University of Gdańsk

Subject card

Subject name and code	Master Laboratory 2, PG_00207574		
Field of study	Medical Physics		
Date of commencement of studies	October 2027	Academic year of realisation of subject	2028/2029
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	Polish
Semester of study	4	ECTS credits	8.0
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. Anna Synak	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	75.0	0.0	0.0	75

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	75	0.0	125.0	200

Subject objectives

The aim of the course is to prepare the student for completing and developing their masters thesis. The student is trained to fully apply research methods, tools, and procedures used in the analysis and presentation of scientific results. They carry out the final stages of research, process and interpret the results, and then prepare the masters thesis in accordance with the principles of research integrity and professional ethics.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FIZMEDMU2_U08] Can determine directions for further improvement of knowledge and skills (including self-education) within the scope of the chosen specialisation and beyond, and guide others in this area, e.g. through popularisation.	The student is able to identify directions for further development of their knowledge and skills within their chosen specialization as well as in related areas, recognizing the need for continuous improvement. They can indicate their own shortcomings and plan actions to address them, including self-study and the use of available knowledge resources. Based on the experience gained in conducting and developing their master's thesis, the student is also able to guide others in expanding their knowledge and to popularize topics in medical physics in a way that is accessible to diverse audiences.	[SU1] oral statement/conversation/ discussion
	[FIZMEDMU2_U04] Can formulate and test hypotheses related to simple research problems within the scope of acquired knowledge in physics and medicine.	The student is able to formulate research hypotheses related to problems within the fields of physics and medicine. They can plan actions to verify them by selecting appropriate research methods – experimental, computational, or theoretical. The student is able to test hypotheses, analyze the obtained results, and draw conclusions regarding their validity. They are also able to critically assess the limitations of their own research and indicate possible directions for further analysis.	[SU1] oral statement/conversation/ discussion
	[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 ready to adopt a scientific approach when solving research problems. They are able to use scientific literature in both Polish and English to justify their work, interpret results, and formulate conclusions. They can integrate knowledge from different areas of physics and medicine in order to comprehensively analyze issues related to their master's thesis. In cases where independent problem solving is insufficient, the student is able to seek and use expert opinions, treating them as a valuable support in the research process.	[SK1] oral statement/conversation/ discussion
	[FIZMEDMU2_K01] Is ready to evaluate himself critically and the teams and organisations in which he participates in the context of his knowledge and skills, as well as the content he receives.	The student is ready to critically evaluate their own knowledge and skills in the context of conducting research and preparing the master's thesis. They are able to analyze their progress and identify areas requiring further improvement. The student recognizes the importance of collaboration with the supervisor and other members of the research team and can assess their contributions to the research process. They understand the significance of critically analyzing received content and research results to ensure reliability and credibility.	[SK1] oral statement/conversation/ discussion

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 collaborate with members of a research team and with professionals from various backgrounds, such as physicians, technicians, hospital staff, and scientists. They are able to communicate their ideas and research results effectively and to take part in solving problems that require interdisciplinary cooperation. The student is able to take initiative and lead the work of a team when necessary, ensuring proper organization of tasks, distribution of responsibilities, and accountability for achieving shared goals. They are able to recognize the importance of teamwork and leadership for the success of research and the preparation of the master's thesis.	[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 apply the scientific method to solving problems in physics and medicine. They can plan and conduct research experiments, as well as perform observations and numerical calculations using appropriately selected mathematical and computational tools. The student is able to formulate research questions, select relevant literature sources and research methods suitable for the problem under study, and draw conclusions based on the obtained results. They are capable of critically evaluating both their own work and the limitations of the applied methods, which enables responsible and reliable completion of the master's thesis.	[SU2] presentation/project/paper/ report
[FIZMEDMU2_U09] Can use English in accordance with the requirements specified for level B2+ of the Common European Framework of Reference for Languages, to a degree that allows for independent completion of education and communication with a diverse audience, using specialist terminology.	The student is able to use English at the B2+ level of the Common European Framework of Reference for Languages, which enables them to independently expand their knowledge and skills through scientific literature and online resources. They can communicate with a diverse audience – both specialists and non-specialists – while applying appropriate professional terminology. The student is capable of preparing parts of the master's thesis, reports, or presentations in English, as well as participating in academic and outreach discussions in this language.	[SU1] oral statement/conversation/ discussion

Subject contents

Depending on the nature of the masters thesis experimental or theoretical the student deepens their knowledge of the current state of research in the area of their work. They become familiar with the conditions, organization, and health and safety regulations in a laboratory equipped with advanced research, diagnostic, and/or computational facilities. The student learns the design, operating principles, and applications of measurement and diagnostic equipment, as well as available specialized software. The key component is the processing and analysis of the obtained results, their comparison with literature data, the formulation of conclusions, and the preparation of a summary that forms the basis for writing the complete masters thesis.

Prerequisites and co-requisites

Passing courses relevant to the masters thesis topic

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
conversation	51.0%	15.0%
thesis chapters or a written report	51.0%	85.0%

Recommended reading

Basic literature	relevant to the topic of the masters thesis, suggested by the supervisor and independently selected by the student
Supplementary literature	not applicable
eResources addresses	

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

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