



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Electronics and optoelectronics

Course

Field of study

Electromobility

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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Prerequisites

Knowledge of the operation of analogue and digital electronic and optoelectronic systems. It knows and can explain the phenomena and properties of electronic and optoelectronic components.

He recognizes basic electronic elements and, on basis of literature sources, can determine their parameters and application conditions. Able to design simple electronic and optoelectronic systems.

Aware that for the proper design and maintenance of electronic and optoelectronic systems, it is necessary to understand how such systems work. It is aware of the importance of extending its competence and shows readiness to cooperate within a team.



Course objective

To understand the properties of basic components and operation of simple electronic and optoelectronic systems and their testing.

Course-related learning outcomes

Knowledge

1. Knows the design and construction of simple analogue and digital electronic and optoelectronic systems.
2. Has practical knowledge of diagnostics and testing of simple electronic systems.

Skills

1. Is able to plan and conduct tests on electronic and optoelectronic components and use the technical documentation attached to them.
2. Be able to test and diagnose simple electronic and optoelectronic systems from an electromobility range.
3. Is able to determine the operating conditions of simple electronic systems on basis of technical documentation.
4. Can build and document simple electronic systems used in electromobility.
5. Be able to conduct tests on electronic and optoelectronic systems and present the results of the tests properly.

Social competences

Aware that the rapidly developing science and technology forces the need to constantly improve knowledge of electronic and optoelectronic components and systems in electromobility applications.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratory classes

The basic method of verifying knowledge achieved in the realization of laboratory exercises is the assessment of a report individually prepared by the student. Laboratory classes take place in cycles with a specific number of laboratory exercises, after which a test of evaluation of knowledge acquired by students is conducted. In addition, the entrance tests verify and reward the knowledge necessary for the realization of the problems posed in the area of laboratory tasks. The passing of laboratory classes is connected with the completion of all exercises, individual reports and positive evaluations from the entrance tests and tests.

Programme content

Laboratory classes



Laboratory classes are conducted in fifteen 90-minute meetings, in 4 subgroups. The subject of laboratory classes is divided into four parts.

- a) Topics of the first part are: introduction, introduction to the measuring instruments and techniques used in the laboratory classes.
- b) In the second part, laboratory tests shall be conducted on basic passive and active electronic components and systems, paying attention to their practical application.
- c) More complex electronic and optoelectronic systems such as A/C and D/A converters, generators and sequential and combination digital systems shall be tested in the third part.
- d) In the last cycle, optoelectronic components and systems such as fibre-optic cables, detectors and emitters of optical radiation will be tested.

Teaching methods

Laboratory exercises are conducted in laboratory groups. During the classes, a connection of the measurement system is performed, the conduct of indicated measurements, preparation of measurement results and a report. In addition, an individual design and assembly of uncomplicated printed circuit boards is performed.

The applied teaching methods are student-oriented and motivate students to actively participate in the teaching process through discussions and lectures.

Bibliography

Basic

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3. U. Tietze, Ch. Schenk, Układy półprzewodnikowe, WNT, Warszawa 2007
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Additional

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Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	20	0,5

¹ delete or add other activities as appropriate