

t.DMSY2 - Design of Mechatronic Systems 2

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Credits: 4

Valid for: 2010/2011

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Learning objectives:

Mechatronic systems develop from an integration of mechanical, electronic and information processing systems. Essential for the development of mechatronic systems is to achieve synergetic effects through an early integration of the three system components and the consideration and optimization of mutual dependencies. The spatial integration is carried out by the mechanical design, while functional integration is determined by information processing, respectively by design of the software.

In the module Design of Mechatronic Systems 2, the knowledge gained in Module 1 will be deepened in a larger project on the development and implementation of a mechatronic system.

The students will:

- Develop system specifications due to a task
 - Design components and a complete system based on structured, systematic development methods
 - Design, building and programming of single systems
 - Setting up the overall system and
 - Implement communication, monitoring and fault diagnosis
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Course content:

By the example of a larger project to develop a mechatronic system the gained knowledge and methods of the module Design of Mechatronic Systems 1 are applied.

In the project it is particularly important that the different components of a complex system efficiently communicate and collaborate.

Teaching contents:

- System specification of mechatronic systems
- Apply development methodologies, creativity techniques
- Mechatronic subsystem development
- Integration of mechanical, electronic and information processing systems
- Structured, conceptual design of mechatronic systems;
- Design of sensor-actuator systems and use of microprocessors in the example;
- Sensors and measurements, in particular imaging sensors;
- Actuators and actuator dynamics;
- Analog and digital interfaces;
- Design of real-time systems;
- Microprocessor technology and programming;
- Real-time communication of mechatronic systems;
- Application of control technology, including linearization, and stability,
- User interfaces and usability

Previous knowledge:

Basic knowledge in mechanics, electronics and computing, including programming of real-time systems and Design of Mechatronic Systems 1.

Teaching method:

Type of lesson:	Number of lessons per week:
Lecture	
Tutorial/Practicum	14x2L and 7x2L
Group teaching	
Block instruction	
Seminar	

Assessment:

According to the table or as specified in writing by the lecture at the beginning of the semester!

Number	Type	Weighting
1	Final demonstration and report	
1	Evaluation of performance during semester	
	Further assessments	

Language of instruction:

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Instruction material:

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Comments:

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