

Information Sheet

Course of Study

Mechatronics and Digital Automation

General Information

Due to increasing digitisation, the discipline of mechanical engineering has changed dramatically over the past few years. Modern assistance systems in cars, intelligent household appliances, fully automatic production lines – all these are examples of this trend. Today's production plants and industrial machines are based more on the complex interaction between electronic components and modern information technology than on purely mechanical solutions. In addition, the integration of production and modern information and communication technologies has made it possible to tailor products according to the customers' individual needs. This is exactly where the interdisciplinary degree programme Mechatronics and Digital Automation comes in: Elements of electrical engineering and computer science are specifically tailored to complement the traditional mechanical engineering curriculum. The programme teaches core competencies in Mechanics as well as sound knowledge of Electrical Engineering, Electronics and Information and Automation Technology. It is characterised by a close relationship between theory and practice: A compulsory work placement and practical project work in the University's modern state-of-the-art laboratories ensure that theoretical knowledge can be put into practice right from the start.

Programme Structure

The programme takes seven semesters to complete and is divided into different modules, which in turn are combined into module groups according to the course content. Further components are a pre-study 12-week internship which has to be completed either prior to the beginning of the programme or within the first 3 semesters, as well as a practical semester (minimum 22 weeks) in semester 5.

The first group – **Fundamentals of Mechanical Engineering** is designed to lay the groundwork for the programme. It involves the following modules:

- Technical Mechanics
- Design I & II
- Machine Parts I & II
- Fundamentals of Machine Dynamics
- Material Science
- Strength of Materials
- Manufacturing Technology
- Technical Thermodynamics
- Technical Fluid Mechanics

The second group – **Information Technology** - provides engineering-related course content in the area of Information and Automation Technology

- Computer Science I & II
- Embedded Systems
- Digital Technology
- Control Engineering
- Digital Signal Processing
- Mechatronic Systems
- Automation and Robotics
- Industry 4.0

The third group - **Electrical Engineering** - is concerned with the following topics:

- Electrical Engineering I & II
- Electrochemistry
- Measurement Technology
- Electrical Machines and Drives

In the 6th and 7th semester, students may choose one of the following **areas of specialisation**:

- Mechatronic Systems
- Signal Processing
- Industry 4.0

The last semester is designated for the completion of the **final research paper** (Bachelor's Thesis) which may also cover research carried out in connection with a practical placement at a company.

The course of study leads to a **Bachelor of Engineering degree (B. Eng.)**.

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