Study programme(s):

Level: Bachelor studies

Course title: Geospatial databases

Lecturer:

Status: elective

ECTS: 6

Requirements: None

Learning objectives

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

Theoretical instruction

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.

Practical instruction

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.

Literature

Recommended

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 teaching load				
Lectures: 2	Exercises: 0	Practical Exercises: 2	Student research: 0	Other:

Teaching methodology

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.

Grading method (maximal number of points 100)

Pre-exam oblications	**points**	**Final exam**	**points**
test	**30**	Oral exam	40
project	**30**		