



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

PO I - Energy planning - Methodology for creating plans for electricity, heat and gas fuels

### Course

Field of study

Year/Semester

Power engineering

2/4

Area of study (specialization)

Profile of study

Sustainable energy development

general academic

Level of study

Course offered in

Second-cycle studies

polish

Form of study

Requirements

part-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

10

Tutorials

Projects/seminars

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr inż. Justyna Michalak

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Wydział Inżynierii Środowiska i Energetyki

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### Prerequisites

Basic information on: power engineering, thermal energy, energy management, fuel economy, energy transmission and distribution, energy security and energy law. The ability to effectively self-study in a field related to the chosen field of study. Is aware of the need to expand their competences.

### Course objective

Understanding the methodology for creating plans for the supply of electricity, heat and gas fuels

### Course-related learning outcomes

Knowledge

1. Has knowledge of planning principles, the basics of modeling electricity, heat and gas supply.



2. Has structured and theoretically founded knowledge of the use of computer techniques supporting planning in the energy sector

3. Has ordered knowledge of energy law knowledge when planning in energy

#### Skills

1. Is able to assess the usefulness of strategic assumptions in supporting decisions related to energy processes

2. Can formulate and verify plans for the supply of electricity, heat and gas fuels

3. Is able to use knowledge in the field of economics related to investments in the energy sector

#### Social competences

Correctly identifies and resolves dilemmas related to planning in the energy sector and energy security of the state

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

- knowledge and skills assessment through a problem-based written exam,
- continuous assessment of student's skills and competences during each class (rewarding attendance and active participation in the classes).

#### Programme content

Introductory lecture, determining the organization of classes, assessment rules. Basic problems of modeling fuel and energy systems. Development plans for the distribution network, heating network and gas network. Urban development plans. Energy law. Commune self-governments. Electromobility Act. Electromobility infrastructure. Electric vehicle charging stations. Forecasting in the energy sector. Fundamentals of forecasting processes, methods and procedures of forecasting. Stochastic nature of variability of power loads. Basic factors shaping the course of load in time. Division of energy forecasts by planning horizon. Essential applications of energy forecasts. Current status and development directions of the supply of electricity, heat and gas fuels.

#### Teaching methods

Lecture: multimedia presentation

#### Bibliography

Basic

1. Suwała W., Modelowanie systemów paliwowo-energetycznych, Wyd. IGSMiE, 2011
2. Dobrzańska I. i inni: Prognozowanie w elektroenergetyce. PCz, Częstochowa 2007



3. Popławski T (red)., Wybrane zagadnienia prognozowania długoterminowego w systemach elektroenergetycznych, W.P.Cz., 2012
4. Popławski T, Teoria i praktyka planowania rozwoju i eksploatacji systemów elektroenergetycznych : wybrane aspekty, Wydawnictwo Politechniki Częstochowskiej, 2013.
5. Krajowa Agencja Poszanowania Energii, Efektywność energetyczna i odnawialne źródła energii w gminie, Krajowa Agencja Poszanowania Energii, 2004.

Additional

1. Szkutnik J., Perspektywy i kierunki rozwoju systemu elektroenergetycznego, W.P.Cz. 2011
2. Dołęga W., Planowanie rozwoju sieciowej infrastruktury elektroenergetycznej w aspekcie bezpieczeństwa dostaw energii i bezpieczeństwa ekologicznego, Oficyna wydawnicza Politechniki Wrocławskiej, 2013
3. Szczerbowski R., 2014 - Modelowanie systemów energetycznych - charakterystyka wybranych modeli. Polityka Energetyczna tom 17, z. 3. Wyd. Instytutu GSMiE PAN, Kraków, s. 147 - 156. PL ISSN 1429-6675.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	30	1,0
Classes requiring direct contact with the teacher	13	1,0
Student's own work (literature studies, preparation for classes, preparation for tests/exam) <sup>1</sup>	17	1,0

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