



Subject card

Subject name and code	Mathematical Analysis, PG_00021019						
Field of study	Mathematics						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2021/2022		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			9.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Zdzisław Dzedzej					
	Teachers	mgr inż. Tomasz Gzella dr hab. Zdzisław Dzedzej					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	60.0	60.0	0.0	0.0	0.0	120
	E-learning hours included: 62.0						
Adresy na platformie eNauczanie: Analiza Matematyczna 1 MAT 1001/1 - Nowy - Moodle ID: 17222 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17222							
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	120	5.0	100.0	225		
Subject objectives	To familiarize students with the basic tools of mathematical analysis.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W07	knowledge of derivatives and their properties, and integral calculus			[SW1] Assessment of factual knowledge		
	K6_U06	calculates simple integrals and geometric applications			[SU4] Assessment of ability to use methods and tools		
	K6_U04	calculates limits of sequences and functions, verifies series for convergence			[SU4] Assessment of ability to use methods and tools		
	K6_U02	simple deduction, verification of theorems and definitions on examples			[SU3] Assessment of ability to use knowledge gained from the subject		
K6_W02	knowledge of basic theorems and definitions			[SW1] Assessment of factual knowledge			

Subject contents	<p>1. Real numbers.</p> <p>2. Theory of sequences of numbers.</p> <p>3. Theory of series.</p> <p>4. Limit of a function. Continuity of a function.</p> <p>5. Differentiability of a function.</p> <p>6. Theory of Riemann integral.</p> <p>7. Indefinite integral.</p> <p>8. Improper integral.</p> <p>9. Sequences and series of functions.</p>																				
Prerequisites and co-requisites	No requirements																				
Assessment methods and criteria	<table border="1" data-bbox="448 860 1493 1070"> <thead> <tr> <th data-bbox="448 860 794 898">Subject passing criteria</th> <th data-bbox="794 860 1141 898">Passing threshold</th> <th data-bbox="1141 860 1493 898">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 898 794 931">Test no. 1</td> <td data-bbox="794 898 1141 931">50.0%</td> <td data-bbox="1141 898 1493 931">27.0%</td> </tr> <tr> <td data-bbox="448 931 794 965">Test no. 2</td> <td data-bbox="794 931 1141 965">50.0%</td> <td data-bbox="1141 931 1493 965">27.0%</td> </tr> <tr> <td data-bbox="448 965 794 999">Activity in the classes</td> <td data-bbox="794 965 1141 999">0.0%</td> <td data-bbox="1141 965 1493 999">9.0%</td> </tr> <tr> <td data-bbox="448 999 794 1032">Activity at the lectures</td> <td data-bbox="794 999 1141 1032">0.0%</td> <td data-bbox="1141 999 1493 1032">9.0%</td> </tr> <tr> <td data-bbox="448 1032 794 1070">Exam</td> <td data-bbox="794 1032 1141 1070">50.0%</td> <td data-bbox="1141 1032 1493 1070">28.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Test no. 1	50.0%	27.0%	Test no. 2	50.0%	27.0%	Activity in the classes	0.0%	9.0%	Activity at the lectures	0.0%	9.0%	Exam	50.0%	28.0%
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Recommended reading	Basic literature	<p>1. W. Kołodziej, Analiza matematyczna, Wydawnictwo Naukowe PWN, Warszawa, 2009</p> <p>2. W. Kryszeński, Wykład analizy matematycznej, cz. I, Funkcje jednej zmiennej, Wydawnictwo Naukowe UMK, Toruń, 2009</p> <p>3. J. Jost, Postmodern Analysis, Universitext, Springer, Berlin, 2005</p>																			
	Supplementary literature	<p>1. R. Rudnicki, Wykłady z analizy matematycznej, Wydawnictwo Naukowe PWN, Warszawa, 2006</p> <p>2. W. Rudin, Podstawy analizy matematycznej, Wydawnictwo Naukowe PWN, Warszawa, 2009</p> <p>3. K. Kuratowski, Rachunek różniczkowy i całkowy, PWN, Warszawa, 1964</p> <p>4. G.M. Fichtenholz, Rachunek różniczkowy i całkowy, Tom 1, Wydawnictwo Naukowe PWN 2007</p> <p>5. K. Maurin, Analiza, Tom 1, Wydawnictwo Naukowe PWN, Warszawa, 2010</p>																			
	eResources addresses	<p>Analiza Matematyczna 1 MAT 1001/1 - Nowy - Moodle ID: 17222 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17222</p>																			

<p>Example issues/ example questions/ tasks being completed</p>	<ul style="list-style-type: none"> • Calculate the limit of a sequence. • Calculate the limit of a function. • Check the continuity of a function. • Check the differentiability of a function. • Calculate the derivative of a function. • Find an antiderivative of a function. • Calculate a Riemann integral. • Examine the convergence of a series. • Calculate the sum of a series.
<p>Work placement</p>	<p>Not applicable</p>