



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Energy management and renewable sources of energy [S1IChiP1>GEiOŻE]

Course

Field of study

Chemical and Process Engineering

Year/Semester

4/7

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

The basic knowledge within mathematics and physical chemistry Student understands the need for continuous training and improve his professional and personal competences

Course objective

Gaining knowledge in term of conventional energy and environmentally friendly renewable energy sources.

Course-related learning outcomes

Knowledge:

student knows the principles of environmental engineering related to chemical production and waste management [k_w08].

Skills:

able to use the principle of saving raw materials and energy, and by modernizing equipment and

processes is achieved favorable economic indicators and reduce the environmental burden [k_u14].

Social competences:

understands the need for continuous training and improve his professional and personal competences - [k_k01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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The knowledge acquired during the lecture is verified by a written test consisting of 10 to 30 test questions and/or several open questions. Passing threshold: 50% of the maximum number of points.

Programme content

The subject covers physical, technological, legal and organizational aspects related to renewable energy sources and the energy market, energy efficiency and energy storage.

Course topics

1. Conventional energy and methods of reduce the risks associated with this type of energy
2. Water, wind, solar and geothermal energy
3. Biomass and biogas as a renewable energy sources
4. Hydrogen as an energy carrier
5. Electrochemical energy

Teaching methods

Lecture

Bibliography

Basic

1. W.M. Lewandowski, Proekologiczne odnawialne źródła energii, WNT, W-wa 2013
2. A. Czerwiński, Ogniwa, akumulatory, baterie, Wydawnictwa Komunikacji i Łączności, W-wa 2012.

Additional

- R. Arnowski, W.M. Lewandowski, Technologie ochrony środowiska w przemyśle i energetyce, WNT, W-wa 2020.
- K. Znajdek, M.Sibiński, Postępy w fotowoltaice, PWN, W-wa 2021
- T. Chmielniak, T. Chmielniak, Energetyka wodorowa, PWN, W-wa 2020

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	3,00
Classes requiring direct contact with the teacher	35	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	3,00