NAZIV PREDMETA	Prostorna statistika s primjenama						
Kod	PMM501	Godina studija		2. godina diplomskog studija			
Nositelj/i predmeta	Doc.dr.sc. Vesna Gotovac Đogaš	Bodovna vrijednost (ECTS)		4			
Suradnici		Način izvođenja nastave (broj sati u semestru)		P	S	V	T
				30		30	
Status predmeta	Obvezni kolegij	Postotak primjene e-učenja		10%			

OPIS PREDMETA

Ciljevi predmeta	Cilj kolegija je studente upoznati s fundamentalnim konceptima statističke analize prostornih podataka. Naglasak je dan na obradi primjera stvarnih podataka u programskom jeziku Ru.
Uvjeti za upis predmeta i ulazne kompetencije potrebne za predmet	Uvjeti za upis: odsluslušan kolegiji Vjerojatnost I Potrebne kompetencije: poželjno je da student poznaje osnove statističkog zaključivanja, te osnove progamiranja.
Očekivani ishodi učenja na razini predmeta (4-10 ishoda učenja)	Očekuje se da nakon položenog kolegija studenti moći: 1. razlikovati različite tipove prostornih podataka, 2. prepoznati koje metode prostorne statistike koristiti u vlastitom istraživanju te ih primjeniti koristeći R, 3. procjeniti parametere različitih statističkih modela, 4. razumjeti ulogu prostorne autokorelacije u statističkom modeliranju, te ispitati prostornu autokorelaciju na stvarnim primjerima prostornih podataka.
Sadržaj predmeta detaljno razrađen prema satnici nastave	Uvod. Primjeri statističkih problema vezanih uz prostorne podatke (2) Tipovi prostornih podataka (4) Prostorni točkovni podaci i njihova statistička analiza. Procjena parametara modela. Procjena karakteristika (8) Geostatistika i interpolacija. Procjena variograma. Kringing (8) Regionalni podaci. Procjena parametara. Test prostorne autokorelacije (8)

Vrste izvođenja nastave:	☒ predavanja ☐ seminari i radionice ☒ vježbe ☐ on line u cijelosti ☐ mješovito e-učenje ☐ terenska nastava	☐ samostalni zadaci ☐ multimedija ☐ laboratorij ☐ mentorski rad ☐ (ostalo upisati)			
Obveze studenata	Pohađanje nastave, polaganje kolokvija i ispita.				
Praćenje rada studenata *(upisati udio u ECTS bodovima za svaku aktivnost tako da ukupni broj ECTS bodova odgovara*	Pohađanje nastave	**2**	Istraživanje		Praktični rad	
	Eksperimentalni rad		Referat		(Ostalo upisati)	
	Esej		Seminarski rad		(Ostalo upisati)	
	Kolokviji	2	Usmeni ispit	**1**	(Ostalo upisati)	

bodovnoj vrijednosti predmeta):	Pismeni ispit	2	Projekt		(Ostalo upisati)	
Ocjenjivanje i vrjednovanje rada studenata tijekom nastave i na završnom ispitu	Kolokviji, završni pismeni i usmeni ispit.					

Obvezna literatura (dostupna u knjižnici i putem ostalih medija)	**Naslov**	**Broj primjeraka u knjižnici**	**Dostupnost putem ostalih medija**
	Bivand R.S*,* Pebesma E.J., Gómez-Rubio V. : Applied Spatial Data Analysis with R. Springer Science&Business Media, 2008.		

Dopunska literatura	Cressie N.A.C.: Statistics for Spatial Data. Wiley, 1993. Illian J., Penttinen A., Stoyan H., Stoyan D.: Statistical Analysis and Modelling of Spatial Point Patterns. Wiley, 2008. Moller J., Waagepetersen R. P.: Statistical Inference and Simulation for Spatial Point Processes. Chapman&Hall/CRC, 2003. Schabenberger O., Gotway C.: Statistical Models for Spatial Data Analysis. Chapman&Hall/CRC, 2005.
Načini praćenja kvalitete koji osiguravaju stjecanje utvrđenih ishoda učenja	Statistika ispitnih rezultata i studentsko vrednovanje putem anonimne ankete na kraju izvedbe predmeta. Anketa se provodi prema pravilniku Sveučilišta u Splitu.
Ostalo (prema mišljenju predlagatelja)	

COURSE TITLE	Applied spatial statistics				
Code		Year of study	2. D, III. semester		
Course coordinator(s)		Credit value (ECTS)	**5**		
Associates		Course delivery types (hours per semester)	L	S	P	T
			30		30	
Course status	Obligatory	E-learning percentage	10%		
COURSE DESCRIPTION					
Course objectives	The aim of the course is to introduce students with the fundamentals of statistical analysis for spatial data. The emphasis is on statistical analysis of real data examples using programming language R.				
Course admission requirements and entrance competences required	The student must have completed the following course: Probability I Previous knowledge required: Students should have a basic background in statistics and programing.				
Expected learning outcomes at a course level (4-10 outcomes)	1. Distinguish different types of spatial data, 2. determine which spatial methods to use to in their own research and implement them using statistical software R, 3. estimate parameters of different statistical models, 4. understand how spatial autocorrelation plays a role in statistical modelling and use existing methods to investigate spatial autocorrelation in example datasets provided.				
Course content elaborated in detail according to the timetable	Introduction. Examples of statistical problems in spatial data analysis. (2) Types of spatial data (4) Statistics of point processes. Estimation of characteristics. Hypothesis testing. Model parameter estimation. (8) Geostatistics. Estimation of variogram. Kriging. (8) Areal data. Parameter estimation. Spatial autocorrelation tests. (8)				
Course delivery types	☒ lectures ☐ seminars and workshops ☒ tutorials ☐ completely *on line* ☐ mixed e-learning ☐ field teaching	☐ independent tasks ☐ multimedia ☐ laboratory ☐ mentorship work ☐ (note down other types)			

Students' duties	Class attendance and taking partial and final exams.					
Following up students' work *(note down ECTS credits for each activity so that the total of ECTS credits matches the course credit value):*	Course attendance	2	Researching		Practical work	
	Experimental work		Term paper		(note down other types)	
	Essay		Seminar paper		(note down other types)	
	Preliminary exams	2	Oral exam	1	(note down other types)	
	Written exam	2	Project		(note down other types)	
Grading and evaluating students' work during the course and in the final exam	Partial exams, written exam and oral exam.					

Obligatory reading list (available in the library and in other media)	**Title**	**Number of copies in the library**	**Available in other media**
	Bivand R.S, Pebesma E.J., Gómez-Rubio V. : Applied Spatial Data Analysis with R. Springer Science&Business Media, 2008.		

Additional reading list	Cressie N.A.C.: Statistics for Spatial Data. Wiley, 1993. Illian J., Penttinen A., Stoyan H., Stoyan D.: Statistical Analysis and Modelling of Spatial Point Patterns. Wiley, 2008. Moller J., Waagepetersen R. P.: Statistical Inference and Simulation for Spatial Point Processes. Chapman&Hall/CRC, 2003. Schabenberger O., Gotway C.: Statistical Models for Spatial Data Analysis. Chapman&Hall/CRC, 2005.
The ways of a quality follow-up which enable acquisition of the defined learning outcomes	Student evaluations following completion of the course. The evaluations are administered according to the regulations of the University of Split.
Other (according to the proposer's opinion)	