

## A good place to study and research



► [www.ovgu.de](http://www.ovgu.de)

Published by:  
Otto von Guericke University Magdeburg, Faculty of Process and Systems Engineering  
Picture credits, if not otherwise specified:  
Archive of the University of Magdeburg and its faculties

Status: 08/2017

### SUSTAINABLE ENERGY SYSTEMS

#### Master's Programme, 3 semesters, in German

This master programme is jointly offered by the Faculty for Electrical Engineering and Information Technology and the Faculty of Process and Systems Engineering. The subject of the programme is to learn how safe, sustainable and resource efficient technologies for the supply of energy can be developed, which is an essential requirement for the economic system as well as the public and everyday life.

You will become an engineer with a fundamental knowledge of the whole area of renewable energies and the linking-up between the different technologies. During the programme you will finally decide to focus on one of the following topics: wind and water power, solar energy, energy storage or bio fuels.

#### FURTHER STUDY PROGRAMMES:

- Mathematical Engineering
- Molekular Biosystems
- Systems Engineering and Technical Cybernetics

### CHEMICAL AND ENERGY ENGINEERING

#### Master's Programme, 4 semesters, in English

The Master's degree programme is based on a Bachelor's degree in process engineering or related disciplines.

The English professional education programme is addressing young people with different cultural backgrounds. They can rely on a modern technological equipment, in particular on high-quality optical (laser) measuring devices and very powerful computer technology.

The focus of the training is to convey the transfer of the scientific basis into applications in the economy.

### PROCESS SAFETY AND ENVIRONMENTAL ENGINEERING

#### Master's Programme, 3 semesters, in English

The economical usage of energy resources, safe production and handling of materials, and the protection of the environment are gaining importance worldwide. Safety and environmental protection are indispensable elements of modern industrial activity.

Graduates from the programme are versed in the natural scientific fundamentals of technical processes, especially those related to safety and environment, and think and act holistically in the assessment of safety and environmental concerns and their prevention and mitigation. Graduates utilize their engineering know-how to develop appropriate solutions for safety and environmental problems.



### APPLICATION AND ADMISSION STANDARDS

The general qualification for university entrance is a prerequisite. A 12 week internship is a part of the study. The internship regulation regulates the details. There are no admission restrictions on the programmes.  
(For exceptions visit: [www.fvst.ovgu.de](http://www.fvst.ovgu.de)).

Submit applications to  
Campus Service Center

[www.servicecenter.ovgu.de](http://www.servicecenter.ovgu.de)  
E-Mail: [servicecenter@ovgu.de](mailto:servicecenter@ovgu.de)  
Phone: +49 391 67 50000

#### Contacts

Faculty of Process and Systems Engineering of the  
Otto von Guericke University Magdeburg  
Exam and Internship Office  
PO Box 4120  
39016 Magdeburg

Universitätsplatz 2  
39106 Magdeburg

[www.fvst.ovgu.de](http://www.fvst.ovgu.de)



Resident Housing Application  
Magdeburg Student Union  
Resident Housing Department  
PO Box 4053  
39015 Magdeburg

[www.studentenwerk-magdeburg.de](http://www.studentenwerk-magdeburg.de)

## Faculty of Process and Systems Engineering



## OTTO VON GUERICKE UNIVERSITY MAGDEBURG

In terms of research and teaching the focus of Otto von Guericke University Magdeburg lies on engineering, the natural sciences, economics and business and medicine. In addition, humanities subjects provide the university, which was founded in 1993, with an essential complement for meeting the challenges of the modern knowledge society.

Over 14,400 students, of which over 2,200 come from international backgrounds, are enrolled in the nine faculties on more than 80 different courses. This dynamic and cosmopolitan university offers state-of-the-art facilities, excellent supervision for students and a practical, hands-on education. The key areas of research and transfer at the university are interdisciplinary in nature and are effectively reinforced by nearby external research institutes.

### KEY AREAS OF RESEARCH

- Dynamic Systems
- Neurosciences

### KEY AREAS OF RESEARCH TRANSFER

- Automotive
- Digital engineering
- Renewable energies
- Medical technology
- Fluidised bed technology

### OTTO VON GUERICKE (1602-1686)

The University of Magdeburg takes its name from the founder of experimental physics and vacuum technology, Otto von Guericke. He lived from 1602 to 1686 and is possibly the city's most famous son. His interest in scientific correlations and methods, as well as his commitment to the common good, are a model for and guiding principle of the university community.

## A FACULTY OVERVIEW

Process Engineering investigates, develops and puts into practice ecologically compatible material transformation processes which produce valuable products from raw materials using physical, biological or chemical influences. Fine chemical-based medicines, petroleum-based functional plastics, building materials and glass made from stone, ore-based metals, recyclate and energy made from waste, silicon chips made from sand, and food made from agricultural raw materials to name just a few examples.

Process Engineering is everywhere, if not always recognisable at first glance, and is indispensable for the economy and society. It is even more essential when society expects prosperity, while at the same time demanding efficiency, sustainability and a good interaction with people and the environment.



### Degree Programmes offered by the Faculty of Process and Systems Engineering

- Process Engineering
- Environmental and Energy Process Engineering
- Chemical Engineering: Molecular and Structural Product Design
- Business Management and Process and Energy Engineering
- Biosystems Engineering
- Safety and Hazard Prevention
- Sustainable Energy Systems
- Chemical and Energy Engineering
- Process Safety and Environmental Engineering

### The Institutes in the Faculty of Process and Systems Engineering

- Institute of Process Engineering (IVT)
- Institute of Chemistry (ICH)
- Institute of Fluid Dynamics and Thermodynamics (ISUT)
- Institute of Apparatus and Environmental Engineering (IAUT)

## PROCESS ENGINEERING

### Bachelor's/Master's Programme, 7+3 semesters in German

Process Engineering is an engineering science which deals with the investigation, development and technical implementation of processes which alter the properties and composition of materials. The task of the process engineer is to transfer results obtained during lab trials by chemists, physicists or material scientists to a production scale.

**Bachelor's/Master's Programme, 7+3 semesters in German**  
There have been rapid advancements in chemistry in the past few years. It is possible to develop new materials and synthesise nano-structures or new natural and active agents through the symbiosis of inorganic and organic chemistry and modern process engineering. The infrastructure of the Institute of Chemistry of the Otto von Guericke University makes fundamental research with a strong focus on application possible.

Connections to process engineering ensure that problems concerning process development or product designs can be easily dealt with.

### ENVIRONMENTAL AND ENERGY PROCESS ENGINEERING

### Bachelor's/Master's Programme, 7+3 semesters in German

Today, the technical standards and the quality of life of an industrial and information society are defined considerably by environmental and energy process engineering.

**Bachelor's/Master's Programme, 7+3 semesters in German**  
The industrial engineer is a combination of engineer and business person. The need for such a combination is evident in the high demand for "generalists".

The "Magdeburg Teaching Profile" is characterised by the combination of modern methods of material and energy production and material recycling with engineering methods for characterising intricately distributed property functions of the target product both on the microscale and the technical macroscale.

The tasks of the environmental and energy process engineer include water and soil treatment, air purification, recycling, use of waste materials, the development of renewable energy sources and the efficient use of energy.

The graduates can thus be deployed directly in process and energy engineering.

In other universities, on the other hand, a broad basic technical knowledge base is taught, with elements also from the branches of mechanical engineering and electrical engineering. Due to the low application reference, a longer set-up time is required in the case of engineering problems.

## CHEMICAL ENGINEERING: MOLECULAR AND STRUCTURAL PRODUCT DESIGN

### Bachelor's/Master's Programme, 7+3 semesters in German

**Bachelor's/Master's Programme, 7+3 semesters in German**  
There have been rapid advancements in chemistry in the past few years. It is possible to develop new materials and synthesise nano-structures or new natural and active agents through the symbiosis of inorganic and organic chemistry and modern process engineering. The infrastructure of the Institute of Chemistry of the Otto von Guericke University makes fundamental research with a strong focus on application possible.

The programme is based on the fundamentals of chemistry, physics and mathematics and uses this in understanding and developing the different techniques of mechanical, thermal and chemical material transformation.

Connections to process engineering ensure that problems concerning process development or product designs can be easily dealt with.

### BUSINESS MANAGEMENT AND PROCESS AND ENERGY ENGINEERING

### Bachelor's/Master's Programme, 7+3 semesters in German

The industrial engineer is a combination of engineer and business person. The need for such a combination is evident in the high demand for "generalists".

Now and in the future the success of an economy depends on whether its products are economic. The economic viability of a process or product is just as important as its function and quality.

The specialty and the profile of the Magdeburg education programme incorporates a knowledge transfer that is applied to a specific branch of industry.

The tasks of the environmental and energy process engineer include water and soil treatment, air purification, recycling, use of waste materials, the development of renewable energy sources and the efficient use of energy.

The graduates can thus be deployed directly in process and energy engineering.

In other universities, on the other hand, a broad basic technical knowledge base is taught, with elements also from the branches of mechanical engineering and electrical engineering. Due to the low application reference, a longer set-up time is required in the case of engineering problems.

## BIOSYSTEMS ENGINEERING

### Bachelor's/Master's Programme, 7+3 semesters in German

**Bachelor's/Master's Programme, 7+3 semesters in German**  
This interdisciplinary programme is jointly offered by the Faculty for Electrical Engineering and Information Technology, the Faculty of Process and Systems Engineering, the Faculty of Medicine and the Faculty of Natural Sciences.

Using modern methods of molecular biology, genetics and bioinformatics allows not only increasingly detailed analyses of fundamental biological phenomena but also targeted interventions into the genomes of bacteria or mammalian cells. The opportunities resulting from this range from improvements in establishing the causes of disease to customized development and manufacturing of new drugs.

In connection with these advances, requirements on the education of engineers, physicians and scientists also change.

An interdisciplinary approach combining life sciences, engineering and system sciences will be required more and more in the future.

In addition to this engineering oriented study course, the natural science focused M.Sc. „Molecular Biosystems“ is offered since winter term 2015.

### SAFETY AND HAZARD PREVENTION

### Bachelor's/Master's Programme, 7+3 semesters in German

This programme is offered jointly with the UAS Magdeburg-Stendal.

Large fires, floods or airplane crashes are rare events. Nevertheless society must be prepared for them. Scenarios are designed to develop management strategies which require the mastering and application of the fundamentals of natural science and technology.

The programme is jointly offered by the Faculty of Process and Systems Engineering and the UAS Magdeburg-Stendal, Department of Water, Environment, Construction and Safety, in collaboration with the Institute for Fire Protection and Emergency Response (IBK) at Heyrothsberge.