



Subject card

Subject name and code	Environmental physics laboratory, PG_00037302						
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			2.0		
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	dr hab. Mateusz Zawadzki					
	Teachers	dr hab. Mateusz Zawadzki dr Mykola Shopa					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0 Adresy na platformie eNauczanie:						
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	30	2.0	18.0	50		
Subject objectives	The aim of the course is to acquaint a student with selected physical processes in environment and acquisition of skills in the field measurements. By participating in the laboratory and field classes the student acquires skills of specialist measuring instruments.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W08	Student is capable of planning and carrying out the experiment in the field			[SW1] Assessment of factual knowledge		
	K6_W12	The student applies to the principles of health and safety while performing environmental measurements.			[SW1] Assessment of factual knowledge		
	K6_U04	Is able to plan and carry out environmental measurements of physical quantities using the corresponding instruments.			[SU1] Assessment of task fulfilment		
	K6_W07	The student learns the principles of operation of theodolite, leveling agent, sextant, magnetometer, ionizing radiation detector and other measuring devices			[SW1] Assessment of factual knowledge		

Subject contents	<p>Sun (construction, nuclear fusion reactions, chemical composition, interaction with the Earth) Processes and physical effects associated with the impact of the Sun-Earth Earth (shape and structure of the Earth, physical models used to describe the structure of the Earth, isostasy, seismology, seismic waves) The winds in the atmosphere</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		50.0%	100.0%
Recommended reading	Basic literature	<p>Boeker E., van Grondelle R., (2002) <i>Fizyka środowiska</i>. PWN, Warszawa.</p> <p>Sellers W.D., (1965) <i>Physical Climatology</i>. University of Chicago Press, Chicago.</p> <p>Stacey F.D., (1992) <i>Physics of the Earth</i>. Brookfield Press, Kenmore, Aust</p>	
	Supplementary literature	<p>1. W. Kosiński, "Geodezja", Wydawnictwo Naukowe PWN, Warszawa 2010.</p> <p>2. J. Rogowski, M. Kłęk, Skrypt - Geodezja wyższa i astronomia geodezyjna, Uczelnia Warszawska im. Marii Skłodowskiej-Curie, Warszawa, 2009.</p> <p>3. M. Barlik, A. Pachuta, "Geodezja fizyczna i grawimetria geodezyjna. Teoria i praktyka", Politechnika Warszawska, 2007.</p> <p>4. Instrukcja techniczna G-4, "Pomiary sytuacyjne i wysokościowe", Wydanie Trzecie, Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 24 marca 1999r. (Dz. U. Nr 30, poz. 297) Wykaz standardów technicznych - poz. 7, PWN, Warszawa 2001.</p> <p>5. Norma branżowa BN-78/8770-07.</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<p>Working with a precision laser leveling - determination of the amount of selected control points (field measurements) Calculating the azimuth of the coordinates and work with precision electronic theodolite - determination of coordinates based on field measurements Gaining practical skills in the use of sextant, learning methods for determining the geographical position using the position of the sun.</p>		
Work placement	Not applicable		