1.1. Course description

NAME OF THE COURSE	Mathematical Methods of Physics II					
Code	PMP101	Year of study	II.			
Course teacher	Associate professor Željana Bonačić Lošić	Credits (ECTS)	6,0			
Associate teachers		Type of instruction (number of hours)	P	S	V	T
			45	0	30	0
Status of the course	Obligatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	The understanding and the ability to apply appropriate mathematical methods to analyze and solve physical problems.					
Course enrolment requirements and entry competences required for the course	Mathematics I and Mathematics II.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	The understanding and the ability to test a function for analyticity. The ability to identify and classify singular points of functions. Familiarity with methods for performing real and complex variable integrals by complex contour integration and realizing some applications in physics. Understanding and ability to apply Fourier series and transformations methods in solving physical problems. Basic understanding of the appearance and the characteristics of the chaotic behavior of dynamical systems.					
Course content broken down in detail by weekly class schedule (syllabus)	Functions of a complex variable. Cauchy –Riemann Conditions. Analytic Functions. Cauchy's Integral Theorem. Cauchy's Integral Formula. Laurent Expansion. Singularities. Calculus of Residues. Evaluation of Definite Integrals. Fourier series. Fourier transformation. Introduction to Nonlinear Methods and Chaos. Logistic map. Sensitivity to Initial Conditions and Parameters.					
Format of instruction	Frontal lectures using interactive simulations and computing examples. Problem solving analytically and with computer in exercise classes. Giving problems to students for home exercise.					
Student responsibilities						
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)*	Written (4 ECTS) and oral (2 ECTS) exam.					
Grading and evaluating student work in class and at the final exam						
Required literature						

(available in the library and via other media)	1. H. J. Weber , G. B. Arfken, G. Arfken, Essential Mathematical Methods for Physicists, Academic Press, 2003.
Optional literature (at the time of submission of study programme proposal)	1. K. F. Riley, M. P. Hobson, S. J. Bence, Mathematical methods for physics and engeneering 2. E. Butkov, Mathematical physics, Addison - Wesley Publishing Company Inc., 1968. 3. Numerical Recipes in C and FORTRAN, The Art of Scientific Computing, Press, Teukolsky, Vetterling and Flannery, (Cambridge University Press, 1993)
Quality assurance methods that ensure the acquisition of exit competences	Student surveys.
Other (as the proposer wishes to add)	