
Modulhandbuch
Biology - Master's Programme
im Sommersemester 2018
erstellt am 17/04/24

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Background Modules

bio770 - Field Methods in Organismal Biology

Module label	Field Methods in Organismal Biology	
Modulkürzel	bio770	
Credit points	15.0 KP	
Workload	450 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule 	
Zuständige Personen	<ul style="list-style-type: none"> • Zotz, Gerhard (module responsibility) • Gerlach, Gabriele (Module counselling) • Albach, Dirk Carl (Module counselling) • von Hagen, Klaus Bernhard (Module counselling) • Mouritsen, Henrik (Module counselling) • Nolte, Arne (Module counselling) • Schmaljohann, Heiko (Module counselling) • Zotz, Gerhard (Prüfungsberechtigt) • Gerlach, Gabriele (Prüfungsberechtigt) • Albach, Dirk Carl (Prüfungsberechtigt) • Will, Maria (Prüfungsberechtigt) • von Hagen, Klaus Bernhard (Prüfungsberechtigt) • Mouritsen, Henrik (Prüfungsberechtigt) • Nolte, Arne (Prüfungsberechtigt) • Khan, Gulzar (Prüfungsberechtigt) • Schmaljohann, Heiko (Prüfungsberechtigt) 	
Prerequisites		
Skills to be acquired in this module	<p> ++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills + interdisciplinary thinking ++ critical and analytical thinking ++ independent searching and knowledge of scientific literature ++ ability to perform independent biological research + data presentation and discussion (E) (written and spoken) ++ project and time management ++ statistics & scientific programming </p> <p> The molecule aims at enabling students to apply theoretical knowledge to practical, hypothesis-based field studies within the scope of a seminar. The data derived from the individual projects performed are then to be documented and discussed in the form of a written laboratory course report oriented by a scientific publication and to be written in English. Several teachers cooperate to enable interdisciplinary approaches (e.g. botanical-zoological approaches). </p>	
Module contents	<p>S: Biogeographic and ecological classification and characterization of a biome (e.g. Mediterranean region, moist tropics, boreal zone), independent identification and treatment of scientific questions, presentation of scientific results in a "mini symposium" subsequent to the field studies. E: Planning and performing a field study project, data analysis, written report in the form of a scientific publication</p>	
Literatureempfehlungen	Varies with topic and field locality	
Links	www.uni-oldenburg.de/fun_eco/	
Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	annually in summer term	
Module capacity	21	
Type of module	Wahlpflicht / Elective	
Module level	MM (Mastermodul / Master module)	
Teaching/Learning method	Seminar, exercise	
Examination	Prüfungszeiten	Type of examination
Final exam of module	2 Presentations (30 %) Laboratory course report on	

Examination		Prüfungszeiten	Type of examination	
			project work (70 %) PLEASE NOTE: Additional conditions regarding attendance and ungraded activities as determined by the persons responsible for the module will apply.	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Exercises		10	SoSe	140
Seminar		2	SoSe	28
Seminar (Pflichtveranstaltung für Erstsemester OHNE bisherige Belehrung)			WiSe	0
Präsenzzeit Modul insgesamt				168 h

bio720 - Marine Biodiversity

Module label	Marine Biodiversity			
Modulkürzel	bio720			
Credit points	15.0 KP			
Workload	450 h			
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master's Programme Biology (Master) > Background Modules• Master's Programme Biology (Master) > Background Modules			
Zuständige Personen	<ul style="list-style-type: none">• Martinez Arbizu, Pedro Miguel (module responsibility)• Martinez Arbizu, Pedro Miguel (Prüfungsberechtigt)• Wehrmann, Achim (Prüfungsberechtigt)• Rossel, Sven (Prüfungsberechtigt)• Gutt, Julian (Prüfungsberechtigt)• Kröncke, Ingrid (Prüfungsberechtigt)			
Prerequisites				
Skills to be acquired in this module	<div><div>++ deepened biological expertise</div><div>++ deepened knowledge of biological working methods</div><div>++ data analysis skills</div><div>++ interdisciplinary thinking</div><div>++ critical and analytical thinking</div><div>++ independent searching and knowledge of scientific literature</div><div>++ ability to perform independent biological research</div><div>++ data presentation and discussion (written and spoken) (E)</div><div>++ teamwork</div><div>+ ethics and professional behaviour</div><div>+ project and time management</div><div>++ statistics & scientific programming</div></div> <div>Knowledge of fundamentals, topical subjects and methods in Marine Biology and Marine Geology. Studies and critical assessment of the scientific literature.</div>			
Module contents	L: (AW) General Marine Geology E: Biogenic sedimentation, Interaction benthos-sediment; (SS) Plankton of the oceans; (MH) unicellular plankton; (IK) benthos of the North-Sea; (PM) biodiversity in the deep sea and on sea-mountains; (JG) conceptions and hypotheses of marine biodiversity, biodiversity of marine vertebrates; (GG) animal migrations and dispersal behaviour. Methods and scientific work on research vessels. A lecture comprises the above-mentioned subjects and imparts marine biological theories, research results and methods. In the seminar, research is presented and discussed. In the laboratory course/exercises, subjects are treated in coordination with the contents of the lecture. With the aid of a computer, data are analysed and interpreted statistically.			
Literatureempfehlungen	as announced in the lecture			
Links				
Languages of instruction	English , German			
Duration (semesters)	1 Semester			
Module frequency	winter term			
Module capacity	unlimited			
Type of module	Wahlpflicht / Elective			
Module level	MM (Mastermodul / Master module)			
Teaching/Learning method	Lecture, seminar, exercise			
Examination	Prüfungszeiten		Type of examination	
Final exam of module			Written examination (60 %), short presentation (20%), practical exercise (20%) Regular active participation is required for the module to be passed.	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		3	WiSe	42
Exercises		9	WiSe	126
Seminar		1	WiSe	14
Präsenzzeit Modul insgesamt				182 h

bio780 - Biodiversity of Littoral Communities

Module label	Biodiversity of Littoral Communities
Modulkürzel	bio780
Credit points	15.0 KP
Workload	450 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules
Zuständige Personen	<ul style="list-style-type: none"> • Martinez Arbizu, Pedro Miguel (module responsibility) • Martinez Arbizu, Pedro Miguel (Prüfungsberechtigt)
Prerequisites	Safe apnoeiving with aptitude test and medical fitness certificate
Skills to be acquired in this module	<p>+ deepened knowledge of biological working methods + ability to perform independent biological research ++ teamwork + ethics and professional behaviour + project and time management</p> <p>By actively participating in this module students acquire qualifications in the following fields: Biological oceanography, marine biology and marine ecology: - Geological formation history of the Mediterranean Sea and Atlantic Ocean, respectively, or the Red Sea and adjacent seas - Oceanography and hydrology - Development of the faunal and floral composition of the Atlantic Ocean, the Mediterranean Sea and the Mediterranean region or the Red Sea (biogeography) - Commercial utilization of the seas and its impacts - Biotopes and biotic communities - Evolution, systematics, morphology, modes of life, and ecology of selected animal groups - Applying theoretical knowledge to real-world organisms/systems - Improved and specialized knowledge of species - Adaptation of life cycles - Interaction between organisms and environment - Dynamics of reef-building and reef-degrading processes - Threat to coral reefs/protection of marine environments Methods: - Formulation and definition of scientific approaches and selection of methods - Observation and investigation of organisms and their habitats (snorkelling/diving) - Documentation of small research projects in groups in the style of a scientific publication - Editorial work to prepare a module report - Popular presentation of results to be published by the media and to be presented at the University Further skills: - Social engagement in groups/teamwork in projects - Independent scientific work in groups - Improvement of scientific discussion culture - Consciousness of the threat to coral reefs - Practising English - Dealing with the culture of the visited region Culture: - History, culture, politics, and religion Additionally: - Physiological aspects of apnoeiving - Measures in case of accidents (also caused by "poisonous" organisms)</p>
Module contents	Biodiversity of littoral biotic communities – topographical field research
Literaturempfehlungen	<p>GRÜTER, W., 2001: Leben im Meer - Vielfalt und Zusammenhänge. Dr. Friedrich Pfeil Verlag, München. %% Should be read prior to a marine biological excursion! This book will arouse your curiosity about the submarine world. A reading book!%% HEMPEL, G., HEMPEL, I. & S. SCHIEL (HRSG.), 2006: Faszination Meeresforschung – Ein biologisches Lesebuch. Hauschild Verlag. %% This textbook is information and fun for all readers interested in marine life as well as in the protection of marine environments.%% HOFRICHTER, R., 2001: Das Mittelmeer - Fauna, Flora, Ökologie. Spektrum Akademischer Verlag, Heidelberg - Berlin: Band I, II, III. %%The textbook for the Mediterranean Sea! The general 1st part provides valuable information on symbioses or feeding types, for example.%% LALLI, C. M. & T. R., PARSONS, 1997: Biological Oceanography: An Introduction. 2. Edition. The Open University, Butterworth, Heinemann. %%Very compact, explanatory! Not expensive! A must for biological oceanography! Recommended for preparing examinations! Provides basic information!%% NYBAKKEN, J. W. & M. D. MERTNESS, 2005: Marine Biology - An ecological approach. Pearson, Education paperback book. Addison, Wesley, Publishers. %%Highly illustrative! Much additional information on different fields! The authors provide a unique ecological approach that helps students understand the real-world relevance of marine biology by exploring how organisms interact within their individual ecosystems.%% SOMMER, U., 2005: Biologische Meereskunde. 2. Auflage, Springer Verlag, Berlin, Heidelberg. %%Connecting biological oceanography with theoretical ecology!%% Literature study: Web of science: externhttp://www.bis.uni-oldenburg.de – Data banks(DBIS) – Biology – TOP data banks, e.g. ASFA, Science Citation Index, Zoological Record http://www.biodiversitylibrary.org/bibliography/14107 externhttp://scholar.google.de/ externhttp://www.vifabio.de Open access journals: externhttp://www.doaj.org/ - externhttp://www.plosone.org</p>
Links	

Languages of instruction		English , German		
Duration (semesters)		1 Semester		
Module frequency		annually in summer term		
Module capacity		unlimited		
Type of module		Wahlpflicht / Elective		
Module level		MM (Mastermodul / Master module)		
Teaching/Learning method		Exercise, seminar		
Examination	Prüfungszeiten	Type of examination		
Final exam of module	during the lectures	2 short presentations (30 %), 1 internship report (70 %) (project report in the style of a scientific publication) PLEASE NOTE: Additional conditions regarding attendance and ungraded activities as determined by the persons responsible for the module will apply.		
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Exercises		9	SoSe	126
Seminar		3	SoSe	42
Seminar (Pflichtveranstaltung für Erstsemester OHNE bisherige Belehrung)			WiSe	0
Präsenzzeit Modul insgesamt				168 h

neu210 - Neurosensory Science and Behaviour

Module label	Neurosensory Science and Behaviour	
Modulkürzel	neu210	
Credit points	9.0 KP	
Workload	270 h (4 SWS Lecture (VO) "Neuroethology" and "Behavioural ecology" Total workload 180h: 56h contact/ 60h background reading/ 64h exam preparation 2 SWS Seminar (SE) "Current issues of ethology" Total workload 90h: 28h contact/ 30h literature reading/ 32h preparation of presentation)	
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master's Programme Biology (Master) > Background Modules• Master's Programme Biology (Master) > Background Modules• Master's Programme Neuroscience (Master) > Background Modules	
Zuständige Personen	<ul style="list-style-type: none">• Langemann, Ulrike (module responsibility)• Langemann, Ulrike (Module counselling)• Mouritsen, Henrik (Module counselling)• Klump, Georg Martin (Prüfungsberechtigt)• Mouritsen, Henrik (Prüfungsberechtigt)• Langemann, Ulrike (Prüfungsberechtigt)• Albert, Jörg (Prüfungsberechtigt)• Clemens, Jan (Prüfungsberechtigt)	
Prerequisites	Fundamentals of Neurobiology, Bahavioural Biology, Evolution, Ecology	
Skills to be acquired in this module	<p>++ Neurosci. knowlg. + Expt. methods + Independent research + Scient. literature + Social skills ++ Interdiscipl. knowlg. Maths/Stats/Progr. + Data present./disc. + Scientific English Ethics</p> <p>Upon successful completion of this course, students</p> <ul style="list-style-type: none">• know the fundamentals of behavioural ecology and neuroethology• are able to present and critically assess scientific data and approaches	
Module contents	<p>The lecture "Neuroethology" provides an introduction to the mechanisms underlying the behaviour of animals. Subjects are, e.g., the mechanisms of perception, control of movement patterns, mechanisms of learning, orientation and navigation.</p> <p>The lecture "Behavioural ecology" provides an introduction to topics such as predator-prey interactions, optimal food utilization, spatial and temporal distribution of animals, social relations and group formation, mating systems and reproductive strategies, sexual selection, investment of parents in offspring, and communication.</p> <p>In the seminar "Current issues of Ethology", current original literature relating to behavioural biology is reported and discussed.</p>	
Literatureempfehlungen	Carew TJ (2004) Behavioral Neurobiology: The Cellular Organization of Natural Behavior. Sinauer Davis NB, Krebs JR, West SA (2012) An Introduction to Behavioural Ecology. Wiley Blackwell	
Links		
Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	jährlich	
Module capacity	30 (Recommended in combination with: neu220 BM "Neurocognition and Psychopharmacology" Shared course components with (cannot be credited twice): bio610 (5.02.611 "Neuroethologie", 5.02.612 "Verhaltensökologie", 5.02.613 "Aktuelle Themen der Ethologie")	
Reference text	Course in the second half of the semester Regular active participation is required to pass the module.	
Examination	Prüfungszeiten	Type of examination

Examination		Prüfungszeiten	Type of examination	
Final exam of module		as agreed, usually in the break after the winter term	80% written exam (content of the two lecture series), 20% presentation(s)	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		4		56
Seminar		2		28
Präsenzzeit Modul insgesamt				84 h

neu220 - Neurocognition and Psychopharmacology

Module label	Neurocognition and Psychopharmacology
Modulkürzel	neu220
Credit points	6.0 KP
Workload	180 h (3 SWS Lecture (VO) "Introd. to Cognitive Neuroscience" and "Psychopharmacol." Total workload 135h: 45h contact/ 45 background reading/ 45h exam preparation 1 SWS Supervised exercise (UE) Total workload 45h: 14h contact/ 31h paper reading)
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Molecular Biomedicine (Master) > Background Modules • Master's Programme Neuroscience (Master) > Background Modules
Zuständige Personen	<ul style="list-style-type: none"> • Thiel, Christiane Margarete (module responsibility) • Thiel, Christiane Margarete (Module counselling) • Thiel, Christiane Margarete (Prüfungsberechtigt) • Gießing, Carsten (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>++ Neurosci. knowlg. + Expt. methods Independent research + Scient. literature + Social skills ++ Interdiscipl. knowlg. Maths/Stats/Progr. + Data present./disc. + Scientific English Ethics</p> <p>Upon successful completion of this course, students know the fundamentals of neurotransmission know the basic neural mechanisms underlying attention, learning, emotion, language and executive functions understand the relationship between disturbances in neurotransmitter systems, cognitive functions and psychiatric disease know the principles of drug treatment for psychiatric disorders have in-depth knowledge in selected areas of these topics are able to understand, explain and critically assess neuroscientific approaches in animals and humans are able to understand and critically assess published work in the area of cognitive neuroscience</p>
Module contents	<p>The lecture "Introduction to Cognitive Neuroscience" gives a short introduction into neuroanatomy and cognitive neuroscience methods and then covers different cognitive functions.</p> <p>Lecture topics: History of cognitive neuroscience Methods of cognitive neuroscience Attention Learning Emotion Language Executive functions.</p> <p>The supervised exercise either deepens that knowledge by exercises or discussions of recent papers/ talks on the respective topic covered during that week.</p> <p>The lecture "Psychopharmacology" illustrates the connection between neurotransmitters and behaviour and its links to psychiatric disease. The lecture contains several interactive parts to consolidate and critically evaluate the acquired knowledge.</p> <p>Lecture topics: Introduction to Terms and Definitions in Drug Research Dopaminergic and Noradrenergic System Cholinergic and Serotonergic System GABAergic and Glutamatergic System Addiction Depression Schizophrenia Anxiety Alzheimer's Disease</p>
Literatureempfehlungen	Ward J (2010) The Student's Guide to Cognitive Neuroscience. Psychology

		Press Meyer JS and Quenzer LF (2012) Psychopharmacology. Sinauer		
Links				
Language of instruction		English		
Duration (semesters)		1 Semester		
Module frequency		jährlich		
Module capacity		30 (Recommended in combination with neu210 "Neurosensory Science and Behaviour", neu300 "Functional MRI data analysis" Shared course components with (cannot be credited twice): bio610 and psy181 (5.02.614 "Introduction to Cognitive Neuroscience", 5.02.615 "Psychopharmacology"))		
Reference text		Course in the second half of the semester Regular active participation is required to pass the module.		
Examination		Prüfungszeiten	Type of examination	
Final exam of module		as agreed, usually in the break after the winter term	100% written exam (content of the lectures)	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		3	--	42
Exercises		1	--	14
Präsenzzeit Modul insgesamt				56 h

neu141 - Visual Neuroscience - Physiology and Anatomy

Module label	Visual Neuroscience - Physiology and Anatomy
Modulkürzel	neu141
Credit points	12.0 KP
Workload	<p>360 h (3 SWS Lecture (VO) Total workload 90 h: 30h contact / 60h background literature reading and preparation for sh 1 SWS Seminar (SE) Total workload 30h: 10h contact / 20h literature reading and preparation of result presentation 8 SWS Supervised exercise (UE) Total workload 240h: 200h contact / 40h results analysis, writing of short reports for portfolio)</p>
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Molecular Biomedicine (Master) > Background Modules • Master's Programme Neuroscience (Master) > Background Modules
Zuständige Personen	<ul style="list-style-type: none"> • Greschner, Martin (module responsibility) • Greschner, Martin (Prüfungsberechtigt) • Ahlers, Malte (Prüfungsberechtigt) • Dedek, Karin (Prüfungsberechtigt) • Dömer, Patrick (Prüfungsberechtigt)
Prerequisites	Basic knowledge of neurobiology
Skills to be acquired in this module	<p>++ Neurosci. knowlg. ++ Expt. Methods + Independent research ++ Scient. Literature + Social skills + Maths/Stats/Progr. ++ Data present./disc. + Scientific English + Ethics</p> <p>Upon successful completion of this course, students</p> <ul style="list-style-type: none"> • have basic knowledge of electrophysiological techniques used in neuroscience research • have acquired first practical skills in some electrophysiological techniques • have acquired basic skills in data analysis • have knowledge on retinal physiology and anatomy of the visual system • have basic knowledge of brain structures and their function • have profound knowledge of the architecture and circuits of the vertebrate retina • have acquired basic skills in histological techniques (tissue fixation, embedding, sectioning, staining procedures, immunohistochemistry) • have acquired fundamental skills in microscopy (differential interference contrast microscopy, phase-contrast microscopy, confocal microscopy)
Module contents	<p>The background module Neurophysiology consists of two weeks of theoretical introduction and two weeks of hands-on lab exercises in patch or extracellular recordings and two weeks of hands-on lab exercises in anatomy.</p> <p>The seminars cover the following topics:</p> <ul style="list-style-type: none"> • Visual system • Introduction to electrophysiological methods • Introduction into methods used in neuroanatomy and neurochemistry • Introduction into microscopy and image analysis • Presentation and discussion of results relating to the literature
Literatureempfehlungen	Course scripts and mandatory scientific literature discussed in the seminar will be available in Stud.IP.

Background and seminar literature will be available in Stud.IP.

Links				
Language of instruction		English		
Duration (semesters)		1 Semester		
Module frequency		annually, summer term, first half (full time)		
Module capacity		12 - with Visual Neuroscience: Anatomy (Shared course components with (cannot be credited twice): neu151 BM Visual Neuroscience: Anatomy)		
Examination		Prüfungszeiten	Type of examination	
Final exam of module		during the course (summer semester, first half) In addition, mandatory but ungraded: seminar presentation	PF	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe oder WiSe	28
Seminar		2	SoSe oder WiSe	28
Exercises		2	SoSe oder WiSe	28
Präsenzzeit Modul insgesamt				84 h

neu360 - Auditory Neuroscience

Module label	Auditory Neuroscience
Modulkürzel	neu360
Credit points	6.0 KP
Workload	<p>180 h (1 SWS Lecture (VO) Total workload 45h: 14 h contact / 31 h background reading</p> <p>1 SWS Seminar (SE) Total workload 45h: 14 h contact / 15 h background reading / 16 h preparation and presentation</p> <p>2 SWS Supervised exercise (UE) Total workload 90h: 10 h contact / 20 h literature search / 60 h work on essay paper)</p>
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Neuroscience (Master) > Background Modules
Zuständige Personen	<ul style="list-style-type: none"> • Köppl, Christine (module responsibility) • Klump, Georg Martin (Prüfungsberechtigt) • Köppl, Christine (Prüfungsberechtigt)
Prerequisites	Recommended previous knowledge/skills: Basics of Neurosensory Science and Behavioural Biology
Skills to be acquired in this module	<p>++ Neurosci. knowlg + Expt. methods ++ Scient. Literature + Social skills ++ Interdiscipl. knowlg ++ Data present./disc. ++ Scientific English + Ethics</p> <p>Introduction to Auditory Physiology. May serve as preparation for a Research Module in this area.</p> <p>Upon successful completion of this course, students</p> <ul style="list-style-type: none"> • have profound knowledge on auditory sensory processing at several levels (including cochlear transduction mechanisms, central auditory processing) • have basic knowledge of the large range of techniques used in auditory research • are able to read and critically report to others on an original research paper in auditory neuroscience • are able to research and review a specific topic in auditory neuroscience
Module contents	<p>One week introductory block course, comprised of a lecture series and matching seminar that emphasizes discussion.</p> <p>Topics:</p> <p>Hair cells: structure, transduction mechanism, receptor potential, synaptic transmission</p> <p>Basilar papilla / cochlea: structure, micromechanics, amplification; otoacoustic emissions</p> <p>Auditory nerve: phase locking, rate coding. Excitation patterns</p> <p>Ascending auditory pathways: wiring, principles of excitation/inhibition, examples of cellular/molecular specialisations</p> <p>Sound localisation in birds and mammals</p> <p>Central auditory processing: imaging techniques, auditory streams, cortex, primates</p> <p>Relation between psychophysics and neurophysiology</p> <p>The introductory block is followed by a supervised literature search and individually written term paper on a specific topic in auditory neuroscience.</p>
Literatureempfehlungen	<p>About 20 selected original papers (selection varies)</p> <p>Pickles JO (2012) An Introduction to the Physiology of Hearing. Brill, Netherlands</p>

Links

Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	annually, summer term, second half
Module capacity	15 (BM neu211 "Neurosensory Science and Behaviour" or BM neu270 "Neurocognition and Psychophysics" or skills module biox "Current Topics in Hearing Science")
Reference text	Registration procedure / selection criteria: StudIP, final acceptance after assignment of seminar presentation

Examination	Prüfungszeiten	Type of examination
Final exam of module	within a few weeks of the end of summer term lecture period	HA

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1	SoSe	14
Seminar		1	SoSe	14
Exercises		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

neu340 - Invertebrate Neuroscience - Neurophysiology

Module label	Invertebrate Neuroscience - Neurophysiology
Modulkürzel	neu340
Credit points	6.0 KP
Workload	180 h (2 SWS Seminar (SE) Total workload 72h: 28h contact / 44h background literature reading, preparation for short tests, portfolio assignments and results presentation 3 SWS Supervised exercise (UE) Total workload 108h: 42h contact / 66h data analysis and preparation of portfolio assignments))
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master's Programme Biology (Master) > Background Modules• Master's Programme Biology (Master) > Background Modules• Master's Programme Neuroscience (Master) > Background Modules
Zuständige Personen	<ul style="list-style-type: none">• Kretzberg, Jutta (module responsibility)• Kretzberg, Jutta (Prüfungsberechtigt)• Albert, Jörg (Prüfungsberechtigt)
Prerequisites	attendance in pre-meeting
Skills to be acquired in this module	<p>++ Neurosci. knowlg. ++ Expt. Methods + Scient. Literature + Social skills + Maths/Stats/Progr. + Independent Research + Data present./disc. + Scientific English + Ethics</p> <p>Upon successful completion of this course, students</p> <ul style="list-style-type: none">• have knowledge on invertebrate neuronal systems in comparison to vertebrate systems• have discussed an overview of experimental and theoretical methods of invertebrate neuroscienc• have acquired first practical skills in intracellular recordings from invertebrate neurons• have acquired basic skills in data analysis• have acquired an intuitive understanding of membrane potential and action potential generation based on computer simulations
Module contents	<p>The module consists of three weeks of seminar and hands-on lab exercises on intracellular recordings from leech neurons, as well as computer simulations to study the basis of membrane potential and action potential generation.</p> <p>The seminar covers the following topics:</p> <ul style="list-style-type: none">• Invertebrate neuronal systems in comparison to vertebrate systems• Ion channels, membrane potential and action potential generation• Introduction to electrophysiological methods• Introduction to data analysis methods <p>In the practical exercises, portfolio assignments will be performed on:</p> <ul style="list-style-type: none">• Qualitative electrophysiological classification of different cell types in the leech nervous system• Quantitative analysis (stimulus - response relationship) of at least one cell type• Action potential generation: Comparison of model simulations and experiments

- Planning a small individual team-work project based on the techniques taught in this module, that can be used as basis for the module neu345

Literaturempfehlungen		Course scripts and mandatory scientific literature (3 review articles) discussed in the seminar will be available in Stud.IP Background and seminar literature will be available in Stud.IP		
Links				
Language of instruction		English		
Duration (semesters)		1 Semester		
Module frequency		annually, summer term, second half		
Module capacity		12 (this module provides the background for neu345 "Neural Computation in invertebrate systems")		
Type of module		Wahlpflicht / Elective		
Previous knowledge		basic knowledge of neurobiology, basic MATLAB programming skills		
Examination	Prüfungszeiten	Type of examination		
Final exam of module	during the course (summer term, second half)	Portfolio consisting of short tests, short reports (according to portfolio assignments) and seminar presentation		
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar		2	SoSe	28
Exercises		3	SoSe	42
Präsenzzeit Modul insgesamt				70 h

neu310 - Psychophysics of Hearing

Module label	Psychophysics of Hearing		
Modulkürzel	neu310		
Credit points	12.0 KP		
Workload	360 h (5 SWS Practical (PR) "Experiments in Hearing" Total workload 225h: 70h contact / 110h experimental work / 45h exam preparation 1 SWS Supervised exercise (UE) "Fundamentals in psychoacoustic data analysis" Total workload 45h: 15h contact / 30h practising data analysis (incl. SPSS) 2 SWS Seminar (SE) "Hearing" Total workload 90h: 30h contact / 60h background reading)		
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Neuroscience (Master) > Background Modules 		
Zuständige Personen	<ul style="list-style-type: none"> • Klump, Georg Martin (module responsibility) • Klump, Georg Martin (Prüfungsberechtigt) • Langemann, Ulrike (Prüfungsberechtigt) • Beutelmann, Rainer (Prüfungsberechtigt) 		
Prerequisites			
Skills to be acquired in this module	+ Neurosci. knowlg. ++ Expt. Methods + Social skills ++ Maths/Stats/Progr. + Data present./disc. + Scientific English Students will learn the basics about performing a psychoacoustic experiment. Based on an experiment in which they study their own hearing, they will learn how to conduct a behavioural study in hearing and analyze the data. In addition, they will be provided with an overview of the mechanisms of auditory perception.		
Module contents	The modul comprises (i) a seminar "Hearing" [2 SWS] (ii) an exercise "Fundamentals in psychoacoustic data analysis" [1 SWS], and a (iii) practical course [7 SWS] including aspects of planning and conducting psychoacoustic experiments.		
Literatureempfehlungen	Plack, Christopher J. (2005) The sense of hearing. Mahwah, NJ [u.a.] : Erlbaum (sufficient number of copies available in the university library)		
Links			
Language of instruction	English		
Duration (semesters)	1 Semester		
Module frequency	annually, summer term, second half		
Module capacity	6 (in total with bio640)		
Type of module	je nach Studiengang Pflicht oder Wahlpflicht		
Module level	---		
Examination	Prüfungszeiten	Type of examination	
Final exam of module	end of summer term	70% report or oral exam, 30% presentation In addition, mandatory but ungraded: regular active participation	
Lehrveranstaltungsform	Comment	SWS	Frequency
Exercises		1	SoSe
Seminar		2	SoSe
Practical training		5	SoSe
Lecture			SoSe
Präsenzzeit Modul insgesamt			Workload of compulsory attendance
			14
			28
			70
			0
			112 h

Research Modules

bio810 - External Research Project

Module label	External Research Project
Modulkürzel	bio810
Credit points	15.0 KP
Workload	450 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> Master's Programme Biology (Master) > Research Modules Master's Programme Biology (Master) > Research Modules
Zuständige Personen	<ul style="list-style-type: none"> Zotz, Gerhard (module responsibility) Zotz, Gerhard (Prüfungsberechtigt) der Biologie, Lehrende (Prüfungsberechtigt)
Prerequisites	<p>External research projects are done on an individual basis. They are supervised by one person from Oldenburg (see list of examiners, https://uol.de/fk5/studium/studiengaenge/pruefungsberechtigte) and a local supervisor at any university or research institution in Germany and abroad. Please contact Gerhard Zotz (Gerhard.zotz@uol.de) for details. See https://uol.de/ibu/studium-und-lehre/fach-master-biology/downloads-und-links/ (Learning Agreement for External Research Module)</p>
Skills to be acquired in this module	<p>++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills ++ critical and analytical thinking ++ independent searching and knowledge of scientific literature ++ ability to perform independent biological research ++ data presentation and discussion (written and spoken) + teamwork ++ project and time management ++ statistics & scientific programming</p> <p>Students perform individual research projects to learn: • planning and organization of a research project in a group outside of University of Oldenburg • formulate a scientific hypothesis • planning, performing and analyzing experiments and / or simulations • working with scientific background literature on the specific context of the project • oral presentation and discussion of backgrounds and results in the lab seminar • write a scientific report in publication format • prepare and present a scientific poster</p>
Module contents	<p>Students are introduced to independent research in a specific area of biology by a scientific working group outside of the regular IBU Biology faculty at the University of Oldenburg (usually a university research institute in Germany or abroad).</p> <p>The content and venue of this module is chosen in close coordination with the Prüfungsausschuss Master Biologie, possibly with consultations of other professors. Course work should cover all parts of a scientific project, i.e. data collection, data analysis and the presentation of the results. Irrespective of the particular venue (universities, research institutes) the student has to report to a professor in Oldenburg in form of a written report and an oral presentation, both in English.</p> <p>Note: • all members of the regular IBU Biology faculty at the University of Oldenburg can act as local supervisor (see list of examiners, https://uol.de/fk5/studium/studiengaenge/pruefungsberechtigte), students should contact appropriate supervisors individually • prior to project start, external and local supervisors must fill the learning agreement form • the supervisor at the host institution is invited to submit a short written statement of assessment, final grading is done by the local supervisor • participation in a joint poster presentation of concurrent research modules is highly recommended.</p>
Literatureempfehlungen	varies with chosen topic
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	Summer and winter term
Module capacity	unlimited
Type of module	Wahlpflicht / Elective
Module level	MM (Mastermodul / Master module)

Teaching/Learning method		Project-based component		
Examination		Prüfungszeiten	Type of examination	
Final exam of module			internship report	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar		1	SoSe und WiSe	14
Projektorientiertes Modul		10	SoSe und WiSe	140
Präsenzzeit Modul insgesamt				154 h

bio820 - Research Module Fast Track

Module label	Research Module Fast Track	
Modulkürzel	bio820	
Credit points	15.0 KP	
Workload	450 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Research Modules • Master's Programme Biology (Master) > Research Modules 	
Zuständige Personen	<ul style="list-style-type: none"> • Klump, Georg Martin (module responsibility) • Klump, Georg Martin (Prüfungsberechtigt) 	
Prerequisites		
Skills to be acquired in this module	[nop] ++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills ++ critical and analytical thinking ++ independent searching and knowledge of scientific literature ++ ability to perform independent biological research ++ data presentation and discussion in German and English (written and spoken) + teamwork ++ project and time management ++ statistics & scientific programming [/nop]	
Module contents		
Literatureempfehlungen		
Links		
Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	irregular	
Module capacity	unlimited	
Type of module	Wahlpflicht / Elective	
Module level	MM (Mastermodul / Master module)	
Teaching/Learning method	Project-based component	
Examination	Prüfungszeiten	Type of examination
Final exam of module		internship report
Lehrveranstaltungsform	Seminar	
SWS	1	
Frequency	--	

Skills Modules

neu730 - Biosciences in the Public Eye and in our Laws

Module label	Biosciences in the Public Eye and in our Laws
Modulkürzel	neu730
Credit points	6.0 KP
Workload	180 h (56h contact / 84h research for presentations / 40h term paper)
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Neuroscience (Master) > Skills Modules
Zuständige Personen	<ul style="list-style-type: none"> • Köppl, Christine (module responsibility) • Sienknecht, Ulrike (Module counselling) • Köppl, Christine (Prüfungsberechtigt) • Sienknecht, Ulrike (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>+ Expt. methods + Scient. Literature ++ Social skills ++ Interdiscipl. knowlg + Data present./disc. + Scientific English ++ Ethics</p> <p>Upon completion of this course, students</p> <ul style="list-style-type: none"> • know basic rules of good scientific practise • are aware of the legal framework that is relevant to biological research, e.g. on animal welfare or genetically modified organisms • have practised to research and summarize different viewpoints on biological research, using both scientific (peer-reviewed) and non-scientific sources • are able to identify and critically discuss ethical conflicts in biological research, e.g., in the context of stem cell research or data manipulation • are able to prepare and give a coherent presentation in a team • have practised to lead a group discussion
Module contents	<p>In supervised exercises, students research the ethical aspects and controversial issues on several specific topics in the biosciences. Everyone participates in researching all topics. Students then take turns in summarizing and presenting each topic in small teams, and leading a critical discussion of each topic. Problem-based, independent research of the scientific background by the students is an integral part of this module.</p> <p>Example topics: Good scientific practise and fraud Neuroenhancement Artificial intelligence Animal welfare, Animal experiments Overfishing, Nature conservation State-of-the-art genetic tools and their implications Genetically modified organisms, e.g., in food production, chimeras Stem cells Humans as experimental subjects</p> <p>A bonus can be obtained through active participation during the semester. Active participation requires regular oral contributions to the group discussions, that go beyond giving your own talks. A bonus improves the exam mark by one step (0.3 or 0.4). The bonus is optional, an exam mark of 1.0 is achievable without a bonus. A bonus cannot be applied to pass a failed exam.</p>
Literatureempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1 Semester

Module frequency		annually, summer term		
Module capacity		18		
Type of module		Wahlpflicht / Elective		
Module level		MM (Mastermodul / Master module)		
Previous knowledge		Fundamentals of genetics, physiology, ecology and biological systematics		
Examination	Prüfungszeiten	Type of examination		
Final exam of module	within a few weeks of summer term lecture period	Term paper Regular participation during the semester is required (max 3 days of absence)		
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture			SoSe	0
Seminar und Übung		4	SoSe	56
Präsenzzeit Modul insgesamt				56 h

neu751 - Laboratory Animal Science

Module label	Laboratory Animal Science
Modulkürzel	neu751
Credit points	3.0 KP
Workload	<p>90 h (one week full-time in semester break + flexible time for studying and exam preparation</p> <p>1 SWS Lecture total workload 45h: 2h contact / 20h background reading / 23h exam preparation</p> <p>1 SWS Supervised exercise total workload 45h: 35h contact / 10h background reading)</p>
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Molecular Biomedicine (Master) > Skills Modules • Master's Programme Neuroscience (Master) > Skills Modules
Zuständige Personen	<ul style="list-style-type: none"> • Köppl, Christine (module responsibility) • Köppl, Christine (Prüfungsberechtigt) • Langemann, Ulrike (Prüfungsberechtigt) • Nolte, Arne (Prüfungsberechtigt) • Heyers, Dominik (Prüfungsberechtigt) • Ebbers, Lena (Prüfungsberechtigt) • Dedek, Karin (Prüfungsberechtigt) • Schmaljohann, Heiko (Prüfungsberechtigt) • Winklhofer, Michael (Prüfungsberechtigt)
Prerequisites	none
Skills to be acquired in this module	<p>++ Expt. Methods + Independent Research + Scient. Literature ++ Social skills ++ Interdiscipl. knowlg + Scientific English ++ Ethics</p> <p>Upon successful completion of this course, students</p> <ul style="list-style-type: none"> • know the relevant EU legislation governing animal welfare and are able to explain its meaning in common language • understand and are able to critically discuss salient ethical concepts in animal experimentation, such as the three Rs and humane endpoint. • have basic knowledge of the biology and husbandry of laboratory animal species held at the University of Oldenburg (rodents or birds or fish) • are able to critically assess the needs and welfare of animals without compromising scientific integrity of the investigation • have practical skills in handling small rodents or birds or fish • have profound knowledge of anaesthesia, analgesia and basic principles of surgery. • have practised invasive procedures and euthanasia. <p>NOTE: These objectives aim to satisfy the requirements for EU directive A „Persons carrying out animal experiments“ and EU directive D „Persons killing animals“.</p>
Module contents	<p>Background knowledge is taught using the third-party online platform "LAS Interactive" which concludes with a written exam that has to be passed before the practical part. Topics covered are:</p> <ul style="list-style-type: none"> • Legislation, ethics and the 3Rs • Scientific integrity • Data collection " • Basic biology of rodents, birds and fish • Husbandry, and nutrition of rodents, birds and fish • Animal Welfare • Health monitoring • Pain and distress • Euthanasia

Practical procedures will first be demonstrated, important aspects will then be practiced under supervision by every participant, on an animal model of their choice (rodents, birds or fish):

- Handling and external examination
- Administration of substances, blood sampling
- Euthanasia and dissection
- Transcardial perfusion
- Anaesthesia and surgery

Literatureempfehlungen		"LAS interactive" internet-based learning platform		
Links				
Language of instruction		English		
Duration (semesters)		1 Semester		
Module frequency		semester break, every semester		
Module capacity		20 (Registration procedure / selection criteria: StudIP, sequence of registration)		
Examination		Prüfungszeiten		Type of examination
Final exam of module		immediately before the practical part		written exam of 90 minutes
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1	SoSe und WiSe	14
Exercises		1	SoSe und WiSe	14
Präsenzzeit Modul insgesamt				
28 h				

neu760 - Scientific English

Module label	Scientific English	
Modulkürzel	neu760	
Credit points	6.0 KP	
Workload	180 h (0,5 SWS Lecture (VO) Total workload 23h: 8h contact / 15h research for term paper 3,5 SWS Supervised exercise (UE) Total workload 158h: 46h contact / 46h preparation of texts and presentations / 66h term paper)	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Molecular Biomedicine (Master) > Skills Modules • Master's Programme Neuroscience (Master) > Skills Modules 	
Zuständige Personen	<ul style="list-style-type: none"> • Köppl, Christine (module responsibility) • Köppl, Christine (Prüfungsberechtigt) 	
Prerequisites	non-native speakers	
Skills to be acquired in this module	+ Neurosci. knowlg. ++ Social skills ++ Data present./disc. ++ Scientific English Upon completion of this course, students <ul style="list-style-type: none"> • have increased their proficiency in different forms of scientific presentation and communication in English, with special emphasis on neuroscience • are able to express themselves with correct sentence structure and grammar, correct use of idioms and correct pronunciation • are proficient in different contexts of scientific communication (e.g., paper, poster and informal exchange by email or phone) • are able to recognize and avoid common errors of non-native speakers. 	
Module contents	Lectures cover - characteristics of the different forms of scientific presentations - sentence structure using the passive voice - scientific vocabulary and terminology as contrasted to common speech - appropriate language for communication with scientific editors and referees Students read neuroscience texts of an advanced level and practice explaining and presenting these in both written and oral form. They also practice different contexts of scientific communication (e.g., paper, poster and informal exchange by email or phone). Emphasis is placed on individual problems in pronunciation and language use errors.	
Literatureempfehlungen	http://users.wpi.edu/~nab/sci_eng/ScientificEnglish.pdf	
Links		
Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	annually, semester break	
Module capacity	12	
Reference text	Usually held in the break before summer term Outsourced to STELS-OL (Scientific and Technical English Language Service); native English speaker with in-depth neuroscience knowlg.	
Previous knowledge	minimum English level B2 (C1 preferred) according to Common European Framework of Reference for Languages (CEFR) priority to non-native speakers, higher semester	
Examination	Prüfungszeiten	Type of examination
Final exam of module	within 2 months of completing the course	Portfolio: 70% several quick tests, texts, presentations, 30% term paper Bonus system for active participation

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		0.5	WiSe	7
Exercises		3.5	WiSe	49
Präsenzzeit Modul insgesamt				56 h

neu780 - Biological Data Analysis with Python

Module label	Biological Data Analysis with Python			
Modulkürzel	neu780			
Credit points	6.0 KP			
Workload	180 h (2 SWS Lecture total workload 90h: 30h contact / 60h individual reading 2 SWS Supervised exercise total workload 90h: 45h contact / 45h solving programming exercises)			
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Neuroscience (Master) > Skills Modules 			
Zuständige Personen	<ul style="list-style-type: none"> • Winklhofer, Michael (module responsibility) • Winklhofer, Michael (Prüfungsberechtigt) 			
Prerequisites				
Skills to be acquired in this module	+ Neurosci. knowlg. ++ Maths/Stats/Progr. + Data present./disc. The objective of the module is the acquisition of programming skills with focus on analysis of neurobiological datasets, using the programming language python. Python is available for any computer platform (PC, Mac, Linux) and is open source (for free), see https://www.python.org/ . Students will learn how to write effective scripts for data processing and visualisation, making use of pre-existing program libraries for various generic purposes (maths, statistics, plotting, image analysis). Typical applications will be analysis of time series (e.g., electrophysiological recordings, movement data), images (e.g. immunohistochemical images, MRI slices), and spatio-temporal correlations in volume data. Students will also learn how to produce synthetic data from various noise models to assess signal-to-noise ratio in instrumental datasets.			
Module contents	Data types and data structures, control structures, functions, modules, file input/output Standard libraries and SciPy libraries (Matplotlib, NumPy,...), scikit-image, VPython, ...			
Literatureempfehlungen	open access http://www.swaroopch.com/notes/python/ http://docs.python.org/3/tutorial/index.html			
Links				
Language of instruction	English			
Duration (semesters)	1 Semester			
Module frequency	semester break, annually			
Module capacity	20			
Reference text	Shared course components with (cannot be credited twice): pb328 "Einführung in Datenanalyse mit Python" (Professionalisierungsmodul im Bachelorstudiengang Biologie)			
Examination	Prüfungszeiten		Type of examination	
Final exam of module	term break, immediately after the course (2 weeks in February)		assignment of programming exercises, 4 out of 5 exercises to be assessed	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

neu790 - Communicating Neuroscience

Module label	Communicating Neuroscience
Modulkürzel	neu790
Credit points	3.0 KP
Workload	90 h (90 h (28 h contact / 62 h individual reading and preparing discussion questions))
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master's Programme Biology (Master) > Skills Modules• Master's Programme Biology (Master) > Skills Modules• Master's Programme Neuroscience (Master) > Skills Modules
Zuständige Personen	<ul style="list-style-type: none">• Kretzberg, Jutta (module responsibility)• Kretzberg, Jutta (Prüfungsberechtigt)• Köppl, Christine (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>+ Neurosci. knowlg. ++ Scient. Literature ++ Social skills + Interdiscipl. knowlg. ++ Data present./disc. + Scientific English ++ Ethics</p> <p>Upon successful completion of this course, students will have thought about and discussed in depth scientific, social and ethical aspects of communication in and about neuroscience. In particular, participants practice critical reading of neuroscience literature, learn about the scientific publication process and discuss science communication to the general public.</p>
Module contents	<p>The overall goal of critical discussion of neuroscientific results in a scientific, social and ethical context requires preparation and active participation both before (Stud.IP wiki) and during the weekly sessions. Each participant is responsible for the preparation and moderation of at least one session in a group of 2-3 students. For passing the module, additional active participation is required in at least 10 of the seminar sessions. The specific papers and topics that are discussed vary, but typically cover:</p> <ul style="list-style-type: none">• How to find literature?• How to read different types of scientific papers: Classic papers, review papers, perspective papers, recent original papers?• Publication process, Authorship and impact metrics• Alternative publication paths and data sharing in neuroscience• Science communication for the general public and on social media• Face-to-face scientific communication
Literatureempfehlungen	<p>List of published papers, as well as online resources for preparation will be selected by the teachers and participants and announced via Stud.IP.</p> <p>Background neuroscience textbooks, e.g.:</p> <p>Galizia, Lledo 'Neuroscience – From Molecule to Behavior', 2013, Springer</p> <p>Nicholls et al. 'From Neuron to Brain', 5th edition 2012, Sinauer</p> <p>Kandel et al. 'Principles of Neural Science', 5th Edition 2013, McGraw-Hill Comp.</p>

Links

Related content: Science communication workshop:

<https://elearning.uni-oldenburg.de/dispatch.php/course/overview?cid=6fc0dbbf5a53d7b3f5e3680f52ac7d0f7>

Language of instruction		English
Duration (semesters)		1 Semester
Module frequency		winter semester
Module capacity		20 (Registration procedure / selection criteria: StudIP)
Type of module		Wahlpflicht / Elective
Module level		MM (Mastermodul / Master module)
Examination	Prüfungszeiten	Type of examination
Final exam of module		Presentation (ungraded, pass / fail)
Lehrveranstaltungsform	Seminar	
SWS	2	
Frequency	WiSe	

neu800 - Introduction to Matlab

Module label	Introduction to Matlab			
Modulkürzel	neu800			
Credit points	3.0 KP			
Workload	90 h (2 SWS Supervised exercise (UE) "Introduction to MATLAB" Total workload 90h: 28h contact / 62h practising learned programming skills)			
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Neuroscience (Master) > Skills Modules 			
Zuständige Personen	<ul style="list-style-type: none"> • Gießing, Carsten (module responsibility) • Gießing, Carsten (Prüfungsberechtigt) 			
Prerequisites				
Skills to be acquired in this module	++ Expt. Methods + Social skills + Interdiscipl. knowlg. ++ Maths/Stats/Progr. + Data present./disc. + Scientific English Within this introductory course students will learn the basics of MATLAB programming. Participants will be introduced in fundamental programming concepts.			
Module contents	The modul comprises an introduction to data structures, flow control, loops, graphics, basic data analyses with MATLAB, scripts and functions.			
Literatureempfehlungen	Recommended: Wallisch, Pascal (2014) MATLAB for neuroscientists: an introduction to scientific computing in MATLAB. 2. ed., Amsterdam: Elsevier.			
Links				
Language of instruction	English			
Duration (semesters)	1 Semester			
Module frequency	annually, summer term, second half			
Module capacity	12 (in total with bio640) (shared course components with (cannot be credited twice): bio640)			
Examination	Prüfungszeiten	Type of examination		
Final exam of module	end of summer term	Working on exercises Regular active participation		
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture			SoSe	0
Seminar			SoSe	0
Exercises		2	SoSe	28
Präsenzzeit Modul insgesamt				28 h

neu810 - International Meeting Contribution

Module label	International Meeting Contribution	
Modulkürzel	neu810	
Credit points	3.0 KP	
Workload	90 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Neuroscience (Master) > Skills Modules 	
Zuständige Personen	<ul style="list-style-type: none"> • Kretzberg, Jutta (module responsibility) • Kretzberg, Jutta (Prüfungsberechtigt) • Köppl, Christine (Prüfungsberechtigt) 	
Prerequisites		
Skills to be acquired in this module	<p>+ Neurosci. knowlg. ++ Independent research + Scient. Literature ++ Social skills + Interdiscipl. knowlg. ++ Data present./disc. + Scientific English + Ethics</p> <p>Preparation, presentation and critical discussion of own studies for an international audience:</p> <ul style="list-style-type: none"> • participate in an international meeting • prepare a poster or talk for an international meeting • present own results in a way that is appropriate for the target audience • put own studies into the context of scientific literature • acquire additional knowledge about a broader field of research 	
Module contents	<p>Active participation in a scientific conference, workshop, summer school etc, lasting a minimum of 3 full days. Student must be the presenter (poster or talk) and an author of the presented work, typically carried out in the context of a research module or the Master thesis.</p> <p>It is mandatory to present the poster or talk to Christine Köppl or Jutta Kretzberg prior to the meeting and incorporate the feedback on the presentation.</p>	
Literatureempfehlungen	dependent on the scientific topic	
Links		
Language of instruction	English	
Duration (semesters)	1 Semester	
Module frequency	every semester, flexible	
Module capacity	unlimited (please contact module organizer individually)	
Type of module	Wahlpflicht / Elective	
Module level	MM (Mastermodul / Master module)	
Examination	Prüfungszeiten	Type of examination
Final exam of module		presentation (ungraded, pass/fail)
Lehrveranstaltungsform	Seminar	
SWS	2	
Frequency	SoSe und WiSe	

Abschlussmodul

mam - Master's Thesis Module

Module label	Master´s Thesis Module		
Modulkürzel	mam		
Credit points	30.0 KP		
Workload	900 h		
Verwendbarkeit des Moduls	<ul style="list-style-type: none">Master's Programme Biology (Master) > Abschlussmodul		
Zuständige Personen	<ul style="list-style-type: none">der Biologie, Lehrende (Prüfungsberechtigt)		
Prerequisites			
Skills to be acquired in this module	<p>Successful completion of the Master module demonstrates that students are able to work on a problem in the field of Biology within a fixed period applying scientific methods.</p> <p>++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills ++ critical and analytical thinking + independent searching and knowledge of scientific literature ++ ability to perform independent biological research ++ data presentation and discussion in German and English (written and spoken) + teamwork + ethics and professional behaviour ++ project and time management</p>		
Module contents	<p>Preparing the Master thesis Active participation in the seminar of the research group, in which the Master thesis is written</p>		
Literatureempfehlungen	<p>Supervisors may supply an initial reading list with important literature. The students are expected to find and use further literature as needed.</p>		
Links			
Languages of instruction	English , German		
Duration (semesters)	1 Semester		
Module frequency	semiannual		
Module capacity	unlimited		
Examination	Prüfungszeiten	Type of examination	
Final exam of module		master's thesis (90%) Final colloquium (10%)	
Lehrveranstaltungsform	Seminar		
SWS	2		
Frequency	SoSe und WiSe		

