COURSE TITLE	Applied spatial statistics						
Code	PMM501	Year of study	2. D, III. semester				
Course coordinator(s)	Doc.dr.sc. Vesna Gotovac	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.

<table>
<tr><td rowspan="4">Obligatory reading list (available in the library and in other media)</td><th>Title</th><th>Number of copies in the library</th><th>Available in other media</th></tr>
<tr><td>Bivand R.S, Pebesma E.J., Gómez-Rubio V. : Applied Spatial Data Analysis with R. Springer Science&Business Media, 2008.</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Additional reading list</td><td colspan="3">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.</td></tr>
<tr><td>The ways of a quality follow-up which enable acquisition of the defined learning outcomes</td><td colspan="3">Student evaluations following completion of the course. The evaluations are administered according to the regulations of the University of Split.</td></tr>
<tr><td>Other (according to the proposer's opinion)</td><td colspan="3"></td></tr>
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