Geoinformatika

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Fakulta	Hornicko-geologická fakulta
Typ studia	navazující magisterské
Jazyk výuky	angličtina
Kód programu	N0532A330044
Název programu	Geoinformatika
Standardní délka studia	2 roky
Garantující katedra	Katedra geoinformatiky
Garant	doc. Ing. Michal Kačmařík, Ph.D.
Oblasti vzdělávání (zaměření)	Vědy o zemi

O studijním programu

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.

Profese

- GIS specialista
- Information systems administrator
- Geoinformatics
- IT analyst
- Developer of web map applications
- Expert in data collection and distribution
- GIS analyst
- Database systems specialist
- Geodata administrator
- Junior specialist for data analysis
- Programmer - specialist
- Project manager
- Data scientist
- Specialist in science, research and development
- GIS application manager
- Expert in the field of relief modeling and processes in hydrology
- Data visualization specialist
- Computer programmer

- Geodata and metadata manager
- Cartographer
- Expert officer in the departments of geoinformatics of municipalities and regional authorities

Dovednosti

- Znalost trendů webových aplikací
- Znalost systémového přístupu
- GIT
- Znalost geografických informačních systémů, geoinformatiky a geoinformačních technologií (GIS, GIT)
- Znalost statistického SW
- Algoritmy a datové struktury
- Modelování a simulace
- SQL
- Vývoj webových aplikací
- Objektově orientované programování
- Meterologie a navigace
- SW MS Access
- SW ArcGIS, QGIS
- Fyzický návrh databáze
- Digitální zpracování obrazu
- HTML, CSS
- Programování aplikací
- Geografické informační systémy, geoinformatika a geoinformační technologie (GIS, GIT)
- Objektová analýza
- R
- IBM SPSS
- Datová analýza
- Dálkový průzkum Země, drony
- Python
- PostgreSQL
- Modelovací nástroje
- Projektování
- Webové mapové aplikace (GeoWeb)
- Databáze, návrh relačních databází, SQL
- Projektové řízení
- Zpracování prostorových dat (pořízení, u ukládání, zpracování, vizualizace, publikace)
- Znalost technické angličtiny
- Programování (Python)
- Tematická kartografie
- Zpracování dat v GIS, statistika (R, IBM SPSS)
- 3D modely a modelování
- Objektově orientované technologie (UML)
- Družicové navigační systémy - GNSS (GPS, Galileo)
- Analytické dovednosti
- MS Office
- Tvorba senzorových sítí
- Znalost angličtiny v psané i mluvené formě
- Návrh a implementace datové vrstvy

- Statistická analýza dat
- Tvorba webových stránek

Cíle studia

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.

Studijní plány

- forma prezenční (en)