



## Subject card

Subject name and code	Mathematics II, PG_00050294						
Field of study	Mechanical Engineering, Mechanical 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	Part-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
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 Anita Dąbrowicz-Tlałka				
	Teachers		dr Anita Dąbrowicz-Tlałka				
Lesson types and methods of instruction	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						
	Adresy na platformie eNauczanie: WM - MiBM niestacjonarne - Matematyka 2, 2020/2021 (A.Tlałka) - Moodle ID: 13014 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=13014">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=13014</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	60		9.0		81.0	150
Subject objectives	The aim of this subject is to obtain the students competence in the range of using the basic methods of mathematical analysis and linear algebra. Furthermore, the student is able to use this knowledge to solve simple theoretical and practical problems that can be found in the field of engineering.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W01] possesses mathematical knowledge within the range of linear algebra and mathematical analysis useful in characterising and interpreting mechanical systems, technological processes and operational properties of devices		Student recognizes the importance of skillful use of basic mathematical apparatus in terms of study in the future.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K6_U01] is able to acquire information from specialized literary sources, databases and other resources, essential for solving engineering tasks; is able to compile the obtained information pieces and to interpret them, additionally is able to form conclusions and present justified opinion		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 [SU2] Assessment of ability to analyse information		

Subject contents	Antiderivative (primitive).		
	The process of finding antiderivatives and integration formulas the substitution method of integration and integration by parts.		
	Integration of rational, trigonometric and irrational functions.		
	Newton-Leibniz Thorem.		
	Integration formulas, the substitution method of integration and integration by parts for definite integrals.		
	Improper integrals.		
	Applications of integral calculus in computing areas of plane figures, lengths of arcs, volumes of solids of revolution.		
	Functions of two variables. Partial derivatives. Differential of function. Extrema of function.		
Double integrals and their applications. Areas of flat regions. Volume of solids. Area of a piece of surface.			
Prerequisites and co-requisites	Knowledge of differential calculus of one variable functions.		
	Knowledge of matrix calculus.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	50.0%	50.0%
	midterm colloquium	50.0%	50.0%
Recommended reading	Basic literature	1) Jankowska K., Jankowski T., Zbiór zadań z matematyki, Gdańsk, 2009.  2) Jankowska K., Jankowski T.: Funkcje wielu zmiennych, całki wielokrotne, geometria analityczna. Wyd. PG, Gdańsk, 2006.  3) Gewert M., Skoczylas Z., Analiza matematyczna 1. Przykłady i zadania, Wrocław, 2003.  4) Gewert M., Skoczylas Z.: Analiza matematyczna 2. Przykłady i zadania, Wrocław, 2003.	
	Supplementary literature	1) Krywicki W., Włodarski L., Analiza matematyczna w zadaniach. Cz. I, Warszawa, 1997.  2) Krywicki W., Włodarski L.: Analiza matematyczna w zadaniach. Cz. II, Warszawa, 1994.  3) Fichtenholz G. M.: Rachunek Różniczkowy i całkowy. PWN, Warszawa, 1995.  4) Leitner R.: Zarys matematyki wyższej dla studiów technicznych. WNT, Warszawa, 1994.  5) Żakowski W., Kołodziej W.: Matematyka cz. II. WNT, Warszawa, 1992.	

	eResources addresses	WM - MiBM niestacjonarne - Matematyka 2, 2020/2021 (A.Tlałka) - Moodle ID: 13014 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13014">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13014</a>
Example issues/ example questions/ tasks being completed	1) Using the definite integral, determine the area of the area between the graphs of the curves ...  2) Find local extremes of functions of two variables ...  3) Use the double integral to calculate the volume of a solid bounded by areas ....	
Work placement	Not applicable	