

Subject card

Subject name and code	Seminar - solving maths problems for maths teachers, PG_00178990						
Field of study	Mathematics						
Date of commencement of studies	October 2023		Academic year of realisation of subject			2025/2026	
Education level	Bachelor's studies		Subject group			Optional subject group	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	3		Language of instruction			Polish	
Semester of study	6		ECTS credits			6.0	
Learning profile	academic		Assessment form			exam	
Conducting unit	Division of Didactics of Mathematics -> Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Elżbieta Mrożek				
	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	Deepening and broadening students knowledge of school mathematics						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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	The analyses confirm mathematical theorems and enable the use of tasks at the IV educational level.	[SU4] test/exam - oral or written [SU8] observation of student's independent or team work
	[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	The analyses confirm mathematical theorems and enable the use of tasks at the IV educational level.	[SU4] test/exam - oral or written
	[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	Is able to formulate questions that serve to deepen one's understanding of a given topic.	[SK4] test/exam - oral or written [SK8] observation of student's independent or team work
	[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	Acts ethically, works independently on assigned tasks if required, especially on tests verifying the knowledge acquired.	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work
	[MATL3_K01] is ready to accept the limitations of his/her own knowledge and understands the need for further education	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	Is able to formulate opinions on basic mathematical issues.	[SK4] test/exam - oral or written [SK8] observation of student's independent or team work
Subject contents	[MATL3_W09] knows and understands the role and importance of proof in mathematics, as well as the concept of the importance of assumptions	Can use mathematical formalism to create simple mathematical models.	[SW4] test/exam - oral or written [SW5] implementation of a problem task
	1. Mathematics in the integral process of education.		
	2. Shaping elementary mathematical concepts and methods of introducing students to definitions.		
	3. Teaching mathematics: problem-based, realistic, text problems and their solution.		
	4. Types of reasoning: empirical, intuitive, formal.		
	5. Problematic, construction problems concerning issues implemented in upper secondary school at an advanced level.		
	6. Mathematical reasoning (proofs).		
Assessment methods and criteria	7. Solving and constructing examination tasks at an advanced level of the 4th stage of education.		
	Prerequisites and co-requisites		
	Subject passing criteria	Passing threshold	Percentage of the final grade
	observation of the student's attitude	51.0%	0.0%
	exam	51.0%	50.0%
	test	51.0%	30.0%
	activity	51.0%	20.0%

Recommended reading	Basic literature	[1] S. Kopański, In Search of Mathematical Talents, Wydawnictwo Dla Szkoły, 2003 [2] A. Birkholc, Mathematical Analysis for Teachers, PWN [3] W. Żakowski, Mathematics for Candidates for Higher Education [4] G. Polya, How to Solve?, PWN 1964 [5] Collections of Matura exam tasks at an advanced level [6] Collections of tasks and school textbooks
	Supplementary literature	[1] M. Szurek, On Teaching Mathematics, GWO 2005
	eResources addresses	
Example issues/ example questions/ tasks being completed	not included	
Work placement	Not applicable	

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