COURSE DESCRIPTION CARD - SYLLABUS

Course name

Distribution systems and electrical installations

Course

Field of study

Power Engineering

Year/Semester

3/6

Area of study (specialization)

Electrical Power Engineering

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

15

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

mgr inż. Krzysztof Łowczowski

email: krzysztof.lowczowski@put.poznan.pl

tel. 616652270

Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

dr inż. Krzysztof Szubert

krzysztof.szubert@put.poznan.pl

tel. 616652282

Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

Prerequisites

The basic information regarding electric devices and their utilization as well as substations. The knowledge about calculation of one - and three-phase AC systems as well as the structure of distribution system network.

Ability to find information in literature and different sources and ability to perform ritical analysis of the information sources. Ability to use analytical, simulation and experimental tools.

Understand aspects and reliability resulting from engineering work. Is able to work in team.

Course objective

Familiarization with power system sources and distribution system networks on medium and low

voltage levels, as well as elements of low voltage installations. Familarization with construction, methods and programs for distribution network development, electrical instalations. Familiarization with applicable legal requirements related to their implementation.

Course-related learning outcomes

Knowledge

Elementary knowledge of the basics of power engineering, power systems and networks

Basic knowledge in the field of power equipment diagnostics and protetion relay devices. Knows the methods of measuring basic quantities characterizing devices and electrical or mechanical systems of various types. Knows calculation methods and IT tools for analyzing the results of experiments.

Skills

Is able to obtain information from literature, databases and other sources; is able to integrate obtained information, make interpretations, as well as to infer and formulate and justify opinions.

Is able to use known methods and mathematical models, as well as computer simulations to analyze and evaluate the operation of energy elements and systems.

Social competences

Is aware of importance and understand non-technical aspects and results of electrical power engineer work, including impact on environment and the associated responsibility for the decisions taken.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: assessment of knowledge and skills at the written exam of a problem nature, continuous assessment at each class (rewarding activity and quality of perception).

Laboratory exercises: test and rewarding knowledge necessary to implement the problems posed in the area of laboratory tasks, assessment of knowledge and skills related to the implementation of the exercise task, assessment of the report of the exercise.

Designing: test and rewarding of knowledge necessary for the implementation of a given project, assessment of knowledge and skills related to the implementation of the project task.
Getting extra points for activity during classes, especially for:
- effectiveness of applying the acquired knowledge when solving a given problem;
- ability to cooperate within a team carrying out a specific task in a laboratory;
- comments related to the improvement of teaching materials;
- aesthetic care of prepared reports and projects.

Programme content

Lecture: Power supply and distribution systems in the MV and LV power grid. Requirements for reliability and reliability of power supply and power supply systems. Components, construction solutions and principles of building and designing distribution networks. Determination of power flow and energy losses, selection of overhead and cable lines and electrical apparatus. Principles and legal conditions

related to the construction of an overhead and cable line. LV network systems. LV power connectors. Components of the electrical installation. Power cords and cables: long-term load capacity, cross-section determination, voltage drops, overcurrent protections.

Laboratories: Modeling of medium and low voltage power grid. Familiarization with the programs supporting the design and operation of the network.

Projects: designing the supply line for customers.

Teaching methods

Lecture: multimedia presentation, illustrated with examples on the board

Laboratory: exercises carried out on digital models, multimedia presentation instructing performed some laboratory exercises

Project: blackboard classes, explaining problems in developed projects

Bibliography

Basic

1. Markiewicz H.: Urządzenia elektroenergetyczne, WNT, Warszawa, 2001

2. Markiewicz H.: Instalacje elektryczne, WNT, Warszawa, 1996, 2000.

3. Prawo Energetyczne, Prawo Budowlane.

4. Przepisy eksploatacji urządzeń elektroenergetycznych, WEMA Warszawa, 1996.

Additional

1. Periodyki: Elektroinstalator, Elektroinfo.

2. Normy przedmiotowe.

3. Katalogi firmowe.

4. Publikacje internetowe.

Breakdown of average student's workload

	Hours	ECTS
Total workload	94	3
Classes requiring direct contact with the teacher	67	2
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	27	1

[1] delete or add other activities as appropriate