

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Nuclear Power Engineering</b>		Code <b>1010314471010315644</b>
Field of study <b>Power Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>4 / 7</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>15</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>2 100%</b> <b>2 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Radosław Szczęrbowski email: radoslaw.szczerbowski@put.poznan.pl tel. 61 665 20 30 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge of physics, chemistry, basics of electricity and basis of thermal energy.
2	<b>Skills</b>	Solving tasks of the balance of mass and energy in simple circuits of thermal power plants.
3	<b>Social competencies</b>	Is aware of the need to broaden their competence, willingness to work together as a team.
<b>Assumptions and objectives of the course:</b> Acquiring basic knowledge of physics nuclear power reactors and get acquainted with currently available technologies used in nuclear power.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Understand the essence of the phenomena occurring in a nuclear reactor and process carried in nuclear power plants - [K_W06++]		
2. It has a basic knowledge of the structure and types of nuclear reactors and nuclear power plants and knows the basic technology to ensure safe operation of nuclear power plant - [K_W21+++K_W20++]		
3. He knows and understands the impact of energy conversion processes in a nuclear power plant on the environment - [K_W08++]		
<b>Skills:</b>		
1. Able to perform basic calculations of criticality conditions for a nuclear power reactor - [K_U07++]		
2. Able to calculate the thermal circuits realized in nuclear power plants - [K_U22++]		
<b>Social competencies:</b>		
1. Is aware of the great responsibility of an engineer in the nuclear power industry for decisions - [K_K02+]		
<b>Assessment methods of study outcomes</b>		
- evaluation of the knowledge and skills demonstrated on the basis of the current check posts and two written tests, - continuous evaluation skills and expertise for each class by conducting discussions on current issues related to the prospect of nuclear power development.		

<b>Course description</b>		
Nuclear fuels and their properties. The essence of uranium fission ? fissions fragments, the energy of fission, radioactive fragments of fissions chains. Interaction of neutrons with the medium ? cross sections. Slowing of the neutrons. The escape of neutrons from the reactor. The life cycle of neutrons ? reactor criticality conditions. The equation for the balance of neutrons in the reactor. Solution of the wave equation for a sphere reactor. Types of nuclear reactors. Safety systems in nuclear power plants. Fuel cycle. Landfilling.		
<b>Basic bibliography:</b>		
1. Z. Celiński, A. Strupczewski, ?Podstawy energetyki jądrowej?, WNT, Warszawa 1984 2. Z. Celiński, ?Energetyka jądrowa?, PWN, Warszawa 1991		
<b>Additional bibliography:</b>		
1. M. Kielkiewicz, ?Teoria reaktorów jądrowych?, PWN, Warszawa 1987 2. A. Strupczewski, ?Awarie reaktorowe a bezpieczeństwo energetyki jądrowej?, WNT, Warszawa 1990.		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. participation in the lectures	15	
2. participation in the consulting	5	
3. preparation for the tests	10	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	30	2
Contact hours	20	1
Practical activities	0	0