COURSE DESCRIPTION

Course title	Course unit code
Integral Equations	MM110IE

Lecturer (s)	Department where the course unit is delivered
Coordinator: assoc. prof. Kristina Kaulakytė	**Faculty of Mathematics and Informatics** **Naugarduko str. 24, LT-03225 Vilnius**

Cycle	Level of the course	Type of the course
second	**1**	**Optional**

Mode of delivery	Semester or period when the course is delivered	Language of instruction
face-to-face	**1ˢᵗ semester (Fall)**	**Lithuanian/English**

Prerequisites and corequisites	
Prerequisites: Functional Analysis, Algebra	**Corequisites (if any): -**

Number of ECTS credits allocated	Student's workload	Contact hours	Individual work
5	**130**	**32**	**98**

Purpose of the course: programme competences to be developed		
The aim of the course is to develop life-long learning skills and to increase knowledge of mathematical theory and methods related to integral equations.		
Learning outcomes of the course: students will be able to	**Teaching and learning methods**	**Assessment methods**
select and apply various strategies and methods of learning	Lecture, Individual reading	Exam (written)
understand the concepts, methods and structure of integral equations theory		
formulate (verbally or in text) ideas, propositions and proofs of integral equations theory using the appropriate language		
solve mathematical problems using techniques from integral equations theory		

Course content: breakdown of the topics	Contact hours						Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Practice classes	Assessment	Contact hours	Individual work	Assignments
1. Integral equations and their classification. Volterra integral equations of the first and the second kind.	6					6	16	Individual reading, problem solving [Kleiza §1], [Tricomi §1]
2. Fredholm equations of the second kind with degenerate kernel.	6					6	16	Individual reading, problem solving [Kleiza §2]
3. Fredholm equations of the second kind in general case, when kernel belongs to L_2.	8					8	16	Individual reading, problem solving [Kleiza §3]
4. Fredholm equations of the second kind with symmetric kernel.	8					8	16	Individual reading, problem solving [Kleiza §5]
5. Fredholm equations of the first kind. Methods of regularization.	4					4	16	Individual reading, problem solving [Kleiza §6]
6. Exam (written)							18	Preparation for the exam
Total:	**32**					**32**	**98**	

Assessment strategy	Weight %	Deadline	Assessment criteria
Exam	100%	At the end of a semester	Exam consists of theoretical questions and exercises. Exam is evaluated in ten point system.

Author	Publishing year	Title	Publisher or URL
Required reading			
J. Kleiza	2011	Integralinės lygtys	Vilnius Technika
F. G. Tricomi	1957	Integral equations	Dover Publ., New York
Recommended reading			
J. P. Collins	2006	Differential and Integral Equations	Oxford University Press
J. Kondo	1997	Integral equations	Clarendon Press, Oxford