GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electronics and Electrotechnics, PG_00025252		
Field of study	Chemistry in Construction Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Krzysztof Żakowski	
	Teachers	dr hab. inż. Krzysztof Żakowski dr inż. Michał Mielniczek dr inż. Łukasz Gaweł dr inż. Ewa Janicka	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Adresy na platformie eNauczanie:
Elektrotechnika i elektronika (Chemia Budowlana 2021/22) - Moodle ID: 13196
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13196

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	4.0	16.0	50

Subject objectives

Possesion by the student the fundamentals of electrical engineering in the understanding of the principles of generation, transmission and distribution of electricity, operation of selected electrical machines, devices, systems, operation of measuring instruments. This knowledge will be useful in the further course of study, in their future careers and in everyday life when using modern electrical and electronic equipment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U02	Student is able to develop and to realize a work schedule which meets deadlines.	[SU4] Assessment of ability to use methods and tools
K6_K02	Student is able to adequately identify priorities required for implementation of specified tasks.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents

Lecture

- DC electrical circuits:
Cells and batteries. The structure of the electrical circuit. Ohm's law. Kirchhoff's laws.

- AC electrical circuits:
The phenomenon of electromagnetic induction. Bipolar sinusoidal voltage generator. RLC circuits.

- Three-phase systems:
Three-phase generator. Classification of three-phase systems. Connecting receivers in a star and a triangle system.

- Electric machines:
Single-phase and three-phase transformers: construction, operating conditions, classification by application. Commutator machines. DC generators and motors. Induction motors.

- Power system:
Thermal, nuclear and water power stations, green energy sources. Transmission and distribution of electricity.

- Electrical installations:
TN-S and TN-C-S network systems. Wires and cables. Electric light sources. Electric shock protection.

- Electrical measurements:
Analog and digital meters - construction, principle of operation. Classification of measuring instruments. Basic methods and measurement layouts.

- Key elements and the electronic layouts:
Semiconductors. Semiconductor junction. Diodes, transistors, thyristors. Amplifier, rectifier, power supplies, filters.

Laboratory

1. Measuring instruments
2. Measurements of resistance
3. Transformer
4. Houses installations
5. Diode and rectifiers
6. Operational amplifier

Prerequisites and co-requisites

Fundamentals of physics.
General knowledge of electrical engineering.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
practical exercises	100.0%	50.0%
colloquium	60.0%	50.0%

Recommended reading

Basic literature	not applicable
Supplementary literature	not applicable
eResources addresses	Elektrotechnika i elektronika (Chemia Budowlana 2021/22) - Moodle ID: 13196 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13196

Example issues/ example questions/ tasks being completed

Work placement

Not applicable