GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Energy Use Rationalization, PG_00042067		
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Paweł Bućko	
	Teachers	dr hab. inż. Paweł Bućko	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	3.0	17.0	50

Subject objectives

Basic knowlege of energy saving projects implementation.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U04	The student is able to design an energy-saving modernization. Is able to carry out a technical and economic analysis of energy-saving projects. Is able to analyze investment profitability.	[SU3] Assessment of ability to use knowledge gained from the subject
K6_W06	The student is able to identify energy technologies. He can keep an efficiency account. He can calculate energy consumption and prepare energy balances.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Energy consumption in Poland in comparison with other European countries. Institution and regulation that support energy conservation in Poland. Electricity conservation in household sector. Structure of energy consumption. Energy efficient equipment. Promotion of energy effectiveness. Systems of energy labels and certificates. Stand-by energy consumption and ways of reduction of stand-by losses. Energy efficient equipment in houses. Typical energy conservation solutions. Ways of promotion of energy conservation techniques in household sector. Energy efficient lighting systems. Parameters of lighting systems. Rules of proper lighting of inside areas, motor ways and roads, work areas. Energy efficient light sources (lamps) and luminaires. Energy efficient lighting systems projecting. Lighting control systems. Typical energy conservation solution in indoor and outdoor lighting systems. Audit of lighting systems. Lighting effectives coefficients. Energy conservation in industry. Energy efficient motors (EEM) standard: usage of EEM, calculating of economic effectiveness of EEM. Energy efficient transformers. Optimization of transformers operation in parallel operation. Electronic control systems for electrical motors. Energy distribution companies activities in energy effectives and conservation promotion. Demand Side Management (DSM) – aims and techniques. Integrated system development planning. Electricity tariffs – tariffs constructions rules and payments. Choosing the best tariff solution for consumer. Optimization of capacity payments.

Prerequisites and co-requisites

Basic of Energy economics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	60.0%	100.0%

Recommended reading

Basic literature

1. Górzyński J.: Audyting energetyczny. Fundacja Poszanowania Energii, Warszawa 2001.
2. Szargut J. i inni: „Racjonalizacja użytkowania energii w zakładach przemysłowych”, Fundacja Poszanowania Energii, Warszawa 1994.

	Supplementary literature	1. Nowak E.: „Racjonalizacja gospodarki energia elektryczną w zakładach przemysłowych”, Fundacja Poszanowania Energii, Warszawa 1997. 2. Stępnieweski M.: „Energooszczędne oświetlenie dróg”, Fundacja Poszanowania Energii, Warszawa 1994
	eResources addresses	Adresy na platformie eNauczanie: Racjonalizacja użytkowania energii [2022/23] - Moodle ID: 26435 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26435
Example issues/ example questions/ tasks being completed	Analyse of a chosen energy saving modernization project.	
Work placement	Not applicable	