

Faculty of Maritime Studies / MARITIME SCIENCES / THE USE OF GIS TECHNOLOGIES IN SEAFARING

Course:	THE USE OF GIS TECHNOLOGIES IN SEAFARING			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
8578	Mandatory	1	5	3+1+0
Programs	MARITIME SCIENCES			
Prerequisites	No prerequisites for course enrollment and attending.			
Aims	Introduction with GIS technologies as one of the most powerful tools in the management of geospace, with emphasis on applications in maritime transport and port management. Practical work with several widely available GIS browser.			
Learning outcomes	Show the knowledge of the basic GIS principles, including the structure and quality of the GIS data. Acquire the theoretical knowledge and practical experience for work with GIS in transport and telecommunications. Acquire a knowledge of new ways of acquisitions, collection, storage and processing of GIS images and data. Acquire a knowledge about integration of GPS systems in GIS, and knowledge related to the analysis and presentation of spatial data. Familiarity with one of the selected GIS software. Use of advanced GEO browsers and their integration into complex GIS systems. Manipulation with vector and raster GIS data in MATLAB. Listing the GIS applications in marine.			
Lecturer / Teaching assistant	Prof. Dr. Radovan Stojanović			
Methodology	Lectures, laboratory exercises, team projects, consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction to Geographic Information Systems (GIS).			
I week exercises				
II week lectures	The GIS basics.			
II week exercises				
III week lectures	Space and spatial data. Methods of the collecting and editing of spatial data.			
III week exercises				
IV week lectures	Databases of spatial data, standardization, multi-layer approach.			
IV week exercises				
V week lectures	Applications of GIS in various areas, RFID, GPS, custom GIS software, web integration.			
V week exercises				
VI week lectures	Test I.			
VI week exercises				
VII week lectures	Monitoring of maritime traffic in real time, routing.			
VII week exercises				
VIII week lectures	AIS and GIS integration.			
VIII week exercises				
IX week lectures	Port design, Infrastructure and expansion. The security measures. GIS in the coast guard.			
IX week exercises				
X week lectures	Emergency response, spill monitoring, tracking incidents, rescue.			
X week exercises				
XI week lectures	Occupancy of the berths and schedule. Cargo and "berth time" calculations. GIS in the management of marinas.			
XI week exercises				
XII week lectures	Monitoring of the meteorological data, Visualization of the depth. Digital nautical charts.			
XII week exercises				

XIII week lectures	Work on specific GIS software and projects.					
XIII week exercises						
XIV week lectures	Practical project in teamwork.					
XIV week exercises						
XV week lectures	Test II.					
XV week exercises						
Student workload	Per week 5 credits x 40/30 = 6 hours and 40 minutes Structure: 3 hours of lectures 1 hours of exercises 2 hours and 40 minutes of individual work, including consultation During semester Lectures and final exam: (6 hours and 40 minutes) x 16 = 106 hours and 40 minutes Necessary preparations before the start of the semester: (administration, enrollment, verification) 2 x 6 hours 40 minutes = 13 hours 20 minutes Total subject load: 5 x 30 = 150 hours Additional hours for preparing correction of final exam, including the taking of the exam: from 0 to 30 hours Load structure: 106 hours 40 minutes (Lectures)+ 13 hours 20 minutes (Preparation) + 30 hours (Remedial classes)					
Per week			Per semester			
5 credits x 40/30=6 hours and 40 minuts 3 sat(a) theoretical classes 0 sat(a) practical classes 1 excercises 2 hour(s) i 40 minuts of independent work, including consultations			Classes and final exam: 6 hour(s) i 40 minuts x 16 =106 hour(s) i 40 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 6 hour(s) i 40 minuts x 2 =13 hour(s) i 20 minuts Total workload for the subject: 5 x 30=150 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 30 hour(s) i 0 minuts Workload structure: 106 hour(s) i 40 minuts (courses), 13 hour(s) i 20 minuts (preparation), 30 hour(s) i 0 minuts (additional work)			
Student obligations			Students are obliged to attend lectures, submit homework assignments and take final exam.			
Consultations						
Literature			1. T. Bernahrdsen, GIS: an introduction, 2002, John Wiley and Sons. 2. Verka Jovanović, Branislav Đurđev, Zoran Srđić, Uglješa Stankov, Geografski informacioni sistemi, 2002 in Serbian. 3. R. Amicis, R. Stojanovic, G, Conti, GeoSpatial Visual Analytics			
Examination methods			1. Two test carry 50 points (25 points each). 2. Team project 10 points. 3. Homeworks 5 points (5 homeworks). 4. Attendance 5 points. 5. Final exam 30 points. The exam is passed with 50 or more points in total.			
Special remarks						
Comment						
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points