KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Nuclear energy	13.3.1208

Name of unit administrating study

null

Studies

faculty	field of study		
Faculty of Chemistry	Chemical Business	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Chemistry	Chemistry	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Chemistry	Environmental Protection	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all

Teaching staff

dr Grzegorz Olszewski

Forms of classes, the realization and number of hours

Forms of classes

Lecture

The realization of activities

blended learning, lectures in the classroom

Number of hours

Lecture: 15 hours

ECTS credits

2
classes - 15 h
tutorial classes - 15 h
student's own work - 20 h
TOTAL: 50 h - 2 ECTS

The academic cycle

2023/2024 summer semester

Type of course

an elective course

Language of instruction

english

Teaching methods

multimedia-based lecture

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

exam

The basic criteria for evaluation

The criteria according to UG regulations for students.

Method of verifying required learning outcomes

Online test with 20 questions. Note based on the exam results

Required courses and introductory requirements

A. Formal requirements

lack

B. Prerequisites

lack

Aims of education

Familiarize students with the topics of the course content.

Course contents

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.

Bibliography of literature

Literature required to pass the course
1. Course content
Extracurricular readings
Bodansky D., Nuclear Energy, Principles, Practices and Prospects, Springer, 2004,
Murray R.L., Holbert K.E., Nuclear Energy, Elsevier, 2020.

The learning outcomes (for the field of study and specialization)

Chemical Business:
K_BC_W06: enumerates unit processes and describes issues in the field of technology and chemical engineering
K_BCh_W07: describes the construction and operating principles of scientific, technological and control-measuring apparatus
K_BCh_U08: uses the chemical nomenclature and engineering terminology properly
K_BCh_U09: using the acquired knowledge, skills and various sources of scientific information independently prepares written papers and oral presentations
K_BCh_K01: identifies the level of her/his own knowledge and skills as well as the need to update engineering knowledge, continuous professional training and personal development
K_BCh_K05: is convinced of the importance of behaving in a professional manner in every situation, taking full responsibility in the field of engineering activities and their impact on the natural environment and compliance with the principles of professional ethics
Chemistry:
K_W05: has advanced knowledge of the chemical specialisation studied
K_U07: prepares documented elaboration on a specific problem in the field of selected chemical and physical issues
K_U09: is able to learn independently
K_K01: identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development
K_K03: establishes priorities in the right way for the implementation of tasks specified by herself/himself and/or by others
K_K07: appreciates the need for understandable presentation of selected chemical issues to the public
K_K08: formulates opinions in the field of science with caution and criticism in their expression
Environmental Protection:
K_OŚI_W02: characterises at an advanced level the relationships and relationships between various disciplines of natural sciences and science, uses knowledge of mathematics, physics, chemistry and biology in the description of basic concepts, concepts and principles in environmental protection
K_OŚI_U03: independently plans and develops her/his own lifelong learning
K_OŚI_U12: uses environmental protection instruments, including the concept of sustainable development, in

Knowledge

1. knows the history of nuclear energy and understands the basic concepts of radioactivity, radiation protection and radiotoxicity,
2. understands the concepts of neutron reactions, nuclear fission, nuclear fusion, chain reactions,
3. knows the types of nuclear power plants and understands the reactor theory,
4. has knowledge on the nuclear fuel cycle including nuclear reactor chemistry and nuclear waste disposal,
5. has the basic knowledge on nuclear reactor safety and security,
6. has the basic knowledge on nuclear weapons and nuclear propulsion.

Skills

1. is able to give concepts of chemistry and physics behind nuclear energy operation,
2. recognizes the principles of nuclear reactors operation,
3. can assess the radiological impact of nuclear energy use,
4. is able to assess safety of nuclear energy

Social competence

1. understands the need for further education in the field of nuclear energy due to its constant development,
2. demonstrates scientific competence in nuclear energy civil use
3. can transfer knowledge in the society about the nuclear energy,

communicating with the socio-economic environment K_OŚI_K05: identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development K_OŚI_K06: knows and appreciates the practical application of the acquired knowledge and skills in solving problems K_OŚI_K10: identifies and sees dilemmas related to pursuing future career	

Contact

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