

Subject card

Subject name and code	Modeling in School Mathematics, PG_00204262						
Field of study	Mathematics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2028/2029		
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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			5.0		
Learning profile	academic	Assessment form			credit		
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 Mrozek				
	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		3.0		62.0	125
Subject objectives	The aim of the lecture is to discuss the most important mathematical concepts appearing in school mathematics and to familiarize students with the different methods of introducing these concepts depending on the level of education.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[MATL3_W06] knows and understands at an advanced level the structure of selected mathematical theories, is able to use mathematical formalism to build and analyze mathematical models		The student understands the meaning and significance of the construction of mathematical reasoning; knows software packages that provide data for symbolic calculations, for statistical calculations, for visualization and for learning geometry in order to build mathematical models.			[SW4] test/exam - oral or written [SW2] presentation/project/paper/report	
Subject contents	<p>1. Modeling concepts in school mathematics - the position of modeling in school documentation (core curriculum, examination requirements, curricula)</p> <p>2. Basic concepts of school mathematics and their modeling - natural numbers, fractions, integers - length, area and volume - function - probability</p> <p>3. Visualization of selected mathematical concepts and mathematical theorems.</p> <p>4. The role of DGS (dynamic geometry software) in shaping geometric intuitions.</p> <p>5. Mathematical simulations and animations.</p>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	activity	51.0%	20.0%
	observation of the student's attitude	51.0%	0.0%
	exam	51.0%	60.0%
	project	51.0%	20.0%
Recommended reading	Basic literature	<p>1. D. Haylock, Mathematics explained for primary teachers, SAGE, London 2010</p> <p>2. S. Lang, Młodzi i macieka, GWO, Gdańsk 1995</p> <p>3. J. Mason, L. Burton, K. Stacey, Mathematical thinking, WSiP, Warsaw 2005</p> <p>4. A. Płocki, Probability calculus for teachers, PWN, Warsaw 1981</p> <p>5. W. W. Sawyer, Figurative thinking in elementary mathematics, Wiedza Powszechna, Warsaw 1988</p> <p>6. S. Turnau, Lectures on teaching mathematics, PWN, Warsaw 1990</p> <p>7. P. Zarzycki, Modeling mathematical concepts, University of Gdańsk Publishing House, Gdańsk, 2019</p> <p>8. Articles from magazines for teachers (Mathematics, Mathematics in School etc.)</p>	
	Supplementary literature	not applicable	
	eResources addresses		
Example issues/ example questions/ tasks being completed	not applicable		
Work placement	Not applicable		

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