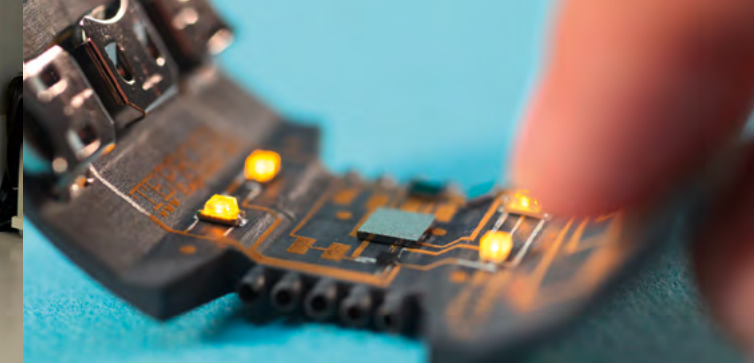




EIT

FACULTY FOR  
ELECTRICAL ENGINEERING AND  
INFORMATION TECHNOLOGY



## → Otto von Guericke University Magdeburg

The Otto von Guericke University Magdeburg focuses on engineering and natural sciences, economics and management as well as medicine. The university, which was founded in 1993, has also found expansion to be essential in the areas of social sciences and humanities in order to meet the challenge of today's knowledge society. Over 14,000 students, including over 2,000 international students, are enrolled in over 80 programmes across the nine faculties. The dynamic, high-profile university offers state-of-the-art facilities, excellent student support and practical, hands-on education. The university's main areas of research and transfer are interdisciplinary in nature and strengthened on a lasting basis by the neighbouring non-university research institutes. Otto von Guericke University is characterised by openness and tolerance in its research and teaching.

### Research focuses

- Neuroscience
- Dynamic Systems

### Transfer focuses

- Automotive
- Digital Engineering
- Renewable Energies
- Medical Technology
- Fluidised Bed Technology

### Otto von Guericke (1602-1686)

The founder of experimental physics and famous son of the city of Magdeburg gives the university its name. The university aspires to teach and research in the tradition of this scientist, philosopher and engineer.



Fotolia

## A Faculty Overview

The combination of electrical engineering and information technology results in a forward-looking program of research and teaching. In addition to traditional subjects such as energy, drive systems and telecommunications engineering, the automation of industrial processes, the development of sensors and their miniaturization, software development and simulations are researched and taught in our faculty. State-of-the-art laboratories for alternative energy sources, automation and robotics, image processing and neurocomputing, circuit simulation, circuit design and sensor technology, microsystems technology, medical technology and electromagnetic compatibility guarantee a first-rate scientific education.

This diversity is reflected in the many points of confluence with other engineering sciences, the natural sciences, medicine and economics. The faculty works closely with domestic and international research facilities. For example, it has close ties with the Max Planck Institute for Dynamics of Complex Technical Systems, the Fraunhofer Institute for Factory Operation and Automation as well as other research institutions in the city of Magdeburg's Science Port.

A dedicated team of professors and administrative staff, a high number of work placements and numerous opportunities to become involved in research projects all contribute to providing excellent conditions for completing an efficient and successful course of studies within the standard course duration.

Varied, in-demand occupations in cutting edge technologies are opened up to graduates of the faculty. Electrical engineers take on positions of responsibility in research and development, industrial manufacturing, inspection and quality, planning, project development and management in many industries including in the electrical, automobile, chemical, mechanical engineering industries, medical technology, consumer electronics and the aerospace industry.

The faculty is one of the most successful in acquiring funds, including from third party organizations, for research projects. This leads to numerous opportunities for students to participate in projects as research assistants, graduands, scientists or PhD students.

### Programmes in the Faculty of Electrical Engineering and Information Technology

- ⇒ Electrical Engineering and Information Technology (B.Sc. / M.Sc.)
- ⇒ Industrial Engineering for Electrical Engineering and Information Technology (B.Sc. / M.Sc.)
- ⇒ Information Technology – Smart Systems (B.Sc.)
- ⇒ Medical Technology (B.Sc.) and
- ⇒ Medical Systems Engineering (M.Sc., in English)
- ⇒ Mechatronics (B.Sc. / M.Sc.)
- ⇒ Systems Technology and Technical Cybernetics (B.Sc. / M.Sc.)
- ⇒ Electrical Power Systems - Renewable Energy Sources (M.Sc.)
- ⇒ Electrical Engineering and Information Technology (M.Sc., in English)

### Institutes of the Faculty of Electrical Engineering and Information Technology

- ⇒ Institute of Automation Technology (IFAT)
- ⇒ Institute of Electrical Energy Systems (IESY)
- ⇒ Institute of Information and Communications Technology (IIKT)
- ⇒ Institute of Medical Technology (IMT)
- ⇒ Institute of Micro and Sensor Systems (IMOS)

## → Faculty Programs

Electrical engineers shape modern, high-tech industry as well as the information society. Electrical engineering and information technology graduates can choose from many types of profession. Electrical engineering, microsystems technology, microelectronics, communications technology, transport technology, power electronics, drive system technology, sensor system technology, cognitive systems and medical technology are only a few areas in the wide-ranging field of electrical engineering and information technology. The Electrical engineering and information technology program is science-oriented and conveys comprehensive theoretical and practical principles and method-oriented specialized knowledge. This program ensures that the student remains flexible and offers sustainable job opportunities in a time of rapid and ongoing technological change.

Students should enjoy mathematics and natural sciences and have the ability to think systematically, to assume a mathematical and scientific approach and to apply this in solving problems. The first part of the program covers the fundamentals of mathematics, physics and, of course, electrical engineering and information technology. The second part of the course conveys in-depth knowledge in the specialist fields of automation technology, general electrical engineering, electrical energy technology, information technology, communications technology, microsystems technology, sensor technology, micro and nanoelectronics and medical systems. Thanks to a broad range of elective subjects, students are able to select the focus of their studies according to their personal interests and inclinations. The course culminates with the writing of a bachelor's thesis.

The prescribed period of study for the bachelor's degree programs is seven semesters. A master's program follows on from the bachelor's program and lasts three semesters.

## → Electrical Engineering and Information Technology

The modern world is no longer imaginable without electrical engineering and information technology. Barely noticed by many people, these fields have become a fixed component of everyday life. They form the basis of smartphones, PCs, motor vehicles, production plants, medical equipment and the supply of energy, for example. Studying electrical engineering and information technology provides the broad yet in-depth knowledge required. This course is the ideal starting point for your subsequent professional career and keeps many options open.

By interweaving aspects of information and energy technology with the fundamentals of electrical engineering, measurement systems, system theory, and control and automation technology, the programme stays abreast of modern developments in ever more complex systems. Innovative topics are covered such as generating energy from renewable sources, decentralized feed-in to the electricity grid via power electronics or electrical drive systems as key components for electric mobility solutions and so on.

The master's programme comprises three semesters and builds upon the bachelor's programme (seven semesters resulting in professional qualifications). Electives reflect the faculty's current key research areas:

- Automation technology
- Electrical energy systems
- Information and communication technology
- Microsystems and semiconductor technology

Electrical and information technology engineers are much in demand across all branches of industry from the electrical engineering, energy or communications sectors to automotive and plant engineering. Anyone choosing to study electrical engineering and information technology will later have the opportunity to contribute to innovative areas such as renewable energy generation or electric mobility.

## → Industrial Engineering for Electrical Engineering and Information Technology

In a successful economy, in addition to technical innovation, the cost-effectiveness of a product or process is of fundamental importance. The job prospects of graduates of this interdisciplinary program, which is supported by the Faculties of Electrical Engineering & Information Technology and Economics & Management, are excellent. Typical jobs combine business and (electro-) technical fields, for example as planning or sales engineer, manager or corporate consultant.

Electrical engineering and business courses are taught in parallel, resulting in an interweaving of subjects. Thanks to a broad range of elective subjects, students are able to select the focus of their studies according to their personal interests and inclinations.

## → Mechatronics

Mechatronics combines the main aspects of electrical engineering, mechanical engineering and computer science. One example of the interdisciplinary nature of this field is the intelligent sensor-actuator system. Gathering information via sensors is followed by electrical signal processing using suitable electronics. Feedback is sent to the system via actuators. The control chain is thus complete. The mechatronics engineer is versatile and, as an expert, is in demand in all three areas. Mechatronics is characterized by thinking beyond the individual subjects.

This seven semester-long bachelor's program and three semester-long master's program provide the student with specialized knowledge in the fields of electrical engineering, mechanical engineering, information technology and computer science.





## → Medical Technology

Mind-controlled prostheses, cardiac pacemakers, magnetic resonance imaging (MRI) scanners with which you can take a precise look inside the body without surgery, and other medical high-tech devices often save patients' lives or dramatically enhance their quality of life. The medical technology industry is booming, both in Germany and around the globe, and German engineering expertise is in high demand abroad.

Medical technology is a prime example of interdisciplinary teamwork among physicians, engineers and scientists. That's why the programme of study at Otto von Guericke University (OVGU) in Magdeburg offers a comprehensive engineering education that includes technology-oriented medical fields.

"Careful selection of your options when planning your curriculum will leave you room for specialization and time for a semester abroad. We offer outstanding laboratories and give high priority to close collaboration with physicians at the university hospital."

Otto von Guericke University is home to one of the medical technology research campuses receiving long-term funding from the German federal government (Federal Ministry of Education and Research (BMBF)) as well as numerous industrial and international university partnerships, which ensure integration of the students in the latest fields of research and thus early contacts to industry as well.

You can follow up the seven-semester bachelor's program in medical technology with an internationally oriented, English-language master's program in Medical Systems Engineering. Graduates from other engineering disciplines may also undertake this course, which takes three or four semesters depending on prior knowledge.

## → Systems Technology and Technical Cybernetics

Cybernetics is an interdisciplinary science which finds solutions to complex problems in various fields using standard methods. Cybernetics looks at analytical issues and the specific influence of dynamic processes in nature and technology and devises appropriate solutions. This is done with the help of mathematical models, methods of system theory and computer simulations. Due to its interdisciplinary approach, cybernetics is used in many different areas, including technology, biology, economics, ecology, chemistry and in the process engineering and pharmaceutical industries. The seven semester-long bachelor's program can be followed by a consecutive, three semester-long master's program.

## → Information Technology – Smart Systems

All around us, we experience 'smart' systems such as smartphones, smart TVs, assistance systems and cars that 'think'. The connectivity trend (the Internet of Things) is increasingly apparent in industry too. Lasting seven semesters, the bachelor's programme in Information Technology – Smart Systems starts with the fundamentals of digital systems, explores the functionality embedded in hardware and concludes with IT-based, 'smart' applications such as voice control, person recognition and user assistance. Each semester involves practical projects, which give students the chance to work on their own and in teams to apply what they have learned in a fully equipped, industry-driven laboratory environment. Graduates are able to progress to any of the master's programmes and have access to contacts in the industry. Typical employment opportunities include the automotive industry, automation technology and services that process information.

## → Electrical Energy Systems – Renewable Energy (M.Sc.)

Within the broad field of electrical engineering and information technology, the master's degree in Electrical Energy Systems – Renewable Energy focuses on the supply of electrical energy, especially from renewable sources. Key aspects include the generation of electrical energy from renewable sources such as wind and solar power, their transfer / distribution in the grid (smart grid) including the associated management of the grid, the necessary power electronic actuators and converters plus the specific electromagnetic compatibility issues that are linked with the conversion of high outputs. The language of instruction is German. The number of semesters needed to complete the program is three, including the master's thesis. Qualification: Master of Science (M.Sc.)

## → Electrical Engineering and Information Technology (M.Sc.)

Students acquire advanced specialized knowledge in electrical engineering and information technology. After a harmonization semester, the students can choose to focus on automation technology, electrical energy technology, information and communications technology and microsystems/sensor technology in the second and third semesters. The fourth semester is intended for completing the master's thesis. The language of instruction is English.

## → Sustainable Energy Systems (M.Sc.)

The master's program in Sustainable Energy Systems has an interdisciplinary focus and covers aspects of electrical engineering, mechanical engineering, the natural sciences and process engineering, all of which are essential for ensuring a sustainable supply of energy, especially from renewable sources.

## Applications and Admission Requirements

The general university entrance qualification, a relevant higher technical education entrance qualification, or the equivalent recognized university admission qualification is required for the bachelor's program. A bachelor's degree is required for the master's programs. Students are recommended to undertake an eight-week general work placement before starting the program. There are no restrictions on admission to the Faculty of Electrical Engineering and Information Technology.

**Please send enquiries to:**  
University General Student Advisory Service  
Building 06, Rooms 018-019  
dez.studienangelegenheiten@ovgu.de  
Tel. +49 391 67 52286, 67 52283

**Student advisors:**  
[www.eit.ovgu.de/Studium+und+Karriere/Studienfachberater.html](http://www.eit.ovgu.de/Studium+und+Karriere/Studienfachberater.html)

**Closing date for applications:**  
The deadline for applications is generally 15 September for bachelor's programs starting in the winter semester – see also more detailed information on the programs on the Internet

**Send your application to:**  
**Campus Service Center**  
The CSC team will put you in touch with the right person for any questions regarding your course.  
Internet: [www.servicecenter.ovgu.de](http://www.servicecenter.ovgu.de)  
Email: [servicecenter@ovgu.de](mailto:servicecenter@ovgu.de)  
Tel.: +49 391 50000

**For more information see:**  
[www.ovgu.de/bewerbungshinweise.html](http://www.ovgu.de/bewerbungshinweise.html)  
[www.eit.ovgu.de/Studium+und+Karriere.html](http://www.eit.ovgu.de/Studium+und+Karriere.html)

## PROGRAM INFORMATION

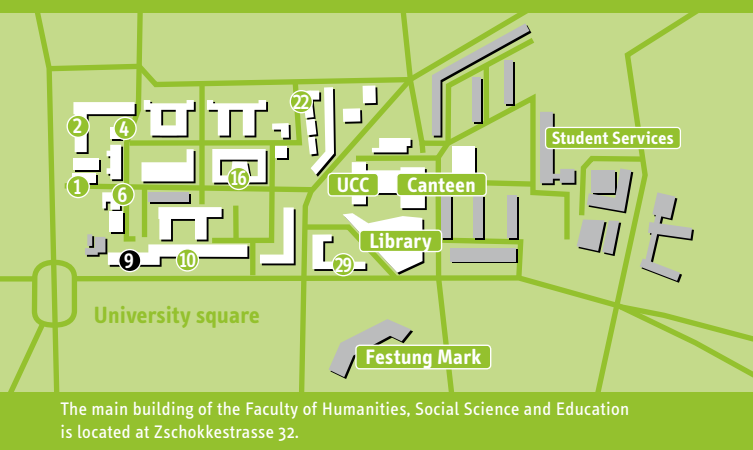
# Faculty for Electrical Engineering and Information Technology

**EIT** FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY



## THE UNIVERSITY CAMPUS

- 1 Campus Service Center
- 2 Faculty of Mathematics
- 4 President's Office
- 6 Department of Academic Affairs
- 9 Faculty of Electrical Engineering and Information Technology**
- 10 Faculty of Mechanical Engineering
- 10 Faculty of Process and Systems Engineering
- 16 Faculty of Natural Sciences
- 22 Faculty of Economics and Management
- 29 Faculty of Computer Science



The main building of the Faculty of Humanities, Social Science and Education is located at Zschokkestrasse 32.