STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Nuclear Power Engineering		**1010315431010315644**
Field of study **Power Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **2 / 3**
Elective path/specialty **Sustainable Energy Development**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **part-time**	
No. of hours Lecture: **10** Classes: **-** Laboratory: **-** Project/seminars: **-**		No. of credits **1**
Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**	
Education areas and fields of science and art **technical sciences** **Technical sciences**		ECTS distribution (number and %) **1 100%** **1 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of power generation technologies: energy conversion, conversion efficiency, and the cycle of transformations and thermodynamic cycles.
2	**Skills**	Understand the basic principles of operation of the machines and know the basic construction of conventional energy devices.
3	**Social competencies**	Is aware of the need to expand their skills and willingness to work together as a team.

Assumptions and objectives of the course:

Understanding the basic types of nuclear reactors. Getting to know their structure, concept and thermal systems. Nuclear security issues. Understanding the trends and development in the field of nuclear energy.

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 implemented in nuclear power plants, understands the impact of energy conversion processes occurring in nuclear power plants on the environment - [K_W03++]

2. Student has the knowledge to analyze the technological systems of nuclear power plants and can evaluate the importance the safety of nuclear power plants - [[K_W12++]]

Skills:

1. Can integrate knowledge in the field of electrical engineering, electronics, computing, control, and other disciplines to assess the role, tasks and other non-technical aspects (including economic and legal) nuclear power plants in the power system. - [[K_U15++]]

Social competencies:

1. Understands the need to formulate and provide reliable information and opinion on nuclear power, presenting different points of view - [[K_K02+++]]

Assessment methods of study outcomes

Continuous evaluation in the classroom. Skill and competence by conducting discussions on current issues in the field of nuclear energy.

Credit on the basis of a written paper consisting of answers to 10 questions and 3 questions test problem with range of topics covering topics classes.

Course description

The state of development of nuclear power in the world. Classification of nuclear reactors. Generation of nuclear power reactors. The basic types of nuclear reactors and their safety features. Construction, concept and basic technological systems of nuclear reactors, fuel elements and structure of the core. Operating parameters of the reactors. Equipment and auxiliary systems. Nuclear safety issues - the importance of nuclear safety and security of the entire nuclear energy. The development of the nuclear power industry.

Basic bibliography:

1. Celiński Z., Strupczewski A., Podstawy energetyki jądrowej, WNT, 1984
2. Ackermann G., Eksploatacja elektrowni jądrowych, WNT
3. Paska J., Elektrownie jądrowe, Oficyna Wydawnicza Politechniki Warszawskiej, 1990
4. Celiński Z., Energetyka jądrowa. PWN. 1991
5. Kubowski J.: Nowoczesne elektrownie jądrowe. Warszawa: WNT 2010

Additional bibliography:

1. Lech M., Kierunki rozwoju elektrowni jądrowych, Oficyna Wydawnicza Politechniki Wrocławskiej, 1997
2. Jezierski G., Energia jądrowa wczoraj i dziś, WNT, 2005
3. Hrynkiewicz A., Energia wyzwanie XXI wieku. Wydawnictwo Uniwersytetu Jagiellońskiego. 2002.

Result of average student's workload

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

Student's workload

Source of workload	hours	ECTS
Total workload	31	1
Contact hours	21	1
Practical activities	0	0