



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Elective course C: Strategy for sustainable energy development and legal regulations

### Course

Field of study	Year/Semester
Electrical Engineering	3/6
Area of study (specialization)	Profile of study
Study Sustainable Development of Power	general academic
Level of study	Course offered in
First-cycle studies	Polish
Form of study	Requirements
full-time	elective

### Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	15	0
Tutorials	Projects/seminars	
0	0	

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Justyna Michalak

Responsible for the course/lecturer:

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Wydział Inżynierii Środowiska i Energetyki

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### Prerequisites

Basic information on energy and fuel, technology and power machinery. Basic knowledge in economics.

The ability to use information from literature and databases. The ability to use economic knowledge and the basics of law in practice.

He is aware of the need to broaden his / her competences, ability to work in a team

### Course objective

To familiarize students with the general principles and conditions of sustainable energy development - in its technical, economic and legal aspects. Ability to assess the energetic situation of the World and Poland. Combining knowledge of energy and energy law.



### Course-related learning outcomes

#### Knowledge

1. Has basic and structured knowledge in the field of energy security and the role of fuels and generation sources in the energy system
2. Has knowledge about the role and importance of energy in the economy of the country, the size of energy resources and the ways of their use, taking into account the production structure of the energy system. He learns the characteristics of various energy sectors: the power system and heating.
3. Knows the structure of the national energy system and subsystems, knows the principles of rational energy management in the processes of conversion and energy use.

#### Skills

1. The student is able to estimate the energy demand
2. Has the ability to solve practical problems in energy systems including legal, economic and environmental aspects

#### Social competences

Is aware of the responsibility for jointly implemented tasks

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

#### Lecture:

- assessment of knowledge and skills demonstrated in a problem or test written test,
- continuous assessment during each class (rewarding activity and quality of perception).

#### Design laboratory:

Form of settlement: presentation on the forum, paper / PDF

### Programme content

#### Lecture:

Assumptions of the European energy policy. Energy Road Map of the European Union until 2050. Poland's energy policy. EU directives and their implementation in Polish legislation. Planning the development of sustainable energy systems at various scales.

#### Design laboratory:

- Technical and economic analysis of exemplary RES investments and case study based on applicable legal regulations
- Concept of a photovoltaic installation in the production plant
- The concept of building a solar farm for investment purposes



- Concept of using electric cars to equalize the load profile of an office building
- Concept of building a biogas plant at the production plant
- The concept of building a biogas plant for the needs of supplying the inhabitants of the commune with electricity and heat

### Teaching methods

Lecture: multimedia presentation

Laboratory: group work, carrying out project tasks

### Bibliography

Basic

1. Góralczyk I. Tytko R., Racjonalna gospodarka energią, Wydawnictwo: Towarzystwo Słowaków w Polsce, 2013
2. Charun H., Podstawy gospodarki energetycznej w zarysie t 1-3. Wydawnictwo Uczelniane Politechniki Koszalińskiej. 2016
3. Niedziółka D., Rynek energii w Polsce, Difin, 2010
4. Soliński I., Ekonomia i organizacja sektorów systemu paliwowo-energetycznego. Uczelniane Wydawnictwa Naukowo-Dydaktyczne. 2000
5. Krajowa Agencja Poszanowania Energii, Efektywność energetyczna i odnawialne źródła energii w gminie, Krajowa Agencja Poszanowania Energii, 2004.
6. Wysocki R., Prawo energetyczne i wybrane przepisy energoefektywne, Polcen, 2014
7. Bogda A., Zasoby naturalne i zrównoważony rozwój, Wydawnictwo Uniwersytetu Przyrodniczego, cop. 2010.
8. Mikosz R., Lipiński A., Radecki G., Dobrowolski G., Zrównoważony rozwój jako czynnik determinujący prawne podstawy zarządzania geologicznymi zasobami środowiska, Agencja Reklamowa Top, 2016.

Additional

1. Szargut J., Ziebiak A., Podstawy energetyki cieplnej, PWN
2. Kuciński K., Energia w czasach kryzysu, DIFIN, 2006
3. Szargut J., Ziebiak A., Podstawy energetyki cieplnej, PWN
4. Kwiatkiewicz P, Szczerbowski R. (red. Nauk.), Bezpieczeństwo, edukacja, gospodarka, ochrona środowiska, polityka, prawo, technologie, Fundacja na Rzecz Czystej Energii, 2014.



5. Banaś M., Ochrona i inżynieria środowiska: zrównoważony rozwój, Wydział Inżynierii Mechanicznej i Robotyki AGH, 2008.

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	52	2,0
Classes requiring direct contact with the teacher	39	1,0
Student's own work (literature studies, preparation for the laboratory, project preparation, preparation for the exam) <sup>1</sup>	13	1,0

<sup>1</sup> delete or add other activities as appropriate