

Subject card

Subject name and code	Independent Propositions in Set Theory, PG_00208678						
Field of study	Mathematics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		6.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Rafał Filipów				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	60		10.0		80.0	150
Subject objectives	The aim of the course is to familiarize students with forcing theory and its applications.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MATL3_K01] is ready to accept the limitations of his/her own knowledge and understands the need for further education	Knows the limitations of his/her own knowledge and understands the need for further education.	[SK8] observation of student's independent or team work
	[MATL3_K06] is ready to formulate opinions on basic mathematical issues	Can formulate opinions on basic mathematical issues.	[SK8] observation of student's independent or team work
	[MATL3_U08] is able to formulate definitions and theorems in an understandable way, both orally and in writing, and present correct mathematical reasoning regarding the acquired issues	Verifies basic properties and proves simple facts about forcing and its applications	[SU4] test/exam - oral or written
	[MATL3_U09] is able to plan how to solve a specific problem and prepare a correct record of this solution, providing strict and precise justification for the correctness of his reasoning	Verifies basic properties and proves simple facts about forcing and its applications	[SU4] test/exam - oral or written
	[MATL3_K04] is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; is willing to act ethically	Understands and appreciates the importance of intellectual honesty in one's own and others' actions and acts ethically.	[SK8] observation of student's independent or team work
	[MATL3_K02] is ready to precisely formulate questions to deepen his/her own understanding of a given topic or to find missing elements of reasoning	Can formulate precise questions to deepen one's own understanding of a given topic or find missing elements of reasoning.	[SK8] observation of student's independent or team work
	[MATL3_W09] knows and understands the role and importance of proof in mathematics, as well as the concept of the importance of assumptions	Knows and understands the basic concepts, theorems, and methods of forcing and its applications	[SW4] test/exam - oral or written
Subject contents	1. Axioms of ZFC Set Theory 2. Partially Ordered Sets 3. Fundamental Theorems of Forcing Theory 4. Forcing Examples 5. Applications of Forcing Theory in Infinite Combinatorics		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	51.0%	50.0%
	tests	51.0%	50.0%
	observation of the student's attitude	51.0%	0.0%
Recommended reading	Basic literature	1. K. Kunen, Set Theory 2. T. Jech, Set Theory	
	Supplementary literature	1. T. Bartoszyński and H. Judah, Set theory. On the structure of the real line 2. A. Blass, Combinatorial Cardinal Characteristics of the Continuum	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Write a definition of a generic extension. 2. Prove the independence of the continuum hypothesis. 3. Write a definition of an unbounded number b and a dominant number d . 4. Prove the consistency of the inequality b less than d .		
Work placement	Not applicable		

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