inf535 - Computational Intelligence I

Module label  Computational Intelligence I
Module code    inf535
Credit points  6.0 KP
Workload       180 h

Used in course of study
- Master's Programme Business Informatics > Akzentsetzungsmodul Bereich Wirtschaftsinformatik
- Master's Programme Computing Science > Angewandte Informatik
- Master's Programme Engineering of Socio-Technical Systems > Embedded Brain Computer Interaction
- Master's Programme Engineering of Socio-Technical Systems > Human-Computer Interaction
- Master's Programme Environmental Modelling > Mastermodule

Contact person
Module responsibility
- Oliver Kramer
- Die im Modul Lehrenden

Authorized examiners
- Oliver Kramer
- Die im Modul Lehrenden

Entry requirements
Skills to be acquired in this module
Professional competence:
The students:
- recognise optimisation problems
- implement simple algorithms of heuristic optimisation
- critically discuss solutions and selection of methods
- deepen previous knowledge of analysis and linear algebra

Methodological competence
The students:
- deepen programming skills
- apply modelling skills
- learn about the relation between problem class and method selection

Social competence
The students:
- cooperatively implement content introduced in lecture
- evaluate own solutions and compare them with those of their peers

Self-competence
The students:
- evaluate own skills with reference to peers
- realize personal limitations
- adapt own problem solving approaches with reference to required method competences

Module contents
Computational Intelligence comprises intelligent and adaptive methods for optimisation and learning. The module "Computational Intelligence I" concentrates on methods for evolutionary optimisation and heuristic approaches. The exercises introduce and deepen practical aspects of the implementation and algorithmic design, also taking into account application aspects.

Overview of Content:
- foundations of optimisation
- genetic algorithms and evolution strategies
- parameter control and self-adaptation
- runtime analysis
- swarm algorithms
- constrained optimisation
- multi-objective optimisation
- meta-modeling

Reader’s advisory


Links

**Language of instruction**  German
**Duration (semesters)**  1 Semester
**Module frequency**  jährlich
**Module capacity**  unlimited
**Modulelevel**  AS (Akzentsetzung / Accentuation)
**Modulart**  je nach Studiengang Pflicht oder Wahlpflicht
**Lern-/Lehrform / Type of program**  
**Vorkenntnisse / Previous knowledge**  - Grundlagen der Statistik

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<th>Examination</th>
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<td>Final exam of module</td>
<td>At the end of the lecture period</td>
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<th>SWS</th>
<th>Frequency</th>
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<tr>
<td>Exercises</td>
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<td>WiSe</td>
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**Total time of attendance for the module**  56 h