University of Gdańsk

Subject card

Subject name and code	Fundamentals of Research Methodology, PG_00182153		
Field of study	Medical Physics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
Education level	Bachelor's studies	Subject group	Obligatory subject group 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	3	ECTS credits	1.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Mathematics, Physics and Informatics -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. n. med. Przemysław Rutkowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	0.0	0.0	0.0	10

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	10	0.0	15.0	25

Subject objectives

The goal is to understand the aims of science, what distinguishes scientific work from other types of work, what the rigors of scientific research are, and to learn the principles and methods of scientific work necessary for preparing a diploma thesis.

The goal is to understand the purposefulness of the rigors applied to scientific research and to grasp the essence of statistical inference.

The goal is to acquire the skills necessary for preparing a diploma thesis in accordance with the methodological principles of scientific research.

<table>
<tr><td>Learning outcomes</td><td>
<table>
<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[FIZMEDL3_K01] He is ready for a critical evaluation of his own knowledge and the information he receives, and understands the need for further education and for improving professional and personal competencies.</td><td>The student differentiates between conducting scientific research and conducting research without the rigours of scientific methodology.
The student is prepared to draw conclusions and critically discuss the results obtained.</td><td>[SK2] presentation/project/paper/ report</td></tr>
<tr><td>[FIZMEDL3_K02] He is ready to constantly update his knowledge in physics and medical physics to solve cognitive and practical problems independently and to use the opinions and assistance of experts.</td><td>The student:
Is ready to use the opinions and help of experts, understanding that scientific work often requires interdisciplinary collaboration and verification from other specialists.
Shows a responsible attitude for the integrity of their research and its results, as well as for adhering to the principles of scientific ethics, including avoiding plagiarism and respecting copyright.</td><td>[SK2] presentation/project/paper/ report</td></tr>
<tr><td>[FIZMEDL3_W13] Knows and understands the legal and ethical considerations associated with scientific work and the practice of medical physics.</td><td>The student:
Knows the main concepts, stages of research procedure, and the structure of both theoretical and empirical scientific work.
Is familiar with the fundamental principles and methods of scientific work required for preparing a diploma thesis.
Knows the rules for conducting scientific research in medical disciplines.
Is familiar with research methods and techniques, including the fundamentals of statistical methods, data collection and organisation, and the principles of constructing a scientific paper.
Knows the criteria for selecting relevant literature for a research topic and its usefulness for the work.
Understands what plagiarism is and is aware of the legal aspects of copyright protection.</td><td>[SW2] presentation/project/paper/ report</td></tr>
</table>
</td></tr>
<tr><td>Subject contents</td><td>The role of deduction and induction in scientific knowledge. The principle of falsifiability, paradigm theory, methods of scientific research. Planning and conducting the research process for a selected problem, defining the research problem and research hypothesis. Choosing appropriate research methods. Developing and presenting research results. The role of statistical inference in scientific knowledge. The problem of plagiarism. Copyright. Citation rules. Rules for publishing and giving presentations.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>The student's ability to think logically, connect facts, and remember key information.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>presentation</td><td>51.0%</td><td>100.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>not applicable</td></tr>
<tr><td>Supplementary literature</td><td>Niegiel B., Pope D., Stanistreet D.: Quantitative Methods for Health Research</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>not applicable</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.