Course title: Differential and Integral Equations	**Neptun code:** **GEMAN411-a**
Course coordinator: Dr. Péter Varga, PhD, associate professor	
type of lesson and number of lessons: **lecture (2)**	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions *(if any)*: No prerequisite subject, but the student is expected to be familiar with Linear Algebra and Calculus. It is recommended that the GEMAN402-a Modern Analysis course is completed beforehand.	
The task and purpose of the subject:	
The course provides a introduction to certain topics of the theory of differential equations, usually not covered at Bachelor or MSc levels. The content of the course depends on the interest and the prior knowledge of the participants.	
Course description:	
The objective of the course is to deepen the students' knowledge of the theory of differential equations. The topics of the course is dependent on the interest and knowledge of the participants. The list of topics inculdes: (I.) Existence theorems for ordinary differential equations and their connections to integral equations, (II.) Qualitative behaviour of the solutions of ODE, chaotic and periodic solutions, (III.) Finite elements and finite differences methods and their connections to the concepts of modern analysis.	
Required literature:	
1. Peter Olver: Introduction to partial differential equations. (Springer, 2014) 2. I. Stakgold and M. Holst: Green's functions and boundary value problems. (Wiley, 2011) 3. C. Edwards and D. Penney. Elementary Differential Equations with Boundary Value Problems. (Prentice Hall, 2003)	
Recommended literature:	
1. Differential equations. MIT-OCW course notes; https://ocw.mit.edu/courses/18-03-differential-equations-spring-2010/ 2. Paul Dawkins: Differential equations. 3. https://tutorial.math.lamar.edu/classes/de/de.aspx *These items are especially useful for students with little background for this course.*	