



COURSE DESCRIPTION CARD - SYLLABUS

Course name

PO I - Energy planning - Planning development of the manufacturing sector and power networks

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

email:justyna.michalak@put.poznan.pl

tel.616652030

Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

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 planning strategy for the development of the manufacturing sector and power networks

Course-related learning outcomes

Knowledge

1. Has knowledge of the principles of planning, the basics of modeling elements of the energy system 2.



Has structured and theoretically founded knowledge in 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. Is able to formulate and verify hypotheses related to the analysis of the manufacturing sector and power networks

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. Energy policy. Development plans for energy enterprises. Creating an energy mix. Basic problems of modeling fuel and energy systems. Overview of system concepts and definitions. Examples of fuel and energy systems. System and subsystem hierarchy. Tasks and procedure for systemic research. The concept and definitions of models. Model classification. Modeling process. Typical elements of fuel and energy systems. Modeling methods. Planning the level of power reserve in the system. Reserve concepts: spinning, hot, cold and cold. Renovation planning. Classification of power unit repairs. Optimization of maintenance intervals for blocks. Factors affecting the duration of renovation for a selected block. Problems of forecasting the development of the production system. Integrated System Development Planning. Formulation of the problem of forecasting the development of the production system.

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) ¹	17	1,0

¹ delete or add other activities as appropriate