

表 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Integral equations, PG_00023813							
Field of study	Mathematics							
Date of commencement of studies	October 2022		Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies		Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery			blended-learning		
Year of study	2		Language of instruction			Polish		
Semester of study	3		ECTS credits			4.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Department of Differential Equations and Mathematical Applications -> Faculty of Applied Physics and Mathematics						sics and	
Name and surname of lecturer (lecturers)	Subject supervisor		dr Agnieszka Bartłomiejczyk					
	Teachers	Bartłomiejczyk						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	15.0		0.0	60
	E-learning hours included: 30.0							
Learning activity and number of study hours	Learning activity Participation ir classes includ		I didactic Participation in consultation hours		Self-study SUM			
	Number of study hours	60		5.0		35.0		100
Subject objectives	The aim of the course is to provide students with knowledge of the integral equations and present analytical manners of solving them.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	K7_K02		Student prepares himself a presentation related to the topic of the lecture			[SK3] Assessment of ability to organize work [SK2] Assessment of progress of work		
	K7_U03		Student is able to solve differential and integral equations in various ways			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
	K7_W04		Student knows different types of integral equations and their properties			[SW1] Assessment of factual knowledge		
	K7_U04		Student is able to solve differential and integral equations in various ways			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
	K7_W07		Student knows different types of integral equations and their properties			[SW1] Assessment of factual knowledge		

Subject contents	Lectures include the following topics:							
	1. Preliminaries from functional analysis (spaces, operators)							
	2. Integral operators							
	3. Elements of spectral theory							
	4. Fredholm theory							
	5. Hilbert-Schmidt theory							
	Various methods for solving integral equations will be additionally discussed in the exercises and project.							
Prereguisites	Ordinary and partial differential equations							
and co-requisites	Functional analysis							
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade					
and criteria	presentation/project	30.0%	20.0%					
	two colloquia	50.0%	60.0%					
	test	50.0%	20.0%					
Recommended reading		 Warszawa, 1982 3. A. Piskorek, <i>Równania całkowe. Elementy teorii i zastosowania</i>, WNT, Warszawa, 1997 3. S.B.Leble, Równania całkowe w fizyce i technice, skrypt dla studentów WFTiMS PG, Politechnika Gdańska, 2012, www.mif.pg.gda.pl/homepages/leble/Lectures/RC.pdf 4. J.Chmieliński, Analiza funkcjonalna, Wydawnictwo Naukowe Akademii Pedagogicznej, Kraków, 1999 						
	 Supplementary literature 1. M. A. Krasnosielski i in., <i>Równania całkowe</i>, Warszawa, WN 2. M. L. Krasnov i in., <i>Zadania z równań całkowych</i>, Warszawa, 1972 3. W. I. Smirnov, <i>Matematyka wyższa</i>, Warszawa, PWN, 1961 							
	eResources addresses	Adresy na platformie eNauczanie: Równania całkowe 2023/2024 - Moodle ID: 32758 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32758						
Example issues/ example questions/	Association of integral equations with differential equations							
tasks being completed	Classification of integral equations							
Work placement	Not applicable							