NAME OF THE COURSE	Modeling and Simulation				
Code	PMII80	Year of study	2nd year of undergraduate study		
Course teacher	doc.dr.sc Marin Kosović	Credits (ECTS)	6		
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30		30	
Status of the course	Obligatory	Percentage of application of e-learning	50			

COURSE DESCRIPTION

Course objectives	To teach students basic steps in the process of modeling and the applications to solving simpler problems in physics and other sciences.
Course enrolment requirements and entry competences required for the course	Basic knowledge of calculus of one variable.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	After the course the student will: - understand basic steps in the process of modeling - know how to apply the simulation tools in solving the considered and similar problems - be able to visualize and critically evaluate obtained results - understand basic considered physics concepts and relations
Course content broken down in detail by weekly class schedule (syllabus)	Model classifications. The modeling process. Simulation tools. Modelling rate of change. Simulation techniques. Force and motion (falling, bungee jumping, pendulums). Conservation of energy and momentum. Rocket motion. Ideal gas laws and scuba diving. Unconstrained and constrained growth. Modeling radioactive decay. Competition. Drug dosage. Electrical circuits. Spread of disease. Global warming. Empirical models. Stochastic modeling and simulation.
Format of instruction	☒ lectures ☐ seminars and workshops ☐ exercises ☐ *on line* in entirety ☒ partial e-learning ☐ field work ☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Active participation in class.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Presentations and models, different web pages		moodle
	Angela B. Shiflet and George W. Shiflet, Introduction to Computational Science: Modeling and Simulation for the Sciences		

Optional literature (at the time of submission of study programme proposal)	Halliday, Resnick, Walker: „Fundamentals of physics“		
Quality assurance methods that ensure the acquisition of exit competences	- following the success of students in colloquia and exams - following the student success in the following exams and the connection to the success of this course - student surveys		
Other (as the proposer wishes to add)			