



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Electrical Power Engineering

Course

Field of study

Electrical Engineering

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Justyna Michalak

email: justyna.michalak@put.poznan.pl

tel. 616652030

Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

dr inż. Krzysztof Szubert

email: Krzysztof.Szubert@put.poznan.pl

tel. 616652282

Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

Prerequisites

Basic knowledge of the mathematics, physics and theoretical electrotechnics and of the basic knowledge of electrical power engineering in the previous semester. Ability to effectively self-education in a field related to the chosen field of study. Is aware of the need to broaden their competence, willingness to work together as a team.

Course objective

Acquiring knowledge of structure and characteristics of electric power system. Knowledge of physical fundamentals of electric energy generation in various types of power plants. Methods and rules for electrical power networks calculations



Course-related learning outcomes

Knowledge

1. It has a general knowledge of issues relating to distributed and non-conventional energy sources
2. It has basic information on the analysis of steady-state and short-circuit electric power systems
3. It has a basic knowledge of analysis of stability transmission and of quality of electricity supplied to

Skills

1. It can classify the electricity generation technologies and to analyze the efficiency of energy conversion occurring in different types of generation sources
2. Able to explain the basic principles of regulatory processes in the power system and to explain the functioning of the power protection automation

Social competences

1. Understand the need to promote energy efficiency and reducing harmful effects on the environment of the electricity sector

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture

- assess the knowledge and skills listed on the written exam,
- continuous grading knowledge and skills on each lecture by discussion regarding actual problems in the electric power engineering.

Programme content

Lecture

Gas and gas-steam power plants Combined heat and power plants. Power plants using renewable energy sources. Organic Rankine cycle. Essential requirements stood networks, reliability. Short-circuit analysis and standard based short-circuit calculations. Basics of power system stability.

Teaching methods

Lecture with multimedia presentation

Bibliography

Basic

1. Pawlik M., Strzelczyk F.: Elektrownie, WNT W-wa 2012, 2017
2. Kacejko P., Machowski J.: Zwarcia w systemach elektroenergetycznych. WNT, Warszawa 2002

Additional

1. Chmielniak T.: Technologie energetyczne, WNT W-wa 2014



2. Marecki J.: Podstawy przemian energetycznych, WNT W-wa 2014
3. Lewandowski W. M.: Proekologiczne źródła energii odnawialnej, WNT, W-wa 2012
4. Kujszczyk Sz. (pod red.): Elektroenergetyczne sieci rozdzielcze, tom 1 i 2, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2004 r.
5. Kujszczyk Sz. (pod red.): Elektroenergetyczne układy przesyłowe, WNT, Warszawa, 1997

Breakdown of average student's workload

	Hours	ECTS
Total workload	43	2,0
Classes requiring direct contact with the teacher	25	1,0
Student's own work (literature studies, preparation for exam) ¹	18	1

¹ delete or add other activities as appropriate