STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
The basics of nuclear power	**1010314391010315972**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**(brak)**	**5 / 9**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Electric Power Systems	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**part-time**

No. of hours	No. of credits
Lecture: **9** Classes: **-** Laboratory: **-** Project/seminars: **-**	**1**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**1 100%**
Technical sciences	**1 100%**

Responsible for subject / lecturer:

Radosław Szczerbowski
email: radoslaw.szczerbowski@put.poznan.pl
tel. 61 665 20 30
Elektryczny
ul. Piotrowo 3A, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of physics (basic laws of physics, physical quantities and their units, mechanics, electrical engineering, thermodynamics, heat transfer). Knowledge of power generation technologies: energy conversion, efficiency of conversion and thermodynamic cycles.
2	**Skills**	Solving the balance of mass and energy in simple circuits of thermal power plants
3	**Social competencies**	Awareness of the need to expand their competence, readiness to work together as a team.

Assumptions and objectives of the course:

Knowledge of general data about the role and importance of nuclear power in the global energy economy. Understanding the characteristics of the fuel cycle in nuclear reactors and radioactive waste management. Acquiring basic knowledge of nuclear power reactors.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Understand nature of developments in a nuclear reactor and process realized in nuclear power plants, understands the impact of energy conversion processes taking place in nuclear power plants on the environment - [K_W03++]
2. It has a basic knowledge of the construction of nuclear reactors and devices that make up the nuclear power plant - [K_W08++ K_W13++]

Skills:

1. Able to assess the role and risks from the use of nuclear energy - [K_U05 +]
2. Is able to analyze basic circuits of nuclear power plants - [K_U10++]

Social competencies:

1. Is aware of the responsibility of an engineer in nuclear energy - [K_K03 +]

Assessment methods of study outcomes

-credit on the basis of a written work consisting of answers to questions concerning lectures
- continuous evaluation in the classroom on the basis of ability to take the discussion on issues related to nuclear power

Course description

The state of development of nuclear power in the world. Generations of nuclear power reactors. Classification of nuclear power plants. General characteristics of the basic equipment and the principle of operation of a nuclear power plant. Fuel economy. Fuel cycle. Management of radioactive waste.

Basic bibliography:

1. Celiński Z., Strupczewski A., Podstawy energetyki jądrowej, WNT, 1984
2. Paska J., Elektrownie jądrowe, Oficyna Wydawnicza Politechniki Warszawskiej, 1990
3. Celiński Z., Energetyka jądrowa. PWN. 1991
4. Celiński Z., Energetyka jądrowa a społeczeństwo. PWN. 1992
5. Kubowski J.: Nowoczesne elektrownie jądrowe. Warszawa: WNT 2010
6. Kiełkiewicz M.: Jądrowe reaktory energetyczne. Warszawa: WNT 1978

Additional bibliography:

1. Ackermann G., Eksploatacja elektrowni jądrowych, WNT
2. Jezierski G., Energia jądrowa wczoraj i dziś, WNT, 2005
3. Kiełkiewicz M., Teoria reaktorów jądrowych. WNT. 1987
4. Hrynkiewicz A., Energia wyzwanie XXI wieku. Wydawnictwo Uniwersytetu Jagiellońskiego. 2002

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	9
2. exam preparation	10
3. presence on the exam	5
4. the consultation of lectures	3

Student's workload

Source of workload	hours	ECTS
Total workload	29	1
Contact hours	17	1
Practical activities	0	0