# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Economics in electrical power engineering [S2Elenerg1>EwE]

## Course

Field of study
Electrical Power Engineering

Year/Semester
2/3

Area of study (specialization)
Smart Grids

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
30

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

## Number of credit points

2,00

## Coordinators

## Lecturers

## Prerequisites

The student has a knowledge of the basics of financial management in energy companies. Has a knowledge of the basics of entrepreneurship, the market functioning and the market economy. Student knows the static and dynamic (discount) methods for assessing the profitability of energy projects. Is able to use the known methods to solve tasks related to the assessment of the economic efficiency of an investment. Student knows the subject of risk in the energy sector and the methods of its analysis.

## Course objective

Getting to know the market values of power plants and combined heat and power plants. Understanding an energetic and economic efficiency of modernization the energy facilities. Understanding the economical aspects of distributed electricity and heat generation.

## Course-related learning outcomes

Knowledge:
1. the student has knowledge of the market value of energy companies.
2. the student has knowledge of energetic and economic efficiency regarding modernization of the energy facilities.
3. student has knowledge of the economic aspects of a distributed energy generation.

Skills:
1. the student is able to determine the market value of power plants and combined heat and power plants.
2. the student is able to estimate the economic efficiency of modernized energy facilities.
3. the student is able to determine the cost of transmission and distribution of energy.

Social competences:
the student is aware of the critical assessment and analysis of issues related to modernization of energy facilities and distributed generation.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lecture
1. Assessment of the knowledge and skills shown in the written test.
2. Continuous assessment during each class - rewarding activity.

## Programme content

Lecture
Market value of power plants and combined heat and power plants. Technical and economic analysis of power grid systems. Costs of transmission and distribution of energy. Capital cost. Economic aspects of electricity distribution and heat generation. Sources of financing
for investment projects.

## Course topics

Energetic and economic efficiency
of power plants and combined heat and power plants modernization.
Unit cost of electricity generation.
Types of external financing sources. Companies. Taxes.

## Teaching methods

Lecture with multimedia presentation

## Bibliography

Basic
1. Michalak J., Metody oceny opłacalności wybranych inwestycji energetycznych, Wydawnictwo Politechniki Poznańskiej, Poznań 2020
2. Paska J., Wytwarzanie rozproszone energii elektrycznej i ciepła, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010.
3. Bartnik R., Rachunek efektywności techniczno - ekonomicznej w energetyce zawodowej, Politechnika Opolska, Opole 2008
4. Paździor A., Finansowanie rozwoju źródeł wytwórczych w krajowym systemie elektroenergtycznym, CeDeWu, Warszawa 2013
5. Ekonomika w elektroenergetyce, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2007.
Additional
1. Michalak J., Porównanie dyskontowych wskaźników oceny opłacalności ekonomicznej inwestycji na wybranym przykładzie, Poznan University of Technology Academic Journals. Electrical Engineering - 2016, Issue 86, s. 79-86
2. Heshmati A., Economic Fundamentals of Power Plant Performance, Routledge 2013
3. Ustawa z dnia 10 kwietnia 1997 r. PRAWO ENERGETYCZNE z Rozporządzeniami Ministra Gospodarki w
sprawie szczegółowych zasad kształtowania i kalkulacji taryf oraz zasad rozliczeń w obrocie energia elektryczną.
4. Sierpińska M., Jachna T., Ocena przedsiębiorstwa według standardów światowych, Wydawnictwo Naukowe PWN, Warszawa, 2017.
5.Praca zbiorowa pod redakcją Jana Duraja, Podstawy ekonomiki przedsiębiorstwa, Polskie

Wydawnictwo Ekonomiczne, Warszawa, 2002.
6. Janasz W, Podstawy ekonomii przemysłu, Wydawnictwo Naukowe PWN, Warszawa, 1997.
7. Drury C., Rachunek kosztów Wydawnictwo Naukowe PWN, Warszawa, 1996.
8. Laudyn D., Rachunek ekonomiczny w elektroenergetyce, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2007.
9. Szynal J.red., Ekonomia, Wydawnictwo Uniwersytetu Ekonomii we Wrocławiu, Wrocław 2013.
10. Bławat F., Podstawy analizy ekonomicznej. Teorie, przykłady, zadania, CeDeWu, Warszawa 2015.

## 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 |