



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Power plant operation in power system

### Course

Field of study

Electrical Engineering

Area of study (specialization)

Electric Power Systems

Level of study

Second-cycle studies

Form of study

part-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

10

Laboratory classes

10

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Robert Wróblewski

Responsible for the course/lecturer:

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Faculty of Environmental Engineering and  
Energy

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### Prerequisites

The student has basic knowledge of energy technologies and machines used in professional power engineering, mechanics, fluid mechanics, basics of metrology. Knows the basic principles of energy installations operation. Understands the principles of operation of basic machine parts and knows the construction of basic conventional energy devices. Is aware of the need to expand their competences, readiness to cooperate within a team

### Course objective

Acquaintance with the principles of operation of power plants and their participation in covering variable loads of the power system



### Course-related learning outcomes

#### Knowledge

1. Student has general knowledge on how to optimize the work of generating sources in the power system
2. The student can thoroughly present the principles of operation of generating sources in the electrical system in various states of his work

#### Skills

1. Student is able to apply the basic principles of correct operation of generating sources in the power system
2. The student is able to analyze complex power systems using appropriate tools and methods of analysis
3. The student knows how to obtain information from literature, databases, integrate information, interpret them and formulate conclusions

#### Social competences

1. Student is able to think and act in a creative and entrepreneurial way

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

assessment of knowledge and skills demonstrated for problem-type written tests,

Laboratory classes:

ongoing assessment of knowledge and skills related to the implementation of the exercise task, evaluation of the report of the exercise,

### Programme content

Lecture:

The role of various types of power plants in the operation of the power system. Power plant energy characteristics. Power plant operation in the power system - economical load distribution, selection of a set of generating units. Power plant availability. Power plant reliability structures. Conditions for connecting generating units to the power grid. The content of the laboratory exercises is consistent with the topic of the lecture and includes the use of power plants in various states of the power system.

Laboratory classes:

power plant operation in various operating states - analysis of obtained results

### Teaching methods



Lecture: multimedia presentation, illustrated with examples on the board

Laboratory classes: classes on the 200MW block simulator

### Bibliography

Basic

1. R.Janiczek, Eksploatacja elektrowni parowych, WNT W-wa 1990
2. Głądyś H., Matla R.: Praca elektrowni w systemie elektroenergetycznym. WNT. W-wa 1995

Additional

1. D.Laudyn, M.Pawlik, F.Strzelczyk, Elektrownie, WNT W-wa 2000
2. M.Pawlik, J.Skierski, Układy i urządzenia potrzeb własnych. WNT W-wa 1986

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests/exam) <sup>1</sup>	30	1,0

<sup>1</sup> delete or add other activities as appropriate