GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Environmental physics laboratory, PG_00037302		
Field of study	Technical Physics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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 Physics and Luminescence -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Mateusz Zawadzki	
	Teachers		

Lesson types	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						

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_U04] is able, individually or in a team, to plan and conduct experiments in physics and related fields, including applied computer science or energy engineering, and to analyse and interpret results and formulate conclusions.	Is able to plan and carry out environmental measurements of physical quantities using the corresponding instruments.	[SU1] Assessment of task fulfilment
[K6_W04] has advanced knowledge of the principles of experimental design, experimental methods, measurement techniques and scientific equipment used in physics and related sciences, including their life cycle.	Student is capable of planning and carrying out the experiment in the field	[SW1] Assessment of factual knowledge
[K6_W01] demonstrates an understanding of the civilisational significance of physics and its applications.	The student understands the role of physics in field and environmental measurements, recognizing its importance in assessing phenomena such as workplace noise, noise pollution, and temperature variations. They are able to use basic electronic modules for measurements and to construct simple monitoring systems, such as a meteorological station, and to interpret the obtained results in terms of their impact on the environment and human health.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Course content – laboratory

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

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

Boeker E., van Grondelle R., (2002) *Fizyka środowiska*. PWN, Warszawa.

Sellers W.D., (1965) *Physical Climatology*. University of Chicago Press, Chicago.

Stacey F.D., (1992) *Physics of the Earth.* Brookfield Press, Kenmore, Aust

	Supplementary literature	1. W. Kosiński, "Geodezja", Wydawnictwo Naukowe PWN, Warszawa 2010. 2. J. Rogowski, M. Kłęk, Skrypt - Geodezja wyższa i astronomia geodezyjna, Uczelnia Warszawska im. Marii Skłodowskiej-Curie, Warszawa, 2009. 3. M. Barlik, A.Pachuta, "Geodezja fizyczna i grawimetria geodezyjna. Teoria i praktyka" , Politechnika Warszawska, 2007. 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. 5. Norma branżowa BN-78/8770-07.
	eResources addresses	
Example issues/ example questions/ tasks being completed	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.	
Practical activites within the subject	Not applicable	

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