Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Subdivided Module Catalogue

for the Subject

Experimental medicine

as a Master's with 1 major

with the degree "Master of Science"

(90 ECTS credits)

Examination regulations version: 2015
Responsible: Faculty of Medicine

Course of Studies - Contents and Objectives

The Faculty of Medicine at JMU offers a Master of Science (M.Sc.) in Experimental Medicine with a strong emphasis on research. The degree Master of Science offers graduates further professional qualifications as well as extensive research experience. The degree program is suited to students who have completed their studies in Medicine (as their first professional degree) and have a strong interest in fundamental research in the fields of natural sciences and medicine. The degree program allows students to deepen their fundamental knowledge of the natural sciences within the field of Medicine and introduces current methods of biomedical research. The degree program is strongly research oriented and covers current scientific issues in the field of biomedicine as well as experimental approaches and methodological principles within medicine, biology, chemistry, and physics. Through thesis work, students show that they are capable of illustrating and handling a defined issue in the field of experimental medicine from an academic perspective using familiar or modified methods within a given time frame. The Master's examination should confirm the candidate's grasp of biomedical research and his or her ability to independently apply scientific methods. A successfully completed Master's degree qualifies the candidate for admittance to a doctoral program pursuant to the respective and current doctoral program guidelines.

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:

ASPO2015

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

08-Dec-2015 (2015-249)

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 (15 ECTS credits)				
03-EM-TM-152-m01	Theoretical Medicine	5	NUM	35
03-EM-MP-152-m01	Methods in Molecular Biology	10	NUM	25
Compulsory Electives (45 ECTS credits)				
Subfield Theoretical Experimental Medicine (15 ECTS credits)				
03-98-MVKN-152-m01	Clinical Neurobiology	5	NUM	13
03-98-MVKB-152-m01	Cardiovascular Biology	5	NUM	11
03-98-MVMO-152-m01	Molecular Oncology	5	NUM	15
03-98-MVSZ-152-m01	Stem Cell Biology	5	NUM	17
03-98-MVTF-152-m01	Tissue Engineering / Functional Materials	5	NUM	19
03-98-ImmM1-152-m01	Immunology 1 BM	5	NUM	9
03-98-VirM1-152-m01	Virology 1 BM	5	NUM	21
03-EM-VAND-152-m01	Biomedical courses from other programs	5	NUM	36
03-EM-Doksem-152-m01	GSLS PhD student seminar	5	B/NB	22
Subfield Practical Experimental Medicine (20 ECTS credits)				
03-EM-PBMB-152-m01	Practical Biochemistry and Molecular Biology	10	NUM	27
03-EM-PMO-152-m01	Practical Training Molecular Oncology	10	NUM	30
03-EM-PKB-152-m01	Practical Training Cardiovascular Biology	10	NUM	29
03-EM-PInIm-152-m01	Practical Training Infection and Immunity	10	NUM	28
03-EM-PNB-152-m01	Practical Training Neurobiology	10	NUM	31
03-EM-PSZ-152-m01	Practical Training Stem Cell Biology and Regenerative Medicine	10	NUM	34
03-98-MHGPX-152-m01	Practical Course in Human Genetics	10	NUM	10
Subfield Organisation and Communication of Science (10 ECTS credits)				
03-98-FSQ-GEN-152-m01	Genetic Engineering and Biosafety	1	B/NB	5
03-98-FSQ-VTK2-152-m01	Laboratory Animal Sciences 2	3	B/NB	7
03-KFE-02a-152-m01	Biometry I	3	B/NB	38
03-EM-FSQ-MB-152-m01	Selected Courses from Life Sciences	2	B/NB	23
07-MLSRR1-152-m01	Responsible Conduct of Research 1	2	B/NB	39
03-EM-PRES-152-m01	Oral Presentation Skills	1	B/NB	33
03-EM-WRI-152-m01	Scientific Writing	1	B/NB	37
03-EM-POST-152-m01	Poster Design	1	B/NB	32
Thesis (30 ECTS credits)				
03-EM-MTH-152-m01	Master Thesis	25	NUM	26
03-EM-MKO-152-m01	Colloquium	5	NUM	24

Module title			Abbreviation
Genetic Engineering and Biosafety			03-98-FSQ-GEN-152-m01
Module coordinator		**Module offered by**	
Institute of Molecular Infection Biology and Graduate School of Life Sciences		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
1	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The lecture imparts knowledge in the following sub-areas:
1) Theoretical fundamentals of genetic engineering and genetic engineering safety requirements as well as an overview of the areas of application of genetic engineering. Introduction to the legal framework and regulations that must be observed when handling biomaterials, genetically modified organisms and pathogens.
2) Learn and reflect
- principles of good scientific practice
- genesis and worldwide establishment of principles
- individual people, (societal) groups and institutions involved, their roles and interests
- specific regulations and procedures of dealing with misconduct, especially those of JMU

Intended learning outcomes

Ad 1) The students have knowledge of methods of genetic engineering as well as the relevant regulations of the Infection Protection Act and the Genetic Engineering Safety and Biological Substances Ordinance. They can categorize biomedical work with regard to its hazard potential. The students remember safety-relevant rules of conduct in the laboratory and are able to apply them in practice.
Ad 2) Factual competencies: Knowledge of rules, knowledge of the current discussion on GSP worldwide
Self-competencies: Ability to understand GSP as a process in science and starting point to develop one's own awareness of and attitude towards GSP.

Courses (type, number of weekly contact hours, language — if other than German)

V (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 (45 to 90 minutes) or
b) log (10 to 20 pages) or
c) oral examination of one candidate each (20 to 30 minutes) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
e) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.

Allocation of places

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Additional information

Students MUST take this module.

Workload

30 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

Bachelor's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Supplementary course Translational Medicine (2018)
Bachelor's degree (1 major) Biomedicine (2018)
Master's degree (1 major) Translational Medicine (2018)

Module title			Abbreviation
Laboratory Animal Sciences 2			03-98-FSQ-VTK2-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Experimental Biomedicine and Animal Welfare Officer of the University of Würzburg		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	undergraduate	--	

Contents

According to the Animal Welfare Regulation Govering Experimental Animals (TierSchVersV), animal experiments on vertebrates and cephalopods may only be carried out by persons who possess the required knowledge and skills. This means that both theoretical and practical expertise must be acquired.
In the lecture Animal Welfare and Laboratory Animal Science, the theoretical knowledge is taught, which is listed in Annex 1 Chapter 3 TierSchVersV.
In terms of content, the module is based on EU Directive 2010/63 for acquiring expertise in animal welfare (formerly FELASA Cat. B). Based on the background of the specific biology, anatomy and physiology of the animal species mouse, optionally also of the rat, which are recapitulated in the module in an application-oriented manner, the students* learn and practice exemplary essential animal experimental techniques with a focus on keeping and handling the animals, administration of substances, sampling of biological probes, anesthesia and analgesia through to surgical interventions and the painless and low-stress euthanasia of animals. In addition to the methodological and experimental principles, the module also focuses on acquiring in-depth knowledge of the german animal protection law and the TSchVersVO as well as the ability for an ethical consideration of animal experiments in the area of conflict between animal protection and medical-translational research.

Intended learning outcomes

Students acquire the expertise for the theoretical part for conducting animal experiments, which is certified by passing the exam. Raising awareness of ethical issues related to the relationship between humans and animals, intrinsic value of life, and arguments for and against the use of animals for scientific purposes.
The formal objective is the acquisition of animal welfare expertise based on the EU directive in consultation with the local authorities. The course enables you to handle laboratory animals in an animal welfare-friendly manner, conveys core competencies in animal experiments, taking into account the complexity of the entire organism, and methodological requirements for planning and conducting your own animal experiments. It teaches the legal animal welfare principles for applying for your own experimental projects. A special concern is the raising of awareness for the respect of the experimental model as a pain-sensitive living being while maintaining objective experimental principles.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + P (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)

written examination (approx. 90 minutes)

Allocation of places

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Additional information

Equivalent to animal welfare qualification (GV-SOLAS (Society of Laboratory Animals) / FELASA category B).

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
Bachelor's degree (1 major) Biomedicine (2015) Master's degree (1 major) Experimental medicine (2015) Supplementary course Translational Medicine (2018) Bachelor's degree (1 major) Biomedicine (2018) Master's degree (1 major) Translational Medicine (2018) Bachelor's degree (1 major) Biomedicine (2020)

Module title			Abbreviation
Immunology 1 BM			03-98-ImmM1-152-m01
Module coordinator		**Module offered by**	
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

Deeper insights into fundamental principles of immunology (General properties of the immune system, molecular and cellular basis of the immune response, development of the immune system, tolerance) with the help of a textbook (e.g. Abbas Cellular and Molecular Immunology) and accompanying review articles. Preparation of answers to test questions at home, presentation of articles and discussion of presentation of and answers to the test questions in the group. Seminar is given in English.

Intended learning outcomes

Students are able to understand current problems in immunology and to discuss these in detail. They learn to receive basic literature and to present it in a concise manner as talk (10-15 min, ppt) and as hand out. Active participation by providing feedback on the talks/presentation and receiving feedback given by participants and lecturer improves discussion skills (in English).

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German/English

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) or
c) oral examination of one candidate each (30 to 60 minutes) or
e) presentation (20 to 45 minutes)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: German or English
Assessment offered: Winter semester only

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) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biomedicine (2018)

Module title			Abbreviation
Practical Course in Human Genetics			03-98-MHGPX-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of of Human Genetics		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	unknown	--	

Contents

No information on contents available.

Intended learning outcomes

No information on intended learning outcomes available.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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) 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).
Students will be informed about the method, length and scope of the assessment prior to the course.

Allocation of places

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Additional information

Additional information on module duration: 4 weeks, full time.

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) Experimental medicine (2015)

Module title			Abbreviation
Cardiovascular Biology			03-98-MVKB-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Experimental Biomedicine		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

Becoming familiar with the basics of the cardiovascular system by means of a lecture series. The first section comprises the anatomical, physiological and biochemical basis. In the second section these fundamentals will be deepened based on relevant cardiovascular diseases of platelets, the vasculature and the heart. In the context of these disorders, current and future targets for adequate therapies will be discussed.

Intended learning outcomes

Students have developed the ability to understand the molecular and physiological basics relevant for cardiovascular biology, with the focus on developmental biology, platelets and coagulation. These will be exemplified by stroke, myocardial disorders, metabolic syndrome, vasculitides and genetic causes. After attending the lecture series, students will be able to understand, describe and assign pathological and pathophysiological changes affecting the cardiovascular system.

Courses (type, number of weekly contact hours, language — if other than German)

V (2)
Module taught in: German/English

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) or
b) log (approx. 10 to 20 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)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: German or English
Assessment offered: Once a year, winter semester

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) Biochemistry (2015)
Master's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biochemistry (2017)
Supplementary course Translational Medicine (2018)

Master's degree (1 major) Biomedicine (2018)
Master's degree (1 major) Translational Medicine (2018)
Master's degree (1 major) Biochemistry (2019)

Module title			Abbreviation
Clinical Neurobiology			03-98-MVKN-152-m01
Module coordinator		**Module offered by**	
Managing Director of the 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) + S (2)
Module taught in: English

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) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or
d) presentation (20 to 45 minutes)
Students will be informed about the method, length and scope of the assessment prior to the course.
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) Biochemistry (2015)
Master's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biochemistry (2017)
Master's degree (1 major) Biomedicine (2018)
Master's degree (1 major) Biochemistry (2019)

Module title			Abbreviation
Molecular Oncology			03-98-MVMO-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Biochemistry and Molecular Biology			
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Molecular mechanisms of tumourigenesis; experimental dissection of tumours; metabolic reprogramming in cancer; visualising in vivo tumour progression and response to therapy; targeting Myc for tumour therapy; Wnt signalling and colorectal cancer; cell cycle and tumour suppressor genes; protein turnover in normal and cancer cells; molecular mechanisms of melanoma development; tumour immunology; stem cells and epigenetics; signal transduction and personalised cancer therapy; molecular pathology; infections and tumour development.

Intended learning outcomes

Students understand the current topics and challenges in tumour research and the methods used to address such challenges.

Courses (type, number of weekly contact hours, language — if other than German)

V (2)
Module taught in: German/English

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) or
b) log (approx. 10 to 20 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)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: German or English
Assessment offered: Once a year, winter semester

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) Biochemistry (2015)
Master's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biochemistry (2017)
Supplementary course Translational Medicine (2018)
Master's degree (1 major) Biomedicine (2018)
Master's degree (1 major) Translational Medicine (2018)

Master's degree (1 major) Biochemistry (2019)

Module title			Abbreviation
Stem Cell Biology			03-98-MVSZ-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Developmental Biochemistry		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

In this module, selected current problems from the fields of stem cell biology, cellular differentiation and regenerative medicine are used to provide basic knowledge as well as analytical approaches. The current state of research is considered on the basis of the historical context. Selected examples are used to learn about topic-specific contexts. Special emphasis is placed on the methodology used to study and characterize stem cells at the molecular level in vivo and in vitro. Bioethical and legal frameworks are discussed in the course of the lecture.

Intended learning outcomes

Necessary basic knowledge to work on, analyze and critically interpret questions from stem cell biology, cellular differentiation and regenerative medicine on the basis of current literature. A basic methodological competence for independent scientific work in the field of stem cell biology. Development of an ethical awareness in relation to the application of stem cells in biomedicine.

Courses (type, number of weekly contact hours, language — if other than German)

V (2)
Module taught in: German/English

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) or
b) log (approx. 10 to 20 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)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: German or English
Assessment offered: Once a year, summer semester

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) Biochemistry (2015)
Master's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biochemistry (2017)
Supplementary course Translational Medicine (2018)

Master's degree (1 major) Biomedicine (2018)
Master's degree (1 major) Translational Medicine (2018)
Master's degree (1 major) Biochemistry (2019)

Module title	Abbreviation
Tissue Engineering / Functional Materials	03-98-MVTF-152-m01

Module coordinator	Module offered by
holder of the Chair of Tissue Engineering and Regenerative Medicine	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

Cell culture technology, basics of tissue engineering, test systems as an alternative to animal experiments skin, intestine, lung, trachea, blood-brain barrier, tumors and other diseases. The development of cell-based transplants is discussed, as well as the regulatory basis for the approval of these and of medical devices and drugs. In detail, these are REACH (Registration, Evaluation, Restriction and Authorization of Chemicals), the Medical Devices and Drugs Act, GLP (Good Laboratory Practice), GMP (Good Manufacturing Practice) and GCP (Good Clinical Practice).

Intended learning outcomes

The student has expertise in tissue engineering, regenerative medicine, bioprocess engineering, test systems and basic relationships in the field of cell biology, metabolism, differentiation, adhesion to surfaces and mechanobiology. The student has methodological competence in quality management. The contents taught in the course lead to a deeper understanding of these competence fields and enable the application, which allows an independent assessment by analyzing publications or questions. For this purpose, the student should be able to understand a scientific publication in this field, to acquire additional background knowledge independently and, after analyzing the experimental results, to evaluate and discuss them critically.

Courses (type, number of weekly contact hours, language — if other than German)

V (2)
Module taught in: German/English

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) or
b) log (approx. 10 to 20 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)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: German or English
Assessment offered: Once a year, winter semester

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) Biochemistry (2015)
Master's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biochemistry (2017)
Supplementary course Translational Medicine (2018)
Master's degree (1 major) Biomedicine (2018)
Master's degree (1 major) Translational Medicine (2018)
Master's degree (1 major) Biochemistry (2019)

Module title			Abbreviation
Virology 1 BM			03-98-VirM1-152-m01
Module coordinator		**Module offered by**	
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

Learning of basic principles and deeper insights into the molecular processes of viral replication cycles. The main focus is on the structure of different virus types, different strategies of virus entry into target cells, and the molecular mechanisms of replication of viral RNA genomes, DNA genomes and retroviral genomes using selected example viruses. The overall topic is the regulation of replication, transcription and translation of viral genes. Introduction to immunological defense mechanisms against viral infections, including intrinsic, natural and adaptive immune responses and antiviral vaccines.

Intended learning outcomes

Expert knowledge of viral replication and regulation strategies at the molecular level. Independently develop and present research findings based on primary scientific literature. Acquire the ability to review and evaluate scientific results and generate scientific hypotheses from them.

Courses (type, number of weekly contact hours, language — if other than German)

V (1) + S (2)
Module taught in: German/English

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) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: German and/or English
Assessment offered: Winter semester only

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) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)
Master's degree (1 major) Biomedicine (2018)

Module title			Abbreviation
GSLS PhD student seminar			03-EM-Doksem-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Sociology and Sociological Theory		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	unknown	--	

Contents

No information on contents available.

Intended learning outcomes

No information on intended learning outcomes available.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German/English

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)

presentation (20 to 30 minutes)
Language of assessment: German and/or 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) Experimental medicine (2015)

Module title			Abbreviation
Selected Courses from Life Sciences			03-EM-FSQ-MB-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biomedizin (Biomedicine)		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
2	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	Prior approval from degree programme coordinator required.	

Contents

Courses offered by the Faculties of Biology or Medicine that contribute to further professional qualification. Recognition (successfully completed/not successfully completed) as assessment to be granted by the module coordinator.

Intended learning outcomes

The students have acquired a broader range of knowledge that enables them to enhance their interdisciplinary thinking skills and improve their professional qualification.

Courses (type, number of weekly contact hours, language — if other than German)

V (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 (45 to 90 minutes) or
b) log (10 to 20 pages) or
c) oral examination of one candidate each (20 to 30 minutes) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
e) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.

Allocation of places

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Additional information

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Workload

60 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) Experimental medicine (2015)

Module title			Abbreviation
Colloquium			03-EM-MKO-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biomedizin (Biomedicine)		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	03-EM-MTH	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Students present the results of their thesis projects in a scientific colloquium.

Intended learning outcomes

Students are able to present and defend the data from their thesis project in front of a professional audience.

Courses (type, number of weekly contact hours, language — if other than German)

K (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)

final colloquium (approx. 30 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) Experimental medicine (2015)

Module title			Abbreviation
Methods in Molecular Biology			03-EM-MP-152-m01
Module coordinator		**Module offered by**	
Institute of Hygiene and Microbiology / RVZ		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	--	

Contents

Students complete a four-week, full-time molecular biology basic lab course with a focus on DNA, RNA, bioinformatics, proteins, cell biology, microscopy in theory as well as practical exercises.

Intended learning outcomes

The students have developed a deep knowledge of fundamental analysis/investigative methods of molecular and cell biology. They are able to discuss their results.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)

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)

Part I: elaboration of logs (approx. 10 to 20 pages). Part II: a) oral examination of one candidate each (20 to 30 minutes) or b) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or c) presentation (20 to 30 minutes).
Students will be informed about the type and length of assessment at the beginning of the course.
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 weeks, full time.

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) Experimental medicine (2015)

Module title			Abbreviation
Master Thesis			03-EM-MTH-152-m01
Module coordinator		**Module offered by**	
chairperson of examination committee of complementary non-degree programme Experimentelle Medizin (Experimental Medicine)		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
25	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Students conduct a scientific research project, using appropriate methods and adhering to the principles of good scientific practice. They document and discuss their work in a thesis and defend it in a final colloquium.

Intended learning outcomes

Students are able to independently carry out scientific work according to the rules of good scientific practice. They are able to document and, where necessary, adjust their research as well as to interpret their findings in a larger context. Students are able to defend their work in front of a professional audience.

Courses (type, number of weekly contact hours, language — if other than German)

No courses assigned to module

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)

Master's thesis (approx. 30 to 60 pages)
Language of assessment: English

Allocation of places

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Additional information

Time to complete: 6 months.

Workload

750 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) Experimental medicine (2015)

Module title			Abbreviation
Practical Biochemistry and Molecular Biology			03-EM-PBMB-152-m01
Module coordinator		**Module offered by**	
holders of the Chairs of Physiological Chemistry, Developmental Biochemistry, Biochemistry and Molecular Biology		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	--	

Contents

Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of multifunctional biochemistry and molecular biology and present the results of the laboratory project at the Institute seminar.

Intended learning outcomes

Participating in clinically-oriented research projects, students gain initial hands-on experience. They reinforce previously acquired lab skills, acquire new lab techniques, and learn how to apply theoretical knowledge in the lab. Students gain expertise in the analysis and presentation of raw data.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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)

practical assignment with log (approx. 10 to 20 pages) and oral examination (approx. 15 to 30 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 to 6 weeks.

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) Experimental medicine (2015)

Module title			Abbreviation
Practical Training Infection and Immunity			03-EM-PInIm-152-m01
Module coordinator		**Module offered by**	
Institute of Virology and Immunobiology		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	--	

Contents

Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of infection and immunity and present the results of the laboratory project at the Institute seminar.

Intended learning outcomes

Participating in clinically-oriented research projects, students gain initial hands-on experience. They reinforce previously acquired lab skills, acquire new lab techniques, and learn how to apply theoretical knowledge in the lab. Students gain expertise in the analysis and presentation of raw data.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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)

practical assignment with log (approx. 10 to 20 pages) and oral examination (approx. 15 to 30 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 to 6 weeks.

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) Experimental medicine (2015)

Module title			Abbreviation
Practical Training Cardiovascular Biology			03-EM-PKB-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Experimental Biomedicine		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	--	

Contents

Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of cardiovascular biology and present the results of the laboratory project at the Institute seminar.

Intended learning outcomes

Participating in clinically-oriented research projects, students gain initial hands-on experience. They reinforce previously acquired lab skills, acquire new lab techniques, and learn how to apply theoretical knowledge in the lab. Students gain expertise in the analysis and presentation of raw data.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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)

practical assignment with log (approx. 10 to 20 pages) and oral examination (approx. 15 to 30 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 to 6 weeks.

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) Experimental medicine (2015)

Module title			Abbreviation
Practical Training Molecular Oncology			03-EM-PMO-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Biochemistry and Molecular Biology			
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of molecular oncology and present the results of the laboratory project at the Institute seminar.

Intended learning outcomes

Participating in clinically-oriented research projects, students gain initial hands-on experience. They reinforce previously acquired lab skills, acquire new lab techniques, and learn how to apply theoretical knowledge in the lab. Students gain expertise in the analysis and presentation of raw data.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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)

practical assignment with log (approx. 10 to 20 pages) and oral examination (approx. 15 to 30 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 to 6 weeks.

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) Experimental medicine (2015)

Module title			Abbreviation
Practical Training Neurobiology			03-EM-PNB-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Clinical Neurobiology		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	--	

Contents

Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of neurobiology and neurophysiology and present the results of the laboratory project at the Institute seminar.

Intended learning outcomes

Participating in clinically-oriented research projects, students gain initial hands-on experience. They reinforce previously acquired lab skills, acquire new lab techniques, and learn how to apply theoretical knowledge in the lab. Students gain expertise in the analysis and presentation of raw data.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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)

practical assignment with log (approx. 10 to 20 pages) and oral examination (approx. 15 to 30 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 to 6 weeks.

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) Experimental medicine (2015)

Module title			Abbreviation
Poster Design			03-EM-POST-152-m01
Module coordinator		**Module offered by**	
unknown		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
1	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Preparation of scientific data for presentation, fundamental principles of visual design.

Intended learning outcomes

Students are able to present scientific facts in poster format.

Courses (type, number of weekly contact hours, language — if other than German)

Ü (1)
Module taught in: English

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 (10 to 20 pages) or
b) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
c) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.
Language of assessment: English

Allocation of places

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Additional information

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Workload

30 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) Experimental medicine (2015)

Module title			Abbreviation
Oral Presentation Skills			03-EM-PRES-152-m01
Module coordinator		**Module offered by**	
unknown		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
1	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Design and organisation of presentations, rhetoric and body language.

Intended learning outcomes

Students are able orally to present scientific results in an understandable and appropriate manner.

Courses (type, number of weekly contact hours, language — if other than German)

Ü (1)
Module taught in: English

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)

b) log (10 to 20 pages) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
e) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.
Language of assessment: English

Allocation of places

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Additional information

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Workload

30 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) Experimental medicine (2015)

Module title	Abbreviation
Practical Training Stem Cell Biology and Regenerative Medicine	03-EM-PSZ-152-m01

Module coordinator	Module offered by
holder of the Chair of Tissue Engineering and Regenerative Medicine / head of the Institute of Medical Radiology and Cell Research (MSZ)	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	--

Contents

Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of stem cell biology and/or regenerative medicine and present the results of the laboratory project at the Institute seminar.

Intended learning outcomes

Participating in clinically-oriented research projects, students gain initial hands-on experience. They reinforce previously acquired lab skills, acquire new lab techniques, and learn how to apply theoretical knowledge in the lab. Students gain expertise in the analysis and presentation of raw data.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)
Module taught in: German/English

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)

practical assignment with log (approx. 10 to 20 pages) and oral examination (approx. 15 to 30 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: 4 to 6 weeks.

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) Experimental medicine (2015)

Module title			Abbreviation
Theoretical Medicine			03-EM-TM-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biomedizin (Biomedicine)		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

Research-oriented fundamentals in the field of clinical and theoretical medicine.

Intended learning outcomes

Students gain a deeper knowledge of theoretical clinical medicine and its research application.

Courses (type, number of weekly contact hours, language — if other than German)

V (3) + V (3) + V (3)

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)

c) oral examination of one candidate each (20 to 30 minutes) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
e) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.
Assessment will cover the subjects of microbiology, pharmacology and pathology. There will either be one assessment covering all of the three subjects or three individual assessments.
Language of assessment: German and/or 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) Experimental medicine (2015)

Module title			Abbreviation
Biomedical courses from other programs			03-EM-VAND-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biomedizin (Biomedicine)		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 degree programme coordinator in advance.	

Contents

Courses from other degree programmes that contribute to further professional qualification. Recognition (successfully completed/not successfully completed) as assessment to be granted by the module coordinator.

Intended learning outcomes

The students have acquired a broader range of knowledge that enables them to enhance their interdisciplinary thinking skills and improve their professional qualification.

Courses (type, number of weekly contact hours, language — if other than German)

V (3)
Module taught in: German/English

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 (45 to 90 minutes) or
c) oral examination of one candidate each (20 to 30 minutes) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per person)
Students will be informed about the type and length of assessment at the beginning of the course.
Language of assessment: German and/or 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) Experimental medicine (2015)

Module title			Abbreviation
Scientific Writing			03-EM-WRI-152-m01
Module coordinator		**Module offered by**	
unknown		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
1	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Basic rules for the preparation of scientific manuscripts, literature references and ways of data presentation. Gaining practice in structured approaches, delineation of a chosen topic, structuring of research questions, compliance with deadlines.

Intended learning outcomes

The students have learned to retrieve scientific results from literature or from other sources and to present these in written form.

Courses (type, number of weekly contact hours, language — if other than German)

Ü (1)
Module taught in: English

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)

b) log (10 to 20 pages) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
e) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.
Language of assessment: English

Allocation of places

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Additional information

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Workload

30 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) Experimental medicine (2015)

Module title			Abbreviation
Biometry I			03-KFE-02a-152-m01
Module coordinator		**Module offered by**	
Institute of Clinical Epidemiology and Biometry (ICE-B)		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

Basics of the statistical software SPSS; data preparation; descriptive statistics; basic methods of inference statistics. Advanced part: statistical modelling by multiple regression for metric, binary, ordinal and survival data.

Intended learning outcomes

The students are able to create data tables, to import and export data, to pool and merge as well as to transform and recode data. They have learned to describe data numerically by statistical measures and to represent it graphically. They are familiar with significance tests and confidence estimates as well as fundamental methods for one and two-sample problems. Advanced part: The students perform multiple regression analyses by the general linear model, binary and ordinal logistic regression as well as Cox regression (including time-dependent covariates) and are able to test for interaction effects.

Courses (type, number of weekly contact hours, language — if other than German)

V (1) + S (1) + Ü (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 (45 to 90 minutes) or
b) log (10 to 20 pages) or
c) oral examination of one candidate each (20 to 30 minutes) or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
e) presentation (20 to 30 minutes)
Students will be informed about the type and length of assessment at the beginning of the course.

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

Bachelor's degree (1 major) Biomedicine (2015)
Master's degree (1 major) Experimental medicine (2015)

Module title			Abbreviation
Responsible Conduct of Research 1			07-MLSRR1-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
2	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Responsible and ethical conduct of research, content and importance of compliance with international regulations to this end, information on national and international authorities regulating rules of conduct of research, biosafety and risks.

Intended learning outcomes

Students meet the academic requirements/possess the knowledge and skills required of a biosafety officer. They have developed an awareness of critical elements in quality management and quality control in research labs. Students know national and international authorities that are responsible for the regulation and control of good scientific conduct and ethical questions involving, in particular, genetically modified organisms. Students understand crucial elements of responsible and ethical conduct of research as well as the consequences of a violation of these rules.

Courses (type, number of weekly contact hours, language — if other than German)

S (1)
Module taught in: English

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)
Students will be informed about the method, length and scope of the assessment prior to the course.
Language of assessment: English

Allocation of places

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Additional information

Consult Academic Advisor

Workload

60 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) Experimental medicine (2015)
Master's degree (1 major) FOKUS Life Sciences (2015)