Course Unit Descriptor

Study Programme: Geodesy	
Course Unit Title: Geoinformatics 1	
Course Unit Code:	
Name of Lecturer(s): Associate Professor Vukan Ogrizović	
Type and Level of Studies: Bachelor Academic Degree	
Course Status (compulsory/elective): Compulsory	
Semester (winter/summer): Summer	
Language of instruction: English	
Mode of course unit delivery (face-to-face/distance learning): Face-to-face	
Number of ECTS Allocated: 5	
Prerequisites: None	

Course Aims:

Introducing relational databases, geoinformatics and geoinformation systems to students

Learning Outcomes:

After the course completion, the students will be skilled in: creation of relational databases and queries, developing a GIS workplace, input of vector and raster data, georeferencing, production of thematic maps based on map algebra

Syllabus:

Theory

1. Basic terms and applications of geoinformatics.
2. Introduction to relational databases. Relational data model. Structured segment of relational model.
3. Integrity segment of relational model. Primary and foreign key. Triggers.
4. Standard Query Language (SQL). Tables, indexes, and views. Data manipulation.
5. Distributed databases. Client-server systems. Object-oriented databases.
6. Basic principles of geographic information systems. Geospatial data models. GIS data organization. GIS functions.
7. Test I
8. Geospatial databases. Organization of data. Defining projections. Raster and vector data. Hybrid GIS.
9. Raster data. Input and output of raster data. Georeferencing raster data.
10. Vector data. Input and output of vector data. Georeferencing vector data.
11. Managing spatial data.
12. Map algebra. Interpolation and resampling of raster.
13. Metadata management.
14. Discrete transformation of vector data into raster. Interpolation of raster surfaces from contour lines. Models and methods of spatial data presentation. Spatial queries.
15. Test II

Practice

Creation of a relational database. Input, edit, and delete data. Creation of queries and data presentation. Creation of a workspace in a GIS environment. Input of vector and raster spatial data. Georeferencing. Creation of spatial queries. Creation of thematic maps. Visualization of obtained results.

Required Reading:

1. Burrough P.A., McDonnell, R.A.: Принципи географских информационих система, Грађевински факултет Универзитета у Београду, 2006.
2. Neteler, M. and Mitasova, H.: Open source GIS: A GRASS GIS approach, Kluwer Academic Publishers, Boston/Dortrecht/London, 2002.
3. Pavlović-Lažetić, G.: Osnove relacionih baza podataka, drugo izdanje, Matematički fakultet, Beograd, 1999.
4. Williams, H. i Lane D.: Web aplikacije i baze podataka: PHP i SQL, Mikro knjiga, Beograd, 2003.

Weekly Contact Hours: 60	**Lectures:** 30	**Practical work: 30**

Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Test I and Test II	50	oral exam	50
Preliminary exam(s)		…….	
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.