Excerpt from Module Descriptions

Bachelor of Science Computer Science

Examination Regulations in the Version of: 2017

Sub-Section: Applied Subject Mathematics
# Index

## Applied Subject Mathematics

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Bachelor of Science Computer Science  
Date printed: 11. Januar 2019
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Modules referring to Applied Subject Mathematics

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Modules referring to Applied Subject Mathematics

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### Assessment

The grade of the module will be the grade of the oral or written (depending on the number of participants) exam. Prerequisite for exam registration is passing the pre-course (to be defined by the examiner).

### Grading procedure

The grade of the module will be the grade of the exam.
Basis for

No english version available yet.
### Applied Stochastics I for Computer Scientists

Modules referring to Applied Subject Mathematics

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Basis for

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| **Applied Numerical Mathematics II**  
| Modules referring to Applied Subject Mathematics |
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| **ECTS credits** | 4 |
| **Attendance time** | 4 |
| **Language of instruction** | No english version available yet. |
| **Duration** | 1 Semester |
| **Cycle** | each Winter Semester |
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Basis for

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### Applied Stochastics II

Modules referring to Applied Subject Mathematics

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# Elements of Functional Analysis

Modules referring to Applied Subject Mathematics

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<td><strong>Coordinator</strong></td>
<td>Prof. Dr. Friedmar Schulz</td>
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<td><strong>Instructor(s)</strong></td>
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**Learning objectives**

- Students will be aware of the core methods of modern analysis
- become familiar with a sophisticated but not too abstract generalization of linear algebra
- be able to manage the main principles of Hilbert space theory
- learn the basic facts for the treatment of partial differential equations, numerical mathematics and other areas of applied mathematics
- recognize several connections to linear algebra, differential and integral equations, numerical mathematics, physics and so on

**Syllabus**

- normed spaces, metric spaces, compactness, Arzela-Ascoli theorem, Banach and Hilbert spaces
- orthogonality, Fourier sequences, orthogonal projection, Riesz representation theorem, linear operators in Banach and Hilbert spaces
- adjoint, inverse, unitary operators, projectors
- Toeplitz theorem
- bilinear forms, Lax-Milgram theorem
- weak convergence, compact operators
- Fredholm theorems
- spectral theory of compact hermitian operators
| **Literature** | Heuser, H.: Funktionalanalyis, Teubner 1986  
| **Teaching and learning methods** | Lecture (2 hours per week), exercise (1 hours per week) |
| **Workload** | contact hours: 42 h; independent study: post-processing (28 h), exercises (30 h), examaination and preparation (20 h); sum: 120 |
| **Assessment** | No english version available yet. |
| **Grading procedure** | No english version available yet. |
| **Basis for** | Special courses in spectral theory, nonlinear functional analysis or partial differential equations. |
**Elements of the Theory of Functions in Complex Variables**
Modules referring to Applied Subject Mathematics

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Basis for
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**Ordinary Differential Equations for Computer Scientists**

Modules referring to Applied Subject Mathematics

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Basis for

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Modules referring to Applied Subject Mathematics

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<td><strong>Duration</strong></td>
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<td><strong>Syllabus</strong></td>
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<td><strong>Literature</strong></td>
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Basis for  No english version available yet.
Measure Theory
Modules referring to Applied Subject Mathematics

Code 8207970006

ECTS credits 4

Attendance time 3

Language of instruction
No english version available yet.

Duration 1 Semester

Cycle each Winter 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.

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