Excerpt from Module Descriptions

Master of Science Computational Science and Engineering

Examination Regulations in the Version of: 2019

Sub-Section: Seminar I from
the field of Applied Mathematics

Index

Seminar I from the field of Applied Mathematics

Seminar I - Algebra and Number Theory - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875107
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Algebra and Number Theory.
Allocation of study programmes	Computational Science and Engineering M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.
Learning objectives	• The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic. • In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge. • They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations. • The students choose suitable forms of presentation and implementation for the lecture and the paper.
Syllabus	Topics that build on at least one advanced module from the field of Algebra and Number theory. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.
Literature	Depending on the topic

Teaching and learning methods	Seminar Algebra und Zahlentheorie - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the lecture and the written elaboration (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral presentation of the results and participation in the discussion.

Grading procedure	The grade of the module will be the grade of the exam.

Basis for	

Seminar I - Applied Graph Theory - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875111
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Graph Theory
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.

Learning objectives

- The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic.
- In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge.
- They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations.
- The students choose suitable forms of presentation and implementation for the lecture and the paper.

Syllabus

Topics that build on at least one advanced module from the field of Graph theory. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.

Literature

Depending on the topic

Teaching and learning methods	Seminar Graphentheorie - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the lecture and the written elaboration (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral presentation and an ungraded written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the examination grade.

Basis for	

Seminar I - Financial Mathematics - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875113
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Financial Mathematics
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.
Learning objectives	• The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic. • In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge. • They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations. • The students choose suitable forms of presentation and implementation for the lecture and the paper.
Syllabus	Topics that build on at least one advanced module from Financial Mathematics. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.
Literature	Depending on the topic

Teaching and learning methods	Seminar Financial Mathematics - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the lecture and the written elaboration (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral presentation and an ungraded written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the examination grade.

Basis for	

Seminar I - Numerics - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875115
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Prof. Dr. Karsten Urban
Instructor(s)	Prof. Dr. Karsten Urban, Prof. Dr. Stefan Funken, Prof. Dr. Dirk Lebiedz
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be announced with the seminar announcement. As a rule, the competences acquired in the basic modules and at least those of an advanced module in numerical mathematics are required.
Learning objectives	- The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic. - In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge. - They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations. - The students choose suitable forms of presentation and implementation for the lecture and the paper. - The students apply the knowledge they acquired in the elementary courses in numerical mathematics in practice and extend their knowledge with regard to selected problems in applications.
Syllabus	Topics which are based on the elementary courses in numerical mathematics. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet. Usually the topics involve the numerical treatment of partial differential equations by the finite difference method or by the finite element method.

Literature	Depending on the topic

Teaching and learning methods	Seminar Numerik - Master (Seminar) (2 SWS)

Workload	Classroom hours (30 h), preparation of the talk (80 h), creation of a written elaboration (10 h), total 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral and written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the percentage weighted average of the examination grades with the following weights: Written presentation (50 %) and oral examination (presentation) (50 %). The calculated grade for the module grade will be entered and shown in the Transcript of Records as a single grade. The exact modalities will be announced at the beginning of the course.

Basis for	

Seminar I - Optimization - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875117
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Optimization
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.

Learning objectives

- The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic.
- In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge.
- They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations.
- The students choose suitable forms of presentation and implementation for the lecture and the paper.

Syllabus

Topics that build on at least one advanced module from the field of Optimization. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.

Literature

Depending on the topic

Teaching and learning methods	Seminar Optimierung - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the lecture and the written elaboration (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral presentation and an ungraded written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the examination grade.

Basis for	

Seminar I - Pure Graph Theory - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875119
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Graph Theory
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.
Learning objectives	- The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic. - In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge. - They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations. - The students choose suitable forms of presentation and implementation for the lecture and the paper.
Syllabus	Topics that build on at least one advanced module from the field of Graph theory. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.
Literature	Depending on the topic

| **Teaching and learning methods** | Seminar Graphentheorie - Master (Seminar) (2 SWS) |

| **Workload** | Classroom hours: 28 h
Individual study time: preparation and postprocessing (28 h), Preparation of the lecture and the written elaboration (64 h)
Total: 120 h |

| **Assessment** | The module examination consists of completing an assignement on a given topic and a graded oral presentation and an ungraded written presentation of the results and participation in the discussion. |

| **Grading procedure** | The module grade is equal to the examination grade. |

| **Basis for** | |

Seminar I - Statistics - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875121
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Statistics
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.

Learning objectives

- The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic.
- In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge.
- They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations.
- The students choose suitable forms of presentation and implementation for the lecture and the paper.

Syllabus

Topics that build on at least one advanced module from the field of statistics. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.

Literature

Depending on the topic

Teaching and learning methods	Seminar Statistik - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the presentation and the written elaboration (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral presentation and an ungraded written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the examination grade.

Basis for	

Seminar I - Stochastic Geometry and its Applications - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875123
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Stochastics
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.
Learning objectives	• The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic. • In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge. • They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations. • The students choose suitable forms of presentation and implementation for the lecture and the paper.
Syllabus	Topics that build on at least one advanced module from the field of stochastics. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.
Literature	Depending on the topic

Teaching and learning methods	Seminar Stochastik - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the presentation and the written elaboration (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral and written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the percentage weighted average of the examination grades with the following weights: Written presentation (50 %) and oral examination (presentation) (50 %). The calculated grade for the module grade will be entered and shown in the Transcript of Records as a single grade. The exact modalities will be announced at the beginning of the course.

Basis for	

Seminar I - Analysis - Master graded

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875109
ECTS credits	4
Attendance time	2
Language of instruction	German
Duration	1
Cycle	each Winter Semester
Coordinator	Dean of Studies of Mathematics
Instructor(s)	Lecturers of Analysis
Allocation of study programmes	Computational Science and Engineering, M.Sc., FSPO 2019, Seminar
Recommended prerequisites	The requirements depend on the topic of the seminar and will be published with the seminar announcement.

Learning objectives

- The students work out a scientific topic largely independently on the basis of literature references, research further sources and information on it and classify these in the context of the topic. In doing so, they delimit and narrow down the subject area and design a presentation on the topic.
- In a presentation and a written paper, the students present their topic using the prerequisite and acquired knowledge.
- They discuss questions about their own presentation with the participating students and the seminar leader and critically participate in discussions about the other presentations.
- The students choose suitable forms of presentation and implementation for the lecture and the paper.

Syllabus

Topics that build on at least one advanced module from the field of Analysis. The exact choice of material is determined by the lecturer and announced on a notice board or on the Internet.

Literature

Depending on the topic

Teaching and learning methods	Seminar Analysis - Master (Seminar) (2 SWS)

Workload	Classroom hours: 28 h Individual study time: preparation and postprocessing (28 h), Preparation of the lecture and the preparation (64 h) Total: 120 h

Assessment	The module examination consists of completing an assignement on a given topic and a graded oral and written presentation of the results and participation in the discussion.

Grading procedure	The module grade is equal to the percentage weighted average of the examination grades with the following weights: Written presentation (50 %) and oral examination (presentation) (50 %). The calculated grade for the module grade will be entered and shown in the Transcript of Records as a single grade. The exact modalities will be announced at the beginning of the course.

Basis for	

Seminar I from the field of Applied Mathematics at Ulm University of Applied Sciences

Modules referring to Seminar I from the field of Applied Mathematics

Code	8811875125
ECTS credits	4
Attendance time	3
Language of instruction	No English version available yet.
Duration	1
Cycle	each Semester
Coordinator	No English version available yet.
Instructor(s)	No English version available yet.
Allocation of study programmes	No English version available yet.
Recommended prerequisites	No English version available yet.
Learning objectives	No English version available yet.
Syllabus	No English version available yet.
Literature	No English version available yet.
Teaching and learning methods	No English version available yet.
Workload	No English version available yet.
Assessment	No English version available yet.
Grading procedure	No English version available yet.

Basis for   No English version available yet.