# Module Catalogue 

 for the Subject Computer Science as a Bachelor's with 1 major with the degree "Bachelor of Science" (180 ECTS credits)Examination regulations version: 2010 Responsible: Institute of Computer Science

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The subject is divided into

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| Mathematics | 29 | 20 |
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| Physics | max. 10 | 51 |
| Business Management and Economics | max. 10 | 54 |
| Linguistics | max. 10 | 67 |
| Medicine | max. 10 | 70 |
| Geography | max. 10 | 72 |
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## Content and Objectives of the Programme

The bachelor of science in computer science combining theoretical and practical elements is the first degree level offered by the Department of Mathematics and Computer Science at the Maximilian University of Würzburg.

The aim of this degree is to teach students the most important aspects of computer science, to understand the theory of algorithms and their application as well as to improve analytical skills, the ability to think in abstract terms and structure complex problems. With this degree the students have the skills to either continue their studies in a consecutive Master of Science program or be able to apply their knowledge in one of the many fields of computer science present outside academia. This is complemented by a specialization field in which the students become familiar with the basic techniques and ways of thinking in a subject of their choice for which methods of computer science are used.

The bachelor program focuses on well established and fundamental knowledge of facts and methods as well as on the development of thought processes necessary for computer science. Furthermore, state-of-the-art methods and their relevant applications are taught. With the bachelor thesis, students demonstrate their ability to work on a specific task and use the scientific methods learned within a defined period of time. Though guided by a mentor, they largely carry out the selected project on their own. The bachelor is an internationally acknowledged degree in the field of computer science that demonstrates the ability to work in this field or continue on to obtain a higher degree.

## Abbreviations used

Course types: $\mathbf{E}=$ field trip, $\mathbf{K}=$ colloquium, $\mathbf{O}=$ conversatorium, $\mathbf{P}=$ placement/lab course, $\mathbf{R}=$ project, $\mathbf{S}=$ seminar, $\mathbf{T}=$ tutorial, $\ddot{\mathbf{U}}=$ exercise, $\mathbf{V}=$ lecture

Term: SS = summer semester, WS = winter semester
Methods of grading: $\mathbf{N U M}=$ numerical grade, $\mathbf{B} / \mathbf{N B}=(n o t)$ successfully completed
Regulations: (L)ASPO = general academic and examination regulations (for teaching-degree programmes), $\mathbf{F S B}=$ subject-specific provisions, $\mathbf{S F B}=$ list of modules

Other: $\mathbf{A}=$ thesis, $\mathbf{L V}=$ course(s), $\mathbf{P L}=$ assessment(s), $\mathbf{T N}=$ participants, $\mathbf{V L}=$ 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)):
```


## 3-Aug-2010 (2010-42)

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

(86 ECTS credits)

## Computer Science

(80 ECTS credits)

| Module title |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Algorithm and data structures |  |  |  |  |  |
| Module coordinator |  |  |  |  | Module offered by |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Design and analysis of algorithms, recursion vs. iteration, sort and search methods, data structures, abstract data types, lists, trees, graphs, basic graph algorithms, programming in Java. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students are able to independently design algorithms as well as to precisely describe and analyse them. The students are familiar with the basic paradigms of the design of algorithms and are able to apply them in practical programs. The students are able to estimate the run-time behaviour of algorithms and to prove their correctness. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $\mathrm{V}+\mathrm{U}$ (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) |  |  |  |  |  |
| written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3 . |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| $\S 49$ (1) 1. a) Informatik Theoretische Informatik, Algorithmen und Datenstrukturen $\S 69$ (1) 1. a) Informatik Theoretische Informatik, Algorithmen und Datenstrukturen |  |  |  |  |  |


| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Software Technology |  |  |  |  | 10-I-ST-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Object-oriented software development with UML, development of graphical user interfaces, foundations of databases and object-relational mapping, foundations of web programming (HTML, XML), software development pro cesses, unified process, agile software development, project management, quality assurance. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess a fundamental theoretical and practical knowledge on the design and development of software systems. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $\mathrm{V}+\mathrm{U}$ (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) |  |  |  |  |  |
| written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3 . |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| $\S 49$ (1) 1. b) Datenbanksysteme und Softwaretechnologie $\S 69$ (1) 1. b) Datenbanksysteme und Softwaretechnologie |  |  |  |  |  |


| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Practical Course in Programming |  |  |  |  | 10-I-PP-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | (not) successfully completed |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| The programming language Java. Independent creation of small to middle-sized, high-quality Java programs. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students are able to independently develop small to middle-sized, high-quality Java programs. |  |  |  |  |  |
| 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) |  |  |  |  |  |
| written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3 . |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| Additional information on module duration: 1 to 2 semesters. |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| § 49 (1) 1. C) Informatik Praktische Softwareentwicklung § 69 (1) 1. d) Informatik Praktische Softwareentwicklung |  |  |  |  |  |


| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Practical course in software |  |  |  |  | 10-I-SWP-102-mo1 |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | (not) successfully completed |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| Completion of a project assignment in groups, problem analysis, creation of requirements specifications, specifi cation of solution components (e. g. UML) and milestones, user manual, programming documentation, presentation and delivery of the runnable software product in a colloquium. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess the practical skills for the design, development and execution of a software project in small teams. |  |  |  |  |  |
| 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) |  |  |  |  |  |
| completion of project assignments, presentation |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| § 49 (1) 1. c) Informatik Praktische Softwareentwicklung § 69 (1) 1. d) Informatik Praktische Softwareentwicklung |  |  |  |  |  |




| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Practical Course in Hardware |  |  |  |  | 10-I-HWP-102-mo1 |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | (not) successfully completed |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| Practical experiments on hardware aspects, for example in communication technology, robots or the structure of a complete microprocessor. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students are able to independently review, prepare and perform experiments with the help of experiment de scriptions, to independently search for additional information as well as to document and evaluate experiment 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) |  |  |  |  |  |
| completion of project assignments, presentation (type and expenditure of time to be specified by the lecturer at the beginning of the course) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
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| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Theoretical informatics |  |  |  |  | 10-I-TI-102-mo |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Computability, decidability, countability, complexity of calculations, Boolean functions and circuits, finite automata and regular sets, generative grammars, context-free languages, context-sensitive languages. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess fundamental and applicable knowledge in the area of computability, decidability, countability, complexity of calculations, Boolean functions and circuits, finite automata and regular sets, generative grammars, context free languages, context sensitive languages. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $\mathrm{V}+$ Ü (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 <br> module is creditable for bonus) |  |  |  |  |  |
| written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3 . |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| § 49 (1) 1. a) Informatik Theoretische Informatik, Algorithmen und Datenstrukturen $\S 69$ (1) 1. a) Informatik Theoretische Informatik, Algorithmen und Datenstrukturen |  |  |  |  |  |

## Basics of Mathematics

(6 ECTS credits)

| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Logic for informatics |  |  |  |  | 10-I-LOG-102- |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 6 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Syntax and semantics of propositional logic, equivalence and normal forms, Horn formulas, SAT, resolution, infinite formula sets, syntax and semantics of predicate logic. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students are proficient in the following areas: syntax and semantics of propositional logic, equivalence and normal forms, Horn formulas, SAT, resolution, infinite formula sets, syntax and semantics of predicate logic. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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) |  |  |  |  |  |
| written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3:25 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| -- |  |  |  |  |  |

## Compulsory Electives

(62 ECTS credits)

## Mathematics

(29 ECTS credits)

| Module title |  | Abbreviation |
| :--- | :--- | :--- | :--- |
| Mathematics $\mathbf{1}$ and $\mathbf{2}$ for students in Computer Science |  | $10-$ M-INF12-102-mo1 |
| Module coordinator | Module offered by |  |
| Dean of Studies Mathematik (Mathematics) | Institute of Mathematics |  |
| ECTS | Method of grading | Only after succ. compl. of module(s) |
| 20 | numerical grade | -- |
| Duration | Module level | Other prerequisites |
| 2 semester | undergraduate | By way of exception, additional prerequisites are listed in the section on <br> assessments. |
| Contents | Fundamentals on numbers and functions, sequences and series, differential and integral calculus in one varia- <br> ble, vector spaces, simple differential equations, linear maps and systems of linear equations, matrix calculus, <br> eigenvalue theory, differential and integral calculus in several variables, differential equations, Fourier analysis. |  |

## Intended learning outcomes

The student gets acquainted with fundamental concepts and methods of advanced mathematics. He/She learns to apply these methods to problems in natural and engineering sciences, in particular in computer science, and is able to interpret the results.
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.

- 10-M-INF12-1-102: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-INF12-2-102: V + Ü (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 10-M-INF12-1-102: Mathematics 1 for students in Computer Science Mathematics 1 for students in Computer Science

- 10 ECTS, Method of grading: (not) successfully completed
- written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e. g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.
Assessment in module component 10-M-INF12-2-102: Mathematics 2 for students in Computer Science Mathematics 2 for students in Computer Science
- 10 ECTS, Method of grading: numerical grade
- written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e.g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.


## Allocation of places

## Additional information

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

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| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Mathematics 1 and 2 for students of Space- and Aerospace Computer Science |  |  |  |  | 10-M-LR112-092-m01 |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Mathematik (Mathematics) |  |  |  | Institute of Mathematics |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 20 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 2 semester |  | undergraduate | By way of exception, additional prerequisites are listed in the section on assessments. |  |  |
| Contents |  |  |  |  |  |
| Basics in one differe | variab <br> ntial | mbers and functio <br> e, vector calculus <br> and integral calcul | uence <br> maps <br> eral v | ementary functions linear equations, $m$ ntial equations, Fo | differential and integral calculus atrix calculus, eigenvalue theory, rier analysis, integral theorems. |

## Intended learning outcomes

The student gets acquainted with fundamental concepts and methods of mathematics. He/She learns to apply these methods to problems in natural and engineering sciences, in particular in aerospace computer science, and is able to interpret the results.
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.

- 10-M-LRI12-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-LR112-2-092: V + Ü (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 10-M-LRI12-1-092: Mathematics 1 for students of Space- and Aerospace Computer Science Mathematics 1 for students of Space- and Aerospace Computer Science

- 10 ECTS, Method of grading: (not) successfully completed
- written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e. g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.
Assessment in module component 10-M-LRI12-2-092: Mathematics 2 for students of Space- and Aerospace Computer Science Mathematics 2 for students of Space- and Aerospace Computer Science
- 10 ECTS, Method of grading: numerical grade
- written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e.g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.


## Allocation of places

## Additional information

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

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| Module title |  | Abbreviation |
| :--- | :--- | :--- | :--- |
| Analysis | Module offered by |  |
| Module coordinator |  | 10-M-ANA-082-mo1 |
| Dean of Studies Mathematik (Mathematics) | Onsty after succ. compl. of module(s) |  |
| ECTS | Method of grading | -- |
| 17 | numerical grade | Other prerequisites |
| Duration | Module level | By way of exception, additional prerequisites are listed in the section on <br> assessments. |
| 2 semester | undergraduate |  |
| Contents | Real numbers and completeness, basic topological notions, convergence and divergence of sequences and se- <br> ries, power series, Taylor series, fundamental calculus in one and several variables (including inverse and impli- <br> cit function theorem); fundamental integral calculus in one variable (Riemann integral and improper integrals). |  |

## Intended learning outcomes

The student knows and masters the essential methods and notions of analysis. He/She is able to perform easy mathematical arguments and present them adequately in written and oral form. He/She is acquainted with the central proof methods and concepts in analysis, their analytic background and geometric interpretation.
Courses (type, number of weekly contact hours, language - if other than German)
This module comprises 3 module components. Information on courses will be listed separately for each module component.

- 10-M-ANA-1-082: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-ANA-2-082: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-ANA-P-082: M (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 10-M-ANA-1-082: Analysis 1 Analysis 1

- 8 ECTS, Method of grading: (not) successfully completed
- a) written examination (approx. 90 minutes; usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Modules $10-\mathrm{M}-\mathrm{VKM}$ and $10-\mathrm{M}-\mathrm{PPM}$ are recommended.

Assessment in module component 10-M-ANA-2-082: Analysis 2 Analysis 2

- 7 ECTS, Method of grading: (not) successfully completed
- a) written examination (approx. 90 minutes; usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Modules $10-\mathrm{M}-\mathrm{VKM}$ and $10-\mathrm{M}$-PPM are recommended; in addition, module component 10-M-ANA-1 is recommended for module component 10-M-ANA-2.
Assessment in module component 10-M-ANA-P-082: Examination in Analysis
- 2 ECTS, Method of grading: numerical grade
- oral examination of one candidate each (approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Only after successful completion of module components: Successful completion of any one of the module components $10-\mathrm{M}-\mathrm{ANA}-1,10-\mathrm{M}-\mathrm{ANL}-1,10-\mathrm{M}-\mathrm{ANA}-2,10-\mathrm{M}-\mathrm{ANL}-2$ is a prerequisite for participation in module component 10-M-ANA-P.

| Allocation of places |
| :--- |
| -- |
| Additional information |
| -- |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |
| $\S 73$ (1) 1. Mathematik Analysis |


| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Linear Algebra |  |  |  |  | 10-M-LNA-08 |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Mathematik (Mathematics) |  |  |  | Institute of Mathematics |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 14 | numerical grade |  |  |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 2 semester |  | undergraduate | By way of exception, additional prerequisites are listed in the section on assessments. |  |  |
| Contents |  |  |  |  |  |
| Sets, relations and maps; notions of groups, rings and fields (in particular, polynomial rings); vector spaces (subspaces, quotient spaces, linear independency, basis, dimension); linear maps (isomorphism theorem, image, kernel, rank); matrix calculus; systems of linear equations, determinants, eigenvalues, eigenvectors and eigenspaces, diagonalisability (including characteristic polynomial, minimal polynomial), normal forms, bilinear forms; Euclidean and unitary vector spaces (orthonormal bases, isometries, principal axis transformation). |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The student knows and masters the basic notions and essential methods of linear algebra. He/She is able to perform easy mathematical arguments independently, and can present them adequately in written and oral form. $\mathrm{He} / \mathrm{She}$ is able to apply the central proof methods and concepts of linear algebra and knows about their algebraic and geometric background. |  |  |  |  |  |

Courses (type, number of weekly contact hours, language - if other than German)
This module comprises 3 module components. Information on courses will be listed separately for each module component.

- 10-M-LNA-1-082: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-LNA-2-082: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-LNA-P-082: M (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 10-M-LNA-1-082: Linear Algebra 1 Linear Algebra 1

- 7 ECTS, Method of grading: (not) successfully completed
- written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.
Assessment in module component 10-M-LNA-2-082: Linear Algebra 2 Linear Algebra 2
- 5 ECTS, Method of grading: (not) successfully completed
- written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner

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| :--- | :---: | :---: |

- Other prerequisites: Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.
Assessment in module component 10-M-LNA-P-082: Examination in Linear Algebra
- 2 ECTS, Method of grading: numerical grade
- oral examination of one candidate each (approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Only after successful completion of module components: Successful completion of module component $10-$ M-LNA-1 or module component $10-M-$ LNA-2 is a prerequisite for participation in module component 10-M-LNA-P.


## Allocation of places

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
$\S 73$ (1) 2. Mathematik Lineare Algebra, Algebra und Elemente der Zahlentheorie

## Computer Science

(23 ECTS credits)


| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Databases |  |  |  |  | 10-I-DB-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Relational algebra and complex SQL statements; database planning and normal forms; transaction management. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess knowledge about database modelling and queries in SQL as well as transactions. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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) |  |  |  |  |  |
| written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of $2: 20$ minutes, groups of $3: 25$ minutes) Language of assessment: German, English if agreed upon with the examiner |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
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| Additional information |  |  |  |  |  |
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| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| $\S 49$ (1) 1. b) Datenbanksysteme und Softwaretechnologie $\S 69$ (1) 1. b) Datenbanksysteme und Softwaretechnologie |  |  |  |  |  |



| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Data Mining |  |  |  |  | 10-I-DM-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Computer Science VI |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Foundations in the following areas: definition of data mining and knowledge, discovery in databases, process model, relationship to data warehouse and OLAP, data preprocessing, data visualisation, unsupervised learning methods (cluster and association methods), supervised learning (e. g. Bayes classification, KNN, decision trees, SVM), learning methods for special data types, other learning paradigms. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess a theoretical and practical knowledge of typical methods and algorithms in the area of data mining and machine learning. They are able to solve practical knowledge discovery problems with the help of the knowledge acquired in this course and by using the KDD process. They have acquired experience in the use or implementation of data mining algorithms. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $V+$ Ü (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) |  |  |  |  |  |
| written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3:25 minutes) Language of assessment: German, English if agreed upon with the examiner |  |  |  |  |  |
| 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 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Theory of Complexity |  |  |  |  | 10-I-KT-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Informatik (Computer Science) |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Complexity measurements and classes, general relationships between space and time classes, memory consumption versus computation time, determinism versus indeterminism, hierarchical theorems, translation methods, P-NP problem, completeness problems, Turing reduction, interactive proof systems. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess a fundamental and applicable knowledge in the areas of complexity measurements and classes, general relationships between space and time classes, memory consumption versus computation time, determinism versus indeterminism, hierarchical theorems, translation methods, P-NP problem, completeness problems, Turing reduction, interactive proof systems. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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) |  |  |  |  |  |
| written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3:25 minutes) Language of assessment: German, English if agreed upon with the examiner |  |  |  |  |  |
| 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 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Automation and Control Technology |  |  |  |  | 10-I-AR-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Computer Science VII |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 8 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Overview of automation systems, fundamental principles of control technology, Laplace transformation, transfer function, plant, controller types, basic feedback loop, fundamental principles of control engineering, automata, structure of Petri nets, Petri nets for automisation, machine-related structure of processing computation machines, communication between process computers and periphery devices, software for automation systems, process synchronisation, process communication, real-time operating systems, real-time planning. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students master the fundamentals of automation and control. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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 <br> module is creditable for bonus) |  |  |  |  |  |
| written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3 . <br> Language of assessment: German, English if agreed upon with the examiner |  |  |  |  |  |
| 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 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating Systems |  |  |  |  | 10-I-BS-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Computer Science II |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Batch, time sharing, real-time virtual machines, system calls, processes and threads, cooperating processes, schedulers, process synchronisation, semaphores, monitors, critical regions, deadlocks, dynamic memory management, segmentation, paging, file systems, interfaces, directory structure, network file systems, hard drive organisation, basics of MS operating systems. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess knowledge and practical skills in building and using essential parts of operating systems. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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) |  |  |  |  |  |
| written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of $3: 25$ minutes) Language of assessment: German, English if agreed upon with the examiner |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
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| Additional information |  |  |  |  |  |
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| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| § 69 (1) 1. c) Informatik Technische Informatik |  |  |  |  |  |



| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Computer Networks and Communication Systems |  |  |  |  | 10-I-RK-102-m |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Computer Science III |  |  |  | Institute of Computer Science |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 8 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |  |  |
| Contents |  |  |  |  |  |
| Properties of computer and communication systems: data traffic in distributed systems. Performance analysis of computer networks and communication systems: problem statement and introduction to method architecture and structure of computer networks: network structure, network access, access methods, digital transfer hierarchies, dataflow control and traffic control, transfer network. Communication protocols: fundamental principles and ISO architecture models. Internet: structure and basic mechanism, TCP/IP, routing, network management. Mobile communication networks: fundamental concepts, GSM, UMTS. Future communication systems and networks. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students possess an intricate knowledge of the structure of computer networks and communication systems as well as fundamental principles to rate these systems. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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) |  |  |  |  |  |
| written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3 . <br> Language of assessment: German, English if agreed upon with the examiner |  |  |  |  |  |
| 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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## Subsidiary Subject

(10 ECTS credits)

## Mathematics

(max. 10 ECTS credits)








## Physics

(max. 10 ECTS credits)

| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Introduction to Physics for Students of Non-physics-related Minor Subjects |  |  |  |  | 11-EFNF-072-mo1 |
| Module coordinator |  |  |  | Module offered by |  |
| Managing Director of the Institute of Applied Physics |  |  |  | Faculty of Physics and Astronomy |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 7 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 2 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| Mechanics, vibration theory, thermodynamics, optics, science of electricity, Atomic and Nuclear Physics. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students have knowledge of the principles of Physics. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $\mathrm{V}+\mathrm{V}$ (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 whethe <br> module is creditable for bonus) |  |  |  |  |  |
| written examination (approx. 120 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| Only as part of pool of general key skills (ASQ): 10 places. Places will be allocated by lot. |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
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| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Practical Course Physics for Students of Non-physics-related Minor Subjects |  |  |  |  | 11-PFNF-072-mo1 |
| Module coordinator |  |  |  | Module offered by |  |
| Managing Director of the Institute of Applied Physics |  |  |  | Faculty of Physics and Astronomy |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 3 | (not) successfully completed |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| Mechanics, vibration theory, thermodynamics, optics, X-rays, nuclear magnetic resonance, Atomic and Nuclear Physics. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students have knowledge of the principles of Physics. |  |  |  |  |  |
| 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) |  |  |  |  |  |
| a) oral test (approx. 15 minutes) during experiment and b) ungraded written examination (approx. 90 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| Only as part of pool of general key skills (ASQ): 10 places. Places will be allocated by lot. |  |  |  |  |  |
| Additional information |  |  |  |  |  |
|  |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
|  |  |  |  |  |  |

## Business Management and Economics

(max. 10 ECTS credits)

| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Introduction to Business Administration - Minor |  |  |  |  | 12-NW-EBWL-092-mo1 |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Business Management, Banking and Finance |  |  |  | Faculty of Business Management and Economics |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| The module will provide students with an insight into economics. The course will first discuss how markets work The resulting market result - traded amounts and price - will be analysed and different starting points for economic policy measures (e.g. regulation of monopolies, introduction of minimum wages, environmental policy) will be discussed. Students will then acquire an overview of macroeconomic interrelationships. In this context, the course will focus on providing students with an understanding of business cycles (unemployment, inflation) and growth processes. Current issues such as monetary and fiscal policy in the euro area will also be discussed. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| After completing the module, students should be able to describe the modern business economics as a scientific discipline in its institutional economic expression and to master appropriate level in their problem-solving techniques used on the character of an orientation session. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $\mathrm{V}+$ Ü (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) |  |  |  |  |  |
| written examination (approx. 60 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
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| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Introduction to Economics - Minor |  |  |  |  | 12-NW-EVWL-092-mo1 |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Monetary Policy and International Economics |  |  |  | Faculty of Business Management and Economics |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 seme | ter | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| The course offers basic insights into the principles of economics. We analyse how markets work, i. e. how consumers form their demand and how suppliers make production decisions. On the basis of first insights into marke economies, we analyse why governments might want to intervene. In this context, we focus on monopoly, environmental issues and minimum wages in labour markets. <br> In addition to micro topics, we also focus on macroeconomic aspects and analyse why we observe business cycles (unemployment, inflation) and long term economic growth. We also address topics related to monetary and fiscal policy in the euro area. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| The students have a basic knowledge of economics , with which they can analyze complex economic relationships. They can deal critically with current economic policy issues and make an independent judgment. In addit on, elementary mathematical techniques for solving micropores and macroeconomic models are mediated. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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 whethe module is creditable for bonus) |  |  |  |  |  |
| written examination (approx. 60 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| -- |  |  |  |  |  |




| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Managerial Accounting |  |  |  |  | 12-IntUR-G-08 |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Business Management and Accounting |  |  |  | Faculty of Business Management and Economics |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  |  |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | - |  |  |
| Contents |  |  |  |  |  |
| Content: <br> This course offers an introduction to aims and methods of managerial accounting (cost <br> Outline of syllabus: <br> 1. Managerial accounting and financial accounting <br> 2. Managerial accounting: basic terms <br> 3. Different types of costs <br> 4. Cost centre accounting based on total costs <br> 5. Job costing based on total costs <br> 6. Cost centre accounting and job costing based on direct/variable costs <br> 7. Budgeting and cost-variance analysis <br> 8. Cost-volume-profit analysis <br> 9. Cost information and operating decisions <br> Reading: <br> Coenenberg/Fischer/Günther: Kostenrechnung und Kostenanalyse, Stuttgart. <br> Friedl/Hofmann/Pedell: Kostenrechnung. Eine entscheidungsorientierte Einführung. <br> (most recent editions) |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| After completing the course "Management Accounting and Control", the students will be able to <br> (i) set out the responsibilities of the company's internal accounting and control; <br> (ii) define the central concepts of internal enterprise computing restriction and control and assign case studies the terms; <br> (iii) apply the basic methods of internal corporate accounting and control on a full and cost base to idealized case studies of medium difficulty that calculate relevant costs and benefits and take on this basis a reasoned decision. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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 <br> module is creditable for bonus) |  |  |  |  |  |
| written examination (approx. 60 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| Number of places: 640. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics), Wirtschaftsmathematik (Mathematics for Economics) and Wirtschaftsinformatik (Business Information Systems). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 ( $50 \%$ of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 ( $25 \%$ of places): number of subject semesters of the respective applicant; among applicants with the same number of |  |  |  |  |  |

subject semesters, places will be allocated by lot. Quota 3 ( $25 \%$ of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become availa ble.

Additional information

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

| Module title |  |  |  | Abbreviation |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Investment and Finance. An Introduction |  |  |  | 12-I\&F-G-082-mo1 |  |
| Module coordinator |  |  | Module offered by |  |  |
| holder of the Chair of Business Management, Banking and Finance |  |  | Faculty of Business Management and Economics |  |  |
| ECTS Me | Method of grading | Only after succ. compl. of module(s) |  |  |  |
| 5 num | numerical grade | -- |  |  |  |
| Duration | Module level | Other prerequisites |  |  |  |
| 1 semester | undergraduate | - |  |  |  |
| Contents |  |  |  |  |  |
| Content: <br> This course offers an introduction to principles of financial mathematics, several methods of capital budgeting and principles of financial economics. <br> Outline of syllabus: <br> 1. Principles of financial mathematics <br> 2. Fundamental concepts <br> 3. Problems of investment and finance in one commodity world under certainty <br> 4. Problems of investment and finance in one commodity world under uncertainty <br> 5. Problems of investment and finance in many commodities world under uncertainty <br> 6. Capital market and corporate financing in Germany |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| After completing the course "Principles of Investments and Finance", the students will be able <br> (i) to understand the fundamentals in financial mathematics and solve several problems, e.g. via the PV approach; <br> (ii) to address the central problems in intertemporal allocation given different capital market scenarios; <br> (iii) to budget and calculate the optimal useful life given static and dynamic investment approaches under the consideration of several other investment opportunities and the capital market scenario, especially the influence of taxes. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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 <br> module is creditable for bonus) |  |  |  |  |  |
| written examination (approx. 60 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| Number of places: 405. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics), Wirtschaftsmathematik (Mathematics for Economics) and Wirtschaftsinformatik (Business Information Systems). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 ( $50 \%$ of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 ( $25 \%$ of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 ( $25 \%$ of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available. |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Bachelor's with | or Computer Science (2010) | JMU Würzburg data record | - generated 23-Aug-2021 • Bachelor ( 180 ECTS) Informa | xam. reg. | page 61/79 |

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

| Module title |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: |
| Introduction to Business Informatics |  |  |  | 12-EWiinf-G-082-mo1 |
| Module coordinator |  |  | Module offered by |  |
| holder of the Chair of Business Management and Business Information Systems |  |  | Faculty of Business Management and Economics |  |
| ECTS ${ }^{\text {Me }}$ | Method of grading | Only after succ. compl. of module(s) |  |  |
| 5 num | numerical grade | -- |  |  |
| Duration | Module level | Other prerequisites |  |  |
| 1 semester | undergraduate | -- |  |  |
| Contents |  |  |  |  |
| Content: <br> This course offers an introduction to the essential aspects of business information system <br> Outline of syllabus: <br> 1. Integration of IT systems <br> 2. From data processing to information processing <br> 3. eCommerce and eGovernment <br> 4. Functionality of IT technology <br> 5. Application development principles <br> 6. Intercommunication <br> Reading: <br> Thome: Grundzüge der Wirtschaftsinformatik. |  |  |  |  |
| Intended learning outcomes |  |  |  |  |
| The course "Einführung in die Wirtschaftsinformatik" communicates <br> (i) an overview of the different task fields of the business informations systems discipline; <br> (ii) an understanding for recent developments in the discipline and related technologies. |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |
| V + Ü (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) |  |  |  |  |
| written examination (approx. 60 minutes) |  |  |  |  |
| Allocation of places |  |  |  |  |
| Number of places: 640. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics), Wirtschaftsmathematik (Mathematics for Economics) and Wirtschaftsinformatik (Business Information Systems). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 ( $50 \%$ of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 ( $25 \%$ of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 ( $25 \%$ of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available. |  |  |  |  |
| Additional information |  |  |  |  |
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Referred to in LPO I (examination regulations for teaching-degree programmes)

| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Business Processes |  |  |  |  | 12-GP-G-082-m |
| Module coordinator |  |  |  | Module offered by |  |
| holder of the Chair of Business Management and Business Information Systems |  |  |  | Faculty of Business Management and Economics |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 5 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| This course is aimed at students of Wirtschaftsinformatik (Business Information Systems) and Wirtschaftswissenschaft (Business Management and Economics) interested in the topic. The course is divided up into two parts. In the theoretical part, students will acquire the necessary theoretical knowledge that will serve as a basis for the practical part. The practical exercise will present students with an opportunity to apply their newly acquired knowledge by working with an SAP Business ByDesign system on case studies on the model company Almika. In this context, the human resources, purchasing, sales, service, project management and finance departments will be dealt with. <br> The course will introduce students to business processes of an ERP system (Enterprise Resource Planning) using the example of SAP Business ByDesign. In addition to the basic principles, students will also become familiar with the processes and functionalities. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| After completing the course, the students will be able to <br> 1. reflect technical principles and operational models of ERP systems, <br> 2. understand the functionality of ERP systems and <br> 3. perform and unterstand business processes within the ERP system SAP Business ByDesign. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| V + Ü (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) |  |  |  |  |  |
| written examination (approx. 60 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| Wirtschaftsinformatik (Business Information Systems) Bachelor's (18o ECTS): no restrictions. Other degree programmes: minimum 15 places. More places will be available provided there is enough capacity. Should the number of applications from students of other subjects exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 ( $50 \%$ of places): total number of ECTS credits already achieved in the respective subject; among applicants with the same number of ECTS credits, places will be allocated by lot. Quota 2 ( $25 \%$ of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 ( $25 \%$ of places): allocation by lot; applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available. |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| -- |  |  |  |  |  |


| Module title |  | Abbreviation |  |
| :--- | :--- | :--- | :--- |
| Forward and Reverse Business Engineering |  | 12-FRBE-F-082-mo1 |  |
| Module coordinator |  |  | Module offered by |
| Business Integration Prof. Thome | Faculty of Business Management and Economics |  |  |
| ECTS | Method of grading | Only after succ. compl. of module(s) |  |
| 5 | numerical grade | -- |  |
| Duration | Module level | Other prerequisites |  |
| 1 semester | undergraduate | -- |  |
| Contents | "Business Engineering" refers to the method and model-based design theory for companies in the information <br> age. "Forward" refers to design methods (such as situation analysis, requirements analysis and business pro- <br> cess modelling) that help implement a new solution. "Reverse" refers to approaches (such as the use and pro- <br> cess analysis) that make it possible to improve or re-design existing structures and processes. Market require- <br> ments and technological innovation potential are typical reasons for the continuous transformation of a compa- <br> ny. The resulting change needs to be implemented into the organisational structure, business processes and in- <br> formation systems. <br> The course traces the implementation cycle of enterprise software from the point of view of a member of a pro- <br> ject team. In addition to acquainting students with the theoretical basis of adaptation, the course will also dis- <br> cuss examples from practical projects. |  |  |

## Intended learning outcomes

The students know in detail the process of adaptation of business software libraries. They master the methods of Forward Engineering (such as situation analysis, requirement analysis, process modeling and business blueprint) and Reverse Engineering (Reverse Business Engineering) and their implementation in tools.
Courses (type, number of weekly contact hours, language - if other than German)
V + Ü (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)
written examination (approx. 60 minutes)

## Allocation of places

Number of places: 50 . Should the number of applications exceed the number of available places, places will be allocated as follows: (1) Bachelor's students of Wirtschaftsinformatik (Business Information Systems) will be given preferential consideration. (2) The remaining places will be allocated to students of other subjects. (3) When places are allocated in accordance with (1) and the number of applications exceeds the number of available places, places will be allocated among applicants from within this group according to the respective FSB (subject-specific provisions) regarding Section 7 Subsection 4 ASPO (general academic and examination regulations). (4) When places are allocated in accordance with (2) and the number of applications exceeds the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 ( $50 \%$ of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 ( $25 \%$ of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 ( $25 \%$ of places): allocation by lot. (5) Within the groups according to (1) and (2), applicants who already have successfully completed at least one module component of the respective module will be given preferential consi deration. (6) Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. (7) A waiting list will be maintained and places re-allocated as they become available.

## Additional information

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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Bachelor's with 1 major Computer Science (2010)

## Linguistics

(max. 10 ECTS credits)



## Medicine

(max. 10 ECTS credits)

| Module title |  |  |  |  | Abbreviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Medical decision making |  |  |  |  | O3-M-MEl-072 |
| Module coordinator |  |  |  | Module offered by |  |
| Dean of Studies Medizin (Medicine) |  |  |  | Faculty of Medicine |  |
| ECTS | Method of grading |  | Only after succ. compl. of module(s) |  |  |
| 10 | numerical grade |  | -- |  |  |
| Duration |  | Module level | Other prerequisites |  |  |
| 1 semester |  | undergraduate | -- |  |  |
| Contents |  |  |  |  |  |
| This module will acquaint students with the fundamental principles of medical diagnostics and treatment and will apply these principles to the most important internal diseases. Students will work on casuistries presented on the computer in the form of virtual patients. The module will discuss the principles of medical word formation as well as the history and development of the language of medicine. It will explain medical word elements (prefixes, suffixes, genitive nouns, adjectives etc.) and will acquaint students with medical terminology. The course will also include exercises. |  |  |  |  |  |
| Intended learning outcomes |  |  |  |  |  |
| Students have developed a knowledge of fundamental medical terminology and medical decision making and are able to apply this knowledge to the example of internal medicine. |  |  |  |  |  |
| Courses (type, number of weekly contact hours, language - if other than German) |  |  |  |  |  |
| $\mathrm{V}+\mathrm{U}+\mathrm{V}$ (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) |  |  |  |  |  |
| written examination ( 60 minutes) or oral examination (one candidate each: 15 minutes, groups of 2: 20 minutes groups of 3: 25 minutes) |  |  |  |  |  |
| Allocation of places |  |  |  |  |  |
| -- |  |  |  |  |  |
| Additional information |  |  |  |  |  |
| -- |  |  |  |  |  |
| Referred to in LPO I (examination regulations for teaching-degree programmes) |  |  |  |  |  |
| -- |  |  |  |  |  |

## Geography

(max. 10 ECTS credits)


## Thesis

(12 ECTS credits)

| Module title |  | Abbreviation |
| :--- | :--- | :--- |
| Bachelor-Thesis |  | 10-I-BA-072-mo1 |
| Module coordinator | Module offered by |  |
| Dean of Studies Informatik (Computer Science) | Institute of Computer Science |  |
| ECTS | Method of grading | Only after succ. compl. of module(s) |
| 12 | numerical grade | Other prerequisites |
| Duration | Module level | Registration for assessment: as specified. |
| 1 semester | undergraduate |  |
| Contents | Largely independently researching and writing on an experimental or theoretical topic in computer science, using <br> known methods and adhering to the principles of good scientific practice. <br> Intended learning outcomes <br> The students are able to largely independently research and write on an experimental or theoretical topic in com- <br> puter science, applying known methods and adhering to the principles of good scientific practice, and to write a <br> Bachelor's thesis. <br> Courses (type, number of weekly contact hours, language - if other than German) <br> no courses assigned <br> Method of assessment type, scope, language - if other than German, examination offered - if not every semester, information on whether <br> module is creditable for bonus) <br> written thesis <br> Language of assessment: German or English <br> Allocation of places <br> -- <br> Additional information <br> -- <br> Referred to in LPO I (examination regulations for teaching-degree programmes) <br> -- |  |

## Subject-specific Key Skills

(12 ECTS credits)




