

Course title Przemysł jądrowy / Nuclear industry		ECTS code 13.3.0716	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemical Business	Bachelor / Engineer	Full-time studies	
Teaching staff dr hab. Alicja Boryło, prof. UG,			
Forms of classes, the realization and number of hours		ECTS credits 2	
A. Forms of classes, in accordance with the UG Rector's regulations lecture		classes - 30 h tutorial classes – 5 h student's own work – 15 h	
B. The realization of activities in-class learning		Total: 50 h - 2 ECTS	
C. Number of hours 30 h lecture			
The academic cycle Third year, summer semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods Lecture and multimedia presentation		Form and method of assessment and basic criteria for evaluation or examination requirements	
		A. Final evaluation, in accordance with the UG study regulations course completion (with a grade)	
		B. Assessment methods Written exam	
		C. The basic criteria for evaluation or exam requirements The scale of grades is consistent with the UG Studies Regulation <ul style="list-style-type: none"> A positive mark from a written exam (30-40 open and close questions on lecture content) 	
Required courses and introductory requirements General chemistry and physics lecture			
Aims of education Acquaint students with all issues mentioned in the lectures program content			
Course contents The subject of the lecture concerns the basics of the subject Issues of the lecture: Natural and artificial radioactivity. Radioactive decays and nuclear reactions. Interaction of ionizing radiation with matter. Dosimetry and radiological protection. Construction and types of nuclear reactors. Nuclear Energy and other energy technologies. Radioactive waste, their transport, processing and storage. Radioactive contamination of the environment and nuclear weapons. Application of radioactive nuclides in science, technology and the army. Legal aspects in the nuclear industry.			

Bibliography of literature

A. Literature required to pass the course

Skwarzec B., Radiochemia środowiska i ochrona radiochemiczna, W-wo DJ s.c., Gdańsk 2002, ISBN: 83-914707-5-X

Sobkowski J. Jelińska-Każmierczuk M., Chemia jądrowa, W-wo Adamantan, Warszawa 2006, ISBN: 83-7350-080-4

A.2. studiowana samodzielnie przez studenta

Szymański W., Chemia jądrowa, Wydawnictwo Naukowe PWN, Warszawa 1996, ISBN: 83-01-12053-3

B. Extracurricular readings

Knowledge

1. The student has knowledge about radioactivity, natural and artificial radioactive elements and their occurrence in environment.
2. Knows the basic rules of radiological protection.
3. Has knowledge about the nuclear reactor construction and knows the advantages and disadvantages associated with the nuclear energy development.
4. Has knowledge about the importance of nuclear energy in the development of the energy industry.
5. Knows the ways of radioactive waste processing and storage.
6. Knows the source of radioactive environmental contamination.
7. Has knowledge about the use of radionuclides in science, technology and military.
8. Has knowledge about the cost of nuclear power plant building.
9. Knows the legal aspects of the nuclear industry.

Skills

1. Recognizes the most important natural and artificial radionuclides contained in environment.
2. Understands the basic concepts of dosimetry and radiological protection.
3. Understands the principle of atomic reactor operation.
4. Knows how to comment on nuclear energy and its significance compared to other energy technologies.
5. Distinguishes between peaceful and military applications of radioactivity.
6. Is aware of the importance and applications of radioactive substances in science, technology and the military.
7. Understands the economic and legal aspects of nuclear industry.

Social competence

1. Understands the need for further education about nuclear chemistry and nuclear energy.
2. Dispels social concerns about the use of radioactive substances in science, industry and the military.
3. Makes the society aware of the impact of radioactivity on human life.
4. Presents ways of using of radioactive substances in peaceful and military human activity.
5. Actively participates in raising public awareness of nuclear energy.