

Study programme: Bachelor with honours in Geography			
Course title: Geospatial databases			
Teacher(s): dr Danijela Tešendić			
Status: elective			
ECTS: 8			
Requirements: none			
Learning objectives			
Introduction to the concept of spatial databases, as well as to methods for storing and searching spatial data.			
Learning outcomes			
After successfully completing this course, students can explain the features of spatial databases, methods for storing data within databases, as well as methods for searching data. Also, students are capable of using case tool to design and creating model of spatial database, creating a database, importing data into database and searching data using SQL queries.			
Syllabus			
<i>Theoretical part:</i>			
Through the first section of the course, students are introduced to the basic concepts of databases, data types, methods for storing and searching data using SQL language. After that, students are introduced to extensions of database that enable storing spatial data. These extensions include geometry data types that allow storing spatial components, as well as SQL language extensions that enable searching spatial data and creating spatial queries. After that, students are introduced to graph data structures and examples of data stored in graphs, as well as the principles of algorithms for searching graphs (connectivity, shortest path).			
<i>Practical part:</i>			
In the practical part of the course, students are introduced to <i>Sybase PowerDesigner</i> case tool. <i>PostgreSQL</i> is used as the database server, all together with <i>PostGIS</i> extension for storing spatial data. <i>PostgreSQL</i> tools and <i>QGIS</i> software are used to access database, insert and search data. The focus is on learning SQL language to create both regular and spatial queries.			
Literature			
1. Shekhar, Shashi, Sanjay Chawla. <i>Spatial databases: a tour</i> . Prentice Hall, 2003.			
2. Obe, Regina O., Leo S. Hsu. <i>PostGIS in action, Second Edition</i> . Manning Publications Co., 2015.			
3. From GPS and Google Maps to Spatial Computing, https://www.coursera.org/course/spatialcomputing			
4. Racković, Miloš, Srđan Škrbić, Jovana Vidaković. <i>Uvod u baze podataka</i> , PMF Novi Sad, 2012.			
Weekly teaching load: 5(75)	Lectures: 3	Exercises: 2	
Methods of Teaching			
Lectures are oral with the use of computer equipment. Exercises are performed in computer classroom where students through practical assignments learn how to use tools and through practical examples illustrate theoretical concepts discussed in lectures.			
Grading method (maximum 100 points)			
Pre-examination assignments	points	Final examination	points
Activities during lectures	10	Oral examination	50
Colloquia	40		