Mandatory Documents

- Bachelor’s Certificate of a at least three-year Bachelor’s Degree
- Transcript of Records of your Bachelor’s Degree
- Secondary School Leaving Certificate
- TOEFL or IELTS result
- Curriculum Vitae and Letter of Motivation

Please note, we do not consider GRE scores. Based on the application documents, the examination board will decide your eligibility for the Master’s program.

FEES

The Master’s Program “Geodetic Engineering” is tuition-free. Students have to pay a semester fee, which includes a regional public transport ticket (called „Semester Ticket“).

CONTACT

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The University of Bonn has been offering geodesy education for more than 125 years. At the institute all geodetic subdisciplines are represented by their own professorships.

- Astronomical, Physical and Mathematical-Geodesy
- Earth System Research
- Geodesy
- Geoinformation
- Information Management
- Photogrammetry
- Remote Sensing
- Urban Planning and Land Management
- Theoretical Geodesy

The research groups conduct several projects in cooperation with numerous national and international partners and institutions. Two projects of the institute are outstanding.

- Since 2019 PhenoRob, the only Cluster of Excellence in Germany in agricultural sciences, is part of the institute. It brings together researchers from different disciplines to investigate how technology can enable sustainable crop production.
- In 2021 a new Collaborative Research Center Regional Climate Change: The Role of Land Use and Water Management (DETECT) was established. It investigates the hypothesis that human-induced land use change and intensified water management influence the regional climate.
If you are interested in sensors and mobile-sensor systems, self-driving cars or robotics and you have a strong background in programming and mathematics this is your profile.

**GEOREALITY AND SPATIAL DEVELOPMENT**

The profile focuses on geoinformation technology that can help decision makers and planners tackle some of the most important challenges of today and the future. Since 2007, more than half of the world’s population has been living in towns and urban regions. Rapid urbanization forces the consumption of natural resources - especially of land - and leads to climate change as well as social inequity. The profile covers advanced methods and systems, including data structures and algorithms for automatic analysis and visualization of geoinformation and spatial development.

You will learn how to deal with spatial, mathematical and algorithmic reasoning as well as software programming and the utilization of software for recent problems, e.g. in urban planning. The profile covers geoinformation systems (GIS), spatial data mining, automated cartography and geovisualization, spatial analysis of real estate markets and land valuation. It addresses methods for integration, configuration and abstraction of spatial data, the analysis of trajectories and transport networks, agent-based models of land use, multi-criteria assessment and optimization methods for spatial decision support systems in urban planning and land management, smart cities, spatial data infrastructures, spatial databases, as well as location-based services.

If you are interested in developing and implementing innovative solutions to problems of spatial data handling and urban development and you have a strong background in GIS and urban development this is your profile.

**GEODETIC EARTH SYSTEM SCIENCE AND DATA ANALYSIS**

The profile focuses on how advanced satellite- and space-geodetic observation techniques, in combination with innovative data processing and modeling approaches, provide us with adequate information to make appropriate decisions based on empirical results and their interpretation.

You will choose elective courses and project topics that allow you to deepen your knowledge in particular space- or satellite-geodetic sensors / terrestrial networks, in reference frame realization, integration of data with geoscientific models, or in data analysis techniques using high-performance computing.

If you are interested in geodesy, gravity, earth rotation, climate change, sea level, mass transports in the earth system, earth observation, satellite technology, adjustment techniques and optimization methods, and other topics related to Geodetic Earth System science, and you have a strong background in mathematics and earth sciences this is your profile.

**REQUIREMENTS AND APPLICATION**

Applicants must possess a first, higher education qualification (Bachelor’s Degree) in Geodesy, Geoinformation or related topics, such as Geoscience, Computer Science, Mathematics, Physics or Electrical Engineering.

**Academic Admission Requirements**

At least 24 credits from Mathematics, Physics and Programming and furthermore 48 credits from at least two of the following research areas:

- Physical Geodesy, Space Geodesy, Geodynamics and Earth System Research,
- Data Analysis, Modeling and Scientific Computing in the context of Geoscience,
- Photogrammetry, Remote Sensing, Computer Vision and Robotics,
- Geodetic Measurement Technology, Engineering Geodesy and Satellite Measurement Technology,
- Algorithmics, Spatial Databases, Geo-Information and Geo-Information Systems,
- Urban Development, Land Readjustment and Real Estate Evaluation and Land Management.

**Language Requirements**

- TOEFL paper-based: 575 points
- TOEFL internet-based: 90 points
- IELTS: 6.5

Native English speakers, German, Swiss, Austrian citizens with Abitur / Matura and students who received their first degree entirely in English taught study programs fulfil the language requirements.