

Subject card

Subject name and code	Nuclear energy, PG_00080774						
Field of study	Chemical Business, Chemistry, Environmental Protection						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		English		
Semester of study	6		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Laboratory of Toxicology and Radiation Protection -> Department of Environmental Chemistry and Radiochemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Grzegorz Olszewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
	Additional information: Lecture						
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	15		2.0		33.0	50
Subject objectives	To familiarize students with the basics of nuclear chemistry and physics and a possible civil and military use of the nuclear energy						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEML3_K08] Formulates opinions in the field of science with caution and criticism in their expression.	is able to identify the positive and negative sides of using nuclear energy	[SK1] oral statement/conversation/discussion
	[CHEML3_U07] Prepares documented elaboration on a specific problem in the field of selected chemical and physical issues.	demonstrates scientific competence in nuclear energy civil use is able to give concepts of chemistry and physics behind nuclear energy operation, recognizes the principles of nuclear reactors operation, can assess the radiological impact of nuclear energy use, is able to assess safety of nuclear energy	[SU1] oral statement/conversation/discussion
	[CHEML3_K03] Establishes priorities in the right way for the implementation of tasks specified by herself/himself and/or by others.	acquires the ability to properly organize time in independently mastering the course material	[SK1] oral statement/conversation/discussion
	[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.	understands the need for further education in the field of nuclear energy due to its constant development	[SK1] oral statement/conversation/discussion
	[CHEML3_K07] Appreciates the need for understandable presentation of selected chemical issues to the public.	can transfer knowledge in the society about the nuclear energy,	[SK1] oral statement/conversation/discussion
	[CHEML3_U09] Is able to learn independently.	Demonstrates the ability to independently search for scientific literature and specialized textbooks	[SU1] oral statement/conversation/discussion
Subject contents	[CHEML3_W05] Has basic knowledge of the chemical specialisation studied.	knows the history of nuclear energy and understands the basic concepts of radioactivity, radiation protection and radiotoxicity, understands the concepts of neutron reactions, nuclear fission, nuclear fusion, chain reactions, knows the types of nuclear power plants and understands the reactor theory, has knowledge on the nuclear fuel cycle including nuclear reactor chemistry and nuclear waste disposal, has the basic knowledge on nuclear reactor safety and security, has the basic knowledge on nuclear weapons and nuclear propulsion.	[SW4] test/exam - oral or written
	Nuclear power development, atoms and nuclei, radioactivity, basics of radiation protection and radiotoxicity, nuclear fission, nuclear fusion, chain reactions, reactor theory, types of nuclear power plants, nuclear fuel cycle, reactor chemistry, nuclear safety and security, nuclear waste disposal, nuclear propulsion and nuclear weapons		
	Prerequisites and co-requisites		
	Assessment methods and criteria	Subject passing criteria	Passing threshold
		Test	50.0%
			Percentage of the final grade
			100.0%
Recommended reading	Basic literature		Bodansky D., Nuclear Energy, Principles, Practices and Prospects, Springer, 2004,
			Murray R.L., Holbert K.E., Nuclear Energy, Elsevier, 2020.

	Supplementary literature	None
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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