



## Mechatronics - Bachelor of Engineering -

### PROFESSIONAL ENVIRONMENT

Mechatronics is a comparatively new branch of engineering sciences which is based on mechanics, electrical engineering and information technology. Innumerable contemporary technical devices and gadgets, such as intelligent robots, digital audio players, mobile phones or anti-breaking systems would not be imaginable without Mechatronics.

The development and implementation of Mechatronic systems is not limited to purely putting together mechanical, electronic and IT-components. It rather intends to look for a working solution combining these components in an integrative, holistic approach. Thus innovative products are created which meet the demands by costumers to increased performance, higher quality and more efficiency. These products are the heart of our contemporary industrial and information society.

### WORKING AREAS

Mechatronic systems and components can be found in a huge variety of different applications, such as traffic systems and means of transportations (railway, road, air and water traffic), in production facilities, power generating systems, in facility engineering and household goods.

A Mechatronic engineer's working area accordingly is very diverse. Among them are: general mechanical engineering and design, automotive production and systems, biomedical engineering, and micro-system engineering. As a Mechatronics graduate you will mainly be concerned with systematic and interface tasks. Accordingly, your studies at Kempten University will concentrate on a systematic approach.

### JOB PROSPECTS

Mechatronics engineers are currently in high demand. The interdisciplinary knowledge combining the classic disciplines mechanical and electrical engineering with IT applications is needed in all areas where complex technical systems are being developed.

Due to the comprehensive approach of this future-oriented education there is a broad array of industrial sectors where employment is possible. In the Allgäu region alone there are attractive jobs galore for Mechatronics graduates. Practice-orientation is high, and the university's links with industry are excellent, and this makes our graduates very attractive on the job market.

### PERSONAL PROFILE AND REQUIREMENTS

Crucial requirements are your interest in the natural sciences and a certain enthusiasm for technology. The study contents make high demands at your ability to abstract. You will learn to recognise mechanical correlations, to work them into mathematical descriptions and to create electronic solutions for them and develop the according software, even before the product will go to production. Your Mechatronics studies will lay the foundation for this work and will enhance your creativity at the same time. If you enjoy developing innovative processes and products you should face this challenge.

One basic prerequisite for any engineering profession nowadays is the ability to work in teams, also in international ones. Project-oriented work will, on one hand, provide a big diversity for you, but it will also demand a high level of awareness for deadlines and costs on the other.

### STUDY STRUCTURE

The study consists of a basic and an advanced study period; its duration is seven semesters or 3.5 years

The **basic study period** (semesters 1 and 2) lays the foundation in terms of mathematics, science and technology.

The subsequent **advanced studies period** (semesters 3 to 7) features core and advanced study modules essential for your later professional activity. A comprehensive choice of work placement carefully designed to complement your theoretical knowledge will enable you to gather practical experience at an early stage and to apply and deepen your knowledge acquired in lectures and practical courses.

Semester 5 is a **work placement semester** which you will spend in industry. You may choose to spend this semester in a company abroad as it is a good opportunity to gather valuable social competency and language skills. A wide range of electives will enable you to adapt your studies to your future job objectives in the final two semesters. You may further customize your studies by choosing one of our specialisation areas Production Systems and Robotics, Micro-Mechatronics or Ambient Assisted Living.

At the end of your studies you will write a Bachelor dissertation in which you will demonstrate your capability to work independently. After passing all examinations you will graduate with the academic degree Bachelor of Engineering (BA. Eng.)

## ABOUT FURTHER EDUCATION

With its broad-based approach our Bachelor's Degree course in Mechatronics is an ideal basis for you to specialise by embarking on a Master's Degree programme, be it at Kempten or any other university world-wide. Kempten University will offer a top-up Master programme in Mechatronics in the near future. Product lifecycles get increasingly shorter, at the same time the demand for quality has become extremely high, and it is necessary to be on the market very quickly with new innovative products – this all makes networking by concurrent engineering a vital need. Our new Master programme will particularly be designed to consider this development.

## THE COURSE OUTLINE

### Basic Studies Period (Semesters 1 and 2)

- Mathematics for Engineers
- Electronics 1 and 2
- Informatics/Computer Science
- Physics
- CAD
- Engineering Mechanics
- Science of Materials

### Advanced Studies Period (Semesters 3 to 7)

- System Analysis with Matlab
- Electronics 3
- Electrical Actuators

- Embedded Systems
- Micro Systems
- Production Engineering
- Measurement Systems and Sensors
- Rapid Control Prototyping
- Mechanical Design and Machine Elements
- Measurement
- Business and Organisational Management
- Multidomain Systems
- Project and Quality Management
- Communication and Presentation
- Manufacturing Automation
- Systems Design
- Course Elective
- General Elective
- Bachelor Seminar
- Project
- Practice Seminar
- Bachelor Thesis

## CONTACT

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## IMPORTANT LINKS

(Information in English on our website)

[www.hs-kempton.de](http://www.hs-kempton.de) > INTERNATIONAL > click English flag (in the top left-hand corner)

[Information for international exchange students](#)  
(> INTERNATIONAL > EXCHANGE STUDENTS / INCOMING)

[Study programmes – short description in English](#)  
(> INTERNATIONAL > DOWNLOADS > Study Programmes)

[Guests and Visitors at Kempten University](#)  
(> INTERNATIONAL > GUESTS AND VISITORS)

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**PLEASE NOTE** that, although this description is written in English, the study course is taught in German.