



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Test circuits of electric power devices

Course

Field of study

Electrical Engineering

Area of study (specialization)

Distribution Devices and Electrical Installations

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

polish

Requirements

elective

Number of hours

Lecture

0

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

15

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

prof. Jerzy Janiszewski, Ph. D., Hab. Eng.

Responsible for the course/lecturer:

Faculty of Environmental Engineering and Energy

Institute of Electric Power Engineering

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Prerequisites

Basic knowledge of electrical engineering, mathematics, physics and electrical devices. Analyzes, reads and draws electrical diagrams. He/she can connect circuits and receivers and calculate the electrical quantities in these circuits. He/she can use analytical, simulation and experimental tools. He/she is aware of the need to expand their competences.

Course objective

Understanding the construction, operating principles and technical requirements for typical test circuits used in testing power equipment. Understanding the essence and methodology of research and threats occurring during testing of power equipment.



Course-related learning outcomes

Knowledge

He/she can choose the right test circuits for a specific research task. Knows the principles of operation and regulation of test circuits, intended for specific tests. Knows the general principles of safe operation of test circuits.

Skills

He/she is able to design basic test circuits with specific output parameters. He/she is able to choose the required transducers as well as measuring and recording equipment. He/she is able to simulate the operation of selected test circuits.

Social competences

He/she is aware of the threats to human life and health related to improper design, execution and use of high-current and high-voltage tests circuits, as well as those threatened by electric arc. He/she is aware of the importance of voltage and current testing of power equipment and creativity in this field.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Projects:

- the preparation of materials for the project is evaluated,
- substantive preparation for the implementation of the assigned project is evaluationed,
- project and its defense are evaluated.

Programme content

Projects:

High-current circuits for short-circuit and rated load tests. Short-circuit circuits for test of electrodynamic phenomena. Circuits for direct and indirect current transformer tests. Network and synthetic systems for testing the connection and short-circuit capability of switches. Systems for testing connector operating parameters. Arc protection tests of switchgears and installation accessories. Measuring devices and circuits related to the operational safety tests of electrical installations. Sources of current and voltage surges for tests related to surge protection. Transducers of electrical and non-electrical quantities used in testing electrical equipment.

Teaching methods

Projects:

- using dedicated or developed computer applications, graphic programs and producers catalogs of power devices and installation equipment,
- multimedia or object-oriented presentations supported by illustrated examples presented on the board.



Bibliography

Basic

1. Markiewicz H., Bezpieczeństwo w elektroenergetyce, PWN, 2009.
2. Maksymiuk J: Niezawodność maszyn i urządzeń elektrycznych, Oficyna Wydawnicza PW, 2003.
3. Kupras K.: Pomiary w elektroenergetyce_wytyczne, wyd. SEP, 2007.
4. Maksymiuk J., Pochanke Z.: Obliczenia i badania diagnostyczne aparatury rozdzielczej, WNT, 2001.
5. Maksymiuk J.: Aparaty elektryczne, PWN, Warszawa, 1995.
6. Chmielak W., Daszyński T., Pochanke Z.: Laboratorium Aparatów elektrycznych, Of.Wydaw. PW, 2017.
7. Markiewicz H., Urządzenia elektroenergetyczne, WNT, 2008.

Additional

1. Normy przedmiotowe dotyczące badań aparatów, instalacji i urządzeń elektroenergetycznych.
2. Publikacje naukowe i internetowe.

Breakdown of average student's workload

	Hours	ECTS
Total workload	35	1,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for classes, mastering the operation of applications supporting design, implementation of current and/or final projects) ¹	15	1,0

¹ delete or add other activities as appropriate