

Subdivided Module Catalogue
for the Subject
Translational Neuroscience
with the degree "Zusatzstudium"
(90 ECTS credits)

Examination regulations version: 2022
Responsible: Faculty of Medicine

Abbreviations used

Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

SPO+ASPO2015

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

22-Dec-2021 (2021-90)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Compulsory Courses (Major) (55 ECTS credits)				
03-TN-MNS-152-m01	Methods in Neurosciences	5	B/NB	27
03-TN-NB1-152-m01	Clinical Neurobiology 1	5	NUM	30
03-TN-NB2-152-m01	Clinical Neurobiology 2: Trend-setting and current findings in neurobiology	5	B/NB	32
03-TN-NN1-152-m01	Neurology/ Neurosurgery 1	5	NUM	34
03-TN-NN2-152-m01	Neurology/ Neurosurgery 2	5	B/NB	36
03-TN-PSYT1-152-m01	Psychiatric Neurosciences	5	NUM	44
03-TN-PSYT2-152-m01	Current findings in psychiatric neurosciences	5	B/NB	45
06-TN-BPSY1-152-m01	Biopsychology 1	5	NUM	49
06-TN-BPSY2-152-m01	Biopsychology 2	5	B/NB	50
03-TN-LR1-152-m01	Advanced lab rotation 1	5	NUM	24
06-TN-BS-222-m01	Biostatistics	5	B/NB	51
Compulsory Electives (Minor) (35 ECTS credits)				
Module Group General Compulsory Electives				
03-TN-P-152-m01	Pain	5	B/NB	40
03-TN-NI-172-m01	Neuroinflammation	5	NUM	33
03-TN-IC-152-m01	Ion channels	5	NUM	22
03-TN-FI-152-m01	Functional Neuroimaging	5	B/NB	21
03-TN-DI-172-m01	Developmental Neuroimaging	5	NUM	15
03-TN-PN-172-m01	Regeneration in the nervous system	5	NUM	43
03-TN-DNP-172-m01	Developmental Neuropsychiatry	5	NUM	16
03-TN-CN-152-m01	Cellular Neurobiology	5	NUM	12
03-TN-EP-152-m01	Experimental Psychiatry	5	NUM	18
03-TN-DCN-152-m01	Developmental cognitive Neuroscience	5	NUM	13
03-TN-RM-172-m01	RNA-Metabolismus/ RNA metabolism	5	B/NB	46
06-TN-EPHY-182-m01	Electrophysiology in human and animals	5	B/NB	52
03-TNOM-191-m01	Optical methods for visualization and manipulation of neural circuits- from synapses to behavior	5	B/NB	38
03-TN-PDES-182-m01	Project design	5	B/NB	41
03-TN-PDEV-182-m01	Project Development	5	B/NB	42
03-TN-EXP1-182-m01	Ask the expert 1	5	B/NB	20
03-EXP2-182-m01	Ask the expert 2	5	B/NB	5
03-TN-ASL-152-m01	Advanced Subject Lecture 1 (actual lectures to be specified)	10	B/NB	7
03-TN-ASL-2-152-m01	Advanced Subject Lecture 2 (actual lectures to be specified)	5	B/NB	8
03-TN-ASL-3-152-m01	Advanced Subject Lecture 3 (actual lectures to be specified)	5	B/NB	9
03-TN-MP-1-152-m01	Meeting Participation 1 (Poster)	5	B/NB	28
03-TN-MT-1-152-m01	Meeting Participation 1 (Talk)	10	B/NB	29
03-TN-ATP-1-152-m01	Advanced Training Program GSLS 1	5	B/NB	10
03-TN-ATP-2-152-m01	Advanced Training Program GSLS 2	5	B/NB	11
03-TN-TU-1-152-m01	Tutorial 1	3	B/NB	47
03-TN-TU-2-152-m01	Tutorial 2	5	B/NB	48

Module Group Compulsory Electives Lab Courses				
03-TN-LR2-152-m01	Advanced lab rotation 2	10	NUM	25
03-TN-LR3-152-m01	Advanced lab rotation 3	10	NUM	26
03-TN-EL-1-152-m01	External Lab Rotation 1	10	B/NB	17
03-TN-AL-1-152-m01	Advanced Practical Course Neuroscience Lab 1	10	B/NB	6

Module title		Abbreviation
Ask the expert 2		03-EXP2-182-m01
Module coordinator		Module offered by
programme speaker		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Cutting edge topics in neurosciences, content varies each semester.		
Intended learning outcomes		
Students gain a deeper insight into the research work of invited scientists. The guest lecturers are selected in the subjects of psychology, psychiatry, neurobiology and neurology (priorities of the compulsory subjects).		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) or e) presentation (20 to 45 minutes) or f) poster according to specific congress requirements Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced Practical Course Neuroscience Lab 1		03-TN-AL-1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
10	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students independently work on a well-defined scientific lab project.		
Intended learning outcomes		
Students have reinforced previously acquired lab skills, acquired new lab techniques and learned how to apply theoretical knowledge in the lab. Students have gained expertise in writing lab reports and know how to give presentations about scientific data.		
Courses (type, number of weekly contact hours, language — if other than German)		
P (4)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
300 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced Subject Lecture 1 (actual lectures to be specified)		03-TN-ASL-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
10	(not) successfully completed	--
Duration	Module level	Other prerequisites
	graduate	Please consult with course advisory service in advance.
Contents		
Cutting edge topics in neurosciences, content varies each semester.		
Intended learning outcomes		
Students gain an overview of current topics in neurosciences.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (4)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
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Additional information		
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Workload		
300 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced Subject Lecture 2 (actual lectures to be specified)		03-TN-ASL-2-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
	graduate	Please consult with course advisory service in advance.
Contents		
Cutting edge topics in neurosciences, content varies each semester.		
Intended learning outcomes		
Students gain an overview of current topics in neurosciences.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced Subject Lecture 3 (actual lectures to be specified)		03-TN-ASL-3-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
	graduate	Please consult with course advisory service in advance.
Contents		
Cutting edge topics in neurosciences, content varies each semester.		
Intended learning outcomes		
Students gain an overview of current topics in neurosciences.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced Training Program GSLS 1		03-TN-ATP-1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Transferable skills tutorials: scientific writing and presentation skills.		
Intended learning outcomes		
Students have developed fundamental scientific writing and presentation skills.		
Courses (type, number of weekly contact hours, language — if other than German)		
T (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced Training Program GSLS 2		03-TN-ATP-2-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Transferable skills tutorials: patent law, validation of enormous amounts of imaging data using special software.		
Intended learning outcomes		
Students are familiar with the fundamental principles of patent law and special software.		
Courses (type, number of weekly contact hours, language — if other than German)		
T (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Cellular Neurobiology		03-TN-CN-152-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and amplification of topics in cellular neurobiology. The following topics will be discussed: structure, function, and molecular functional components of the peripheral nerves of the nervous system including its neuronal and non-neuronal cells as well as the neuromuscular endplate, motor behavioral tests in mouse models for motoneuron diseases; functional and morphological analysis of motoneurons and motor endplates, anatomical, cellular/neuronal plasticity at selected brain structures, e.g. hippocampus and cerebellum, molecular and cellular pathomechanisms of neuromotor disorders, optogenetic approaches and their use to understand circuit biology, immunohistochemistry /immunofluorescence in hippocampal/cerebellar slices, confocal microscopy, primary neuron preparations of dorsal root ganglia and hippocampal neurons, mouse perfusion, whole cell patch clamp recordings to determine ion channel properties.		
Intended learning outcomes		
Students who successfully completed this module are able to understand and dispose current experimental approaches in neurobiology. They are trained in preparations and recording techniques to study the function and pathomechanisms of neural model systems. The students are able to evaluate clinical aspects of neurobiology with a focus on the molecular, cellular and physiological mechanisms. Additionally, they are able to document, evaluate, and classify their own data that were collected during the lab course. Furthermore, the students can critically reflect their data in the context of the experimental methods used.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + P (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
Log (approx. 10 to 30 pages)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Developmental cognitive Neuroscience		03-TN-DCN-152-m01
Module coordinator		Module offered by
University Hospital, Department of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get an introduction to the key cognitive, behavioral and brain developmental steps. There will be strong focus on how the computational lens of reinforcement learning models, tightly linked to monoamine transmission and dopamine in particular, can be useful to investigate research questions in developmental neuroscience. It will be discussed how developmental neuroscience can be a useful tool to investigate the development of psychiatric conditions, in particular ADHD and substance use problems. The methods focus will be on behavioral experiments, neuroimaging, in particular task-based fMRI, and computational modelling. Students will learn to critically evaluate the role of these techniques. Students will give presentation on the topics based on state-of-the-art research articles.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into the current scientific state of normal and altered cognition and motivation as well as brain development. Developmental changes of basic cognition and motivation such as working memory, reinforcement learning and emotion processing will be addressed via behavioral and neuroscientific studies. Abnormal development will be explained in the context of the neuropsychiatric disorders such as attention-deficit / hyperactivity disorder, autism, substance use and anxiety / depression. The influences of main monoaminergic neuromodulators, in particular dopamine in the context of reinforcement learning, will be discussed.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + S (0) + Ü (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 13 / 52

Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title		Abbreviation
Developmental Neuroimaging		03-TN-DI-172-m01
Module coordinator		Module offered by
University Hospital, Department of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get an introduction to basic physics of MRI, in particular the functional MRI signal (so called BOLD response). Different fMRI designs, block vs. event, will be introduced. Students will learn to critically evaluate such design differences. The basic steps for preprocessing fMRI data will be introduced and practiced. Using example data of a block and event design, there will be an introduction and practice session on how to implement a statistical model of task-based fMRI data. Students will give presentation on the topics based on state-of-the-art textbooks and research articles or implement analysis code. The course requires the students to use Statistical Parametric Mapping software in Matlab. Previous experience in Matlab is not required but beneficial.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into the basics principles of functional and structural MRI data collection as well as how to perform data preprocessing and principles of statistical analysis. Behavioral data from an experiment conducted during functional MRI will be analyzed and implemented into the statistical analysis of brain activation of controls and patients. As an outlook, we will touch on opportunities of informing such analysis by computational modeling.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (o) + Ü (o)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Developmental Neuropsychiatry		03-TN-DNP-172-m01
Module coordinator		Module offered by
University Hospital, Department of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get an introduction to the main conditions in child and adolescent psychiatry as well as to state-of-the-art neuroscientific models of etiology and pathophysiology. There will be a focus on ADHD, anxiety disorders, autism spectrum disorder, substance use disorder, eating disorders as well as conduct problems. Whenever possible, clinical interviews with patient from our department will be presented to the class. Research approaches in child and adolescent psychiatry will be introduced to the students including clinical trials, functional neuroimaging and transcranial sonography. Students will learn to critically evaluate the role of these techniques. Students will give presentation on the topics based on state-of-the-art textbooks and research articles.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into neurodevelopmental aspects of child and adolescent psychiatric disorders including clinical symptoms, diagnostic criteria, etiology, pathophysiology and research approaches on ADHD, anxiety disorders, autism spectrum disorder, substance use disorder, eating disorders as well as oppositional defiant and conduct problems. Developmental aspects of neuropsychopharmacology are further discussed and the clinical use will be critically evaluated.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (o) + S (o)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
External Lab Rotation 1		03-TN-EL-1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
10	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Research experience abroad in agencies, institutes or industry. Topics will vary according to the individual place selected for a placement.		
Intended learning outcomes		
Students are familiar with the structures of institutes and the industry abroad and acquire abilities that qualify them for a career in science.		
Courses (type, number of weekly contact hours, language — if other than German)		
P (4)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
300 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Experimental Psychiatry		03-TN-EP-152-m01
Module coordinator		Module offered by
University Hospital, Department of Psychiatry, Psychosomatics and Psychotherapy, Molecular Psychiatry		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Brain regions and neurotransmitter systems involved in neuronal networks involved in experiencing anxiety and fear, attentional networks, learning and memory, and their importance for emotionality in humans, analysis of gene variants and their association with various psychiatric disorders and behavioural traits; animal models for psychiatric disorders, gene x environment interaction; neuroadaptive mechanisms as a result of stress exposure during different periods of lifetime; resilience, epistatic load hypothesis, mismatch hypothesis, anatomical, cellular/neuronal plasticity at selected brain regions, e. g. hippocampus and amygdala; adult neurogenesis; immunohistochemistry/immunofluorescence using forebrain slices; neuronal reconstructions using the Neurolucida software.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into current concepts and experimental approaches in psychiatry and especially in the neurobiological basis of the etiopathogenesis and the treatment of psychiatric disorders. They will have been trained in molecular biology methods, e. g. genotyping, gene expression analysis and in various methods studying structural neuronal plasticity of the brain. Additionally, they will have learned how to evaluate and present data in oral and written form that was collected during the lab course. In addition, the students will have learned to critically read scientific publications in the field of neurobiology/neuropsychiatry.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + P (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
--		
Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 18 / 52

Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title		Abbreviation
Ask the expert 1		03-TN-EXP1-182-m01
Module coordinator		Module offered by
programme speaker		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Cutting edge topics in neurosciences, content varies each semester.		
Intended learning outcomes		
Students gain a deeper insight into the research work of invited scientists. The guest lecturers are selected in the subjects of psychology, psychiatry, neurobiology and neurology (priorities of the compulsory subjects).		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) or e) presentation (20 to 45 minutes) or f) poster according to specific congress requirements Language of assessment: English		
Allocation of places		
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Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Functional Neuroimaging		03-TN-FI-152-m01
Module coordinator		Module offered by
University Hospital, Department of Nuclear Medicine		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Content: target identification for functional and molecular neuroimaging, basic concepts of radiochemistry, radiolabelling of surrogate markers for PET and SPECT, basic concepts of magnetic resonance imaging, basic concepts of positron emission tomography, single photon emission computed tomography and hybrid devices (PET/CT, SPECT/CT), anatomic and functional structures of the brain in small animals, anatomic and functional structures in humans and patients with neurodegenerative disorders and dementia, multimodality multiparametric imaging of brain tumours using MR, PET and SPECT.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into current experimental approaches in neurobiology. They will have been introduced to preparations and recording techniques to study the function and pathomechanisms of neural model systems. The students will have examined clinical aspects of neurobiology with a focus on the molecular, cellular and physiological mechanisms. Additionally, they will have learned how to document their own data that they collected during lab courses. In addition, the students will have learned to critically reflect their data in the context of the experimental methods used.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
--		
Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
--		
Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Ion channels		03-TN-IC-152-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
<p>Students will get a theoretical introduction and amplification of topics in ion channel physiology. The following topics will be discussed: physiological properties of membranes, structure-function relationships of ligand-gated and voltage-gated ion channels and their subfamilies, regulation and pharmacology of ion channels, anatomical expression profiles, developmental regulation, evolution of ion channels, sensory systems, ion channelopathies. The accompanied literature seminars are based on current publications of ion channel structures and physiological aspects to discuss experimental and methodological approaches and with this promoting translational thinking. Using student presentations of current research results, the earned knowledge on ion channels is recessed. The practical session will include whole cell recordings at the electrophysiological setup using transfected cells and primary neurons. Using various neurotransmitters and blocking agents, students will apply their learned knowledge of ion channel physiology and observe the consequences at the functional level.</p>		
Intended learning outcomes		
<p>Students who successfully completed this module are able to remind and understand the physiological properties of various ion channel families and their importance for brain physiology. The students are able to classify in a bottom-up approach to put the molecular findings into the context of pathomechanisms in various kinds of channelopathies. They will be trained in recording techniques to study ion channel properties on transfected/injected cell lines as well as primary neurons. With this experience, students are able to evaluate the applicability of electrophysiological recording techniques for various ion channels. Additionally, they are able to critically read, reflect, and present scientific reports in the field of channel physiology.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + S (0) + P (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
--		
Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
--		
Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 22 / 52

Supplementary course Translational Neuroscience (2018)
Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title		Abbreviation
Advanced lab rotation 1		03-TN-LR1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	Please consult with course advisory service in advance.
Contents		
Students get an intense training in at least two different methods from different fields of neurosciences.		
Intended learning outcomes		
Students have reinforced previously acquired lab skills, acquired new lab techniques and learned how to apply theoretical knowledge in the lab. Students have gained expertise in the analysis and presentation of raw data.		
Courses (type, number of weekly contact hours, language — if other than German)		
P (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) log (approx. 10 to 30 pages) or b) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
--		
Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced lab rotation 2		03-TN-LR2-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	Please consult with course advisory service in advance.
Contents		
Students spend 4 weeks working under supervision on a small, well-defined scientific lab project.		
Intended learning outcomes		
Students have reinforced previously acquired lab skills, acquired new lab techniques and learned how to apply theoretical knowledge in the lab. Students have gained expertise in the analysis and presentation of raw data.		
Courses (type, number of weekly contact hours, language — if other than German)		
P (4)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) log (approx. 10 to 30 pages) or b) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or c) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
300 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Advanced lab rotation 3		03-TN-LR3-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	Please consult with course advisory service in advance.
Contents		
Students spend 6 weeks independently working on their own small, well-defined scientific lab project.		
Intended learning outcomes		
Students have reinforced previously acquired lab skills, acquired new lab techniques and learned how to apply theoretical knowledge in the lab. Students have gained expertise in the analysis and presentation of raw data.		
Courses (type, number of weekly contact hours, language — if other than German)		
P (4)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) log (approx. 10 to 30 pages) or b) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or c) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
300 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Methods in Neurosciences		03-TN-MNS-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Molecular techniques, microscopic methods, immunohistochemistry, mouse models and gene-knockout approaches, protein and molecular biology techniques, PCR, advanced protein biochemistry, imaging techniques, biodistribution of imaging biomarkers, pain behaviour, gait analysis, biostatistics of psychiatric genetic studies, mouse brain neuroanatomy with a focus on neuromorphology and adult neurogenesis, neural stem cells.		
Intended learning outcomes		
Students are able to review and expand their knowledge of standard molecular techniques and are able to choose methods and techniques to design experiments in a specific research area of neurosciences.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + P (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Meeting Participation 1 (Poster)		03-TN-MP-1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Design and presentation of a poster with description of the research results of a project.		
Intended learning outcomes		
Poster design and oral presentation of scientific results, ability to answer specific questions in the context of the research project with a special regard to experimental design and interpretation of data.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
poster in accordance with conference specifications		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Meeting Participation 1 (Talk)		03-TN-MT-1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
10	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Design and presentation of a talk with description of the research results of a project.		
Intended learning outcomes		
Talk design and oral presentation of scientific results, ability to answer specific questions in the context of the research project with a special regard to experimental design and interpretation of data.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (4)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
e) presentation (20 to 45 minutes)		
Allocation of places		
--		
Additional information		
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Workload		
300 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
--		
Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Clinical Neurobiology 1		03-TN-NB1-152-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and amplification of topics in clinical neurobiology. The following topics will be discussed: introduction to neurons and glia, ion channels and membrane potential, ion channelopathies, synapses, transmitter release, NMJ, myasthenia gravis, cerebellum, basal ganglia, ataxia and Morbus Parkinson, somatosensory system, touch, pain, schizophrenia and autism spectrum disorders, disorders of cognition, muscle and muscle diseases, anatomy and function of the motor system, spinal reflexes, motoneuron diseases, hippocampus, learning and memory, anterograde amnesia, visual agnosia, cortex and the limbic system, emotions, disorders of conscious and unconscious mental processes, attention, smell and taste and hearing, sleep, EEG, epilepsy, vision and diseases of the visual system. The accompanied literature seminars are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological approaches and with this promoting translational thinking. Using student presentations of current research results, the earned knowledge in neurobiology is recessed		
Intended learning outcomes		
Students who successfully completed this module are able to remind and understand the current theoretical concepts in neurobiology. Furthermore, students are able to classify clinical aspects of neurobiology with the focus to disease mechanisms at molecular, cellular, and physiological levels. Based on current experimental data evaluation, students are able to critical read and evaluate current publications in neurobiology as well as extract relevant information from recent publications.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
--		
Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Supplementary course Translational Medicine (2018) Master's degree (1 major) Translational Medicine (2018) Master's degree (1 major) Translational Neuroscience (2018)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 30 / 52

Supplementary course Translational Neuroscience (2018)
Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title		Abbreviation
Clinical Neurobiology 2: Trend-setting and current findings in neurobiology		03-TN-NB2-152-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
<p>Students will get a theoretical introduction and amplification of topics in clinical neurobiology. The following topics will be discussed: introduction to neurons and glia, ion channels and membrane potential, ion channelopathies, synapses, transmitter release, NMJ, myasthenia gravis, cerebellum, basal ganglia, ataxia and Morbus Parkinson, somatosensory system, touch, pain, schizophrenia and autism spectrum disorders, disorders of cognition, muscle and muscle diseases, anatomy and function of the motor system, spinal reflexes, motoneuron diseases, hippocampus, learning and memory, anterograde amnesia, visual agnosia, cortex and the limbic system, emotions, disorders of conscious and unconscious mental processes, attention, smell and taste and hearing, sleep, EEG, epilepsy, vision and diseases of the visual system. The accompanied literature seminars are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological approaches and with this promoting translational thinking. Using student presentations of current research results, the earned knowledge in neurobiology is recessed.</p>		
Intended learning outcomes		
<p>Students who successfully completed this module are able to remind and understand the current theoretical concepts in neurobiology. Furthermore, students are able to classify clinical aspects of neurobiology with the focus to disease mechanisms at molecular, cellular, and physiological levels. Based on current experimental data evaluation, students are able to critical read and evaluate current publications in neurobiology as well as extract relevant information from recent publications.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
e) presentation (20 to 45 minutes)		
Allocation of places		
--		
Additional information		
--		
Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
<p>Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)</p>		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 32 / 52

Module title		Abbreviation
Neuroinflammation		03-TN-NI-172-m01
Module coordinator		Module offered by
Department of Neurology, Section of Developmental Neurobiology and Institute of Virology and Immunobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Introduction to neural cells and structures relevant for neuroinflammation (glial cells, myelin, myelin molecules, synapses, nodes of Ranvier), components of the innate immune system I: macrophages and microglial cells, components of the innate immune system II: dendritic cells, NK cells, granulocytes; antigen presentation; lymphatic organs, components of the adaptive immune system: lymphocytes and antigen recognition, the phenomenon of tolerance and autoimmunity, experimental models for neuroinflammation (EAE, cuprizone, EAN); the BBB, clinics, pathogenesis and therapy of multiple sclerosis, role of inflammation in primarily neurological/neurodegenerative disorders (Alzheimer's disease; inherited neuropathies).		
Intended learning outcomes		
Students who successfully completed this module will have acquired solid insights into fundamental and disease-relevant aspects of neuroimmunology and neuroinflammation. They will have learned to critically read scientific publications and will have been trained in the ability to extract relevant information from the original scientific literature.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + S (0)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Language of assessment: English		
Allocation of places		
--		
Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
--		
Module appears in		
Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Neurology/ Neurosurgery 1		03-TN-NN1-152-m01
Module coordinator		Module offered by
Department of Neurology, Department of Neurosurgery		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and scientific background from the following topics: antibody-mediated CNS diseases – experimental analysis of auto-antibody function; Lessons on nociceptor function learned from pain genetics; Translational approaches in stroke medicine; Subarachnoid hemorrhage - pathophysiology and translational therapy approaches; Pathophysiology of brain trauma: experimental brain trauma models and their analysis; Neurophysiology of hearing in tumor and trauma; The molecular basis of glioma-biology; Neuroplasticity after CNS damage by brain tumors; Connectomics in neurology; understanding neuronal networks for treatment of tremor syndromes; stem cell based models of movement disorders; basics of electrophysiology in experimental and clinical practice; the molecular basis of myopathies. The accompanied journal clubs are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological approaches and with this promoting translational thinking. Students will give presentations and thereby earn and transfer knowledge.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into the current molecular and cellular pathophysiology of diseases prevalent in neurology and neurosurgery. They will understand basic mechanisms of disease in the motor and sensory system and of higher functions. They will understand about brain trauma and brain tumor biology. They will have gained theoretical knowledge about animal models for neurological and neurosurgical diseases and will be introduced into behavioral, neurophysiological, morphological and molecular biological analysis methods. They will have learnt how to raise appropriate bed-to-bench research questions and how to devise study plans. They will learn how to read scientific publications critically and how to extract the relevant data bringing them forward in their own project. In addition, they will have learnt how to record and analyze data and how to present them in oral and written form.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
--		
Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 34 / 52

Master's degree (1 major) Translational Neuroscience (2017)
Master's degree (1 major) Translational Neuroscience (2018)
Supplementary course Translational Neuroscience (2018)
Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title		Abbreviation
Neurology/ Neurosurgery 2		03-TN-NN2-152-m01
Module coordinator		Module offered by
Department of Neurology, Department of Neurosurgery		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and scientific background from the following topics: antibody-mediated CNS diseases – experimental analysis of auto-antibody function; Lessons on nociceptor function learned from pain genetics; Translational approaches in stroke medicine; Subarachnoid hemorrhage - pathophysiology and translational therapy approaches; Pathophysiology of brain trauma: experimental brain trauma models and their analysis; Neurophysiology of hearing in tumor and trauma; The molecular basis of glioma-biology; Neuroplasticity after CNS damage by brain tumors; Connectomics in neurology; understanding neuronal networks for treatment of tremor syndromes; stem cell based models of movement disorders; basics of electrophysiology in experimental and clinical practice; the molecular basis of myopathies. The accompanied journal clubs are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological approaches and with this promoting translational thinking. Students will give presentations and thereby earn and transfer knowledge.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into the current molecular and cellular pathophysiology of diseases prevalent in neurology and neurosurgery. They will understand basic mechanisms of disease in the motor and sensory system and of higher functions. They will understand about brain trauma and brain tumor biology. They will have gained theoretical knowledge about animal models for neurological and neurosurgical diseases and will be introduced into behavioral, neurophysiological, morphological and molecular biological analysis methods. They will have learnt how to raise appropriate bed-to-bench research questions and how to devise study plans. They will learn how to read scientific publications critically and how to extract the relevant data bringing them forward in their own project. In addition, they will have learnt how to record and analyze data and how to present them in oral and written form.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015)		
Master's degree (1 major) Translational Neuroscience (2017)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 36 / 52

Master's degree (1 major) Translational Neuroscience (2018)
Supplementary course Translational Neuroscience (2018)
Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title			Abbreviation
Optical methods for visualization and manipulation of neural circuits- from synapses to behavior			03-TNOM-191-m01
Module coordinator		Module offered by	
Institute of Clinical Neurobiology		Faculty of Medicine	
ECTS	Method of grading	Only after succ. compl. of module(s)	
5	(not) successfully completed	--	
Duration	Module level	Other prerequisites	
1 semester	graduate	--	
Contents			
Students will get a theoretical introduction in light microscopy methods in neurobiology and systems neuroscience. Main topics are: Physics of light, building of a standard microscope, objectives, numeric aperture, bright field, phase contrast, fluorescence microscopy, confocal microscopy, resolution, contrast, Airy disc patterns, fluorescent molecules and dyes, image processing, preparation of images for publication, Software: GIMP and Fiji (ImageJ), imaging of calcium ions, genetically encoded calcium indicators (GCamp), viral techniques, lentiviral vectors, MMLV-based vectors, AAV, rabies virus, new developments in image analysis, deep learning, principles of circuit neuroscience, optogenetics, video-based behavioral analysis.			
Intended learning outcomes			
Students who successfully completed this module will have acquired distinct knowledge about light & fluorescence microscopy, in vivo calcium imaging and optogenetic methods in neuroscientific research. Processes of image acquisition, image preparation and image analysis will be introduced. Thus, students will be able to better understand, design and evaluate experiments based on microscopy and modern optical methods in the neurosciences. In short lab visits, the students will learn about principle components of microscopes (e.g. epifluorescence, confocal). The students will learn how these components are used to get better microscopy data. The students will see how molecular tools (e.g. viral vectors) and modern methods (optogenetics, chemogenetics) are used to better understand the anatomy and function of neurons and neural networks. They will acquire the competence to better understand these kind of experiments, to analyse and evaluate them. They will also be able to evaluate methods of systems neuroscience and will be able to theoretically design representative technical approaches. Short student presentations (3 – 4 min) will mediate specific presentation competence with the aim to allow presentation of complex microscopy methods in a focused and understandable way for a heterogeneous expert audience. The overall aim is that students will be able to understand, question, evaluate, recapitulate and present light microscopy approaches in neurobiology and system neuroscience.			
Courses (type, number of weekly contact hours, language — if other than German)			
S (2)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)			
a) Written Examination (30-60 Minutes; Open Questions as well as Multiple Choice) or b) Protocol (10-30 pages) or c) Individual Oral Exam (30-60 Minutes) or d) Oral Examination in groups of up to three students (30-60 Minutes) or e) Presentation (20-45 Minutes)			
Allocation of places			
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Additional information			
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Workload			
150 h			
Teaching cycle			
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Referred to in LPO I (examination regulations for teaching-degree programmes)			
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Module appears in

Master's degree (1 major) Translational Neuroscience (2018)
Supplementary course Translational Neuroscience (2018)
Master's degree (1 major) Translational Neuroscience (2022)
Supplementary course Translational Neuroscience (2022)

Module title		Abbreviation
Pain		03-TN-P-152-m01
Module coordinator		Module offered by
University Hospital, Department of Anaesthesia and Critical Care		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
<p>Students will receive a theoretical introduction and consolidation in topics of pain processing as well as clinical pain medicine. Contents include an introduction to nociceptors and their activation via specific ion channels, the pain pathway with its synapses, and the descending pathways. Clinically, the classification of pain and the major primary and secondary pain syndromes are discussed. Pain research will be reflected with the possibilities and limitations of preclinical animal models on the one hand and measurement of pain in patients on the other. A focus will also be on the translation of results from research for the clinic and drug development. The subsequent literature seminar will be based on fundamental and current literature on topics relevant to the lecture to discuss clinical studies, experiments and new methods and thereby promote translational thinking in pain medicine. Presentations of current research results and the connection to the clinic (examination of patients) and multimodal interdisciplinary therapy will be used to deepen the learned knowledge in pain medicine.</p>		
Intended learning outcomes		
<p>In this course, students will learn about the (patho-) physiology of pain, neuroanatomical structures and pain therapy including interdisciplinary multimodal pain therapy. These include molecular mechanism of pain, studying pain in animals and humans and drug development. How to evaluate studies in "pain" is worked-out by the students in a specific article/topic chosen by the student and presented within in a talk during the course.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
V (0) + P (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
<p>Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)</p>		

Module title		Abbreviation
Project design		03-TN-PDES-182-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and amplification of how to write a Master Thesis. The following topics will be discussed: Official Regulations, Planing of a scientific project, Data production, Data evaluation, statistics, scientific writing, reading and citing literature. Using student former lab rotations a “dummy”-Master-Thesis is written, by each student and learned content is recessed.		
Intended learning outcomes		
Students who successfully completed this module are able to remind and understand important aspects of a preparing and writing a Master Thesis. Furthermore, students are able to classify important aspects in terms of planning scientific projects and of scientific writing. Based on current experimental data evaluation, students are able to critical read and evaluate current publications in neurobiology as well as extract relevant information from recent publications.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) or e) presentation (20 to 45 minutes) or f) poster according to specific congress requirements Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Project Development		03-TN-PDEV-182-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and amplification of how to write a scientific Grant application. The following topics will be discussed: Planing of a scientific project, Data production, Data evaluation, , scientific writing, reading literature. Using student former lab rotations a “dummy”-Grant Application is written, by each student and learned content is recessed.		
Intended learning outcomes		
Students who successfully completed this module are able to remind and understand important aspects of how to invent a scientific project and how to write a grand application. Furthermore, students are able to classify important aspects in terms of preparing, planning and structuring a scientific project. Based on current knowledge and experimental data evaluation, students are able to critical read and evaluate current publications in neurobiology as well as extract relevant information from recent publications.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) or e) presentation (20 to 45 minutes) or f) poster according to specific congress requirements Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Regeneration in the nervous system		03-TN-PN-172-m01
Module coordinator		Module offered by
Department of Neurology, Section of Developmental Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Cellular elements of the PN I: origin, development, structure, myelin formation, Cellular elements of the PN II: lesion, regeneration and surgical reconstitution, physiology and pathophysiology, Diseases I: inflammatory (GBS, CIDP, myasthenia; clinic and therapy), Diseases II: diabetes; iatrogenic (e. g. vincristine; clinic and therapy), Diseases III: inherited NPs (including models and attempts for treatment approaches). The literature seminar is based on fundamental literature on lecture-relevant topics to document the experiments underlying our present knowledge in peripheral nerve research.		
Intended learning outcomes		
Students who successfully completed this module will have acquired insights into cellular elements of the peripheral nerve, physiology and pathophysiology. The students will have examined clinical aspects of diseases with the involvement of peripheral nerves with a focus on the molecular mechanisms and therapeutical options. Additionally, they will have learned how to evaluate and present data in oral form. In addition, the students will have learned to critically read scientific publications in the field of peripheral nerve diseases and will have been trained in the ability to extract relevant information from the original literature.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (o) + S (o)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Psychiatric Neurosciences		03-TN-PSYT1-152-m01
Module coordinator		Module offered by
University Hospital, Department of Psychiatry, Psychosomatics and Psychotherapy		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Basic knowledge about the characteristics of various psychiatric disorders, the proposed neurobiological basis (e.g. gene by environment interaction) as well as the treatment approaches: Anxiety disorders, somatoform disorders, social interaction disorders, psychotic disorders, attention deficit hyperactivity disorder, substance use disorders, neurodegenerative disorders. Basic knowledge about the genetic and neural mechanisms associated with psychiatric disorders such as gene by environment interaction, anatomical, cellular/neuronal plasticity of selected brain regions, e.g. hippocampus and amygdala and brain regions and neurotransmitter systems involved in the processing of emotions. Basic knowledge about state-of-the-art research methods in the field such as the analysis of gene variants and their association with various psychiatric disorders and behavioral traits, animal models for psychiatric disorders, neuroimaging methods in humans.		
Intended learning outcomes		
Students who successfully completed this module will have gained an overview of the characteristics of diverse psychiatric disorders. They will have acquired insights into the neurobiological basis of the etiopathogenesis of these disorders (e. g. which neurotransmitter systems and brain regions are involved), how they are treated and into current concepts and experimental approaches studying these psychiatric disorders.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Current findings in psychiatric neurosciences		03-TN-PSYT2-152-m01
Module coordinator		Module offered by
University Hospital, Department of Psychiatry, Psychosomatics and Psychotherapy		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
The literature seminar is based on fundamental literature on lecture-relevant topics to document the experiments underlying our present knowledge in neuropsychiatric diseases.		
Intended learning outcomes		
Students will acquire a theoretical understanding of how methods in molecular biology work and will learn how to publish scientific results in the field of neurobiology/neuropsychiatry.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
RNA-Metabolismus/ RNA metabolism		03-TN-RM-172-m01
Module coordinator		Module offered by
Institute of Clinical Neurobiology		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Each week a high-impact paper from the current literature that describes RNA-based mechanisms contributing to neurodegeneration is jointly analyzed in depth. Emphasis is placed on understanding of novel approaches for investigating RNA. The course organizer will give a short introduction at the beginning of each seminar describing the background for the paper to be discussed. Afterwards, students individually describe the original data and jointly discuss their relevance. Individual topics include: RNA expression, function and localization; RNA dysregulation in neurodegenerative diseases; high-throughput sequencing methods for transcriptome analysis; properties and functions of RNA-binding proteins.		
Intended learning outcomes		
After successful completion of this module, students will have gained a deeper understanding of current RNA-based research in the area of neurodegeneration. This outcome is achieved by a weekly in-depth analysis of a current article in this field. Students will become familiar with many techniques applied in RNA research and will learn how to critically interpret the results in the context of neurodegenerative diseases. By doing so, students will be able to evaluate methodological advances in RNA research and obtain a deeper understanding of the pathomechanisms underlying neurodegeneration. Through discussion and active participation, students will improve their communication and analysis skills.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (0)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		
Translational Neuroscience (2022)	JMU Würzburg • generated 30-Mär-2024 • exam. reg. data record Zusatzstudium Translational Neuroscience - 2022	page 46 / 52

Module title		Abbreviation
Tutorial 1		03-TN-TU-1-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
3	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students work as tutors. They support teaching and are involved in the organisation and planning of lectures, seminars and practical courses.		
Intended learning outcomes		
Tutors will learn how to convey complex topics and to independently supervise a group of students. In addition, they will learn to organise and plan their own projects and to teach the contents to students.		
Courses (type, number of weekly contact hours, language — if other than German)		
T (1)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
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Workload		
90 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Tutorial 2		03-TN-TU-2-152-m01
Module coordinator		Module offered by
programme coordinator		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students work as tutors. They support teaching and are involved in the organisation and planning of lectures, seminars and practical courses.		
Intended learning outcomes		
Tutors will learn how to convey complex topics and to independently supervise a group of students. In addition, they will learn to organise and plan their own projects and to teach the contents to students.		
Courses (type, number of weekly contact hours, language — if other than German)		
T (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (approx. 10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes)		
Allocation of places		
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Additional information		
--		
Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Biopsychology 1		o6-TN-BPSY1-152-mo1
Module coordinator		Module offered by
holder of the Chair of Psychology I		Institute of Psychology
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and amplification of topics in biopsychology and cognitive neuroscience. The following topics will be discussed: introduction to biopsychological research methods (behavioral assessments, eye-tracking, autonomic psychophysiology, electroencephalography, structural and functional magnetic resonance imaging), emotion and motivation, learning and memory, attention, perception, cognitive control, clinical aspects (e.g., anxiety disorders, depression, addiction). The accompanying seminars are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological approaches and with this promoting translational thinking. Using student presentations of current research results, the acquired knowledge in biopsychology is recessed.		
Intended learning outcomes		
Students who successfully completed this module are able to remind and understand the current theoretical concepts in biopsychology and cognitive neuroscience. Furthermore, students are able to describe and interpret biopsychological data and they can select appropriate non-invasive techniques to address specific psychological research questions. They are familiar with general psychological concepts and know about their biological basis. Based on this knowledge, students are able to critical read and evaluate current publications in biopsychology and cognitive neuroscience and can extract relevant information from recent publications.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)		
Allocation of places		
--		
Additional information		
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Workload		
150 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Biopsychology 2		o6-TN-BPSY2-152-mo1
Module coordinator		Module offered by
holder of the Chair of Psychology I		Institute of Psychology
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students will get a theoretical introduction and amplification of topics in biopsychology and cognitive neuroscience. The following topics will be discussed: introduction to biopsychological research methods (behavioral assessments, eye-tracking, autonomic psychophysiology, electroencephalography, structural and functional magnetic resonance imaging), emotion and motivation, learning and memory, attention, perception, cognitive control, clinical aspects (e.g., anxiety disorders, depression, addiction). The accompanying seminars are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological approaches and with this promoting translational thinking. Using student presentations of current research results, the acquired knowledge in biopsychology is recessed.		
Intended learning outcomes		
Students who successfully completed this module are able to remind and understand the current theoretical concepts in biopsychology and cognitive neuroscience. Furthermore, students are able to describe and interpret biopsychological data and they can select appropriate non-invasive techniques to address specific psychological research questions. They are familiar with general psychological concepts and know about their biological basis. Based on this knowledge, students are able to critical read and evaluate current publications in biopsychology and cognitive neuroscience and can extract relevant information from recent publications.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
e) presentation (20 to 45 minutes)		
Allocation of places		
--		
Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2015) Master's degree (1 major) Translational Neuroscience (2017) Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Biostatistics		o6-TN-BS-222-m01
Module coordinator		Module offered by
holder of the Chair of Psychology I		Institute of Psychology
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Students who successfully completed this module will have acquired knowledge of and expertise in probability theory, frequentist statistics in a linear model framework. Topics covered will be: What is statistics, what are data, Intro to R, data wrangling, data visualization, probability, sampling, hypothesis testing, t-tests, ANOVA, regression, (generalized) linear (mixed) model, reproducible research, advanced (bio-)statistical methods. In addition, students will learn the statistical programming language R. At the end of the seminar, they will be able to wrangle and visualize data, carry out different statistical analyses, and write a report in R and RMarkdown.		
Intended learning outcomes		
Students who completed this module will have acquired important research skills: They will be able to independently develop a data analysis plan and generate a report using R. Specifically, they will know and remember different types of analysis, will be able to interpret results of these analysis, and implement the analysis in R. In addition, they will be able to identify which analysis is suitable for a given data set, differentiate between analyses, and critically evaluate the results. Furthermore, they will gain methods competence by learning how to program using the statistical programming language R. Using RMarkdown, they will be able to generate a reproducible report. The students will have gained increased social- and self-competencies by cooperating on the class report and increased self-efficacy in the application of statistical analysis.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + Ü (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) Klausur (30-60 Min., auch Multiple Choice) oder b) Protokoll (ca. 10-30 S.) oder c) mündliche Einzelprüfung (30-60 Min.) oder d) mündliche Gruppenprüfung (max. 3 TN, ca. 30-60 Min.) oder e) Referat (20-45 Min.)		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		

Module title		Abbreviation
Electrophysiology in human and animals		o6-TN-EPHY-182-m01
Module coordinator		Module offered by
Department of Neurology, Department of Neurosurgery		Faculty of Medicine
ECTS	Method of grading	Only after succ. compl. of module(s)
5	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Besides a detailed theoretical introduction to the means of electrophysiological brain recording in human and animal models, this module will allow to apply analysis to these different types of data. It will focus on temporal analysis of electrophysiological signals but also on a frequency based analysis, i.e. oscillatory brain activity, which plays a crucial role in low-level as well as higher-level cognitive functions. Different electrophysiological responses to simple visual input will be compared between analysis approaches and data type.		
Intended learning outcomes		
This module will give a detailed theoretical and practical insight into different electrophysiological recording techniques and the resulting data obtained in human and animal brain recordings. Through hands-on analysis experience with such data, namely multi-electrode recordings, ECoG recordings and EEG/ MEG recordings, the module will allow students to learn analysis techniques and understand the information content of these different kinds of electrophysiological data. The recording and analysis methods introduced can build a bridge from spikes to the local field, from human to the animal model, from invasive to non-invasive approaches and will therefore stimulate translational thinking.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)		
a) written examination (30 to 60 minutes, including multiple choice questions) or b) log (10 to 30 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) or e) presentation (20 to 45 minutes) or f) poster according to specific congress requirements Language of assessment: English		
Allocation of places		
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Additional information		
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Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Translational Neuroscience (2018) Supplementary course Translational Neuroscience (2018) Master's degree (1 major) Translational Neuroscience (2022) Supplementary course Translational Neuroscience (2022)		