



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Selected aspects of energy sector policy [S2EJ1>WAPE]

Course

Field of study

Nuclear Power Engineering

Year/Semester

2/3

Area of study (specialization)

–

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

1,00

Coordinators

dr hab. inż. Rafał Ślefarski prof. PP
rafal.slefarski@put.poznan.pl

Lecturers

Prerequisites

Knowledge: The student has basic information about the operation of energy systems based on fossil fuels, nuclear energy and renewable energy sources. Skills: The student is able to analyze scientific information on energy systems and formulate conclusions. Social competencies: The student understands the need to improve his knowledge.

Course objective

To acquiring students with expanded theoretical knowledge of the functioning of electricity and heat markets in terms of the energy transition.

Course-related learning outcomes

Knowledge:

1. The student has an expanded knowledge of the energy policy of Poland and the European Union.
2. The student knows the mechanics of balancing the demand and supply of electricity and heat.
3. The student has an expanded knowledge of the problems and barriers that arise from the integration of conventional energy systems, renewable energy and nuclear energy.

Skills:

1. The student is able to analyze and select optimized energy system models for the process of decarbonization of individual energy consumers.
2. The student is able to perform an analysis of the operation of the energy system powered by various energy sources and identify the risks of its operation.
3. The student is able to determine the impact of energy systems on society and the environment.

Social competences:

1. The student is ready to think in an entrepreneurial way and act for the public interest.
2. The student is ready to recognize knowledge in solving cognitive and practical problems and to enlist the opinions of experts in the field of nuclear, conventional and renewable energy.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures

The knowledge acquired in the lecture is verified in a written exam consisting of 5 open questions scored from 0 to 2 points. Passing level: >50% of the points

Programme content

Lectures

Review and discussion of the main assumptions of energy policy of the European Union countries, key problems of the energy sector in the age of energy transition, characteristics of conventional and renewable energy sources, advantages and disadvantages of distributed energy, energy demand characteristics and demand-supply balancing methods, analysis of energy storage systems, Power to X technologies, technologies for generating and using hydrogen in the power industry, the formation of electricity and heat prices,

Course topics

none

Teaching methods

Lecture delivered remotely using synchronous access methods.

Lectures: multimedia presentation (including drawings, photos, animations).

Bibliography

Basic:

1. T. Chmielniak: Technologie Energetyczne, WNT, 2008
2. E. Klugmann-Radziemska: Energetyka i ochrona środowiska generowanie i magazynowanie energii. Odpady energetyczne. Analiza cyklu życia, WNT, 2023
3. M. Popkiewicz: Zrozumieć transformację energetyczną: od depresji do wizji, 2022
4. G. Jastrzębska: Energia ze źródeł odnawialnych i jej wykorzystania, WKŁ, 2017

Additional:

1. P.Kwiatkiewicz, R. Szczerbowski: Energetyka-bezpieczeństwo w wyzwaniach badawczych, 2017
2. Poland's Energy Policy until 2040,
3. Hydrogen Strategy for Poland

Breakdown of average student's workload

	Hours	ECTS
Total workload	28	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	13	0,50