Course title : Geoinformation Science and Spatial Analysis

Course Basic Information	
Academic Unit:	Faculty of Civil Engineering
Course title:	Geoinformation Science and Spatial Analysis
Level:	Master in Geodesy
Course Status:	Mandatory
Year of Study:	Year 1; Semester 2.
Number of Classes per Week:	2+2
ECTS Credits:	6 ECTS
Time /Location:	According to the timetable
Teacher:	Assoc.Prof.Dr. Bashkim Idrizi
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Course Description:	Geoinformation Science and spatial analysis is a course of high importance in geodesy study programme. During this course the students have the opportunity to gain basic theoretical and practical knowledge about GIS, its practical implementation in society problem solving, its components (hardware, software, data and people), data acquisition and integration, spatial analyses, geostatistics, decision making support, management of GI projects, applications and trends in GIS.
Course Goals:	This course aims to teach higher levels of geoinformation science and methods for spatial analyses.
Expected Learning Outcomes:	- Be familiar with key GI concepts and terms - Identify major components of GIS from both technical and organizational point of view - Apply spatial operators, e.g. describing feature shapes as well as spatial patterns, finding a shortest path, model visibility, apply interpolation and explain the differences, advantages and disadvantages between alternative techniques - Recognize problems in using spatial operations - Use geostatistical techniques to solve practical problems - Be able to simulate of spatial processes - Explain benefits of integrating spatial information into general ICT

	- Be able to evaluate results of data analysis, criticize data the process, and defend the conclusion - Discuss reasons why spatial information provides added value - Define typical GIS applications - Support effectively spatial decision process

Student Workload (should be in compliance with student's Learning Outcomes)			
Activity	**Hours**	**Day/ Week**	**Total**
Lectures	2	15	30
Theory/ Lab Work/Exercises	2	15	30
Practical Work			
Consultations with the teacher	1	6	6
Field Work			
Test, seminar paper	4	5	20
Homework	1	10	10
Self-study (library or home)	2	15	30
Preparation for final exam	2	7	14
Assessment time (test, quiz, final exam)	3	2	6
Projects, presentations, etc.	2	2	4
Total			**150**

Teaching Methods:	- *Lecture* - *Discussion during lectures* - *Exercises* - *Work in group*
Assessment Methods:	Prerequisite for assessment: more than 50% attendance in lectures and positive evaluation of seminar paper by the lecturer. First valuation: 15% Second Valuation: 15% Homework: 30% Attendance: 10% Final Exam: 30% Total: 100%
Primary Literature:	1. K. T. Chang: Introduction to Geographic Information Systems, Mc Graw-Hill International Edition, 6th Edition, 2011 2. M. de Smith - P. Longley - M. Goodchild: Geospatial Analysis - A comprehensive guide, Winchelsea Press, 4th Edition, 2012 3. Campbell J.E., Shin M. Geographic Information System Basics. V.1. 2012.
Additional Literature:	1. P. Longley et al.: Geographic Information Systems and Science, 2nd Edition, John Wiley & Sons Ltd., 2005. 2. Kainz W. Geographic Information Science (GIS). 2004.

Designed teaching plan	
Week	**Title of the Lecture**
Week 1:	GIS and its principles, definitions
Week 2:	GIS building blocks (hardware, software, database and human resources)
***Week 3*:**	Data acquisition and data integration
Week 4:	Data handling techniques
Week 5:	Spatial operations
***Week 6*:**	Geostatistics
Week 7:	Network analysis, allocation
Week 8:	First Students Valuation
Week 9:	Digital elevation modelling
Week 10:	Performing spatial data analysis
***Week 11*:**	Spatial decision support
***Week 12*:**	GI project management
***Week 13*:**	Data integration: Catalogs and data sources
***Week 14*:**	GIS application and contemporary trends
***Week 15*:**	Second Students Valuation

Note | If a student has more than 3 class assignments evaluated below 50%, he/she loses the right on taking the final exam. Evaluation is done from 0-100 %.

Academic Policies and Code of Conduct
We start and finish class on time. *Tools used during class must be cleaned and stored away at the end of class.* *Mobile/smart phones, and other electronic devices (e.g. iPods) must be turned off (or on vibrate) and hidden from view during class time.* *Laptop and tablet computers are allowed for quiet use only; other activities such as checking personal e-mail or browsing the Internet are prohibited.*