COURSE DESCRIPTION CARD - SYLLABUS

Course name

Energy planning

Course

Field of study

Electrical Engineering

Year/Semester

2/3

Area of study (specialization)

Study Sustainable Development of Power

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

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Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Basic information from: power engineering, heat engineering, energy economy, fuel economy, energy transmission and distribution, energy security and energy law. Ability to effectively self-study in a field related to a chosen field of study. Ability to effectively self-study in a field related to a chosen field of study. Is aware of the need to expand his competences.

Course objective

Understanding energy planning strategies at various levels

Course-related learning outcomes

Knowledge

1. Has knowledge in the field of planning principles, the basics of modeling the elements of the energy system

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

3. Has structured knowledge in the field of energy law knowledge while planning in power engineering

Skills

1. Can assess the usefulness of strategic assumptions while supporting decisions related to energy processes

2. Is able to formulate and verify hypotheses related to the analysis of the energy system and its components

3. Can use the knowledge in the field of economics related to investments in energy

Social competences

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

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture

- assessment of knowledge and skills based on a written exam of the material discussed,

- continuous assessment of each skill and competence class by discussing current issues related to planning in the power industry Course

Programme content

Lecture

Introductory lecture, arrangement of classes, assessment rules. Basic problems of fuel and energy systems modeling. Overview of system concept and definitions. Examples of fuel and energy systems. Hierarchy of systems and subsystems. Tasks and procedure of system tests. Concept and definitions of models. Model classification. Modeling process. Typical elements of fuel and energy systems. Modeling methods. Forecasting in power industry. Fundamentals of forecasting processes, forecasting methods and procedures. Stochastic nature of the variability of electrical power loads. Basic factors shaping the course of time load. Breakdown of energy forecasts due to planning horizon. Essential use of energy forecasts. Planning the power reserve level in the system. Reserve concepts: spinning, hot, cold and cold. Planning renovations. Classification of repairs of power units. Optimizing interruptions for blocks. Factors shaping the repair duration for the selected block. Problems predicting the development of the manufacturing system. "Integrated System Development Planning". Formulation of the problem of forecasting the development of the manufacturing system.

Teaching methods

Lecture with 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	39	1,0
Classes requiring direct contact with the teacher	26	1,0
Student's own work (literature studies, preparation for exam) [1]	13	1,0

[1] delete or add other activities as appropriate