

Subject card

Subject name and code	Didactics of mathematics in secondary school II, PG_00155429						
Field of study	Mathematics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Optional subject group Specialty 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	3		ECTS credits		5.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Agnieszka Demby				
	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		5.0		60.0	125
Subject objectives	The aim of the course is to prepare students in the field of mathematics didactics to teach mathematics at post-primary school level.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[MATMU2_K01] is willing to acknowledge the limitations of his or her own knowledge and is willing to pursue further education		Is willing to acknowledge the limitations of his or her own knowledge and is willing to pursue further education.		[SK8] observation of student's independent or team work		
	[MATMU2_K04] is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; ethical conduct		Is ready to understand and appreciate the importance of intellectual honesty in one's own and others' actions; ethical conduct.		[SK8] observation of student's independent or team work		

Subject contents	1. Teaching mathematics in relation to mathematics as a scientific discipline. 2. Introducing mathematical concepts in secondary school. Learning to use theorems and proofs. 3. Objectives and content of teaching mathematics in secondary school, including in the context of matriculation exam requirements. 4. Analysis of proposals for detailed methodological solutions. Formal and intuitive aspects of different approaches. 5. Solving tasks from selected areas of mathematics implemented in secondary school with particular attention to matriculation exam tasks. Reflection on different ways of solving and their adequacy for different groups of students. 6. Characteristic difficulties of students in selected issues of mathematics in secondary school. 7. Mathematical modelling as preparation for solving problems from various areas of science and life. 8. Methodology of solving tasks. 9. A review of current school programs and textbooks for mathematics. Criteria for assessing school programs and textbooks. 10. Didactic methods and resources adequate for teaching mathematics in secondary school. Visualizations. Use of new technologies. 11. Introducing students to independent learning of mathematics and self-control. 12. Selected aspects of monitoring and assessing students. Diagnosing students, including diagnosis after primary school. 13. Individualization problems of students' work: specifics of working with students with excessive difficulties, stimulating the development of a student gifted in mathematics.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria Test Project Observation of student's attitude Activity Exam	Passing threshold 51.0% 51.0% 51.0% 51.0% 51.0%	Percentage of the final grade 25.0% 25.0% 0.0% 15.0% 35.0%
Recommended reading	Basic literature	1. Articles selected for the subject topic from the magazines "Dydaktyka Matematyki", "Matematyka", "Matematyka w Szkole". 2. Websites devoted to the theory of mathematics didactics and practical solutions and good practices in this area of teaching mathematics in secondary school. 3. Education law documents and guidelines of the Central Examination Board on the organization of the Matura exam. Proposals of educational publishers on the methodology of preparing students for the Matura exam. Collections of tasks and Matura exam papers. 4. Examples of mathematics teaching programs and didactic plans as well as textbooks and collections of tasks for teaching mathematics in secondary school. 5. Books and articles of a methodological nature.	
	Supplementary literature	1. Gucewicz-Sawicka (red.), Podstawowe zagadnienia dydaktyki matematyki, PWN, Warszawa 1982. 2. S. Turnau: Wykłady o nauczaniu matematyki, PWN, Warszawa 1991. 3. P.Zarzycki: Dydaktyka matematyki. Zagadnienia ogólne, PWN, Warszawa 2023. 4. P.Zarzycki: Dydaktyka matematyki. Nauczanie w szkole ponadpodstawowej, PWN, Warszawa 2023. 5. Books and articles of a popular science nature.	
	eResources addresses		

Example issues/ example questions/ tasks being completed	Provide 3 methodological tips for teachers preparing students for the Matura exam in mathematics, concerning: a) organization of revision of the material, b) work with different types of tasks appearing in the Matura exam, c) strategies for working with the Matura exam paper.
Work placement	Not applicable

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