

Study program : Mathematics			
Type and level of studies: Undergraduate academic studies			
Course unit: Differential Equations			
Teacher in charge : Bojana Borovicnin, Assistant Professor			
Language of instruction : <i>English</i>			
ECTS: 7			
Prerequisites: None			
Semester : <i>Winter Semester</i>			
Course unit objective Introducing students to some parts of the theory of ordinary differential equations (first order differential equations, higher order differential equations, systems of differential equations, problems of existence and uniqueness of solutions) and providing an insight into the possibility of applying differential equations in modeling different physical, technical or biological processes.			
Learning outcomes of Course unit Students have the ability to apply the acquired knowledge and mathematical methods in solving various theoretical and practical problems.			
Course unit contents Theoretical classes First order differential equations. Introduction and definitions. Modeling via differential equations. Separable equations. Homogenous, linear, Bernoulli, Riccati equations. Exact and non-exact equations. Integrating factor technique. Existence and uniqueness of solutions. Higher order differential equations. Introduction and basic results. Homogenous linear equations with constant coefficients. Non-homogenous linear equations. Method of undetermined coefficients. Method of variation of parameters. Systems of differential equations. Normal systems of differential equations. Integral of a system of differential equations. Practical classes The application of theoretical knowledge to solve problems and tasks in these areas.			
Literature 1. W.E. Boyce, R. C. DiPrima, <i>Elementary Differential Equations and Boundary Value Problems</i> , Wiley, 2009. 2. G. Teschl, <i>Ordinary Differential Equations and Dynamical Systems</i> , AMS, 2012. 3. V. I. Arnol'd, <i>Ordinary Differential Equations</i> , Springer, 1992.			
Number of active teaching hours			Other classes
Lectures: 3	Practice: 3	Other forms of classes: 0	
Teaching methods Presentation and discussions, consultation with the professor			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	4	oral examination	50
practical classes/tests	46	written examination	
Seminars/homework		
Project			
Other			
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	

6	51-60	Passing
5	0-50	Failing

(Table 5.2) Course unit description