University of Gdańsk

Subject card

Subject name and code	Advanced Nuclear Laboratory, PG_00168495						
Field of study	Nuclear safety and radiological protection						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor'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	3		Language of instruction		Polish		
Semester of study	5		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 inż. Angelina Łobejko				
	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	not applicable						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BJORL3_W02] Understands the role of physical and chemical experimentation, mathematical theoretical models approximating reality, and computer simulations in scientific research methodology; is aware of technological, apparatus, and methodological limitations in scientific research	The student understands the role of physical and chemical experiments in nuclear research and knows the importance of theoretical models and computer simulations as tools supporting the interpretation of results and approximating physical reality. The student is aware of the technological, instrumental, and methodological limitations associated with conducting nuclear measurements and is able to assess their impact on the quality and reliability of the data obtained.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work
	[BJORL3_U09] Can independently plan and implement his own learning	The student is able to independently plan and implement their own learning process by systematically preparing for laboratory exercises, analyzing the results of experiments, and supplementing the theoretical knowledge necessary to understand them. Students are able to identify areas requiring further study, select appropriate sources of information, and develop their experimental and analytical skills in a conscious and focused manner.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work
	[BJORL3_K07] has a sense of responsibility for jointly implemented tasks; is able to interact and work in a group, taking on different roles in it	The student feels responsible for jointly performed laboratory tasks and is able to cooperate effectively in a team, taking on different roles depending on the needs of the group. The student demonstrates a willingness to perform assigned duties reliably, supports other team members, and ensures that experiments are conducted safely and efficiently.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK3] text preparation/written work
	[BJORL3_W03] knows how to plan and perform a simple physical or chemical experiment and analyze the results obtained; knows the elements of the theory of measurement uncertainty as applied to experiments; knows the basic units of the SI system and its most important derived units; knows other systems of measurement units	The student knows the principles of planning and conducting simple experiments in nuclear physics and chemistry and understands the stages of the measurement process, from preparing the workstation to analyzing the results obtained. The student has knowledge of the theory of measurement uncertainty and is able to identify its sources and impact on the reliability of results. In addition, they know the basic units of the SI system, the most important derived units, and are familiar with other systems of units used in nuclear research.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work
	[BJORL3_W06] knows the basic computational methods used to solve typical problems in radiological protection and nuclear safety	The student knows the basic calculation methods used to analyze and solve typical problems in the field of radiation protection and nuclear safety, including methods for calculating radiation doses, assessing exposure, and modeling the processes of radiation interaction with matter. Students understand the principles of applying these methods, their scope of applicability, and the limitations resulting from the adopted assumptions and measurement parameters.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work

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<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[BJORL3_K08] can think and act in an entrepreneurial way</td><td>The student is able to think and act in an entrepreneurial manner, showing initiative in solving experimental problems, searching for effective methods of measurement, and optimizing laboratory work. Students are ready to propose improvements, make responsible decisions, and organize activities effectively, which promotes a creative and practical approach to nuclear research issues.</td><td>[SK1] oral statement/conversation/ discussion
[SK2] presentation/project/paper/ report
[SK3] text preparation/written work</td></tr>
<tr><td>[BJORL3_W07] knows the construction and basic principles of operation of scientific apparatus used in radiological protection and aimed at ensuring nuclear safety</td><td>The student knows the structure and basic principles of operation of scientific equipment used in nuclear research and radiological protection, including radiation detectors, electronic systems, spectrometers, and dosimetry devices. The student understands the functions of individual components of the equipment, knows their capabilities and limitations, and is able to indicate their application in measurements used to ensure nuclear safety.</td><td>[SW1] oral statement/ conversation/discussion
[SW2] presentation/project/paper/ report
[SW3] text preparation/written work</td></tr>
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<tr><td>Subject contents</td><td>not applicable</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>not applicable</td></tr>
<tr><td>Assessment methods and criteria</td><td>
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<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>not applicable</td><td>51.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>
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<tr><td>Basic literature</td><td>not applicable</td></tr>
<tr><td>Supplementary literature</td><td>not applicable</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<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>
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