Course Unit Descriptor

Study Programme: Computer Science – Master

Course Unit Title: Geospatial Databases

Course Unit Code: CS707

Name of Lecturer(s): Danijela Tešendić

Type and Level of Studies: Master Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

Language of instruction: Serbian (primary), English (secondary)

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

Introduction to the concept of spatial databases, as well as to methods for storing and searching spatial data.

Learning Outcomes:

Minimum:

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.

Desirable:

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 integrating spatial databases into systems and applications using appropriate libraries.

Syllabus:

Theory

Through the first section of the course, students are introduced with 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 with different approaches to access spatial database from applications, as well as with different methods for manipulation and visualization of spatial data.

Practice

In the practical part of the course, students use PostgreSQL database server, all together with PostGIS extension for storing spatial data. PostgreSQL tools and QGIS software are used to access database, insert and search data. Illustrative applications are implemented using appropriate libraries for manipulation and visualization of spatial data like HibernateSpatial and GeoServer..

Required Reading:

1. Shekhar, Shashi, Sanjay Chawla. Spatial databases: a tour. Prentice Hall, 2003.

2. Obe, Regina O., Leo S. Hsu. PostGIS in action, Second Edition. Manning Publications Co., 2015.

3. Rigaux, Philippe, Michel Scholl, and Agnes Voisard. Spatial databases: with application to GIS. Morgan Kaufmann, 2001.

Weekly Contact Hours: 4	**Lectures:** 2	**Practical work:** 2

Teaching Methods:

Theoretical instruction is oral with the use of computer equipment. Practical instruction is performed in computer classroom where students through practical assignments learn how to use tools and through practical examples illustrate theoretical concepts discussed in lectures.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Test	30	Oral exam	40
Project	30		