



## Automation and Robotics - Master of Engineering -

### JOB PROSPECTS

The Master's degree course Automation and Robotics imparts state-of-the-art application-oriented special knowledge which is urgently needed by industry for securing Germany's position as production location. Sophisticated top-quality products at marketable prices can only be manufactured in Germany and Europe by developing and implementing innovative solutions from automation and control. The challenges on hand for production are mirrored in the study contents of this course.

### OBJECTIVES

Complex automated production plants are mechatronic systems able to efficiently produce high-quality products. Recent developments in information technology offer new possibilities for optimisation of production plants by networking sensors with actors and by evaluating the gathered information as a whole. Moreover, new areas of tasks are surfacing in robotics in connection with the application of robots in applications going beyond the pure production technology. An example for this is service robotics, where highly-qualified graduates are needed.

This course will allow students to develop a deep understanding of mechatronic interrelationships of automation technology components. Graduates will be able to select appropriate sensor systems and integrate them in a complete system of a production automation environment, as well as to evaluate the gathered data and use them for optimising the system. Mastering the necessary simulation tools is among the course contents, and so is dynamic interpretation of multi-body systems.

### COURSE STRUCTURE

Although designed as a full-time course for a 3-semester's study, the course may also be done part-time in 6 semesters. The workload is equivalent to 90 credits in the ECTS-system.

Five compulsory modules in the two academic semesters deal with the core contents of automation technology and robotics, such as advanced robotics and modelling, and simulation of dynamic systems. This comprises lectures as well as complimentary laboratories and practical courses. A deep understanding of the challenges and procedures related to automation contexts is developed in an automation project in one out of five specialisation areas. Three more specialisation modules will enable you to deepen your own interests and sharpen your individual qualification profile. The engineering modules are complimented by two modules in which additional competences are taught. In these modules you will acquire key qualifications in communication and management and be prepared to assume leadership tasks in the future.

Studies will be completed with a Master's thesis accompanied by a seminar in the third semester. By its successful completion you will demonstrate your capability of solving a set of tasks from automation and robotics with scientific methods, and of presenting and discussing your findings in the complimentary seminar.

Upon successful graduation from this course you will be awarded the academic degree Master of Engineering (M.Eng.).

### BEGINNING OF THE COURSE

Studies can be commenced in each semester, winter and summer semesters alike.

## MASTER OF ENGINEERING – AUTOMATION AND ROBOTICS

	Seminar	Master's Thesis				
<b>SS</b>	Advanced Robotics	Modelling and Simulation of Dynamic Systems	Virtual Plant Design	Special Areas in Automation 3	Automation Project	
<b>WS</b>	Optical Sensor Systems	Information and Control Technology	Special Areas in Automation 1	Special Areas in Automation 2	Additional Competences 1	Additional Competences 2
<b>ECTS</b>	5	10	15	20	25	30

### Possible modules in the specialisation areas of automation:

- Product-Specific Use of Materials
- Electrical Drive Systems
- Interface Electronics
- Higher Engineering Mechanics
- Power Electronics
- Certified Robot Engineering
- Model-Based Controls Development
- Sensor Networks

### ADMISSION REQUIREMENTS

Primary admission requirement is Bachelor's degree successfully completed with the average grade "good" or better in Electrical Engineering/Electronics, Mechanical Engineering or Computer Science, or a similar degree course at a university in Germany or abroad. If you do not have a final first-degree certificate conditional admission may be granted. Admission of the candidates is made on the basis of the complete and due presentation of the registration documents within the deadline and the grade point average of the first degree course.

### MORE INFORMATION

[www.hs-kempten.de/automatisierungstechnik-robotik](http://www.hs-kempten.de/automatisierungstechnik-robotik)

### CONTACT

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### IMPORTANT LINKS

(Information in English on our website)

[www.hs-kempten.de](http://www.hs-kempten.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.