University of Gdańsk

Subject card

Subject name and code	Physics in Interdisciplinary Contexts, PG_00207695		
Field of study	Physics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
Education level	Master's studies	Subject group	Obligatory subject group in the field of study 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	English
Semester of study	4	ECTS credits	5.0
Learning profile	academic	Assessment form	exam
Conducting unit	Institute of Experimental Physics -> Faculty of Mathematics, Physics and Informatics -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Adrian Kołodziejski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	30.0	0.0	0.0	60

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	60	0.0	65.0	125

Subject objectives

The aim of the course is to demonstrate the relationships between physics and other scientific disciplines, as well as to develop students ability to apply physical knowledge to interpret phenomena occurring in areas such as biology, medicine, sport, environmental protection, and modern technologies. The course also aims to prepare students to present physics in an interdisciplinary and practical context.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[FIZMU2_W03] knows to an in-depth degree experimental, observational, and numerical techniques allowing to plan and execute a complex physical experiment or computer simulation	The student is familiar with selected experimental, observational, and numerical techniques applied in interdisciplinary applications of physics, particularly in biophysics, medical physics, sports physics, and the analysis of environmental processes.	[SW4] test/exam - oral or written
[FIZMU2_W04] knows to an in-depth degree the principle of operation of measuring systems and research equipment specific to the area of physics related to the chosen specialization or knows advanced methods of theoretical and mathematical physics	The student is familiar with the operating principles of selected measurement systems and research equipment used in applications of physics related to medicine, biology, sports, and environmental monitoring.	[SW4] test/exam - oral or written
[FIZMU2_U02] can plan and conduct basic and advanced experiments or observations in specific areas of physics or its applications	The student is able to design and analyse simple experiments or observations illustrating interdisciplinary applications of physics and interpret the obtained results in the context of a selected research or practical problem.	[SU2] presentation/project/paper/ report

Subject contents

1. Physics as a universal tool for describing natural, technological, and social phenomena.
2. Applications of physics in biology and biophysics.
3. Physics in medicine.
4. Physics in sports.
5. Connections between physics and chemistry.
6. Environmental physics.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
project	51.0%	30.0%
exam	51.0%	70.0%

Recommended reading

Basic literature	1. Paul G. Hewitt, Fizyka wokół nas, PWN 2025 2. K. Ernst, Fizyka sportu, PWN 2012 3. A. Hrynkiewicz, Fizyczne metody diagnostyki medycznej i terapii, PWN 2000 4. P. Davidovits, Physics in Biology and Medicine, Academic Press 2008 5. J. J. Bevelacqua, Basic Health Physics, Wiley-VCH 2010
Supplementary literature	not applicable
eResources addresses	

Example issues/ example questions/ tasks being completed

not applicable

Work placement

Not applicable

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