# COURSE DESCRIPTION CARD - SYLLABUS

Course name

Selected issue of electrical engineering

**Course**

| | |
|---|---|
| Field of study | Year/Semester |
| Power Engineering | 1/2 |
| Area of study (specialization) | Profile of study |
| – | general academic |
| Level of study | Course offered in |
| Second-cycle studies | polish |
| Form of study | Requirements |
| part-time | compulsory |

**Number of hours**

| | | |
|---|---|---|
| Lecture | Laboratory classes | Other (e.g. online) |
| 0 | 10 | 0 |
| Tutorials | Projects/seminars | |
| 0 | 0 | |

**Number of credit points**

2

**Lecturers**

Responsible for the course/lecturer:

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Wydział Elektryczny

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Responsible for the course/lecturer:

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## Prerequisites

The student starting this subject should have knowledge of the basics of electrical engineering and metrology. He should also be able to develop detailed documentation of the results of the experiment and be able to think independently, act creatively and work in a team.

## Course objective

Learning practical issues related to selected electrical engineering issues. Acquiring practical skills in the selection of elements and measuring apparatus included in the electrical circuit, connection of the circuit and its analysis.

## Course-related learning outcomes

Knowledge

1. Has extended and ordered knowledge about the operation of symmetrical and asymmetrical three-phase systems, non-linear circuits, electric filters and the principles of selecting measuring equipment and making measurements.

2. Has detailed knowledge of the structure, principles of operation and frequency analysis of LC and RC type crosses, differences in their operating conditions, current-voltage characteristics of non-linear elements and their dynamic and static resistance.

Skills

1. Is able to apply knowledge of electrical engineering, methods of selection of elements and measuring apparatus, analysis and evaluation of the work of an electrical circuit.

2. Is able to work individually and in a team and prepare a study containing discussion of measurement results.

Social competences

1. Understands the importance of knowledge and skills in solving problems in the field of electrical engineering and is ready for critical assessment and analysis of issues.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Skills acquired as part of the laboratory classes are verified on the basis of two tests, consisting of 2-3 questions, variously scored depending on their level of difficulty, and on the basis of two reports from laboratory exercises. Passing threshold: 50% of points.

## Programme content

Operation of symmetrical three-phase, three-wire, four-wire systems combined in a star and a triangle. Study of voltage distribution and current distribution in three-phase systems at power and load asymmetry. Understanding the properties of LC and RC electric filters. Properties of filters used in DC power supplies and their evaluation. Investigation and analysis of current-voltage characteristics of various non-linear elements as well as their dynamic and static resistances.

## Teaching methods

Laboratory exercises illustrated with examples given on the board and performing tasks given by the teacher - practical exercises.

## Bibliography

Basic

1.Nawrowski R., Zielińska M., Wybrane zagadnienia z teorii obwodów.Laboratorium, Wydawnictwo Politechniki Poznańskiej, Poznań 2019.

2. Bolkowski S., Teoria obwodów elektrycznych, WNT. Warszawa 2008.

3. Kurdziel R., Podstawy Elektrotechniki, WNT, Warszawa, 1973.

Additional

1. Krakowski M., Elektrotechnika teoretyczna, PWN, Warszawa 1995.

2. Chua L. O., Desoer C. A., Kuh E. S.: Linear and nonlinear circuits, McGraw-Hill Inc., New York 1987.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 40 | 2,0 |
| Classes requiring direct contact with the teacher | 15 | 1,0 |
| Student's own work (literature studies, preparation for laboratory classes, preparation for tests, preparation of reports) [1] | 25 | 1,0 |

[1] delete or add other activities as appropriate