COURSE DESCRIPTION CARD - SYLLABUS

Course name
European Union strategies in energy supply [S2ZE1E>SEUE]

Course

Field of study
Green Energy

Year/Semester
1/2

Area of study (specialization)
–

Profile of study
general academic

Level of study
second-cycle

Course offered in
english

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
15

Number of credit points

2,00

Coordinators

dr inż. Jerzy Andruszkiewicz
jerzy.andruszkiewicz@put.poznan.pl

Lecturers

Prerequisites

Basic knowledge in electrical power engineering, impact of the energy sector on the environment, transmission and distribution of electricity, energy markets, and the operation of energy systems. Ability to assess the impact of the analyzed processes in the field of electrical power engineering on society. Knowledge of the basics of entrepreneurship, market operation and the market economy. Ability to effectively self-study topics related to the chosen field of study. Awareness of the need to extend competences, readiness to cooperate within a team and aiming at sustainable development of utility processes.

Course objective

Acquainting with the legal basis for implementing the sustainable development strategy and improving energy efficiency. Understanding the tasks in terms of improving energy efficiency and climate protection resulting from the applicable legal regulations and threats in case of not achieving the adopted goals.

Course-related learning outcomes

Knowledge:
1. Student has knowledge of the basics of the action strategies in terms of energy efficiency and climate

protection and the goals to be fulfilled in these areas.
2. Student has knowledge of the basic measures to improve energy efficiency and implement climate protection.

Skills:
1. Student is able to determine the effects and measurable benefits resulting from the implementation of activities aimed at climate protection and improving energy efficiency.
2. Student is able to analyze the operation of objects in terms of possible reduction of energy consumption.
3. Student is able to use the existing support measures for pro-efficiency and climate protection projects in business practice.

Social competences:
1. Student is aware of the need to consider the environment and climate protection requirements in the operational activities and planned projects in the energy sector.
2. Student is able to explain the benefits of implementing pro-efficiency and pro-climatic measures.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:
- knowledge and skills assessment through two problem-based written tests,
- continuous assessment of student's skills and competences during each class through discussions on current problems related to the EU energy strategies (rewarding attendance and active participation in classes).
Project:
- knowledge and skills assessment concerning the project tasks, evaluation of the reports on the completed tasks,
- assessment of active participation in classes, rewarding in particular the ability to cooperate within the team handling the project task.

Programme content

Lecture:
Strategic goals of the EU in the energy sector and their planned implementation. Energy law in the EU structure, regulatory activities in the energy sector, rules of energy trade and activities of network operators on the wholesale energy market, supplying energy on the retail market, the role of smart metering systems, energy efficiency, energy efficiency and energy savings indicators, demand response through tariff systems and peak load reduction programs, energy management systems in enterprises, development planning in power systems, support systems for the sustainable development strategy, greenhouse gas emissions trading system, cross-border energy trade.
Project - possibility to choose one of the following variants:
Mechanism of shaping energy price on the wholesale market, the impact of transmission constraints on electricity prices, creating tariffs on the retail market and selecting the most beneficial tariff, designing demand response programs using the value of demand elasticity, improving energy and economic efficiency in the field of electricity consumption in households.

Teaching methods

Lecture: multimedia presentation - informational and problem lectures supplemented with examples presented on the board, elements of brainstorming and discussion
Project: solving project tasks in groups, analysis of literature data, consultations with the teacher

Bibliography

Basic:
1. A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy COM(2018) 773; https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0773&from=EN
2. In-depth analysis in support of the Commission Communication COM(2018) 773; https://ec.europa.eu/clima/system/files/2018-11/com_2018_733_analysis_in_support_en.pdf

3. Energy Policy of Poland until 2040 Extract - Ministry of Climate and Environment; https://www.gov.pl/web/climate/energy-policy-of-poland-until-2040-epp2040
4. Executive Summary of Poland's National Energy and Climate Plan for the years 2021-2030 (NECP PL); https://www.gov.pl/web/klimat/national-energy-and-climate-plan-for-the-years-2021-2030
5. Status Review of Renewable Support Schemes in Europe for 2018 and 2019; https://www.ceer.eu/documents/104400/-/-/ffe624d4-8fbb-ff3b-7b4b-1f637f42070a

Additional:
1. Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency; https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012L0027&from=PL
2. Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources; https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=PL
3. EU ETS Handbook; https://ec.europa.eu/clima/system/files/2017-03/ets_handbook_en.pdf
4. World Energy Outlook 2021; https://iea.blob.core.windows.net/assets/4ed140c1-c3f3-4fd9-acae-789a4e14a23c/WorldEnergyOutlook2021.pdf

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00