Partner Universities and Laboratories

The international Geomatics program is also offered in cooperation with the Universidad Politécnica de Valencia (UPV) as a double-degree M.Sc. program. Students have the opportunity to spend one year at HsKA (Germany) and one year at UPV (Spain) and receive Master degrees from both universities. Furthermore, some courses or the Master thesis, e.g. to qualify as an international study program for German students, can be completed at different partner universities abroad, e.g. in the UK (Edinburgh), South Africa (Pretoria), Hungary (Szeged), Russia (Novosibirsk), Greece (Thessaloniki), Chile (Santiago) or the USA (Mankato).

Laboratories and Research Projects

Laboratory work and the inclusion of sophisticated research and development projects (RaD) are regarded as essential characteristics of the Master program Geomatics (M.Sc.). Graduates are thus well-versed in science- and research-oriented academic education, while at the same time meeting the professional skill requirements requested in the industry and the governmental sector. The involved laboratories of expertise are:

- Laboratory for GIS and Digital Image Processing
- ESRI Development Center (EDC)
- Laboratory for Photogrammetry and Remote Sensing
- Laboratory for Measuring Technology and Terrestrial 3D Laserscanning
- Laboratory for GNSS and Navigation
- Laboratory for Media Design and Integration
Geomatics is a modern, self-contained geo-information, geoscience, engineering, and ICT-related discipline. It deals with the acquisition, processing, modelling, analysis, and visualization of spatially referenced data. This concerns the geometry as well as physical and socio-economic features of our Earth, spatial information infrastructures of the built and natural environment, and the simulation of geospatial processes. The data originates from many different sources, including satellites, air and seaborne sensors, ground-based measurements, surveys and statistics, and analogue maps. Today’s techniques make extensive use of GNSS, often involving the crowd.

The data is processed with state-of-the-art information and communication technologies (ICT), often in geographical information systems (GIS) and based on a broad spectrum of mathematical algorithms and models. Thus, Geomatics plays an important role in products and services, which depend on geospatial data and spatial computing. Nowadays it has an impact on numerous disciplines including environmental management, land development and planning, engineering, geo- and life sciences, traffic, logistics, and utilities.

As economic and political decisions are increasingly based on geospatial information, Geomatics plays a key-role for society as a whole. The modern mobile society generates new challenges with a tremendous increase in applications related to e.g. location-based services, 3D city models, crowd-sourced mapping, big data, UAV, indoor navigation, and mobile GIS.

The aim of the Master program in Geomatics (M.Sc.) is to provide students with extensive, detailed knowledge on the theory, scientific methods, and practices in Geomatics, combined with a high level of competence in the acquisition, processing, modelling, analysis and visualization of geospatial data. Although graduates of diverse backgrounds are accommodated within one joint program, the choice of elective modules allows for following individual interests among the various fields of geomatics, and thus for a specialization.

Due to the high demand for qualified Geomatics engineers, the M.Sc. graduates are guaranteed a wide choice of rewarding careers at national and international levels in private industry as well as at governmental or scientific institutions. In Germany, the M.Sc. graduates can pursue a career in the higher civil service (Höherer Verwaltungsdienst). The M.Sc. degree also 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.

Accreditation and Fees
The Geomatics study program has been accredited by ASIIN and EUR-ACE for the third time in a row and leads to a Master of Science (M.Sc.) degree. Study fees of 1,500 € per semester apply to overseas students (i.e. students from outside the EU).

The international study program Geomatics (M.Sc.) comprises 120 ECTS in 4 semesters with generally 5 modules and 30 ECTS per semester. The 2nd and 3rd semesters cover compulsory and elective modules, where 6 electives have to be selected among 10. The courses of the 1st semester ensure that all students bring along the required knowledge base. For graduates with a 210 ECTS Bachelor degree, up to 30 ECTS of the 1st semester Master courses can be recognized. In order to qualify as an international study program, one taught semester of the Bachelor or Master program or a substantial portion of the Master thesis phase has to be spent abroad.

The internationally oriented program is unique in combining the study of cartography and geodesy with a focus on the following six fields of specialization:
- Geoinformatics: Application programming for Web processing, monitoring and Open Source GIS;
- Geovisualization: Computer-aided visualization, communication and use of geospatial information;
- Geobusiness: Location-aware spatial analysis based on economic principles;
- Environment: Monitoring and managing our changing natural environment by means of GIS and remote sensing;
- Geodesy: Engineering photogrammetry and geodesy for automated information extraction;
- Navigation: GNSS/MEMS integrated precise navigation for outdoor and indoor applications.