



## Subject card

Subject name and code	Mathematics 2, PG_00042017						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2020/2021		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	2	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Mathematics Center -> Vice-Rector for Education						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Magdalena Łapińska				
	Teachers		dr inż. Magdalena Łapińska				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	45.0	45.0	0.0	0.0	0.0	90
	E-learning hours included: 0.0						
	Adresy na platformie eNauczenie: ET - Mathematics 2 2020/2021 (M.Łapińska) - Moodle ID: 11552 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=11552">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=11552</a>						
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	90		15.0		45.0	150
Subject objectives	Students obtain competence in using methods of mathematical analysis and differential equations, and knowledge how to solve simple problems that are found in the field of engineering.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U02		The student uses mathematical methods to analyze and design energy elements. Student is able to process the acquired information, analyze and interpret it, draw conclusions and reason opinions.		[SU3] Assessment of ability to use knowledge gained from the subject		
K6_W01		Student combines knowledge of mathematics with knowledge from other fields.		[SW1] Assessment of factual knowledge			

Subject contents	<p>Improper Integrals</p> <p>Ordinary differential equations</p> <p>Sequences and Series</p> <ul style="list-style-type: none"> <li>• definitions, monotonicity, boundedness, limits</li> <li>• convergence tests</li> </ul> <p>Function series:</p> <ul style="list-style-type: none"> <li>• power Taylor, McLaurin series, radius of convergence</li> <li>• information about Fourier series</li> </ul> <p>Multivariable Calculus</p> <ul style="list-style-type: none"> <li>• partial derivatives, directional derivatives, applications</li> <li>• double and triple integrals</li> </ul> <p>Elements of Vector Calculus</p> <ul style="list-style-type: none"> <li>• line integral over scalar and vector fields</li> <li>• information about surface integrals</li> </ul> <p>Complex functions</p> <ul style="list-style-type: none"> <li>• derivatives of complex functions</li> <li>• holomorphic functions</li> <li>• conformal mapping</li> <li>• integrals of complex functions</li> <li>• Taylor and Laurent series</li> </ul>											
Prerequisites and co-requisites	Working knowledge of the concepts of the first semester of mathematics.											
Assessment methods and criteria	<table border="1" data-bbox="448 965 1485 1066"> <thead> <tr> <th data-bbox="448 965 794 994">Subject passing criteria</th> <th data-bbox="794 965 1141 994">Passing threshold</th> <th data-bbox="1141 965 1485 994">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 994 794 1023">Final Exam</td> <td data-bbox="794 994 1141 1023">50.0%</td> <td data-bbox="1141 994 1485 1023">50.0%</td> </tr> <tr> <td data-bbox="448 1023 794 1066">Tests</td> <td data-bbox="794 1023 1141 1066">50.0%</td> <td data-bbox="1141 1023 1485 1066">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Final Exam	50.0%	50.0%	Tests	50.0%	50.0%
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<p>Example issues/ example questions/ tasks being completed</p>	<ol style="list-style-type: none"> <li>1. Solve the given differetial equation of the first order (e.g. Brenoulli equation).</li> <li>2. Solve the given differetial equation of the second order.</li> <li>3. Find the extremum of the given function of the two variables.</li> <li>4. Find the volumes of the given solids by means of double integral (or by means of triple integral).</li> <li>5. Find the line integral</li> <li>6. Find the integral of a complex function.</li> </ol>
<p>Work placement</p>	<p>Not applicable</p>