we will introduce to you the CLC Main Workbench software, an important tool for in silico cloning and sequence analyses.

**Course title:** W3 Macroevolutionary and Microevolutionary Analysis (4007)  
**Link:** [http://campus.uni-tuebingen.de/20152e124233](http://campus.uni-tuebingen.de/20152e124233)  
**Course type:** Block Course  
**Contact hours:**  
**Course coordinator:** Prof. Dr. rer. nat. Katharina Foerster  
**Target audience**  
MSc Biologie / Biologie Diplom, BSc Biologie  
**Prerequisites**  
none  
**Course description**  
1) Macroevolution: This is an introduction to phylogenetic inference from morphological and molecular data. It deals with basic principles such as maximum parsimony, genetic distances and probabilistic methods. 2) Microevolution: This part introduces to the basics of population genetics and quantitative genetics. It deals with population and individual genetic variation, the causes of allele frequency changes, selection, heritability, and adaptation.

**Course title:** W3 Modul: Cell Differentiation (4140)  
**Link:** [http://campus.uni-tuebingen.de/20152e126677](http://campus.uni-tuebingen.de/20152e126677)  
**Course type:** Block Course  
**Contact hours:**  
**Course coordinator:** PD Dr. rer. nat. habil. Bernard Moussian  
**Course description**  
In diesem Modul sollen verschiedene Differenzierungsmechanismen unter anderem beim Modelorganismus Drosophila melanogaster studiert werden. Entsprechende Themen werden dabei historisch anhand von Publikationen abgegrenzt. Dabei ist es wichtig die Fragestellungen zu erkennen und zu formulieren, die zugrundeliegenden Daten zu verstehen und einzuordnen und die Schlussfolgerungen zu ziehen. Über die einzelnen Schritte werden die Student/innen
Course title: W3 Visual Ecology I (4118)
Link: http://campus.uni-tuebingen.de/20152e124176
Course type: Block Course
Contact hours: 4
Course coordinator: Ph.D. Pierre-Paul Bitton, o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
This course is intended for advanced undergraduates (3rd-Year Bachelor) and Master students. PhD students are also welcome to attend.
Prerequisites
Background in basic zoology is mandatory. A background in ecology, evolution, neurobiology or physics is advantageous.
Course description
The goal of this course is to provide a good background in the evolution of animal visual systems in complex light environments, the role of vision in communication, how animal colouration coevolves with the light environment and more. The focus will be on terrestrial as well as aquatic (marine) systems, with an emphasis on vertebrates. This is a new course which is part of a larger programme in visual ecology. Complementary courses will be developed in the future - in cooperation with other groups in evolutionary ecology and neurobiology. The course will be taught by Dr. Pierre-Paul Bitton, an Canadian scientist with a background in bird visual ecology. The 2-hour lecture will be based on the books listed unter “literature”. The 2-hour practical part will offer hands-on experience in spectrophotometry, eye anatomy, eye diversity, types pigments, structural colours, as well as discussion of current literature and the design of experiments in this field.
Additional information
http://www.evoeco.uni-tuebingen.de/

Course title: W3 Visual Ecology II (4148) findet erst in WiSe 2016/2017 statt
Link: http://campus.uni-tuebingen.de/20152e124172
Course type: Block Course
Contact hours: 4
Course coordinator: Ph.D. Pierre-Paul Bitton, o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
Biology, Geoecology, and Environmental Science Master and Bachelor students
Course description
How do animals see the world? As humans we often assume the world is as we perceive it - however vision is highly adaptable and suited to the common visual tasks of a given species. Polarded light vision, ultraviolet colours, red fluorescence, motion based detection and super acuity are all prevalent in the animal world. In this course we examine the vision of animals and see how they perceive the world around them.
Additional information
http://www.evoeco.uni-tuebingen.de/

Course title: W4 - The Cell Nucleus (4138/4072)
Link: http://campus.uni-tuebingen.de/20152e124839
Course type: Block Course
Contact hours:
Course coordinator: o. Prof. Dr. rer. nat. Alfred Nordheim, Mitarbeiter
Target audience
Studierende des MSc Studienganges “Molecular Cell Biology &Immunology”. Das Modul 4072
(The Cell Nucleus) ist ein Pflichtmodul für die Studierenden des MSc Studienganges “Molecular Cell Biology & Immunology”.

**Prerequisites**
Abschluss BSc Curriculum. Aufnahme in MSc Curriculum “Biologie” (speziell: Vertiefungsfach ‘Molecular Cell Biology & Immunology’).

**Course description**
This practical course will provide hands-on experience with ongoing research projects focusing on the topic of functions of the cell nucleus. Pairs of students (‘tandems’) will be supervised by experienced researchers (post-docs, graduate students). Different research laboratories of Tuebingen research institutions will be involved in the supervision.

**Course title:** W-Schiene (Di, Mi, Do): Introduction to Biostatistics (Einführung in die Biostatistik) (3010)
**Link:** [http://campus.uni-tuebingen.de/20152e124173](http://campus.uni-tuebingen.de/20152e124173)

**Course type:** Block Course

**Contact hours:**

**Course coordinator:** o. Prof. Dr. rer. nat. Nico K. Michiels, Dr. rer. nat. Nils Anthes

**Target audience**
MSc 1st year, BSc 3rd year. Students in Biology, Geoecology, Medicine, Biochemistry, Naturwissenschaftliche Archäologie, ...

**Prerequisites**
Participants will need a laptop with the latest version of JMP, which can be downloaded from the Rechnenzentrum (ZDV) with your usual university user details.

**Course description**
The content of this module (taught in English) is identical to the W2 Block module “Einführung in die Biostatistik” (taught in German); Both courses are targeted at BSc and MSc students of Biology, Geoecology and other Life Sciences, but the English version more explicitly invites first year MSc students who wish to better prepare for the obligatory Advanced Biometry course (then to be attended in the second year MSc). How do I optimally collect, organise, and analyse biological and ecological datasets? Which problems and pitfalls occur when preparing data for statistical analysis? How to identify the appropriate statistical test for my current dataset? How to interpret and report statistical output? Using the user-friendly software JMP, this course offers an applied introduction to Biostatistics with applications to all quantitative fields of Biology and Ecology. This course is composed of (i) two introductory lectures (1h each) on Wednesday and Thursday, (ii) individual computer tasks where participants apply the acquired knowledge to real statistical datasets, and (iii) a 2h rehearsal seminar of each week’s tasks on Tuesday.

**Additional information**
[http://www.evoeco.uni-tuebingen.de](http://www.evoeco.uni-tuebingen.de)

**Course title:** W-Schiene (Do) Biotic Interactions: Plant-Animal-Interactions (3132) (will take place in SS 16)
**Link:** [http://campus.uni-tuebingen.de/20152e124625](http://campus.uni-tuebingen.de/20152e124625)

**Course type:** Block Course

**Contact hours:** 3

**Course coordinator:** Ph.D. Michal Gruntman

**Target audience**
MSc Biologie, MSc Geoökologie, Diplom und Bachelor Biologie, Geoökologie, Geographie

**Course description**
What is the role of herbivory in shaping the world around us? How do plants respond to the presence of herbivores? What are the differences between domestic grazing and natural herbivory? Is herbivory always bad for the plants? The course presents the huge variability in plant-herbivore interactions focusing on response at different organization levels, different
animal groups and different ecosystems. The course is divided into three parts: The first part concerns with herbivore effects on plants from the individual plant (e.g. defense mechanisms) to the plant community level, introducing theoretical models and case studies on the subjects. The second part studies the differences between various herbivore groups (e.g. large mammals vs. insect herbivory; domestic grazing vs. wild animals). The third part presents the interactions between herbivory and several other environmental factors in shaping specific landscapes and ecosystems such as the savannah or the Mediterranean region.

Course title: W-Schiene (Fr) Biomimetics of Animal Constructions (3098)
Link: http://campus.uni-tuebingen.de/20152e124251
Course type: Block Course
Contact hours: 4
Course coordinator: Prof. Dr. rer. nat. Oliver Jörg Betz, Prof. Dr. rer. nat. James Nebelsick
Target audience
Master, Diplom, Lehramt, Biologie, Geologie, Umweltwissenschaften, NWT
Prerequisites
Bachelor, Grundlagenkenntnisse der Speziellen Zoologie, Kenntnisse in der Literaturrecherche
Course description

Course title: W-Schiene (Fr) Evolutionäre Ökologie der Pflanzen (3154)
Link: http://campus.uni-tuebingen.de/20152e125639
Course type: Block Course
Contact hours: 4
Course coordinator: Ph.D. Johannes Scheepens, Prof. Dr. sc. nat. Oliver Bossdorf
Target audience
Course description

Course title: W-Schiene (Mi, Fr) Behavioural Ecology I (4052)
**Course type:** Block Course

**Contact hours:**

**Course coordinator:** Prof. Dr. rer. nat. Katharina Foerster

**Target audience**
BSc Bio MSc Bio

**Course description**
The lecture offers a broad introduction to the main topics in behavioural ecology. The participants will deepen their knowledge on selected topics in the seminar. Each participant will prepare an essay (review) and an oral presentation.

**Course title:** W-Schiene (Mo, Fr): Essentials in Evolutionary Biology (4009)

**Link:** http://campus.uni-tuebingen.de/20152e124165

**Course type:** Block Course

**Contact hours:** 4

**Course coordinator:** o. Prof. Dr. rer. nat. Nico K. Michiels

**Target audience**
This class is primarily aimed at Students in the Master in Biology programm (major in Evolution and Ecology). It is, however, also a good module for any other student in Biology (Bachelor or Master) and Geosciences (particularly Geo-Ecology, Palaeontology and Archaeology).

**Course description**
What is evolution? Although being simple in its essence, evolution has wide-ranging consequences across biology. Dealing with this is the purpose of this module. The seminar part (Mondays 1600-1800, room and schedule will be announced during first session) provides talks given by selected speakers from Tübingen or elswhere, including top-scientists from abroad. Students are expected to attend at least 10 of these presentations and submit an abstract, which will be edited and marked. The lecture (Fridays 0800-1000, room N12, E-building Biology, 3rd floor) introduces essentials of modern evolutionary biology, with an emphasis on short-term processes (selection, adaptation, development) as well as long-term processes (speciation, extinction, phylogeny). This module is compulsory for MSc students in Evolution and Ecology.

**Geoecology – Bachelor (major)**

**Course title:** Dynamik der Erde (V)

**Link:** http://campus.uni-tuebingen.de/20152e121520

**Course type:** Lecture

**Contact hours:** 4

**Course coordinator:** Prof. Dr. phil. Todd Ehlers

**Course description**

**Course title:** Klimatologie (VÜ)

**Link:** http://campus.uni-tuebingen.de/20152e121496

**Course type:** Lecture/Exercises

**Contact hours:** 3

**Course coordinator:** Prof. Dr. Hervé Bocherens, Dr. rer. nat. Dorothee Drucker-Bocherens, Dr. rer. nat. Hartmut Schulz, Prof. Dr. rer. nat. Jens Bange, PD Dr. rer. nat. Dr. rer. nat. Wilfried
Konrad, Jun.-Prof. Dr. rer. nat. Ilka Weikusat

Course title: Ökosysteme der Erde (VÜ)
Link: http://campus.uni-tuebingen.de/20152e121481
Course type: Lecture/Exercises
Contact hours: 3
Course coordinator: Prof. Dr. Hervé Bocherens, Dr. rer. nat. Dorothee Drucker-Bocherens, Prof. Dr. Yvonne Oelmann

Course title: The Hilgendorf Lecture
Link: http://campus.uni-tuebingen.de/20152e124166
Course type: Colloquium
Contact hours: 2
Course coordinator: Dr. rer. nat. Christine Hein, o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
Die EvE Hilgendorf Lecture is open for all interested persons.
Course description
Internationally acclaimed external guests present their latest work in the field of Evolutionary Biology and Ecology.
Additional information

Geoecology – Master

Course title: Evolution and Ecology Seminar
Link: http://campus.uni-tuebingen.de/20152e124041
Course type: AG/Kolloquium
Contact hours: 2
Course coordinator: Ph.D. Mark Bilton, Prof. Dr. rer. nat. Katja Tielbörger
Target audience
This seminar specifically targets all Tübingen students (undergrad, postgrad) interested in Ecology and Evolution - this is your direct access to learn more about ongoing local research and establish contacts.
Course description
This is the scientific colloquium of the Institute for Evolution and Ecology. Speakers are early career researchers as well as senior scientists in the broad fields of Ecology, Biodiversity and Evolution. On the one hand, this is the platform where scientists from within Tübingen (University, Max Planck Institutes) disseminate and share their research topics with a broader audience. On the other hand, we frequently invite external guest speakers to present novel findings and research perspectives. Moreover, it is the place where scientists working in the fields of ecology and evolution meet and discuss their most recent findings.

Course title: Paleobiology Seminar
Link: http://campus.uni-tuebingen.de/20152e121497
Course type: Seminar
Contact hours: 1
Course coordinator: Prof. Dr. Hervé Bocherens
Geosciences – Bachelor

Course title: Dynamik der Erde (V)
Link: http://campus.uni-tuebingen.de/20152e121520
Course type: Lecture
Contact hours: 4
Course coordinator: Prof. Dr. phil. Todd Ehlers
Course description

Course title: Earth System Dynamics Research Seminar
Link: http://campus.uni-tuebingen.de/20152e121515
Course type: Seminar
Contact hours: 2
Course coordinator: Prof. Dr. phil. Todd Ehlers

Course title: Geophysics 1(VÜ)
Link: http://campus.uni-tuebingen.de/20152e121429
Course type: Lecture/Excercises
Contact hours: 3
Course coordinator: Prof. Dr. rer. nat. Erwin Appel

Course title: Paläobiologie
Link: http://campus.uni-tuebingen.de/20152e121482
Course type: Lecture/Excercises
Contact hours: 6
Course coordinator: Prof. Dr. Hervé Bocherens

Course title: The Hilgendorf Lecture
Link: http://campus.uni-tuebingen.de/20152e124166
Course type: Colloquium
Contact hours: 2
Course coordinator: Dr. rer. nat. Christine Hein, o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
Die EvE Hilgendorf Lecture is open for all interested persons.
Course description
Internationally acclaimed external guests present their latest work in the field of Evolutionary Biology and Ecology.
Additional information

Geosciences – Master

Course title: Earth System Dynamics Research Seminar
Link: http://campus.uni-tuebingen.de/20152e121515
Course type: Seminar
Contact hours: 2
Course coordinator: Prof. Dr. phil. Todd Ehlers
Course title: Paleobiology Seminar  
Link: http://campus.uni-tuebingen.de/20152e121497  
Course type: Seminar  
Contact hours: 1  
Course coordinator: Prof. Dr. Hervé Bocherens

Course title: The Hilgendorf Lecture  
Link: http://campus.uni-tuebingen.de/20152e124166  
Course type: Colloquium  
Contact hours: 2  
Course coordinator: Dr. rer. nat. Christine Hein, o. Prof. Dr. rer. nat. Nico K. Michiels  
Target audience  
Die EvE Hilgendorf Lecture is open for all interested persons.  
Course description  
Internationally acclaimed external guests present their latest work in the field of Evolutionary Biology and Ecology.  
Additional information  

Computer Science – Bachelor

Course title: Drug Design 1  (Course number: BIOINF4371)  
Link: http://campus.uni-tuebingen.de/20152e126648  
Course type: Lecture/Excercises  
Contact hours:  
Course coordinator: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel

Course title: Evolution und Phylogenie  (Course number: BIOINF3310)  
Link: http://campus.uni-tuebingen.de/20152e126090  
Course type: Lecture/Excercises  
Contact hours: 4  
Course coordinator: o. Prof. Dr. math. Daniel Huson  
Additional information  
http://ab.inf.uni-tuebingen.de/teaching/ws2015/phylogeny

Computer Science – Master

Course title: Advanced Neural Networks Practicum  
Link: http://campus.uni-tuebingen.de/20152e126643  
Course type: Internship  
Contact hours:  
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. rer. nat. Jan Kneissler, M.Sc. Tobias Fabian Schrodt

Course title: Advanced Sequence Analysis  (Course number: BIOINF4361)  
Link: http://campus.uni-tuebingen.de/20152e126091  
Course type: Lecture/Excercises
Contact hours: 4
Course coordinator: o. Prof. Dr. math. Daniel Huson
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/seqan

Course title: Algorithms of Bioinformatics  (Course number: BIOINF4362)
Link: http://campus.uni-tuebingen.de/20152e126092
Course type: Seminar
Contact hours:
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter
Course description
mit Dr. Richard Neher, MPI
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/seminar

Course title: Bioinformatics I  (Course number: BIOINF4110)
Link: http://campus.uni-tuebingen.de/20152e126654
Course type: Lecture/Excercises
Contact hours: 6
Course coordinator: Mitarbeiter, PD Dr. math. Katja Nieselt
Prerequisites
Grundlagen der Bioinformatik, Programmierkenntnisse (Java)
Course description
The lecture "Bioinformatics I" is the first in the series on "Bioinformatics", which are mandatory for all bioinformatics Master students. Sequence-based and machine learning algorithms and applications are the focus of this lecture.

Course title: Bioinformatics Tools  (Course number: BIOINF4240)
Link: http://campus.uni-tuebingen.de/20152e126093
Course type: Internship
Contact hours:
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/tools

Course title: Cognitive Modeling
Link: http://campus.uni-tuebingen.de/20152e126641
Course type: Lecture/Excercises
Contact hours:
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. Anna Belardinelli
Additional information
http://www.cm.inf.uni-tuebingen.de/teaching/teaching-overview/wise-2015/vorlesung-cognitive-modeling.html

Course title: Displays  (Course number: INF4177)
Link: http://campus.uni-tuebingen.de/20152e126783
Course type: Lecture/Excercises
Contact hours:
Course coordinator: o. Prof. Dr.-Ing. Hendrik Lensch, Dipl.-Inform. Katharina Schwarz

Course title: Drug Design 1  (Course number: BIOINF4371)
Link: http://campus.uni-tuebingen.de/20152e126648
Course title: Intelligent Systems - Artificial Intelligence for Robotics  
Link: http://campus.uni-tuebingen.de/20152e126095  
Course type: Lecture/Excercises  
Contact hours:  
Course coordinator: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel  

Course title: Logik und Sprachtheorie/Mathematical Logic  
Link: http://campus.uni-tuebingen.de/20152e126079  
Course type: Oberseminar  
Contact hours: 2  
Course coordinator: o. Prof. Dr. phil. Peter Schroeder-Heister  
Course description: For the programme see http://www.uni-tuebingen.de/en/30477 . Colloquium with guest lectures from various areas of mathematical logic and philosophy of language. If you would like to receive announcements of talks, please send an email to thomas.piecha@informatik.uni-tuebingen.de. 

Course title: Machine Learning and Artificial Neural Networks in Biomedical Applications  
(Course number: INF4192)  
Link: http://campus.uni-tuebingen.de/20152e126039  
Course type: Seminar  
Contact hours: 2  
Course coordinator: Dr. rer. nat. Martin Spüler  
Course description: The seminar “Machine Learning” and Artificial Networks in Biomedical Applications” covers current topics of signal processing on neural signals (e.g., fMRI, EEG or MEG) for their use in biomedical applications (e.g., neuroprosthetics of brain-computer interfaces, BCIs) and related topics, as well as methods and algorithms applied in those fields. 
Additional information http://www.embedded.uni-tuebingen.de/Seminar-Machine-Learning-and-Artificial-Neural-Ne.1883.0.html 

Course title: Mathematical Logic  
(Course number: INF4654)  
Link: http://campus.uni-tuebingen.de/20152e126078  
Course type: Seminar  
Contact hours:
Course coordinator: o. Prof. Dr. phil. Peter Schroeder-Heister

Prerequisites
Solid knowledge of first-order logic.

Course description
Selected topics from mathematical and philosophical logic. Solid knowledge in first-order logic is presupposed. Presentations of the participants will take place at several full-day sessions towards the end of the winter semester. Depending on the subject and course studied, this seminar counts for either philosophy or computer science. If (and only if!) all participants are German speaking, presentations can be given in German.

Course title: Rendering  (Course number: INF4165)
Link: http://campus.uni-tuebingen.de/20152e126782
Course type: Lecture/Exercise
Contact hours: 4
Course coordinator: o. Prof. Dr.-Ing. Hendrik Lensch, Dipl.-Inf. Fabian Groh, M.Sc. Sebastian Herholz

Cognition Science – Bachelor

Course title: Drug Design 1  (Course number: BIOINF4371)
Link: http://campus.uni-tuebingen.de/20152e126648
Course type: Lecture/Exercise
Contact hours:
Course coordinator: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel

Course title: HS: Second Language Acquisition (LS - Weber)
Link: http://campus.uni-tuebingen.de/20152e126773
Course type: Hauptseminar
Contact hours: 2
Course coordinator: Christoph Deeg, Prof. Dr. phil. Andrea Weber
Course description
When you have already acquired one language, what happens when you acquire another? This question is the raison d’être of second language acquisition (SLA) research. In SLA research, second languages are investigated both in people who are accustomed to a second language early in life and in those who are learning a second language later in life. This course covers the major issues in SLA from a linguistics perspective and discusses the possible contribution of SLA research to second language teaching. To this end, commonly used methods in second language teaching are introduced and examined for their empirical cognitive basis.

Course title: Introduction to Computational Neuroscience / Seminar (3028) (Fr / Mo)
Link: http://campus.uni-tuebingen.de/20152e120948
Course type: Seminar
Contact hours: 2
Course coordinator: o. Prof. Dr. rer. nat. Hanspeter Mallot
Target audience
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten
Course description
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgekin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessible with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar. Please note that for the lecture you have to register separately!

Additional information
http://www.cog.uni-tuebingen.de/

Course title: Introduction to General Linguistics: Phonology

Course type: Proseminar
Contact hours: 2
Course coordinator: Dr. phil. Christian Ebert
Course description
Students beginning to study General Linguistics (‘Allgemeine Sprachwissenschaft’) must do the course “Introduction to General Linguistics” to gain an overview of the three core areas of
Students beginning to study General Linguistics (‘Allgemeine Sprachwissenschaft’) must do the course “Introduction to General Linguistics” to gain an overview of the three core areas of linguistics and to acquire linguistic analytical skills. It is also an introductory course for several other language-related degree courses. The course consists of three parts: - syntax (the study of grammatical structure at the sentence level) - semantics (the study of the link between form and meaning) - phonetics and phonology (the study of language sounds and language sound systems). These three topics are taught in two groups: syntax and semantics are taught on Tuesday and Thursday mornings, syntax in the first half of the semester and semantics in the second half. Phonetics and phonology are taught on Friday mornings for the whole term. The material will largely revolve around the analysis of German and English, with occasional glances at other languages. The class introduces basic notions in linguistics, central aspects of the analysis of German and English, and seeks to convey an understanding of the approach of generative (cognitive) linguistics to natural language.

**Course title:** Introduction to General Linguistics: Semantic

**Link:** [http://campus.uni-tuebingen.de/20152e124412](http://campus.uni-tuebingen.de/20152e124412)

**Course type:** Proseminar

**Contact hours:** 4

**Course coordinator:** MA Johannes Wahle

**Course description**

Students beginning to study General Linguistics (‘Allgemeine Sprachwissenschaft’) must do the course “Introduction to General Linguistics” to gain an overview of the three core areas of linguistics and to acquire linguistic analytical skills. It is also an introductory course for several other language-related degree courses. The course consists of three parts: - syntax (the study of grammatical structure at the sentence level) - semantics (the study of the link between form and meaning) - phonetics and phonology (the study of language sounds and language sound systems). These three topics are taught in two groups: syntax and semantics are taught on Tuesday and Thursday mornings, syntax in the first half of the semester and semantics in the second half. Phonetics and phonology are taught on Friday mornings for the whole term. The material will largely revolve around the analysis of German and English, with occasional glances at other languages. The class introduces basic notions in linguistics, central aspects of the analysis of German and English, and seeks to convey an understanding of the approach of generative (cognitive) linguistics to natural language.

**Course title:** Introduction to General Linguistics: Syntax

**Link:** [http://campus.uni-tuebingen.de/20152e124413](http://campus.uni-tuebingen.de/20152e124413)

**Course type:** Proseminar

**Contact hours:** 2

**Course coordinator:** MA Marisa Delz

**Course description**

Students beginning to study General Linguistics (‘Allgemeine Sprachwissenschaft’) must do the course “Introduction to General Linguistics” to gain an overview of the three core areas of linguistics and to acquire linguistic analytical skills. It is also an introductory course for several other language-related degree courses. The course consists of three parts: - syntax (the study of grammatical structure at the sentence level) - semantics (the study of the link between form and meaning) - phonetics and phonology (the study of language sounds and language sound systems). These three topics are taught in two groups: syntax and semantics are taught on Tuesday and Thursday mornings, syntax in the first half of the semester and semantics in the second half. Phonetics and phonology are taught on Friday mornings for the whole term. The material will largely revolve around the analysis of German and English, with occasional glances at other languages. The class introduces basic notions in linguistics, central aspects of the analysis of German and English, and seeks to convey an understanding of the approach of generative (cognitive) linguistics to natural language.
Course title: Programming Course Computational Linguistics  
Link: http://campus.uni-tuebingen.de/20152e122437  
Course type: Proseminar  
Contact hours: 8  
Course coordinator: Dr. phil. Daniël de Kok  
Prerequisites  
- Data Structures and Algorithms for Language Processing I  
- Data Structures and Algorithms for Language Processing II  
Course description  
This programming course provides an introduction to algorithms and data structures that are commonly used in computational linguistics, such as string distance measures, data structures for approximate string search, finite state automata, and parsing algorithms. The course is driven by assignments where participants implement these algorithms and data structures in small, but practical, applications.

Course title: Semantik I  
Link: http://campus.uni-tuebingen.de/20152e124032  
Course type: Proseminar  
Contact hours: 6  
Course coordinator: apl. Prof. Dr. phil. habil. Wolfgang Sternefeld

Cognition Science – Master

Course title: Advanced Neural Networks Practicum  
Link: http://campus.uni-tuebingen.de/20152e126643  
Course type: Internship  
Contact hours:  
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. rer. nat. Jan Kneissler, M.Sc. Tobias Fabian Schrodt

Course title: Cognitive Modeling  
Link: http://campus.uni-tuebingen.de/20152e126641  
Course type: Lecture/Exercises  
Contact hours:  
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. Anna Belardinelli  
Additional information  
http://www.cm.inf.uni-tuebingen.de/teaching/teaching-overview/wise-2015/vorlesung-cognitive-modeling.html

Course title: Computational Approaches to Language Variation and Stylometrics  
Link: http://campus.uni-tuebingen.de/20152e122440  
Course type: Hauptseminar  
Contact hours: 4  
Course coordinator: Dr. Çagri Çöltekin  
Course description  
This seminar focuses on computational methods for studying language change and variation. Languages differ based on time, geography, speakers (or author), or even audience. This course is concerned with how to find these differences, how to reason about them, and how to deal with them in computational linguistic methods and applications. In this course, we will read and discuss a selection of articles mainly in the areas of computational study of dialectology.
(dialectometry) and computational study of literary style, or stylometry, but also in other relevant areas of language change and variation depending on the participants' interests.

Course title: HS: Second Language Acquisition (LS - Weber)
Link: http://campus.uni-tuebingen.de/20152e126773
Course type: Hauptseminar
Contact hours: 2
Course coordinator: Christoph Deeg, Prof. Dr. phil. Andrea Weber
Course description
When you have already acquired one language, what happens when you acquire another? This question is the raison d'être of second language acquisition (SLA) research. In SLA research, second languages are investigated both in people who are accustomed to a second language early in life and in those who are learning a second language later in life. This course covers the major issues in SLA from a linguistics perspective and discusses the possible contribution of SLA research to second language teaching. To this end, commonly used methods in second language teaching are introduced and examined for their empirical cognitive basis.

Course title: Methods in Neuropsychology  (Course number: NB05A)
Link: http://campus.uni-tuebingen.de/20152e122480
Course type: Lecture
Contact hours: 2
Course coordinator: Ph.D. Bianca Haan, Dr. Marc Himmelbach
Prerequisites
none
Course description
Over the recent years, many new techniques have been developed to study the human brain and human brain function. The aim of this course is to assess the usefulness of these techniques when studying cognitive functions like perception, memory and action. To achieve this goal, this course will provide a theoretical and practical overview of the techniques available in neuropsychology to study human brain function. At the end of this course, students will be able to plan, implement and analyse neuropsychological experiments. The following topics will be covered: 1) Psychophysics 2) Transcranial Magnetic Stimulation (TMS) 3) Electroencephalography (EEG) and Magnetoencephalography (MEG) 4) New, alternative methods like positron emission tomography (PET), near infrared spectroscopy (NIRS) and invasive methods 5) Functional magnetic resonance imaging(fMRI) 6) Combining multiple techniques in the same experiment
Additional information

Course title: Natural Language Processing with Python: A hands-on introduction using NLTK
Link: http://campus.uni-tuebingen.de/20152e124407
Course type: Hauptseminar
Contact hours: 4
Course coordinator: Prof. Dr. phil. Detmar Meurers
Course description
This course provides a hands-on introduction to programming in Python using NLTK. The Natural Language Toolkit NLTK is an open source platform offering transparent access to a broad range of algorithms and resources for computational linguistics.
Additional information
http://purl.org/dm/15/ws/hs

Course title: Neuroergonomics
**Course description**

Neuroergonomics is the neuroscientific approach to ergonomics and human factors, that is, to the study of human performance and well-being in natural settings such as work and everyday environments. Examples are the operation of cars and aircrafts, or the interaction of humans with computers and other machines at the workplace or at home. The goal of this fast-growing field is to set knowledge of human brain functioning in relation to the design and evaluation of real-world tasks, technologies, and human-machine systems, while taking into account the physical, cognitive, and affective capabilities and limitations of humans. The course will introduce students to behavioral and neuroimaging methods typically used in neuroergonomic research as well as to a variety of current research topics, such as the assessment of physical and mental workload and fatigue, driver and pilot safety, and human-centered design of adaptive automation and shared control in man-machine interaction.

---

**Course title**: Second Language Acquisition  
**Link**: http://campus.uni-tuebingen.de/20152e124411

**Course type**: Lecture  
**Contact hours**: 2  
**Course coordinator**: Prof. Dr. phil. Detmar Meurers  

**Course description**

This course offers an introduction at the graduate level to the study of language acquisition, in particular Second Language Acquisition (SLA). The course surveys the major SLA theories, their goals, research methodology, and major findings, emphasizing the interdisciplinary link to linguistic modeling and cognition.

**Additional information**

http://purl.org/dm/14/ws/sla

---

**Information and Media Technologies – Bachelor**

**Course title**: Drug Design 1  (Course number: BIOINF4371)  
**Link**: http://campus.uni-tuebingen.de/20152e126648

**Course type**: Lecture/Excercises  
**Contact hours**:  
**Course coordinator**: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel

**Course title**: Evolution und Phylogenie  (Course number: BIOINF3310)  
**Link**: http://campus.uni-tuebingen.de/20152e126090

**Course type**: Lecture/Excercises  
**Contact hours**: 4  
**Course coordinator**: o. Prof. Dr. math. Daniel Huson  

**Additional information**

http://ab.inf.uni-tuebingen.de/teaching/ws2015/phylogeny
Information and Media Technologies – Master

Course title: Advanced Neural Networks Practicum
Link: http://campus.uni-tuebingen.de/20152e126643
Course type: Internship
Contact hours: 
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. rer. nat. Jan Kneissler, M.Sc. Tobias Fabian Schrodt

Course title: Advanced Sequence Analysis  (Course number: BIOINF4361)
Link: http://campus.uni-tuebingen.de/20152e126091
Course type: Lecture/Exercises
Contact hours: 4
Course coordinator: o. Prof. Dr. math. Daniel Huson
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/seqan

Course title: Algorithms of Bioinformatics  (Course number: BIOINF4362)
Link: http://campus.uni-tuebingen.de/20152e126092
Course type: Seminar
Contact hours: 
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter
Course description
mit Dr. Richard Neher, MPI
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/seminar

Course title: Bioinformatics I  (Course number: BIOINF4110)
Link: http://campus.uni-tuebingen.de/20152e126654
Course type: Lecture/Exercises
Contact hours: 6
Course coordinator: Mitarbeiter, PD Dr. math. Katja Nieselt
Prerequisites
Grundlagen der Bioinformatik, Programmierkenntnisse (Java)
Course description
The lecture “Bioinformatics I” is the first in the series on “Bioinformatics”, which are mandatory for all bioinformatics Master students. Sequence-based and machine learning algorithms and applications are the focus of this lecture.

Course title: Bioinformatics Tools  (Course number: BIOINF4240)
Link: http://campus.uni-tuebingen.de/20152e126093
Course type: Internship
Contact hours: 
Course coordinator: o. Prof. Dr. math. Daniel Huson, Mitarbeiter
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/tools

Course title: Cognitive Modeling
Link: http://campus.uni-tuebingen.de/20152e126641
Course type: Lecture/Exercises
Contact hours: 
Course coordinator: o. Prof. Ph.D. Martin Butz, Dr. Anna Belardinelli
Course title: Displays  (Course number: INF4177)
Link: http://campus.uni-tuebingen.de/20152e126783
Course type: Lecture/Excercises
Contact hours:
Course coordinator: o. Prof. Dr.-Ing. Hendrik Lensch, Dipl.-Inform. Katharina Schwarz

Course title: Drug Design 1  (Course number: BIOINF4371)
Link: http://campus.uni-tuebingen.de/20152e126648
Course type: Lecture/Excercises
Contact hours:
Course coordinator: Dr. rer. nat. Jens Krüger, Mitarbeiter, Dr. rer. nat. Philipp Thiel

Course title: Intelligent Systems - Artificial Intelligence for Robotics
Link: http://campus.uni-tuebingen.de/20152e126095
Course type: Lecture/Excercises
Contact hours:

Target audience
Master students in Computer Science, Mathematics and Physics and associated fields.

Course description
The goal of this class is to go over artificial intelligence techniques in the context of robotics. Robots are artificial agents acting on the physical world through motion; hence a special emphasis will be put on robotic motion generation. We will study multiple components of the action-perception loop in navigation and manipulation tasks. How can robots perceive the environment and localize themselves in it? How can they autonomously generate their motion and construct sophisticated plans to perform complex tasks? We will see how different levels of representations (i.e., symbolic, geometric and dynamic) allow to reason efficiently about their capabilities and the environment. Finally, we will see reinforcement and imitation learning techniques allowing robots to learn new behaviors from humans and improve their behavior over time.

Course title: Logik und Sprachtheorie/Mathematical Logic
Link: http://campus.uni-tuebingen.de/20152e126079
Course type: Oberseminar
Contact hours: 2
Course coordinator: o. Prof. Dr. phil. Peter Schroeder-Heister
Course description
For the programme see http://www.uni-tuebingen.de/en/30477 . Colloquium with guest lectures from various areas of mathematical logic and philosophy of language. If you would like to receive announcements of talks, please send an email to thomas.piecha@informatik.uni-tuebingen.de.

Course title: Machine Learning and Artificial Neural Networks in Biomedical Applications
(Course number: INF4192)
Link: http://campus.uni-tuebingen.de/20152e126039
Course type: Seminar
Contact hours: 2
Course coordinator: Dr. rer. nat. Martin Spüler
Course description
The seminar “Machine Learning” and Artificial Networks in Biomedical Applications” covers current topics of signal processing on neural signals (e.g., fMRI, EEG or MEG) for their use in biomedical applications (e.g., neuroprosthetics of brain-computer interfaces, BCIs) and related topics, as well as methods and algorithms applied in those fields.
Additional information
http://www.embedded.uni-tuebingen.de/Seminar-Machine-Learning-and-Artificial-Neural-Ne.1883.0.html

Course title: Mathematical Logic  (Course number: INF4654)
Link: http://campus.uni-tuebingen.de/20152e126078
Course type: Seminar
Contact hours:
Course coordinator: o. Prof. Dr. phil. Peter Schroeder-Heister
Prerequisites
Solid knowledge of first-order logic.
Course description
Selected topics from mathematical and philosophical logic. Solid knowledge in first-order logic is presupposed. Presentations of the participants will take place at several full-day sessions towards the end of the winter semester. Depending on the subject and course studied, this seminar counts for either philosophy or computer science. If (and only if!) all participants are German speaking, presentations can be given in German.

Course title: Rendering  (Course number: INF4165)
Link: http://campus.uni-tuebingen.de/20152e126782
Course type: Lecture/Excercises
Contact hours: 4
Course coordinator: o. Prof. Dr.-Ing. Hendrik Lensch, Dipl.-Inf. Fabian Groh, M.Sc. Sebastian Herholz

Medicineinformatics – Bachelor

Course title: Evolution und Phylogenie  (Course number: BIOINF3310)
Link: http://campus.uni-tuebingen.de/20152e126090
Course type: Lecture/Excercises
Contact hours: 4
Course coordinator: o. Prof. Dr. math. Daniel Huson
Additional information
http://ab.inf.uni-tuebingen.de/teaching/ws2015/phylogeny

Nanoscience – Bachelor

Course title: Analytical Methods and Applications in Life and Nanoscience
Link: http://campus.uni-tuebingen.de/20152e125439
Course type: Lecture
Contact hours: 2
Course coordinator: Dr. rer. nat. Anita Jannasch, Prof. Dr. rer. nat. Erik Schäffer
Course description
In the lecture, key analytical methods that are used in life science to investigate nanometer-sized objects are presented and their applications discussed.

**Course title:** Analytical Methods and Applications in Life and Nanoscience  
**Link:** [http://campus.uni-tuebingen.de/20152e125440](http://campus.uni-tuebingen.de/20152e125440)  
**Course type:** Seminar  
**Contact hours:** 2  
**Course coordinator:** MA Naghmeh Azadfar, Dr. rer. nat. Anita Jannasch, Prof. Dr. rer. nat. Erik Schäffer

**Course title:** Experimental Techniques in NanoScience and Bio-Physics  (Course number: VFTNSBP)  
**Link:** [http://campus.uni-tuebingen.de/20152e125410](http://campus.uni-tuebingen.de/20152e125410)  
**Course type:** Lecture  
**Contact hours:** 2  
**Course coordinator:** PD Dr. rer.nat. Fajun Zhang, Dr. rer. nat. Alexander Gerlach, Prof. Dr. rer. nat. Frank Schreiber  
**Course description**  
The course will provide a basis for modern experimental techniques in the area of nano-science and bio-physics and also cover the fundamentals of some of the experiments in the F-practicals.  
1.1 IR spectroscopy  
1.2 Raman spectroscopy  
1.3 Optical microscopy  
2.1 X-ray scattering from surfaces  
2.2 X-ray scattering from nanoparticles  
2.3 Light scattering  
3.1 Photoelectron spectroscopy  
3.2 Surface science techniques  
3.3 Fundamentals of vacuum technology  
4.1 Growth and preparation of surfaces and nano-structures  
4.2 Thin film growth  
4.3 Nanoparticles and their manipulation  
4.4 Growth of protein single crystals  
4.5 Self-assembled monolayers  
4.6 Bio-functionalised surfaces

**Course title:** Introduction to Computational Neuroscience / Seminar (3028) (Fr / Mo)  
**Link:** [http://campus.uni-tuebingen.de/20152e120948](http://campus.uni-tuebingen.de/20152e120948)  
**Course type:** Seminar  
**Contact hours:** 2  
**Course coordinator:** o. Prof. Dr. rer. nat. Hanspeter Mallot  
**Target audience**  
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.  
**Course description**  
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgkin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessible with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar. Please note that for the lecture you have to register separately!
Additional information
http://www.cog.uni-tuebingen.de/

Course title: Introduction to Computational Neuroscience / Vorlesung (3028) (Fr)
Link: http://campus.uni-tuebingen.de/20152e124295
Course type: Lecture
Contact hours: 4
Course coordinator: o. Prof. Dr. rer. nat. Hanspeter Mallot
Target audience
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitonswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.
Course description
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgekin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessible with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar.
Additional information
http://www.cog.uni-tuebingen.de/

Course title: Nano-Science II
Link: http://campus.uni-tuebingen.de/20152e124511
Course type: Seminar
Contact hours: 2
Course coordinator: Dr. rer. nat. Üner Kolukisaoglu

Nanoscience – Master

Course title: Aktuelle Themen der Zell- und Entwicklungsbiologie - Current Topics in Developmental Genetics (4016)
Link: http://campus.uni-tuebingen.de/20152e121036
Course type: Block Course
Contact hours: 2
Course coordinator: Dr. rer. nat. Anke Beermann, Dipl.-Agrarbiol. Simone Früholz, Dr. rer. nat. Christopher Grefen, PD Dr. rer. nat. habil. Bernard Moussian, Dr. rer. nat. Sabine Müller, N.N., N.N., Dr. rer. nat. Peter Pimpl, Dr. rer. nat. Laura Ragni, Prof. Dr. rer. nat. Rolf Reuter, Dr. rer. nat. Sandra Richter, Hon.-Prof. Dr. rer. nat. Ralf Sommer, Dr. rer. nat. Detlef Weigel, o. Prof. Dr. rer. nat. Gerd Jürgens
Target audience
Themenmodul im Masterprogramm des ZMBP. Diplomanden und Doktoranden werden
ebenfalls zugelassen, Masterstudenten haben aber Vorrang.

**Prerequisites**
Bachelor

**Course description**
Überblick über den Stand der Forschung und aktuelle Forschungsthemen in der molekularen Zellbiologie.

**Course title**: Comparative innate immunity in animals and plants, Themenmodul 4026
**Link**: [http://campus.uni-tuebingen.de/20152e124380](http://campus.uni-tuebingen.de/20152e124380)

**Course type**: Lecture/Excercises

**Contact hours**: 3

**Course coordinator**: o. Prof. Dr. rer. nat. Thorsten Nürnberg, Prof. Dr. rer. nat. Georg Felix, Dr. rer. nat. Andrea Gust, Dr. rer. nat. Birgit Kemmerling

**Target audience**: M.Sc. in Biochemistry or Biology

**Course description**
Module comprises a lecture, seminar and tutorial. The lecture concerns current topics of innate immunity in animals and plants. The seminar consolidates the topics covered in the lecture by using original publications. Content of the tutorial will be writing of a research proposal based on the original publications covered in the seminar. The seminar and tutorial will take place in the summer semester. Final schedule for the seminar and the discussion of proposals within the tutorial will be according to agreement.

**Course title**: Data analysis with statistics and fitting
**Link**: [http://campus.uni-tuebingen.de/20152e127482](http://campus.uni-tuebingen.de/20152e127482)

**Course type**: Lecture/Excercises

**Contact hours**: 2

**Course coordinator**: Dr. rer. nat. Anita Jannasch

**Course description**
anrechenbar im fächerübergreifenden Mastermodul (6010) für alle Masterstudiengänge der Biologie

**Course title**: Introduction to Computational Neuroscience / Seminar (3028) (Fr / Mo)
**Link**: [http://campus.uni-tuebingen.de/20152e120948](http://campus.uni-tuebingen.de/20152e120948)

**Course type**: Seminar

**Contact hours**: 2

**Course coordinator**: o. Prof. Dr. rer. nat. Hanspeter Mallot

**Target audience**
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionsstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.

**Course description**
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgkin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessable with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be
discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar. Please note that for the lecture you have to register separately!

**Additional information**
http://www.cog.uni-tuebingen.de/

**Course title:** Introduction to Computational Neuroscience / Vorlesung (3028) (Fr)
**Link:** http://campus.uni-tuebingen.de/20152e124295
**Course type:** Lecture
**Contact hours:** 4
**Course coordinator:** o. Prof. Dr. rer. nat. Hanspeter Mallot

**Target audience**
The course is listed for the following programs (program names in German) Biologie Bachelor, 3. Jahr (optional - Wahlpflicht) Biologie Master (optional - Wahlpflicht) Biologie Lehramt (optional - Wahlpflicht) Kognitionswissenschaft Bachelor, 3. Jahr (mandatory - Pflichtveranstaltung) Neuro- und Verhaltenswissenschaft (Lecture mandatory, seminar optional) NanoScience (optional - Wahlpflicht) Promotionssstudium in Neurowissenschaft und verwandten Gebieten Students from other programs are welcome.

**Course description**
The course will provide an overview over the field of computational neuroscience focussing on four topics: (i) biophysics of excitable membranes: Hodgekin-Huxley theory of the action potential and cable theory of passive conduction, (ii) receptive fields including linear systems and Fourier theory, (iii) neural networks and basics of statistical learning theory, and (iv) neural coding. The focus of the course is on central neuroscience mechanisms; mathematical formalizations are presented on a medium level that should be accessable with highschool or introductory BSc level knowledge of mathematics. In the seminar, classical papers will be discussed that extend the material of the lecture course. In each seminar session, a team of two to three students will (a) present a paper, (b) give a tutorial on a related issue in neural computation and (c) prepare a handout for the class. All students are required to read each weeks’ paper in advance of the seminar.

**Additional information**
http://www.cog.uni-tuebingen.de/

**Course title:** Molecular Biophysics (Übungen)
**Link:** http://campus.uni-tuebingen.de/20152e125441
**Course type:** Exercises
**Contact hours:** 2
**Course coordinator:** Dipl.-Phys. Michael Bugiel, M.Sc. Tobias Jachowski, Dr. rer. nat. Anita Jannasch, Prof. Dr. rer. nat. Erik Schäffer

**Course title:** Molecular Biophysics (Vorlesung)
**Link:** http://campus.uni-tuebingen.de/20152e125442
**Course type:** Lecture
**Contact hours:** 2
**Course coordinator:** Dr. rer. nat. Anita Jannasch, PD Dr. rer. nat. habil. Hans Joachim Schöpe, Prof. Dr. rer. nat. Erik Schäffer

**Course title:** MWM1 (Phänomenologische Materialeigenschaften) (Course number: PC0765)
**Link:** http://campus.uni-tuebingen.de/20152e121191
**Course type:** Lecture
Contact hours: 2
Course coordinator: o. Prof. Dr. rer. nat. habil. Thomas Chassé

Course title: PCM8 (Optische Mikroskopie, optische Einzelmolekülspektroskopie, Nanooptik)
(Course number: PC0725)
Link: http://campus.uni-tuebingen.de/20152e121221
Course type: Lecture
Contact hours: 2
Course coordinator: o. Prof. Dr. sc. nat. habil. Alfred J. Meixner, PD Dr. rer. nat. Dai Zhang

Scientific Archaeology – Bachelor

Course title: Datierungsmethoden (S)
Link: http://campus.uni-tuebingen.de/20152e124085
Course type: Block Course
Contact hours: 2
Course coordinator: Dr. Davinia Moreno

Course title: Datierungsmethoden (V)
Link: http://campus.uni-tuebingen.de/20152e124086
Course type: Lecture
Contact hours: 2
Course coordinator: Dr. Davinia Moreno

Course title: Dynamik der Erde (V)
Link: http://campus.uni-tuebingen.de/20152e121520
Course type: Lecture
Contact hours: 4
Course coordinator: Prof. Dr. phil. Todd Ehlers
Course description
Die Vorlesung wir in englischer Sprache gehalten. Die Powerpoint Präsentationen sind in
deutscher Sprache. Die Prüfung wird in deutscher und englischer Sprache angeboten.

Course title: Geophysics 1(VÜ)
Link: http://campus.uni-tuebingen.de/20152e121429
Course type: Lecture/Excercises
Contact hours: 3
Course coordinator: Prof. Dr. rer. nat. Erwin Appel

Scientific Archaeology – Master

Course title: Archaeology of Mobile Populations
Link: http://campus.uni-tuebingen.de/20152e125658
Course type: Seminar
Contact hours: 2
Course coordinator: Dr. rer. nat. Michelle De Gruchy

Course title: Current topics in Paleogenetics
Link: http://campus.uni-tuebingen.de/20152e124677
Course type: Seminar
Contact hours: 2
Course coordinator: Dr. rer. nat. Verena Schünemann
Prerequisites
Besuch der Vorlesung Paläogenetik

Course title: Essential Statistics  (Course number: CM04C)
Link: http://campus.uni-tuebingen.de/20152e125254
Course type: Lecture/Excercises
Contact hours: 2
Course coordinator: Ph.D. Hendrikje Nienborg
Course description
Statistical techniques are ubiquitous in quantitative neuroscience research. Therefore, they are essential for the correct understanding and interpretation of results published in the literature, and for publishing and properly reporting the results of one’s own research. This lecture will cover basic statistical concepts for neuroscientists, such as descriptive statistics, hypothesis testing, and correlation and regression analysis. An intuitive understanding of the central concepts will be facilitated via simple matlab exercises.

Additional information
http://www.neuroschool-tuebingen.de/courses/winter-term/master-neural-behav-sci/

Course title: Introduction to Cultural Anthropology
Link: http://campus.uni-tuebingen.de/20152e126699
Course type: Seminar
Contact hours: 2
Course coordinator: M.A. Alexandra Uhl

Course title: Klimatologie (VÜ)
Link: http://campus.uni-tuebingen.de/20152e121496
Course type: Lecture/Excercises
Contact hours: 3
Course coordinator: Prof. Dr. Hervé Bocherens, Dr. rer. nat. Dorothee Drucker-Bocherens, Dr. rer. nat. Hartmut Schulz, Prof. Dr. rer. nat. Jens Bange, PD Dr. rer. nat. Dr. rer. nat. Wilfried Konrad, Jun.-Prof. Dr. rer. nat. Ilka Weikusat

Course title: Out of Africa: How hominins settled the world
Link: http://campus.uni-tuebingen.de/20152e125621
Course type: Block Course
Contact hours: 2
Course coordinator: M.Sc. Alissa Mittnik

Course title: W-Schiene (Di, Mi, Do): Introduction to Biostatistics (Einführung in die Biostatistik) (3010)
Link: http://campus.uni-tuebingen.de/20152e124173
Course type: Block Course
Contact hours:
Course coordinator: o. Prof. Dr. rer. nat. Nico K. Michiels, Dr. rer. nat. Nils Anthes
Target audience
MSc 1st year, BSc 3rd year. Students in Biology, Geocology, Medicine, Biochemistry, Naturwissenschaftliche Archäologie, ...
Prerequisites
Participants will need a laptop with the latest version of JMP, which can be downloaded from the Rechnenzentrum (ZDV) with your usual university user details.

Course description
The content of this module (taught in English) is identical to the W2 Block module “Einführung in die Biostatistik” (taught in German); Both courses are targeted at BSc and MSc students of Biology, Geocology and other Life Sciences, but the English version more explicitly invites first year MSc students who wish to better prepare for the obligatory Advanced Biometry course (then to be attended in the second year MSc). How do I optimally collect, organise, and analyse biological and ecological datasets? Which problems and pitfalls occur when preparing data for statistical analysis? How to identify the appropriate statistical test for my current dataset? How to interpret and report statistical output? Using the user-friendly software JMP, this course offers an applied introduction to Biostatistics with applications to all quantitative fields of Biology and Ecology. This course is composed of (i) two introductory lectures (1h each) on Wednesday and Thursday, (ii), individual computer tasks where participants apply the acquired knowledge to real statistical datasets, and (iii) a 2h rehearsal seminar of each week’s tasks on Tuesday.

Additional information
http://www.evoeco.uni-tuebingen.de

Course title: W-Schiene (Mo, Fr): Essentials in Evolutionary Biology (4009)
Link: http://campus.uni-tuebingen.de/20152e124165
Course type: Block Course
Contact hours: 4
Course coordinator: o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
This class is primarily aimed at Students in the Master in Biology programm (major in Evolution and Ecology). It is, however, also a good module for any other student in Biology (Bachelor or Master) and Geosciences (particularly Geo-Ecology, Palaeontology and Archaeology).

Course description
What is evolution? Although being simple in its essence, evolution has wide-ranging consequences across biology. Dealing with this is the purpose of this module. The seminar part (Mondays 1600-1800, room and schedule will be announced during first session) provides talks given by selected speakers from Tübingen or elswhere, including top-scientists from abroad. Students are expected to attend at least 10 of these presentations and submit an abstract, which will be edited and marked. The lecture (Fridays 0800-1000, room N12, E-building Biology, 3rd floor) introduces essentials of modern evolutionary biology, with an emphasis on short-term processes (selection, adaptation, development) as well as long-term processes (speciation, extinction, phylogeny). This module is compulsory for MSc students in Evolution and Ecology.

Course title: ZNA-3a: Aktuelle NWA II: Archäobotanik (S)
Link: http://campus.uni-tuebingen.de/20152e124050
Course type: Seminar
Contact hours: 2
Course coordinator: Dr. rer. nat. Simone Riehl, M.Sc. Alexander Weide
Course description
The theoretical introduction to archaeobotany is taught in seminar form as an additional background to the practical laboratory course offered during the summer semesters. Methodological basics and main archaeobotanical research questions are focussed. Each session will be similarly structured with an introductory lecture of ca. 40 minutes, followed by a student presentation and group discussion. Language comment: The introductory lecture will be in English, presentations can be either in English or in German. Discussion can be mixed English/German. Scope of work: Students will be given one article (to be downloaded via ILIAS) to prepare for each session. They are expected to know the contents of the provided article, to
be able to contribute to the discussion in every session. Reading and contribution to the discussion counts 20% to the end qualification of this seminar. The presentation (duration: 30 minutes) by the referee will count 40%. A final exam will focus on the contents of the lectures and counts 40%.

**Course title:** ZNA-3b: Aktuelle NWA II: Geoarchaeology (V-S)  
**Link:** http://campus.uni-tuebingen.de/20152e124054  
**Course type:** Seminar  
**Contact hours:** 2  
**Course coordinator:** PD Dr. phil. Katleen Irene Irma Deckers

**Course title:** ZNA-4a: Aktuelle NWA III: Archäometrie & Paläo-Genetik (Archäometrie) (V)  
**Link:** http://campus.uni-tuebingen.de/20152e124078  
**Course type:** Lecture  
**Contact hours:** 2  
**Course coordinator:** Dr. phil. Patrick Schmidt  
**Course description**  
The module ZNA-4, Aktuelle Naturwissenschaftliche Archäologie III: Archäometrie aims in introducing the basics of Archaeometry. The module is composed of a general lecture and a workshop in which each student will actively participate. Both the lecture and the workshop will have as primary objective the communication of knowledge about the aims and methods used for archaeometric research. Addressed methodological sections comprise: sampling techniques, remote sensing, the nature of archaeo-materials and their study, the understanding of the most commonly used analytical techniques and dating methods used in archaeology. Thematic sections comprise: the study of lithic raw material, ceramics, building materials, metals and stable isotopes in archaeological science. Students will acquire theoretical knowledge about the used terminology, learn to deal with archaeological samples and learn to critically read specific archaeometric literature.

**Course title:** ZNA-4b: Aktuelle NWA III: Archäometrie & Paläo-Genetik (Paläo-Genetik) (V/S)  
**Link:** http://campus.uni-tuebingen.de/20152e124079  
**Course type:** Lecture  
**Contact hours:** 2  
**Course coordinator:** Dr. rer. nat. Verena Schünemann

---

**Palaeoanthropology – Bachelor**

**Course title:** Fossilgeschichte: Introduction to human evolution (Ü)  
**Link:** http://campus.uni-tuebingen.de/20152e124083  
**Course type:** Exercises  
**Contact hours:** 2  
**Course coordinator:** Dr. rer. nat. André Strauß

**Course title:** Out of Africa: How hominins settled the world  
**Link:** http://campus.uni-tuebingen.de/20152e125621  
**Course type:** Block Course  
**Contact hours:** 2  
**Course coordinator:** M.Sc. Alissa Mittnik
Pharmacy – state exam

Course title: Neue Ergebnisse der Pharmazeutisch-Biologischen Grundlagenforschung
Link: http://campus.uni-tuebingen.de/20152e127188
Course type: Seminar
Contact hours: 1
Course coordinator: Prof. Dr. rer. nat. Harald Groß, PD Dr. rer. nat. Bertolt Gust, Dr. rer. nat. Kristian Apel, Jun.-Prof. Dr. rer. nat. Leonard Kaysser
Course description
Im Raum B9A29

Physics – Bachelor

Course title: Advanced Principles of MRS and MRI  (Course number: S00SBMR03)
Link: http://campus.uni-tuebingen.de/20152e122689
Course type: Seminar
Contact hours:
Course coordinator: Dr. Anke Henning, Prof. Dr. phil.-nat. Klaus Scheffler
Prerequisites
Basics of MRI
Course description
(Students/Doktoranden müssen Übersichtsvorträge zu verschiedenen MR Themen vorbereiten und vortragen; Ausbildungsaspekt steht im Vordergrund - keine wissenschaftlichen Vorträge)

Course title: Advanced Topics in Soft and Molecular Matter
Link: http://campus.uni-tuebingen.de/20152e125412
Course type: Lecture
Contact hours: 2
Course coordinator: Prof. Dr. rer. nat. Frank Schreiber, Prof. Dr. rer. nat. Martin Oettel, Prof. Dr. rer. nat. Roland Roth, PD Dr. rer.nat. Fajun Zhang, Dr. rer. nat. Alexander Gerlach

Course title: Exercises for Introduction to General Relativity  (Course number: VFERT)
Link: http://campus.uni-tuebingen.de/20152e124710
Course type: Exercises
Contact hours: 2
Course coordinator: Prof. Ph.D. Konstantinos Kokkotas
Course description
Day and time will be fixed during the first lecture.
Additional information
http://www.tat.physik.uni-tuebingen.de/~kokkotas/Teaching/GTR.html

Course title: Exercises for Numerical Methods in Physics and Astrophysics  (Course number: VFNMPAP)
Link: http://campus.uni-tuebingen.de/20152e124708
Course type: Exercises
Contact hours: 2
Course coordinator: Prof. Ph.D. Konstantinos Kokkotas,
Course description
Day and time will be fixed during the first lecture.
Additional information
Course title: Experimental Techniques in NanoScience and Bio-Physics  (Course number: VFTNSBP)
Link:  http://campus.uni-tuebingen.de/20152e125410
Course type: Lecture
Contact hours: 2
Course coordinator: PD Dr. rer.nat. Fajun Zhang, Dr. rer. nat. Alexander Gerlach, Prof. Dr. rer. nat. Frank Schreiber
Course description
The course will provide a basis for modern experimental techniques in the area of nano-science and bio-physics and also cover the fundamentals of some of the experiments in the F-practicals.
1.1 IR spectroscopy 1.2 Raman spectroscopy 1.3 Optical microscopy 2.1 X-ray scattering from surfaces 2.2 X-ray scattering from nanoparticles 2.3 Light scattering 3.1 Photoelectron spectroscopy 3.2 Surface science techniques 3.3 Fundamentals of vacuum technology 4.1 Growth and preparation of surfaces and nano-structures 4.2 Thin film growth 4.3 Nanoparticles and their manipulation 4.4 Growth of protein single crystals 4.5 Self-assembled monolayers 4.6 Bio-functionalised surfaces

Course title: High Energy Astrophysics  (Course number:VFHAP)
Link:  http://campus.uni-tuebingen.de/20152e125378
Course type: Lecture
Contact hours: 2
Course coordinator: Dr. rer. nat. Dmitry Klochkov, Dr. rer.nat. Manami Sasaki
Prerequisites
There are no requirements for the course. However, a basic knowledge of Astronomy and Astrophysics can be very useful to follow the course.

Course description
The goal of the course is to learn the fundamental processes of High Energy Astrophysics and to apply them in selected astrophysical contexts. Messengers of this High Energy Universe are certainly photons with energy from a fraction of keV up to TeV and possibly higher. But to explore even higher energies other messengers like Cosmic Rays or Neutrino are used. Lectures will be rather informal and the active participation of the students is very welcome. Lectures will be in English and/or German depending on the audience.

Additional information

Course title: Intelligent Systems - Artificial Intelligence for Robotics
Link:  http://campus.uni-tuebingen.de/20152e126095
Course type: Lecture/Excercises
Target audience
Master students in Computer Science, Mathematics and Physics and associated fields.
Course description
The goal of this class is to go over artificial intelligence techniques in the context of robotics. Robots are artificial agents acting on the physical world through motion; hence a special emphasis will be put on robotic motion generation. We will study multiple components of the action-perception loop in navigation and manipulation tasks. How can robots perceive the environment and localize themselves in it? How can they autonomously generate their motion and construct sophisticated plans to perform complex tasks? We will see how different levels of representations (i.e., symbolic, geometric and dynamic) allow to reason efficiently about their capabilities and the environment. Finally, we will see reinforcement and imitation learning techniques allowing robots to learn new behaviors from humans and improve their behavior.
over time.

**Course title:** Introduction to General Relativity  (Course number: VFERT)  
**Link:** http://campus.uni-tuebingen.de/20152e124711  
**Course type:** Lecture  
**Contact hours:** 2  
**Course coordinator:** Prof. Ph.D. Konstantinos Kokkotas  
**Course description**  
student hours/ Sprechstunde:T.B.D.Morgenstelle 10: C10 P17, C10 P13  
contact: kostas.kokkotas@uni-tuebingen.de  
**Additional information**  
http://www.tat.physik.uni-tuebingen.de/~kokkotas/Teaching/GTR.html

**Course title:** Numerical Methods in Physics and Astrophysics  (Course number: VFNMPAP)  
**Link:** http://campus.uni-tuebingen.de/20152e124709  
**Course type:** Lecture  
**Contact hours:** 2  
**Course coordinator:** Prof. Ph.D. Konstantinos Kokkotas  
**Course description**  
student hours/ Sprechstunde:T.B.D.Morgenstelle 10: C10 P17, C10 P13  
contact: kostas.kokkotas@uni-tuebingen.de  
**Additional information**  
http://www.tat.physik.uni-tuebingen.de/~kokkotas/Teaching/Num_Methods.html

**Course title:** Preclinical Imaging and Radiopharmacy  (Course number: S06SDRAD01)  
**Link:** http://campus.uni-tuebingen.de/20152e122831  
**Course type:** Seminar  
**Contact hours:**  
**Course coordinator:** Prof. Dr. rer. nat., Dipl.-Ing. Bernd Pichler, Dr. rer. nat. Jonathan Disselhorst  
**Prerequisites**  
ab 2 klin. Semester, Studierende der Biologie, Physik, Pharmazie und Biochemie ab dem 5. FS  
**Course description**  
Mitarbeiterseminar mit Vorträgen und Diskussionen über aktuelle Projekte sowie Vorträge von eingeladenen Gastsprecher, Journal Club

**Physical Geography/ Landscape System Sciences – Master**

**Course title:** W2 Global Change Ecology (3173)  
**Link:** http://campus.uni-tuebingen.de/20152e125641  
**Course type:** Block Course  
**Contact hours:** 4  
**Course coordinator:** Dr. sc. nat. Madalin Parepa, Prof. Dr. sc. nat. Oliver Bossdorf  
**Target audience**  
Biology Bachelor, 3rd year Biology Master, Ecology &Evolution Geoökologie Master  
**Course description**  
This course is about the ecological and evolutionary impact of global environmental change: about different kinds of observations (e.g. phenological changes, range shifts, extinctions, evolutionary changes) and different ways of making predictions through models or experiments. We also examine interactions between different drivers of global change, and we discuss some
of the ways how humans attempt to fix ecological problems caused by global change. Students thus learn about some fundamental ecological questions, but also about the methods and some of the most controversial debates in current global change research. The seminar is organised as an interactive discussion group, with occasional regular lectures. The course language is English.

Psychologie – Bachelor

Course title: S Experimental programming for psychological research (Matlab, Psychtoolbox, Python, PsychoPy)  
Link: [http://campus.uni-tuebingen.de/20152e127937](http://campus.uni-tuebingen.de/20152e127937)  
Course type: Seminar  
Contact hours: 2  
Course coordinator: Ph.D. Ian Grant Mackenzie

Course title: S Mental rotation: Basics, interindividual differences and development  
Link: [http://campus.uni-tuebingen.de/20152e127932](http://campus.uni-tuebingen.de/20152e127932)  
Course type: Seminar  
Contact hours: 2  
Course coordinator: M.Sc. André Caissie

Psychologie – Master

Course title: FS Externalizing Disorders in the Developmental Course  
Link: [http://campus.uni-tuebingen.de/20152e127959](http://campus.uni-tuebingen.de/20152e127959)  
Course type: Forschungsseminar  
Contact hours: 2  
Course coordinator: Dr. rer. nat. Aiste Jusyte  
Course description  
In this course, we will focus on learning about externalizing disorders during childhood and adolescence (oppositional-defiant disorder, conduct disorder, ADHD) as well as adulthood (ADHD, antisocial personality disorder, psychopathy). In the second half of the course, we will explore some of the most established etiological models, new research directions and treatment approaches.

Environmental Sciences – Bachelor

Course title: Dynamik der Erde (V)  
Link: [http://campus.uni-tuebingen.de/20152e121520](http://campus.uni-tuebingen.de/20152e121520)  
Course type: Lecture  
Contact hours: 4  
Course coordinator: Prof. Dr. phil. Todd Ehlers  
Course description  
Course title: Geophysics 1 (VÜ)
Link: http://campus.uni-tuebingen.de/20152e121429
Course type: Lecture/Exercises
Contact hours: 3
Course coordinator: Prof. Dr. rer. nat. Erwin Appel

Course title: The Hilgendorf Lecture
Link: http://campus.uni-tuebingen.de/20152e124166
Course type: Colloquium
Contact hours: 2
Course coordinator: Dr. rer. nat. Christine Hein, o. Prof. Dr. rer. nat. Nico K. Michiels
Target audience
Die EvE Hilgendorf Lecture is open for all interested persons.
Course description
Internationally acclaimed external guests present their latest work in the field of Evolutionary Biology and Ecology.
Additional information

Course title: Water Treatment (Module Water Treatment and Remediation)
Link: http://campus.uni-tuebingen.de/20152e121440
Course type: Lecture/Exercises
Contact hours: 3
Course coordinator: Prof. Dr. rer. nat. Christian Zwiener