Faculty of Geoengineering

Course title: WEB AND MOBILE GIS

ECTS credit allocation (and other scores): 3

Semester: autumn

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 45

Course coordinator/ Department and e-mail: Tomasz Templin, Ph.D., Institute of Geodesy,
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Type of classes: classes and lectures

Substantive content

CLASSES:
Creating GIS project, working with GIS applications. Imports data from network sources, basemap, adding data from OGC services. Advanced modeling and visualization techniques. Map meshups. Types of geodatabases, design schema and add data to geodatabase, migrating data from external sources. Web Map Server. Web Feature Server. Building a Web Mapping Application. Publishing GIS maps and data with OpenLayer and Google API. Final project.

LECTURES:
Fundamentals of GIS. Distributed systems and Distributed GIS. Mobile GIS, Location-Based Services. Basic components of Distributed GIS. Client- server architecture, Standards for Distributed GIServices. Spatial Data Infrastructure. OGC Web Services standards (WMS, WFS, WCS). Introduction to Spatial Databases. Database Management Systems. Technology evolution of WebMapping. Building a geospatial information system. Applications of Distributed GIS.

Learning purpose:
This course introduces students to the concepts, technology and benefits of distributed geographic information systems (Mobile and Web GIS). It will examine different aspects of theory and technology relating to distributed GIS and leverage multiple software / hardware platforms and networks.

On completion of the study programme the graduate will gain:

Knowledge:
Describe evolution of GIS systems. Know main components of GIS systems. Understand the significance of distributed systems and how it relates to GIS technology. Understand the basics of data storage and role of database management systems, identify framework of web mapping.

Skills:
Design a new GIS project. Organize, integrate and analyze data in various formats. Create geodatabases and import data into them. Demonstrate how to deploy a web map server or web feature server. Use various tools to create distributed web services and mashups.

Social Competencies:
Understand the many impacts distributed technology is having on GIS, and the need to study those impacts.

Basic literature:

1) Longley P.A., Goodchild M., Maguire D.I., Rhind D. W., Geographic Information System and Science, Third Edition, wyd. Wiley & Sons, Ltd., 2011 ;
2) Pinde Fu, Getting to Know Web GIS, wyd. Esri Press, 2019 ;
3) Peng Z.-R., Tsou M.-H., Internet GIS. Distributed Geographic Information. Services for the Internet and Wireless Networks, wyd. John Wiley & Sons, Ltd., 2003.

Supplementary literature:
1) Mitchell T., Web Mapping Illustrated, wyd. O'Reilly, 2005

The allocated number of ECTS points consists of: 75 h.

Contact hours with an academic teacher: 50 h.
Student's independent work: 25 h.