

Subject card

Subject name and code	Nuclear Energetics and Reactor Processes, PG_00207663						
Field of study	Nuclear safety and radiological protection						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor'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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		3.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Laboratory of Environmental Analytics and Radiochemistry -> Department of Environmental Chemistry and Radiochemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Alicja Boryło, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30		0.0		45.0	75
Subject objectives	familiarizing students with all issues mentioned in the lecture program content						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BJORL3_U07] Knows how to present in an accessible way the latest developments in radiological protection and nuclear safety and can analyze their legal aspects.	can present the latest achievements in the field of radiological protection and nuclear safety	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[BJORL3_W01] Has an advanced knowledge and understanding of the main concepts and principles of nuclear physics and chemistry, understands their historical development and significance not only for nuclear safety and radiation protection, but also in the context of the fundamental dilemmas facing modern civilization.	has general knowledge of nuclear physics and chemistry and understands the importance of nuclear safety and radiological protection, has basic knowledge of biology and ecology	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[BJORL3_W09] Has general knowledge of the economic, legal and ethical considerations associated with professional activities.	has basic legal knowledge related to professional activity	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[BJORL3_K05] Is ready to perform the professional role in a competent and responsible manner and to adhere to the principles of professional ethics.		
	[BJORL3_K04] Is ready to initiate activities for the public interest and to popularise radiological protection and nuclear safety.		
	[BJORL3_W06] Has advanced knowledge and understanding of computational methods used to solve typical problems in radiological protection and nuclear safety.	knows the basic computational methods used to solve typical problems in the field of radiological protection and nuclear safety	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[BJORL3_W07] Has advanced knowledge and understanding of the construction and principles of operation of scientific apparatus used in radiological protection and nuclear safety.	knows the structure and basic principles of operation of scientific equipment used in radiological protection and aimed at ensuring nuclear safety	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[BJORL3_U04] Can use mathematical and computer apparatus to analyze and solve problems in radiological protection and nuclear safety.	can use mathematical apparatus to analyze and solve problems in the field of radiological protection and nuclear safety	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
Subject contents	nuclear energy in the world, nuclear reactors, their structure and types, reactor processes in nuclear reactors, reactor accidents and the safety of nuclear power plants, radioactive waste from nuclear power plants, thermonuclear fusion, nuclear energy compared to other methods of obtaining energy, prospects for the development of nuclear energy.		
Prerequisites and co-requisites	passed subjects in environmental radiochemistry and radiological protection as well as nuclear chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	51.0%	100.0%
Recommended reading	Basic literature	Z.Celiński, Nuclear energy, PWN, Warsaw (1991), Nuclear energy and society, PWN, Warsaw (1992) W. Szymański, Nuclear chemistry, PWN, Warsaw 1996. Sobkowski and M. Jelińska-Kaźmierczuk, Nuclear chemistry, Adamantan Publishing House, Warsaw 2006 B. Skwarzec, Environmental radiochemistry, University of Gdańsk Publishing House, 2021, ISBN 978-83-8206-111-6	
	Supplementary literature	not applicable	
	eResources addresses		

Example issues/ example questions/ tasks being completed	What is a fission reaction? Describe the structure of a nuclear reactor Describe the processes of nuclear fuel enrichment
Work placement	Not applicable

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