GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Nuclear Power Plants, PG_00066159		
Field of study	ELEKTROWNIE JĄDROWE		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marcin Jaskólski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	0.0	0.0	0.0	10

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	10	6.0	9.0	25

Subject objectives

The aim of the course is for students to acquire knowledge related to key issues related to the construction, operation and importance of nuclear energy in the global energy economy.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W02] has an in-depth and structured knowledge of electrical measurements electrical measurements, the methods and equipment used for electrical measurements of non-electrical quantities, he/she knows the principles of testing operation tests of electrical equipment, has a structured knowledge of electricity quality issues	Does not concern the subject.	[SW1] Ocena wiedzy faktograficznej
[K7_U02] is able to prepare and deliver a short oral presentation on a selected technical topic	Does not concern the subject.	[SU2] Ocena umiejętności analizy informacji
[K7_U03] is able to obtain information from literature, databases and other sources, also in English, draw conclusions, formulate and fully justify opinions. substantiate opinions; is able to identify directions for further learning and implement the process of self-education	Properly formulates answers to test questions on key issues for a nuclear power plant.	[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[K7_W05] has detailed knowledge of the regulatory processes in the electricity system electricity system, electricity safety and electricity safety automation	Defines safety-related solutions in nuclear power plants.	[SW1] Ocena wiedzy faktograficznej

<table>
<tr><td>Subject contents</td><td>Course content – lecture
General problems and data of nuclear energy systems in the world. Classification of the world-wide existing different types of nuclear power stations and these stations which are foreseen for Poland. Elements of nuclear physics regarding especially light water reactors (LWR), thermal hydraulics of the primary circuit and of the power unit (secondary circuit) of nuclear power station. Basic technical and operation indices of the plant and means for improving the gross efficiency of the nuclear power plant. Operating conditions and performance characteristics of station equipment in particular bloc units with PWR reactors. Nuclear radiation shielding and radiation protection issues. Nuclear fuel cycle and the processing and handling of the radioactive wastes at nuclear power stations.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Good knowledge of elements of physics (basic lows, physical quantities and their units and measures, mechanics, electrical engineering, thermodynamics, heat transfer). Knowledge of electrical energy generation technologies: energy conversions, efficiency of single conversion, efficiency of conversion cycle and thermodynamic cycle efficiency. Basic knowledge of mathematics: algebra, geometry, trigonometry, differential and integral calculus.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Lecture test</td><td>60.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Zieliński A. (red.): Elektrownie jądrowe w nowoczesnej gospodarce. Wydawnictwo Naukowe PWN, Warszawa 2024.

Król K.: Bezpieczeństwo radiologiczne. Wydawnictwo Naukowe PWN, Warszawa 2024.

Kubowski J.: Elektrownie jądrowe. Wydawnictwo Naukowe PWN, Warszawa 2017.</td></tr>
<tr><td>Supplementary literature</td><td>1. Jezierski G.: Energia jądrowa wczoraj i dzisiaj. Warszawa: WNT 2005.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>• role and importance of nuclear energy in the global energy economy,
• classification of nuclear power plants,
• elements of nuclear physics regarding especially light water reactors (LWR), thermal hydraulics of the primary circuit and of the power unit (secondary circuit) of nuclear power plants,
• describe fuel cycle in nuclear reactors and management of radioactive waste.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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