inf962 - Fundamental Competences in Computing Science III: Algorithms and Computational Problem Solving

Module label
Fundamental Competences in Computing Science III: Algorithms and Computational Problem Solving

Module code
inf962

Credit points
6.0 KP

Workload
180 h

Used in course of study
- Master's Programme Engineering of Socio-Technical Systems > Fundamentals/Foundations

Contact person
Module responsibility
- Lehrende der Informatik

Authorized examiners
- Die im Modul Lehrenden

Entry requirements
Skills to be acquired in this module
The students acquire a thorough understanding of the fundamental methods of computer science in general and the use of algorithms for computational problem solving in particular. They learn how structure problems, model problems and solutions, and develop and implement computational solutions. Within the curriculum of the MSc EngSTS, this course provides students featuring a BSc in psychology or related subjects with fundamental skills in computational problem solving that are necessary for mastering subsequent courses in computer science.

Professional competences:
The students understand concepts for representing information computationally, they know pertinent data structures and algorithms and can argue about their complexity, and they are acquainted with formal concepts like automata and formal languages as a means of modeling

Methodological competences:
The students are able to analyze problems from their application domain, to conceive computational solutions, and to estimate the effort involved in their realization and execution. They are able to evaluate alternative computational representations of data and problems and to draw informed conclusions for subsequent decisions in design and implementation

Social competences:
The students:
The students are able to present and discuss their solutions in an interdisciplinary team

Self-competences:
The students are able to critically reflect fundamental design decisions in algorithms and data structures

Module contents
Computer representation of information; formal languages, grammar and automata; basic data structures; algorithms and complexity; programming in the small

Reader's advisory

Links

Language of instruction
English

Duration (semesters)
1 Semester

Module frequency
once a year

Module capacity
unlimited

Reference text
This course is part of the base curriculum of the MSc program "Engineering of Socio-Technical Systems". It provides students featuring a background in psychology with skills in computational problem solving as necessary for mastering subsequent courses in computer science. This course is not intended for students with a background in computer science

Modullevel
BC (Basiscurriculum / Base curriculum)

Modulart
Pflicht o. Wahlpflicht / compulsory or optional

Lern-/Lehrform / Type of program
V+Ü

Vorkenntnisse / Previous knowledge
Knowledge of a programming language may be helpful, but is not required

Examination
Time of examination
At the end of the lecture period

Type of examination
Hands-on exercises and written exam or Hands-on exercises and oral exam

Course type
Comment
SWS
Frequency
Workload attendance
Lecture
3.00
WiSe
42 h
Exercises
1.00
WiSe
14 h

Total time of attendance for the module
56 h