Module Catalogue
for the Subject
Experimental medicine
as a Master’s with 1 major
with the degree "Master of Science"
(120 ECTS credits)

Examination regulations version: 2009
Responsible: Faculty of Medicine
Contents

The subject is divided into 3
Content and Objectives of the Programme 4
Abbreviations used, Conventions, Notes, In accordance with 5
Compulsory Courses 6
Microbiology, Virology, Hygiene 7
Pathology 8
Pharmacology and Toxicology 9
Molecular biological methods 10
Compulsory Electives 11
Practical Experimental Medicine 12
Infection and Immunity 13
Molecular Oncology 14
Structure and Function of Proteins 15
Cardiovascular Biology 16
Neurobiology and Neurophysiology 17
Subfield Theoretical Experimental Medicine 18
Seminar Infection and Immunity 19
Seminar Molecular Oncology 20
Seminar Structure and Function of Proteins 21
Seminar Cardiovascular Biology 22
Seminar Neurobiology and Neurophysiology 23
Thesis 24
Final Examination Experimental Medicin 25
The subject is divided into

<table>
<thead>
<tr>
<th>section / sub-section</th>
<th>ECTS credits</th>
<th>starting page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Courses</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>Compulsory Electives</td>
<td>60</td>
<td>11</td>
</tr>
<tr>
<td>Practical Experimental Medicine</td>
<td>45</td>
<td>12</td>
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<td>15</td>
<td>18</td>
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<td>Thesis</td>
<td>30</td>
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Content and Objectives of the Programme

No translation available.
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:

ASPO2009

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

6-Dec-2011 (2011-109)

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.
Compulsory Courses

(30 ECTS credits)
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Microbiology, Virology, Hygiene</td>
<td>03-EM-MVH-092-m01</td>
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<th>Module offered by</th>
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<td>Institute of Hygiene and Microbiology</td>
<td>Faculty of Medicine</td>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
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</table>

### Contents
Foundations of clinical and theoretical medicine in microbiology, virology and hygiene with examination of one candidate each.

### Intended learning outcomes
Students gain a deeper understanding of infection and immunity with a view to research application.

### Courses
V (no information on SWS (weekly contact hours) and course language available)

### Method of assessment
oral examination of one candidate each (approx. 25 minutes)

### Allocation of places
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### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)
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<table>
<thead>
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<th>Module title</th>
<th>Abbreviation</th>
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<td>holder of the Chair of Pathology</td>
<td>Faculty of Medicine</td>
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<td>1 semester</td>
<td>graduate</td>
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</table>

**Contents**

Foundations of clinical and theoretical medicine in pathology with examination of one candidate each.

**Intended learning outcomes**

Students gain a deeper understanding of pathology with a view to research application.

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

V (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

oral examination of one candidate each (approx. 25 minutes)

**Allocation of places**

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**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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<table>
<thead>
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<td>Pharmacology and Toxicology</td>
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<td>Faculty of Medicine</td>
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### Contents
Foundations of clinical and theoretical medicine in pharmacology and toxicology with examination of one candidate each.

### Intended learning outcomes
Students gain a deeper understanding of pharmacology and toxicology with a view to research application.

### Courses
(V no information on SWS (weekly contact hours) and course language available)

### Method of assessment
(oral examination of one candidate each (approx. 25 minutes))

### Allocation of places
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### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)

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<table>
<thead>
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<th>Module title</th>
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<tr>
<td>Molecular biological methods</td>
<td>03-EM-MP-092-m01</td>
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**Module coordinator**

Institute of Hygiene and Microbiology / RVZ
Faculty of Medicine

**ECTS** | **Method of grading** | **Only after succ. compl. of module(s)** |
----------|-----------------------|------------------------------------------|
15        | 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 (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (written elaboration of lab reports, minimum 20 pages total)

**Allocation of places**

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**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

--
Compulsory Electives

(60 ECTS credits)
Practical Experimental Medicine
(45 ECTS credits)
### Module title

**Infection and Immunity**

### Abbreviation

03-EM-InIm-092-m01

### Module coordinator

Institute of Virology and Immunobiology

### Module offered by

Faculty of Medicine

### ECTS

15

### Method of grading

numerical grade

### Only after succ. compl. of module(s)

--

### Duration

1 semester

### Module level

graduate

### Other prerequisites

--

### 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

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 03-EM-InIm-1-092: P (no information on SWS (weekly contact hours) and course language available)
- 03-EM-InIm-2-092: K (no information on SWS (weekly contact hours) and course language available)

### Method of assessment

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

**Assessment in module component 03-EM-InIm-1-092: Practical Training Infection and Immunity**

- 10 ECTS, Method of grading: numerical grade
- term paper (ready-to-publish written summary of results of experiments, minimum 10 pages)

**Assessment in module component 03-EM-InIm-2-092: Colloquium Infection and Immunity**

- 5 ECTS, Method of grading: numerical grade
- oral presentation and discussion of results of lab course (approx. 15 to 20 minutes)

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)
**Module Catalogue for the Subject**
**Experimental medicine**
**Master's with 1 major, 120 ECTS credits**

<table>
<thead>
<tr>
<th>Module title</th>
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<td>Molecular Oncology</td>
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**Module coordinator**
holder of the Chair of Biochemistry and Molecular Biology

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<tr>
<td>1 semester</td>
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</table>

**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**
This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 03-EM-MO-1-092: P (no information on SWS (weekly contact hours) and course language available)
- 03-EM-MO-2-092: K (no information on SWS (weekly contact hours) and course language available)

**Method of assessment**
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

**Assessment in module component 03-EM-MO-1-092:** Practical Training Molecular Oncology
- 10 ECTS, Method of grading: numerical grade
- term paper (ready-to-publish written summary of results of experiments, minimum 10 pages)

**Assessment in module component 03-EM-MO-2-092:** Colloquium Molecular Oncology
- 5 ECTS, Method of grading: numerical grade
- oral presentation and discussion of results of lab course (approx. 15 to 20 minutes)

**Allocation of places**
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**Additional information**
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**Referred to in LPO I** (examination regulations for teaching-degree programmes)
--
Module title
Structure and Function of Proteins

Abbreviation
03-EM-SFP-092-m01

Module coordinator
holder of the Chair of Structural Biology

Module offered by
Faculty of Medicine

ECTS
15

Method of grading
numerical grade

Only after succ. compl. of module(s)

Duration
1 semester

Module level
graduate

Other prerequisites

Contents
Students spend 4 to 6 weeks working on their own small, well-defined scientific lab project in the area of the structure and function of proteins 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
This module comprises 2 module components. Information on courses will be listed separately for each module component.
- 03-EM-SFP-1-092: P (no information on SWS (weekly contact hours) and course language available)
- 03-EM-SFP-2-092: K (no information on SWS (weekly contact hours) and course language available)

Method of assessment
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 03-EM-SFP-1-092: Practical Training Structure and Function of Proteins
- 10 ECTS, Method of grading: numerical grade
- term paper (ready-to-publish written summary of results of experiments, minimum 10 pages)

Assessment in module component 03-EM-SFP-2-092: Colloquium Structure and Function of Proteins
- 5 ECTS, Method of grading: numerical grade
- oral presentation and discussion of results of lab course (approx. 15 to 20 minutes)

Allocation of places

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module title | Abbreviation
--- | ---
Cardiovascular Biology | 03-EM-KVB-092-m01

Module coordinator | Module offered by
holder of the Chair of Experimental Biomedicine | Faculty of Medicine

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<tr>
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</table>

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
This module comprises 2 module components. Information on courses will be listed separately for each module component.
- 03-EM-KVB-1-092: P (no information on SWS (weekly contact hours) and course language available)
- 03-EM-KVB-2-092: K (no information on SWS (weekly contact hours) and course language available)

Method of assessment
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 03-EM-KVB-1-092: Practical Training Cardiovascular Biology
- 10 ECTS, Method of grading: numerical grade
- term paper (ready-to-publish written summary of results of experiments, minimum 10 pages)

Assessment in module component 03-EM-KVB-2-092: Colloquium Cardiovascular Biology
- 5 ECTS, Method of grading: numerical grade
- oral presentation and discussion of results of lab course (approx. 15 to 20 minutes)

Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module title | Abbreviation
---|---
Neurobiology and Neurophysiology | 03-EM-NBP-092-m01

Module coordinator | Module offered by
holder of the Chair of Clinical Neurobiology | Faculty of Medicine

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<th>Other prerequisites</th>
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<tbody>
<tr>
<td>1 semester</td>
<td>graduate</td>
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</tbody>
</table>

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)
This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 03-EM-NBP-1-092: P (no information on SWS (weekly contact hours) and course language available)
- 03-EM-NBP-2-092: K (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 03-EM-NBP-1-092: Practical Training Neurobiology and Neurophysiology
- 10 ECTS, Method of grading: numerical grade
- term paper (ready-to-publish written summary of results of experiments, minimum 10 pages)

Assessment in module component 03-EM-NBP-2-092: Colloquium Neurobiology and Neurophysiology
- 5 ECTS, Method of grading: numerical grade
- oral presentation and discussion of results of lab course (approx. 15 to 20 minutes)

Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Subfield Theoretical Experimental Medicine
(15 ECTS credits)
## Module Catalogue for the Subject
### Experimental medicine
#### Master's with 1 major, 120 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
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<td>Seminar Infection and Immunity</td>
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<tr>
<td>Institute of Virology and Immunobiology</td>
<td>Faculty of Medicine</td>
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</table>

### Contents

Semester-long, integrated scientific seminar in small groups with exercise, discussion and presentations/talks by students, among others on current literature and/or selected special lectures covering the fields of virology and immunobiology.

### Intended learning outcomes

Advanced insights into the focuses chosen for the in-depth scientific study of the selected specialist area. Students are able to evaluate relevant specific information, to present it in a professional manner and to discuss it with others. Students acquire a critical understanding of the most important theories, principles and methods of individual issues within the subject.

### Courses

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

S (no information on SWS (weekly contact hours) and course language available)

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

presentation (approx. 15 to 20 minutes) and written summary (approx. 1 page)

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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<table>
<thead>
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**Contents**

Semester-long, integrated scientific seminar in small groups with exercise, discussion and presentations/talks by students, among others on current literature and/or selected special lectures covering the field of molecular oncology.

**Intended learning outcomes**

Advanced insights into the focuses chosen for the in-depth scientific study of the selected specialist area. Students are able to evaluate relevant specific information, to present it in a professional manner and to discuss it with others. Students acquire a critical understanding of the most important theories, principles and methods of individual issues within the subject.

**Courses**

(no information on SWS (weekly contact hours) and course language available)

**Method of assessment**

presentations (approx. 15 to 20 minutes) and written summary (approx. 1 page)

**Allocation of places**

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**Additional information**

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**Referred to in LPO I**

(examination regulations for teaching-degree programmes)

--
Module title: Seminar Structure and Function of Proteins
Abbreviation: 03-EM-Sem3-092-m01

Module coordinator: holder of the Chair of Structural Biology
Module offered by: Faculty of Medicine

ECTS: 5
Method of grading: numerical grade
Duration: 1 semester
Module level: graduate

Other prerequisites: --

Contents:
Semester-long, integrated scientific seminar in small groups with exercise, discussion and presentations/talks by students, among others on current literature and/or selected special lectures covering the field of structure and function of proteins.

Intended learning outcomes:
Advanced insights into the focuses chosen for the in-depth scientific study of the selected specialist area. Students are able to evaluate relevant specific information, to present it in a professional manner and to discuss it with others. Students acquire a critical understanding of the most important theories, principles and methods of individual issues within the subject.

Courses:
S (no information on SWS (weekly contact hours) and course language available)

Method of assessment:
Presentation (approx. 15 to 20 minutes) and written summary (approx. 1 page)

Allocation of places:
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Additional information:
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Referred to in LPO I:
(examination regulations for teaching-degree programmes)
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<table>
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<tr>
<td>holder of the Chair of Experimental Biomedicine</td>
<td>Faculty of Medicine</td>
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<table>
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<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>graduate</td>
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</table>

### Contents

Semester-long, integrated scientific seminar in small groups with exercise, discussion and presentations/talks by students, among others on current literature and/or selected special lectures covering the field of cardiovascular biology.

### Intended learning outcomes

Advanced insights into the focuses chosen for the in-depth scientific study of the selected specialist area. Students are able to evaluate relevant specific information, to present it in a professional manner and to discuss it with others. Students acquire a critical understanding of the most important theories, principles and methods of individual issues within the subject.

### Courses

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

S (no information on SWS (weekly contact hours) and course language available)

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

presentation (approx. 15 to 20 minutes) and written summary (approx. 1 page)

### Allocation of places

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### Additional information

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### Referred to in LPO 1

(examination regulations for teaching-degree programmes)

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### Module Catalogue for the Subject

#### Experimental medicine

**Master's with 1 major, 120 ECTS credits**

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Seminar Neurobiology and Neurophysiology</td>
<td>03-EM-Sem5-092-m01</td>
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#### Module coordinator

holder of the Chair of Clinical Neurobiology

#### Module offered by

Faculty of Medicine

<table>
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</table>

#### Duration

1 semester

#### Module level

graduate

#### Other prerequisites

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### Contents

Semester-long, integrated scientific seminar in small groups with exercise, discussion and presentations/talks by students, among others on current literature and/or selected special lectures covering the field of neurobiology and neurophysiology.

### Intended learning outcomes

Advanced insights into the focuses chosen for the in-depth scientific study of the selected specialist area. Students are able to evaluate relevant specific information, to present it in a professional manner and to discuss it with others. Students acquire a critical understanding of the most important theories, principles and methods of individual issues within the subject.

### Courses

(no information on SWS (weekly contact hours) and course language available)

### Method of assessment

presentation (approx. 15 to 20 minutes) and written summary (approx. 1 page)

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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Thesis

(30 ECTS credits)
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<td>Final Examination Experimental Medicine</td>
<td>03-EM-MA-092-m01</td>
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<tbody>
<tr>
<td>chairperson</td>
<td>Faculty of Medicine</td>
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<td>of examination</td>
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<td>complementary</td>
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<td>programme</td>
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<td>Experimentelle</td>
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<tr>
<td>Medizin (Experimental Medicine)</td>
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**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**

This module has 2 components; information on courses listed separately for each component.

- 03-EM-MA-2-092: K (no information on language and number of weekly contact hours available)
- 03-EM-MA-1-092: A (no information on language and number of weekly contact hours available)

**Method of assessment**

This module has the following 2 assessment components. Unless stated otherwise, students must pass all of these assessment components to pass the module as a whole.

**Assessment component to module component 03-EM-MA-2-092**: Kolloquium zur Masterarbeit

- 5 ECTS credits, method of grading: numerical grade
- Abschlusskolloquium (approx. 45 minutes)
- Only after succ. compl. of module component(s): Teilmodul 03-EM-MA-2 setzt Bestehen von Teilmodul 03-EM-MA-1 voraus.

**Assessment component to module component 03-EM-MA-1-092**: Masterarbeit "Experimentelle Medizin"

- 25 ECTS credits, method of grading: numerical grade
- written thesis

**Allocation of places**

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**Additional information**

Additional information listed separately for each module component.

- 03-EM-MA-1-092: Additional information on module duration: 6 months.
- 03-EM-MA-2-092: --

**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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