University of Gdańsk

Subject card

Subject name and code	Specialized Physics Laboratory, PG_00207563		
Field of study	Medical Physics		
Date of commencement of studies	October 2027	Academic year of realisation of subject	2027/2028
Education level	Master's studies	Subject group	Obligatory subject group in the field of study 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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	4.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Mathematics, Physics and Informatics -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Marek Józefowicz, prof. UG	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	45.0	0.0	0.0	45

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	45	0.0	55.0	100

Subject objectives

Developing student independence in advanced experimental work. Introducing students to the use of advanced methods, research tools, and procedures used in the creation and presentation of scientific results.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FIZMEDMU2_U07] Can lead a team, interact with team members from various backgrounds (e.g. doctors, technicians, hospital staff, scientists), and take the initiative in managing an interdisciplinary team.	The student is able to: – plan, coordinate, and conduct advanced research requiring the cooperation of a group of people, – publicly perform a critical analysis of the results of measurements, observations, and theoretical calculations.	[SU2] presentation/project/paper/ report
	[FIZMEDMU2_U03] Can find necessary information in professional literature, both in databases and other sources.	The student is able to: – use various sources of knowledge.	[SU2] presentation/project/paper/ report
	[FIZMEDMU2_U01] Can apply the scientific method in solving physical and medical problems, carrying out experiments and drawing conclusions in the field of physics, medical physics and other fields, based on in-depth knowledge, appropriate selection of sources, and mathematical and computer science methods and tools.	The student is able to: – plan and conduct advanced scientific experiments representative of selected fields of physics, – critically analyze the results of measurements, observations, or theoretical calculations from selected fields of physics, including an assessment of the accuracy of the results, – find the necessary information in professional literature, both in databases and other sources, – reproduce the line of reasoning and course of experiments from various fields of physics described in the literature, taking into account the assumptions and approximations made, – use methods and ideas from various areas of physics and other exact and natural sciences, – apply the knowledge and methodology of physics, including its experimental methods, to related scientific disciplines.	[SU2] presentation/project/paper/ report
	[FIZMEDMU2_K03] He is ready to take a scientific approach to the issues being solved, using scientific literature, as well as expert opinions, in case of difficulties in solving the problem on his own.	The student is aware of: – the necessity of applying scientific methods in research work, – responsibility for research tasks carried out as part of a team; – the importance of intellectual honesty in their own and others' activities; – ethical issues in the context of research integrity, – the need to raise questions and issues related to the research being conducted; – the risks of obtaining information from unverified sources, including the Internet.	[SK2] presentation/project/paper/ report
	[FIZMEDMU2_U06] Can effectively communicate on specialised topics in the field of physics and medical physics with diverse audiences (specialists and non-specialists), skillfully justifying his/her position.	The student is able to: – critically analyze the results of measurements, observations, and theoretical calculations, including an assessment of the accuracy of the results, – find information from various fields of science in specialized sources, – reproduce the line of reasoning and course of an experiment described in the literature, taking into account the assumptions and approximations made, – apply the knowledge and methodology of physics and its experimental methods to related scientific disciplines.	[SU2] presentation/project/paper/ report

Course outcome	Subject outcome	Method of verification
[FIZMEDMU2_W07] Knows and understands the principles of occupational health and safety to a degree that allows for independent work in medical facilities and research laboratories.	The student knows: – occupational health and safety rules to a degree sufficient to work independently in their field of specialization, – basic legal and ethical conditions related to scientific activity, – basic concepts and principles of industrial property protection and copyright law, – rules for using patent information resources.	[SW2] presentation/project/paper/ report
[FIZMEDMU2_W03] Knows and understands to an in-depth degree advanced experimental and numerical techniques that allow for planning and performing complex physical experiments.	The student knows: – advanced experimental, observational, and numerical techniques in various areas of experimental physics, – the principles of operation of measuring systems and research equipment in various areas of experimental physics, advanced methods of theoretical and mathematical physics, – occupational health and safety rules to a degree sufficient to enable independent experimental work, – basic legal and ethical conditions related to scientific activity, – principles of using patent information resources.	[SW2] presentation/project/paper/ report
[FIZMEDMU2_U02] Can plan and conduct an experiment using new or adapt existing methods and tools, and critically analyse the results of measurements, observations or numerical calculations, assessing the accuracy of the results using known methods and tools.	The student is able to: – plan and conduct advanced scientific experiments, including in areas related to physics, – critically analyze the results of measurements, observations, or theoretical calculations, including an assessment of the accuracy of the results, – find the information necessary for experimental research in professional literature from various fields, – use methods and ideas from various areas of physics and other exact and natural sciences, – apply the knowledge and methodology of physics, including its experimental methods, to related scientific disciplines.	[SU2] presentation/project/paper/ report

Subject contents	Depending on the nature of the laboratory (atomic, molecular, or condensed phase, or medical applications), students gain in-depth, up-to-date knowledge in the area of experimental work, familiarize themselves with the conditions, organization, and health and safety rules in a laboratory equipped with advanced scientific research equipment and/or computers, become familiar with the measuring equipment and/or available software, perform measurements and/or numerical calculations, and compile the results of the measurements.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
not applicable	51.0%	100.0%

Recommended reading		
	Basic literature	not applicable
	Supplementary literature	not applicable
	eResources addresses	

Example issues/ example questions/ tasks being completed	not applicable
Work placement	Not applicable

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