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
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<td>Subfield Theoretical Experimental Medicine</td>
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<td>24</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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<td>Microbiology, Virology, Hygiene</td>
<td>03-EM-MVH-092-m01</td>
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<td>1 semester</td>
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**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**

--

**Additional information**

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**Referral to in LPO I**

(examination regulations for teaching-degree programmes)

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<table>
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**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**

--

**Additional information**

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

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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** (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**

--

**Additional information**

--

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

--
Module title
Molecular biological methods

Abbreviation 03-EM-MP-092-m01

Module coordinator
Institute of Hygiene and Microbiology / RVZ

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 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 --

Additional information --

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

**Duration**  
1 semester

**Module level**  
graduate

**Other prerequisites**  

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**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)

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# Module Catalogue for the Subject
## Experimental medicine
### Master’s with 1 major, 120 ECTS credits

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<th>Module title</th>
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<td>Molecular Oncology</td>
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<td>1 semester</td>
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### 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
--

### 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**: 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)

- **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)

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

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** (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-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**

--

**Additional information**

--

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

--
**Module title**
Neurobiology and Neurophysiology

**Abbreviation**
03-EM-NBP-092-m01

**Module coordinator**
holder of the Chair of Clinical Neurobiology

**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 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**

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**

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)

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Subfield Theoretical Experimental Medicine
(15 ECTS credits)
## Seminar Infection and Immunity

<table>
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### Module coordinator
- Institute of Virology and Immunobiology

### Module offered by
- Faculty of Medicine

### ECTS
- 5

### Method of grading
- numerical grade

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

### 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 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
- 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
- --

### Additional information
- --

### 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**

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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

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### Method of assessment

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### 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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<tr>
<td>1 semester</td>
<td>graduate</td>
<td>--</td>
</tr>
</tbody>
</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 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**

--

**Additional information**

--

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

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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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</thead>
<tbody>
<tr>
<td>Seminar Cardiovascular Biology</td>
<td>03-EM-Sem4-092-m01</td>
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</table>

**Module coordinator**

holder of the Chair of Experimental Biomedicine

**Module offered by**

Faculty of Medicine

<table>
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<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>numerical grade</td>
<td>--</td>
</tr>
</tbody>
</table>

**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 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**

--

**Referred to in LPO I**

(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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</thead>
<tbody>
<tr>
<td>Seminar Neurobiology and Neurophysiology</td>
<td>03-EM-Sem5-092-m01</td>
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</table>

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<th>Module offered by</th>
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<tbody>
<tr>
<td>holder of the Chair of Clinical Neurobiology</td>
<td>Faculty of Medicine</td>
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<td>1 semester</td>
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<td>--</td>
</tr>
</tbody>
</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 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

*(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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**Thesis**

(30 ECTS credits)
Module title | Abbreviation
---|---
Final Examination Experimental Medicine | 03-EM-MA-092-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)
---|---|---
30 | 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)

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

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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