COURSE DESCRIPTION CARD - SYLLABUS

Course name
Energy management and renewable sources of energy

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 studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
dr hab. Małgorzata Osińska

Responsible for the course/lecturer:

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:

A written final credit course.

Programme content

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.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	40	1,6
Student's own work (literature studies, preparation for test) [1]	35	1,4

[1] delete or add other activities as appropriate