inf301 - Machine-oriented Systems Engineering

Module label: Machine-oriented Systems Engineering
Module code: inf301
Credit points: 6.0 KP
Workload: 180 h

Used in course of study:
- Master's Programme Computing Science > Technische Informatik
- Master's Programme Embedded Systems and Microrobotics > Akzentsetzungsmoduln
- 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 Engineering of Socio-Technical Systems > Systems Engineering

Contact person:
Module responsibility
- Alfred Mikschl
- Die im Modul Lehrenden

Authorized examiners:
- Alfred Mikschl
- Die im Modul Lehrenden

Entry requirements:
The module provides practical relevance to the design of digital embedded systems.

Skills to be acquired in this module:

Professional competence:
The students:
- characterise the structure of microprocessor systems
- name control aspects of time sensitive external components
- program efficient embedded systems

Methodological competence:
The students:
- use specifications from electrical components data sheets

Social competence:
The students:
- work in a team
- discuss solutions

Module contents:
Embedded systems support complex feedback problems, control problems and data processing tasks. They have an important value creation potential for telecommunications, production management, transport and electronics. The functionality of embedded systems is realised by the integration of processors, special hardware and software. The embedded systems design is influenced by the heterogeneity of system architectures, the complexity of systems and technical and economic requirements.

This module gives an initial review of computer architectures. After that embedded systems are introduced by a specific microprocessor. Furthermore, external hardware will be connected to the microprocessor. Besides this, the design of circuit boards will be discussed. The students will design, develop and implement a circuit layout with CAD and programme this embedded system with a Flash-EPROM.

Reader's advisory:
Lecturers notes, hardware manuals and data sheets, and development tool manuals

Links:
Languages of instruction: German, English
Duration (semesters): 1 Semester
Module frequency: semi-annual
Module capacity: unlimited
Modullevel: AS (Akzentsetzung / Accentuation)
Modulart: Pflicht o. Wahlpflicht / compulsory or optional
Lern-/Lehrform / Type of program: V+P
**Vorkenntnisse / Previous knowledge**

„Eingebettete Systeme I and II“ and successful completion of the module „Praktikum Technische Informatik“

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<tr>
<th>Examination</th>
<th>Time of examination</th>
<th>Type of examination</th>
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<tbody>
<tr>
<td>Final exam of module</td>
<td>At the end of the lecture period</td>
<td>Portfolio (Design, development and implementation of embedded systems, colloquium)</td>
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<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Lecture</td>
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<td>2.00</td>
<td>WiSe</td>
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<tr>
<td>Practical</td>
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<td>2.00</td>
<td>WiSe</td>
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**Total time of attendance for the module** 56 h