



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design and assembly of electronics

Course

Field of study

MECHARTONICS

Area of study (specialization)

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Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/2

Profile of study

practical

Course offered in

English

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

15

Projects/seminars

15

Number of credit points

6

Lecturers

Responsible for the course/lecturer:

Phd Eng. Dominik RYBARCZYK

Responsible for the course/lecturer:

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Faculty of Mechanical Engineering

Piotrowo 3, 60-965 Poznań

Prerequisites

Knowledge: Basic knowledge of electronics, electronic device design.

Skills: Ability to read and perform electrical diagrams

Social competencies: Understanding the importance of electronics for the development of the country's economy. Awareness of necessity for broadening knowledge and skills.

Course objective

Understanding the basic manufacturing methods and principles of electronic circuit design.



Course-related learning outcomes

Knowledge

- 1 Getting to know the methods of producing printed circuits
- 2 Analysis of selected integrated circuits and electronics passive components
- 3 Getting to know CAD design methods for electronic diagrams
- 4 The use of IT tools to design electronic diagrams

Skills

- 1 Designing mechatronic drives based on low power electric motors
- 2 Selection of the measuring system and its implementation in the mechatronic drives
- 3 Control of electric motors with microcontrollers
- 4 Control of electric motors using PLC controllers

Social competences

1. Understanding the requirement of learning by whole life; ability to inspire and organize learning process of other people.
2. s aware of the role of electronics in modern economy and its importance for the development of society and the environment.
3. Ability to think and act in a creative and enterprising way.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Test consisting of open questions

Programme content

Understanding the methods of producing printed circuits. Getting to know the types of integrated circuit housings and electronics passive components. Learning methods of electronic diagrams CAD design. Rules for making electronic diagrams. The use of IT tools to design electronic diagrams. Execution of printed circuits by prototype methods. Soldering of electronic circuits. Running designed electronic circuits.

Students design an electronic circuit board, make its diagrams and then produce printed circuits and solder components on the board. The course ends with a presentation of the system made by the student

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on a board, discussion and problem analysis.



2. Laboratory exercises: practical exercises, problem solving, discussion, teamwork
3. Design: making your own electronic system
3. Exercises: Principles for calculating basic electrical systems

Bibliography

Basic

- a) 20 prostych projektów dla elektroników, Górski K., BTC, 2008
- b) Lutowanie bezołowiowe, Hackiewicz H., Bukat K., BTC, 2007
- c) Podstawy technologii dla elektroników - Poradnik praktyczny, Kisiel R., BTC, 2005

Additional

- a) Elementy i układy elektroniczne w pytaniach i odpowiedziach, Pasierbiński J., Rusek M., WNT, 2006

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	6,0
Classes requiring direct contact with the teacher	60	4,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	40	2,0

¹ delete or add other activities as appropriate