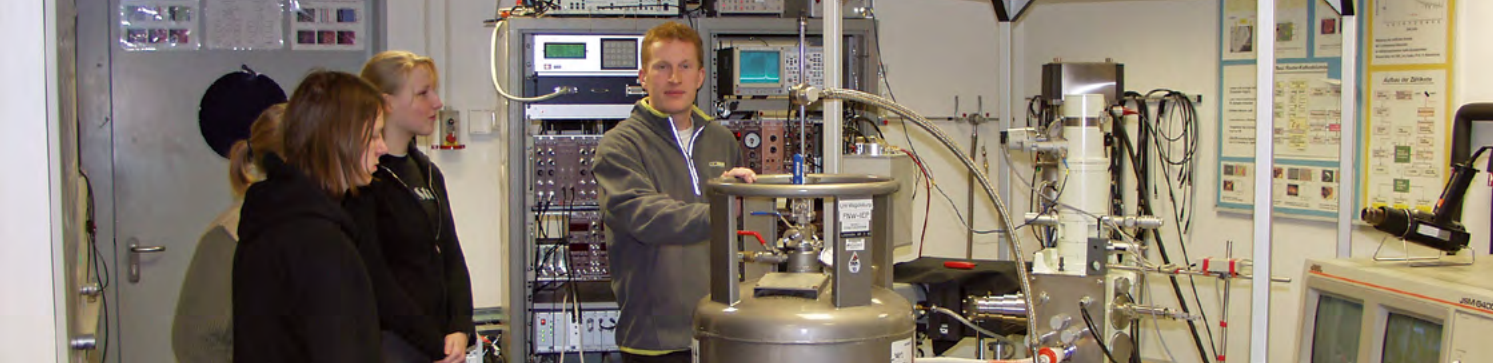




NAT

**FACULTY OF
NATURAL SCIENCES**



→ 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.



Faculty Profile

The Natural Sciences encompass different fields such as physics, psychology and biology and focus on the mechanistic analysis of the animated and non-animated nature. Research in these disciplines forms the basis for the applied sciences and creates innovative ideas to promote advancement in both, technology and the humanities, as well as social progress.

The Faculty of Natural Sciences of the Otto von Guericke University Magdeburg offers interdisciplinary curricula encompassing aspects from natural, technical and neurosciences. Study programs offered by the faculty lead to the following academic degrees:

- Bachelor of Science/Master of Science in Physics
- Bachelor of Science/Master of Science in Psychology
- Master of Science Integrative Neuroscience
- Master of Science Molecular Biosystems (starting winter term 2015/16)
- Dr. rer. nat.
- Dr. rer. nat. habil.

The interdisciplinary profile allows for the sharing of the scientific infrastructure with other departments and institutes at our university such as engineering, computer science, medicine, including medical neuroscience.

Research topics:

- Semiconductor nanostructures for microelectronics and optoelectronics
- Wide-band gap semiconductors for optoelectronics and sensors
- Epitaxial growth and characterisation of device relevant layers
- Adaptive materials
- Nonlinearity and disorder in complex systems
- Self-organisation and pattern formation
- Cognitive neurosciences
- Clinical neuropsychology
- General and biological psychology
- Biomedical magnetic resonance imaging (7 tesla MRT)
- Cortical mapping of cognitive processes
- Functional imaging of motivational behaviors
- Behavioral and developmental neurobiology
- Systemic and molecular neurobiology of learning and memory
- Systems biology

Institutes:

- Institute of Experimental Physics
- Institute of Theoretical Physics
- Institute of Psychology
- Institute of Biology

Cooperation with research institutes in Magdeburg:

- Leibniz Institute for Neurobiology
- Fraunhofer Institute of Factory Operation and Automation
- Max Planck Institute for the Dynamics of Complex Technical Systems
- German Center of Neurodegenerative Diseases

→ Bachelor of Science/Master of Science in Physics

At least among physicists, physics is often considered the most fundamental of all natural sciences. Following the statement "So that I may perceive whatever holds /The world together in its inmost folds" (Goethe's Faust), physics students learn how matter is structured and which forces interact among its components.

Physicists are considered to be the generalists among the natural scientists. The concepts, approaches and methods developed in physics are of ubiquitous relevance: They have made their way into chemistry, experiments and theory, philosophical questions, material and computer sciences, biology and biomedicine. This general relevance is reflected in a broad spectrum of physics courses and a diversified scientific education, which enables the graduated physicist to seek a variety of positions in academia as well as in industry and administration.

Interestingly, in addition to the classical areas of physics, more and more attractive opportunities of professional activity have been opening up recently. These involve software engineering at financial institutions and at information technology companies, in consultant agencies, in patent offices, editorial companies, and in the domain of environmental protection.

The prominent and innovative economic activities involve, among others, the areas of information transfer and processing, regenerative energy, energy efficiency, photovoltaics and medical technologies. Long-term research topics were established, e.g. in the area of New Materials / Semiconductors by participating in the Collaborative Research Centre 787 (Semiconductor nanophotonics, with Graduate School) and the interdisciplinary research campus *STIMULATE* (Solution Centre for Image guided local Therapies). The Faculty has facilities to synthesize semiconductors by metal-organic vapour epitaxy (MOVPE) and a highly modern Center for Microstructures, where the samples can be characterised by high-resolution optical and structural methods. These include high-resolution

X-ray diffractometry, transmission and field electron microscopy, and cathodoluminescence. The first European 7 tesla resonance tomograph is available for biomedical studies.

Magdeburg offers the degrees Bachelor and Master of Science in Physics. The duration of the Bachelor's studies is 6 semesters and contain courses in experimental physics, laboratory courses in physics, mathematics and theoretical physics; in addition a facultative subject may be selected among chemistry, computer sciences, material sciences, and technical mechanics. The Bachelor's courses are concluded by the Bachelor's thesis. The Master's courses cover 4 semesters. In addition to a series of core physics courses, the student receives a specialisation according to his/her personal interests in the areas of, e.g., semiconductor physics, biophysics, statistical physics, etc. Opportunities to engage in an interdisciplinary curriculum (medical technology, computer sciences, neurosciences) are available.

Students are strongly encouraged to complement their studies by selecting from a rich variety of compulsory and elective courses. The ability to perform independent scientific research in the area of a scientific specialisation is trained in a research internship at the research groups, and then confirmed by the Master's thesis. The Master's studies are concluded by final examinations and a defence of the Master's thesis.



OSRAM GaN-on-Si bulb technology invented by OVGU Magdeburg

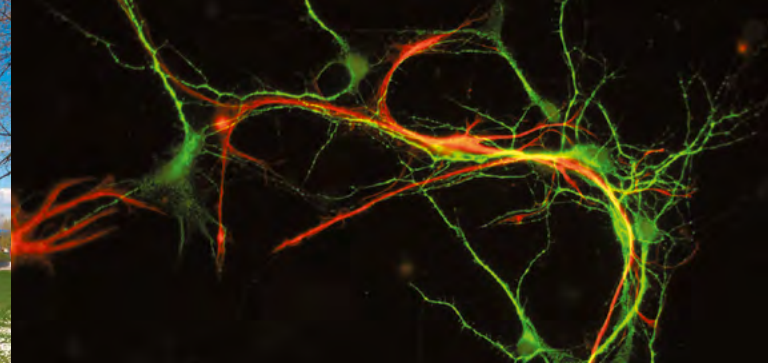
LED light based on low-priced GaN-on-Si technology, which was developed at the OVGU

→ Bachelor of Science / Master of Science in Psychology

This course is taught in German. Graduates in Psychology have a wide variety of employment opportunities ranging from clinical care and counselling, education, personnel management to basic and applied research.

The B.Sc./M.Sc. programs are ranked among the top courses in Germany. Students receive their Bachelor's degree after 6 semesters during which essential knowledge in the core areas of Psychology is acquired including General Psychology, Biological Psychology, Personality Psychology, Social Psychology, Organisational Psychology, and Clinical Psychology in addition to a sound foundation in quantitative and qualitative methods.

Students who wish to further deepen their knowledge and skills may enrol in the subsequent Master's program. During this two year course finishing with the Master's thesis students can focus their studies in the areas clinical neuroscience, cognitive neuroscience, family psychology, or human-technology interaction. These topics are closely linked to the main research areas of the university. For example, Master's students focussing on clinical or cognitive neuroscience will benefit from the university-wide research activities in the neurosciences allowing access to state-of-the-art neuroimaging facilities (including 7 Tesla MRI and 250 channel magnetoencephalography). Students specialising in human-technology interaction or family psychology on the other hand will benefit from interactions with cultural and social sciences.



→ Study program "Integrative Neuroscience" (M.Sc.)

The "Center of Behavioral Brain Sciences" (CBBS) represents one of the largest Neuroscience centres in Germany and merges the research activities of departments at the Faculty for Natural Sciences, Medical Faculty and at the Leibniz Institute for Neurobiology and at the German Center for Neurodegenerative Diseases.

The study program "Integrative Neuroscience" combines molecular with systemic aspects and thereby generates a flow of knowledge and research output on the level of basic science, and which is also transferred to applied sciences and technologies. The format of the study program corresponds to the American "graduate schools" and enrolls German and international students holding a Bachelor's degree in Biology, Biochemistry, Chemistry, Physics, Psychology, Computer Science, Electrical Engineering or in human and veterinary medicine.

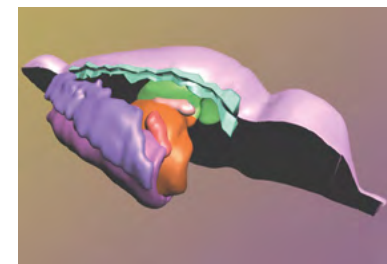
Attractive career opportunities are available for graduates with a Master's in Neurosciences such as

- Research and teaching
- Applied research, e.g. in medical technology or biotechnology
- Science journalism, science politics

The international study program focuses on theoretical-conceptual aspects as well as on practical applications and covers a broad spectrum of neuroscience research and technology. The curriculum is held in English and covers the cellular, molecular-genetic, developmental as well as systemic and computational aspects to unravel the neurobiological mechanisms of animal and human behaviors, with particular emphasis on the mechanisms of learning and memory.

Collaborating institutions

- Faculty of Medicine, Otto von Guericke University Magdeburg
- Leibniz Institute for Neurobiology/Center for Learning and Memory Research
- Center for Behavioral Brain Sciences (CBBS)
- Center for Neuroscientific Innovation and Technology (ZENIT) GmbH (university-based research groups and start-up companies)
- German Center for Neurodegenerative Diseases (DZNE)



Three dimensional visualization of a rat brain, reconstructed from serial histological sections, displaying cortical and limbic brain regions.

Applications and Admissions Standards

Admission restrictions:

There are no restrictions for the admission to the Bachelor's and Master's programs in Physics at the Faculty of Natural Sciences. In contrast, a local selection procedure will be applied for the admission to the Bachelor's and Master's programs in Psychology as well as the Master's program in Integrative Neurosciences.

Admission requirements:

Admission standards usually require general qualifications for university entrance, a relevant technical higher education entrance qualification, or the equivalent fulfillment of admissions requirements recognized approved by the State of Saxony Anhalt through a legal ruling. (See the university's enrolment regulations for more details.)

Start of the studies:

Once per year at the fall term (starting October 1)

Period of applications:

June 1 to September 15

Degree program in Psychology

(submitted to a local selection procedure)
Applications accepted until July 15

Master's program in Integrative Neurosciences

(submitted to a local selection procedure)
Applications accepted until March 15. Please send the applications directly to:
Ms. Nicole Albrecht, Program coordinator
Otto von Guericke University Magdeburg FNW/IBIO
Haus 91, Leipziger Str. 44, 39120 Magdeburg, Germany
Tel.: +49 391 67-55051 and -55001
e-mail: neurosci@ovgu.de
<http://neurosci.uni-magdeburg.de>

Contact address:

Postal address:
Otto von Guericke University Magdeburg
PO Box 4120
39016 Magdeburg, Germany
Street Address:
Universitätsplatz 2, 39106 Magdeburg, Germany

Campus Service Center

The CSC-Team offers individual counseling to assist with educational programs and courses, it provides easy access to print and technical career resources, online job postings and recruiting websites and connects to potential employees.
Web: www.servicecenter.ovgu.de
e-mail: servicecenter@ovgu.de
Tel.: + 49 391 50000

www.fnw.ovgu.de

e-mail: Dean's office: fnw@ovgu.de
e-mail: Academic records office: fnw-pra@ovgu.de

For further information:

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Tel.: +49 391 67-18361

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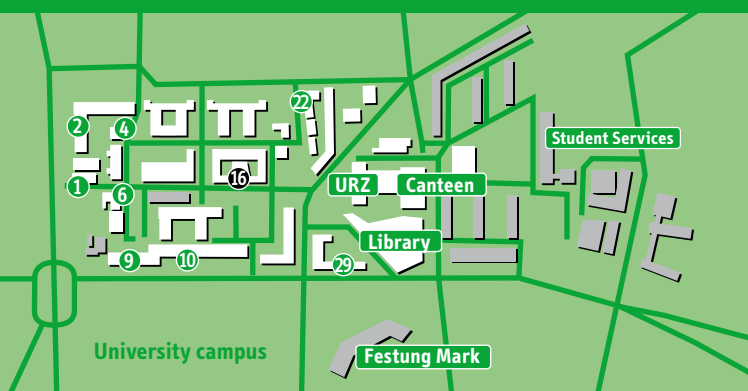
PROGRAM INFORMATION

Faculty of Natural Sciences



THE UNIVERSITY CAMPUS

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| 1 Campus-Service-Center | 10 Faculty of Process and Systems Engineering |
| 2 Faculty of Mathematics | 16 Faculty of Natural Sciences |
| 4 Principal's Office | 22 Faculty of Economics and Management |
| 6 Department of Academic Affairs | 29 Faculty of Computer Science |
| 9 Faculty of Electrical Engineering and Information Technology | 91 Faculty of Natural Sciences Biology (IBIO) |
| 10 Faculty of Mechanical Engineering | |



The main building of the Faculty for the Human sciences is located in Zschokkestrasse 32.

