

Level: bachelor				
Course title: Geographic information systems (DG301)				
Status: elective				
ECTS: 9				
Requirements: none				
Learning objectives The aim of the course is to introduce students to the principles of the theory and practice of geographic information systems (GIS). Students will gain knowledge and skills in the use of GIS, GPS and remote sensing.				
Learning outcomes Students will become familiar with the basic theoretical principles and operations of geographic information systems. At the same time, students will be able to independently use the most common GIS software applications.				
Syllabus <i>Theoretical instruction</i> Definition of GIS. Brief development of GIS. The principles of organization and types of geodata in GIS. Real world modelling. Abstraction. A conceptual model. Geographic entities. Topology and topics. Raster model. The vector model. The object-oriented model. Basic procedures for collecting geographic data. Satellite data. Scanning and digitizing. Georeferencing. Photogrammetry. GPS. Direct measurements. Quality of geographical information. Standardization of geographic data. The importance of data geodatabases. Hierarchical and network data geodatabases. The relational model of data geodatabases. Object-oriented and intelligent databases. Spatial database. Manipulation and transformation of geographic data. Query functions. Analytic functions. Arithmetic and logical operations. Statistical functions. Common characteristics of GIS maps. Preparing for the presentation of information. Classification of information. Tabular data. Pictures. 3D and 4D visualization. Compatibility. Web GIS (Characteristics of Web GIS. Functions of Web GIS. The use of Web GIS. Web GIS in the Web 2.0 era). <i>Practical instruction</i> Introduction to ArcGIS software package. Training in ArcReader, the ArcCatalog and ArcMap (databases, georeferencing, digitizing, spatial and attribute queries, buffer analysis, geostatistical analysis, thematic maps, using graphs, creating reports, creating charts, and printing), GPS training and publishing to web.				
Weekly teaching load				Other: -
Lectures: 3	Exercises: 3	Other forms of teaching: -	Student research: -	