VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF MINING AND GEOLOGY

Study programme Geoinformatics

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Faculty	Faculty of Mining and Geology
Type of study	Follow-up Master
Language of instruction	English
Code of the programme	N0532A330044
Title of the programme	Geoinformatics
Regular period of the study	2 years
Cost	50,000 CZK per semester
Coordinating department	Department of Geoinformatics
Coordinator	doc. Ing. Michal Kačmařík, Ph.D.
Key words	Global Navigation Satellite Systems, spatial data; spatial data analysis, Earth Observation; drones, geoinformation technologies, spatial database systems and geoweb

About study programme

We encounter geoinformatics every day, literally at every turn - whether it's navigation, weather forecasting, maps or gaming. During your studies, we'll teach you how to transform the world around you into a digital environment, fly drones, use state-of-the-art GPS devices, use artificial intelligence, and create 3D models. You will be able to process and analyse the results of your work, display them on maps and publish them on the internet. We will teach you not only how to work with modern applications, but also how to develop them. The study programme "Geoinformatics" prepares students not only in the fields of geoinformatics and computer science, but also does not forget about soft skills.
After graduation, you will have opened doors inlarge and small companies or public administration. You will find employment in positions such as web mapping application developer, data analyst, database specialist, or geodata collection and distribution expert. The most successful ones will also start their own companies.

Professions

- Developer of web map applications
- Expert in data collection and distribution
- Project manager
- Database systems specialist
- Information systems administrator
- Expert officer in the departments of geoinformatics of municipalities and regional authorities
- Geoinformatics
- Geodata and metadata manager
- GIS application manager
- IT analyst
- Expert in the field of relief modeling and processes in hydrology
- GIS analyst
- Data scientist
- Specialist in science, research and development
- GIS specialista
- Cartographer
- Computer programmer

- Programmer - specialist
- Junior specialist for data analysis
- Geodata administrator
- Data visualization specialist

Hard skills

- Knowledge of English in written and spoken form
- Earth remote sensing, drones
- Modeling and simulation
- Satellite navigation systems - GNSS (GPS, Galileo)
- Design and implementation of a data layer
- Project management
- Knowledge of technical English
- Meteorology and navigation
- 3D models and modeling
- Knowledge of geographic information systems, geoinformatics, and geoinformation technologies (GIS, GIT)
- Object-oriented programming
- Knowledge of system approach
- Modelling tools
- Web map applications (GeoWeb)
- R
- Object analysis
- Programming (Python)
- GIT
- MS Office
- SW MS Access
- Geographic information systems, geoinformatics and geoinformation technologies (GIS, GIT)
- Thematic cartography
- PostgreSQL
- Spatial data processing (acquisition, storage, processing, visualization, publication)
- Knowledge of web applications trends
- Statistical data analysis
- Analytical skills
- SQL
- Designing
- Knowledge of statistical SW
- Creation of sensor networks
- Physicak design of the database
- Digital image processing
- Algorithms and data structures
- Python
- Website creation
- Databases, relational databases design, SQL
- HTML, CSS
- Data processing in GIS, statistics (R, IBM SPSS)
- Application programming
- SW ArcGIS, QGIS
- Development of web applications
- Object Oriented Technologies (UML)

- IBM SPSS
- Data analysis

Study aims

With the continuous development of information technology, the amount of data that needs to be processed, analysed and interpreted for the broad needs of the human population is growing. These data often come from heterogeneous sources and are localised in space and time. The labour market is therefore in continuous demand for skilled graduates who have a comprehensive knowledge of working with spatial data.
The study of the programme builds on the foundations acquired by studying the Bachelor's degree in Geoinformatics, or a related bachelor's programme.
The follow-up Master's degree in Geoinformatics focuses on teaching advanced processing and analysis of spatial and non-spatial data using conventional quantitative techniques and modern approaches based on artificial intelligence. Existing geoinformatics and other applications, or self-developed applications and scripts, are used to process this data, so graduates are able to provide automation and replicability of processes. In the process of data acquisition, storage and processing, they are also able to use spatial database systems, server technologies, web services or cloud services. The emphasis is put on the ability to apply a systematic approach to problem solving, self-interpretation of results and quality presentation of the produced outputs using advanced data visualization techniques. Students also develop their knowledge and skills in Earth observation, localization and navigation in space, modeling and simulations
or soft skills.
Graduates find employment in companies operating in most industries, especially in IT, environment related sectors, the financial sector, construction, transport and integrated rescue services. A number of graduates have also successfully started their own businesses.

Study curriculum

- form Full-time (en)