GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introductory CDIO Project, PG_00049763		
Field of study	Power Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Optional subject group 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	1	Language of instruction	English
Semester of study	2	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electric Drives and Energy Conversion -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Łuksza	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	45.0	0.0	45

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	45	6.0	49.0	100

Subject objectives

The aim of this course is to make the students familiar with the team work to design and construct simple electronic circuits. Also, how to write technical and engineering documentation taking in consideration electrical engineering, electronics, CAD and PCB design and computer simulation problems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_K02] is able to work in a group taking different roles in it, can think and act in an entrepreneurial way, is aware of responsibility for their own work and responsibility for teamwork	Student can work individually and in team, can estimate the time needed for the entrusted task.	[SK2] Assessment of progress of work
[K6_U01] can obtain information from literature and other sources, organize, interpret it and draw and formulate conclusions; has the ability to self-educate, interprets the results of completed engineering tasks, is able to design simple energy systems and their systems	Student can obtain information from technical literature on the construction and design of simple electronic circuits. The obtained information can integrate, interpret and get conclusions. Student can find data in catalog cards and in software documentation. Student can elaborate and present documentation of the prepared project.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>Course content – project

Design of complete prototype of Simple electronic circuit (DC-DC converter) with control based on %%% integrated circuit. The project is divided into the following stages:

• Get familiar with laboratory equipment (oscilloscope, multimeters, DC power supply, assembly and soldering tools)
• DC-DC converter computer simulation,
• Design of control system based on IC timer 555 type,
• Selection of electronics elements,
• Design of magnetic coil using simulation software,
• Draw of mechanical elements for coil winding utilizing 3D CAD software,
• Assembling of electronics circuit using general, universal board,
• The initial testing stage of assembled circuit with the possibility to correct connection structure, changing the electronics elements etc.,
• Designing of the printed circuit board PCB utilizing CSD software,
• Manufacturing of PCB board,
• Assembling the electronic elements on PCB board (soldering and connection tests)
• Starting the operation stage of the assembled electronic circuit
• Measurements of the assembled circuit (using of multimeters, oscilloscope),
• Project documentation (final report),
• Presenting the project with the final results.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>• Basic English and elementary computer software skills (Word, Excel, etc.)</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>Project</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>1. Manual of electronic circuits simulation software LT Spice http://www.linear.com/designtools/software/
2. Manual of printed circuit board design software EAGLE Light Edition http://www.cadsoftusa.com/
3. Manual of magnetic elements simulation software FEMM: David Meeker Finite Element Method Magnetics. User’s Manual.</td></tr><tr><td>Supplementary literature</td><td>1. By Chen, Wai-Ka, Electrical Engineering Handbook, Elsevier, 2005.</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Design, assembling and constructing, perform and run laboratory tests of DC-DC converter, documentation preparation and presenting the delivering of multimedia presentation.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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