

Partner Universities and Laboratories



Partner Universities and Double Degree with University of Valencia

The international Geomatics program is also offered, in cooperation with the Universidad Politécnica de Valencia (UPV), as a double-degree Master of Science program. Students have the possibility to spend one year at Karlsruhe University of Applied Sciences and one year at UPV and receive Master's degrees from both universities. The double graduation is funded by DAAD scholarships. Besides, some courses can also be completed at different partner universities abroad in the Netherlands (ITC/ Enschede, Utrecht), UK (Aberdeen), Baltic States (Riga, Vilnius), Hungary (Szeged), Russia (Novosibirsk), South America (Rio de Janeiro, Brazil) and USA.

Laboratories and Research Projects

Laboratory work and the inclusion of sophisticated research and development projects (RaD) are regarded as essential characteristics and components of the Master programs Geomatics (M.Sc.) and Geomatik (M.Sc.). Graduates of both Master programs are thus well versed in science- and research-oriented academic education, while meeting at the same time the requirements of professional skills requested by industry. The included laboratories and RaD projects are:

- Laboratory for Geographic Information Systems (GIS)
www.iaf.hs-karlsruhe.de/gvisr/
- Laboratory for Photogrammetry and Remote Sensing
- Geodetic Measurements Laboratory
- Laboratory for GNSS and Navigation
www.dfhbf.de, www.goca.info, www.monika.ag,
www.moldpos.eu, www.navka.de
- Laboratory for Terrestrial 3D Laserscanning

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Faculty of Information Management and Media

Degree programs in Geomatics / Geomatik

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Master

Geomatics / Geomatik

International Degree Programme /
Consecutive Degree Programme

Master of Science (M.Sc.)

Faculty of Information Management and Media

Geomatics



Geomatics is the modern geoscience, engineering, and IT discipline of acquisition, processing, modelling, analysing, management, retrieval and visualization of geo-referenced spatial data, which concern the geometry, gravity field, and physical features of the Earth, as well as the built and natural environment. These data come from many different sources, including earth orbiting satellites, GNSS, MEMS, air and sea-borne sensors, and ground-based instruments.

The data are processed with state-of-the-art communication and information technologies concerning soft-, hardware and geoinformation systems (GIS) in a broad spectrum of complex mathematical models. Thus geomatics, geomatic products, services and RaD have an impact on and applications in all disciplines which depend on geo-referenced spatial data, including information and monitoring of the environment, planning, engineering and geosciences, navigation, land development and management.

As economics and political decisions are inherently and increasingly based on geoinformation, geomatics plays a key role for society, industry, and economy. The modern mobile society generates new challenges for geomatics, e.g. on traffic and logistics, location-based services, mobile IT, GIS and mapping, multisensor out-/indoor navigation, and geo-referencing systems, 3D city and facility models, computer aided facility management, vehicle navigation, and robotics.

Study Programs and Accreditation

Two Master study programs are offered, the international Geomatics and the consecutive Geomatik. Both are accredited by ASIIN as Master of Science (M.Sc.). No tuition fees are charged for these programs.

Study Program and Target Group

Study Program Disciplines and Characteristics

The core disciplines of geomatics are geodesy & navigation, cartography, geography, photogrammetry & remote sensing, software technologies, and geoinformatics. The Master study programs Geomatics and Geomatik combine these with a focus on the following competences:

- Global and regional reference frames and geo-referencing
- Space, physical, integrated and engineering geodesy
- Remote sensing, photogrammetry and geodetic geomonitring
- Data acquisition, statistical analysis and parameter estimation on modeling and geo-referencing of sensordata and hybrid data types
- Computer-aided visualisation, communication, and use of geospatial information
- Spatial analysis and geostatistics in the context of IT and communication technologies
- GNSS/MEMS integrated precise navigation and mobile GIS technologies
- Software development and programming, e.g. on GIS, mobile IT and navigation

Target Group and Career Perspectives

The aim of the Master programs in Geomatics (M.Sc.) and Geomatik (M.Sc.) is to provide students with extensive, detailed knowledge of the theory, scientific methods, and practice in geomatics, combined with a high level of competence in the acquisition, modelling, processing, and management of geodata and geoinformation. The elective modules allow individual specialisation in the different fields of geomatics, GI sciences, and technologies.

Due to the high demand for qualified geomatics engineers, the M.Sc. graduates are guaranteed a wide choice of challenging and rewarding careers at a national and international level in industry as well as at scientific institutions. In Germany, the M.Sc. graduates can pursue a career in the higher civil service (Höherer Staatsdienst). Furthermore, the M.Sc. degree generally qualifies for PhD programs. At Karlsruhe University of Applied Sciences, PhD studies can be carried out in cooperation with different German and foreign partner universities.

Curriculum

The international Geomatics (M.Sc.) program, below abbreviated as "GMC", comprises 4 semesters and 120 ECTS. The consecutive Master program in Geomatik (M.Sc.), below abbreviated as "GMK", comprises 3 semesters and 90 ECTS. The semesters comprise compulsory modules and elective modules, where 5 modules with 6 ECTS are obligatory. All compulsory modules are offered in English, as well as most of the electives.

1st Semester GMC

Statistics & Adjustment and Reference Systems, Photogrammetry and Remote Sensing, GIS and Databases, Thematic Cartography, Language Courses.

2nd Semester GMC = 1st Semester GMK

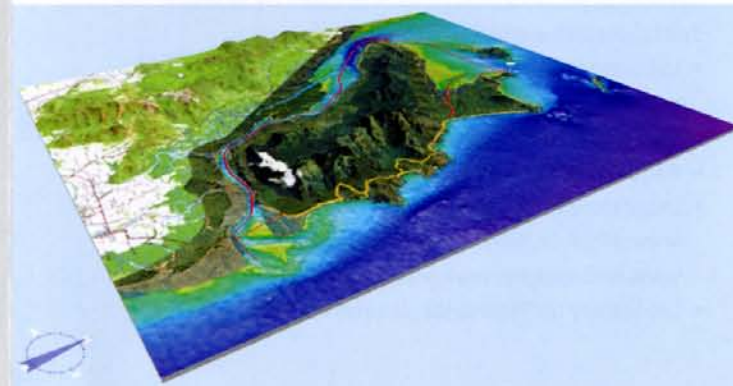
Project Management and GIS, Geography, Facility Management, Navigation, Soft-Skills and Language Courses, Visualization in the Internet, Location Based Services and Visualisation, Satellite Geodesy and Geodetic Monitoring, Digital Signal Processing and Numerical Methods.

3rd Semester GMC = 2nd Semester GMK

Satellite Image Analysis, Software Engineering and Programming, Advanced Thematic Cartography & Visualization, GIS Project and Open Source, Physical Geodesy, Adjustment and Mathematical Geodesy, Engineering Photogrammetry and Geodesy, Geostatistics.

4th Semester GMC = 3rd Semester GMK

Seminar, Master Thesis and Colloquium



GEOMATICS



Master of Science in Geomatics Department of Geomatics, Karlsruhe

- Programme start: September
- Duration: 2 years (120 ECTS)
- 3 Semester Lectures and
1 Semester Master Thesis

 **cutting-edge
content**

 **no tuition fees**

Unique in Germany

The internationally oriented programme is unique in combining the study of cartography and geodesy with a focus on the following core competences:

- Computer-aided visualisation, communication and use of geospatial information;
- Spatial analysis within the context of communication and information technology (IT);
- Acquisition, statistical modelling and geo-referencing of hybrid sensor- and geo-data;
- GNSS/MEMS integrated precise navigation and mobile GIS-technologies.

Target Groups

The aim of the master's programme is to provide students with extensive, detailed knowledge of the theory and methods of geomatics on a high scientific level. Master Thesis is related to research and development activities of the professors. Small working groups, permanent dialogue with the teachers and intensive support guarantee a quick study and a successful degree.

Seal of Quality

For the second time ASIIN (the German Accreditation Agency for Study Programmes in Engineering, Informatics, Natural Sciences and Mathematics – a member of the Washington Accord), has awarded full accreditation (until 2015) to the University of Applied Sciences for its Master Programme in Geomatics.



Feel free to order a prospectus via e-mail

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Hochschule Karlsruhe
Technik und Wirtschaft
UNIVERSITY OF APPLIED SCIENCES