



Subject card

Subject name and code	Mathematical methods of physics and technics II, PG_00037303							
Field of study	Technical Physics							
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022			
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study			
Mode of study	Full-time studies	Mode of delivery			at the university			
Year of study	2	Language of instruction			Polish			
Semester of study	4	ECTS credits			4.0			
Learning profile	general academic profile	Assessment form			assessment			
Conducting unit	Department of Atomic, Molecular and Optical Physics -> Faculty of Applied Physics and Mathematics							
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Radosław Szmytkowski					
	Teachers		prof. dr hab. Radosław Szmytkowski					
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: Metody matematyczne fizyki i techniki II (semestr letni 2021/22) - Moodle ID: 22022 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22022								
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		35.0	100	
Subject objectives	Acquaint students with selected mathematical methods of physics and technology and their applications.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	K6_W03		Students are familiar with selected mathematical methods used in physics and technology.			[SW1] Assessment of factual knowledge		
	K6_U02		Students know how to apply selected mathematical methods in description of physical processes.			[SU4] Assessment of ability to use methods and tools		
Subject contents	1. Fundamentals of variational calculus. 2. Elements of Lagrangian mechanics. 3. Elements of Hamiltonian mechanics.							
Prerequisites and co-requisites								
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade		
	Grade of exercises		37.5%			100.0%		
Recommended reading	Basic literature		1. G. B. Arfken, H. J. Weber, Mathematical methods for physicists, 5th ed., Academic, San Diego, 2001 2. D. ter Haar, Elements of Hamiltonian mechanics, 2nd ed., Pergamon, Oxford, 1964					

	Supplementary literature	None.
	eResources addresses	Metody matematyczne fizyki i techniki II (semestr letni 2021/22) - Moodle ID: 22022 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22022
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. The Euler-Lagrange equations. 2. The variational principle of Hamilton. 3. The Hamilton equations. 4. The Hamilton-Jacobi equation. 	
Work placement	Not applicable	