

Title Unconventional sources of energy	Code 1010322331010320955
Field Power Engineering	Year / Semester 2 / 3
Specialty -	Course core
Hours Lectures: 2 Classes: - Laboratory: 2 Projects / seminars: 1	Number of credits 0
	Language polish

Lecturer:

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Status of the course in the study program:

Obligatory subject, Faculty of Power Engineering, Field: Power Engineering, full time second degree studies

Assumptions and objectives of the course:

Attainment of competence of theoretical and practical solving of problems in field of unconventional sources of energy.

Contents of the course (course description):

1. The comparison between conventional and renewable energy sources, world energy consumption, (finite resources, emissions).
2. Renewables:
 - a.) Wind energy, water energy and its conversion into electricity. Sun energy and photovoltaic conversion. Electricity using biogas and biomass. Geothermal energy conversion into electricity.
 - b.) Fundamental laws and principles. Equations, characteristics, parameters of process and optimization of conversion of energy. Technologies, construction and efficiency of converters.
 - c.) Production of energy. Stand - alone and grid - connected installations. Large power plants.
 - d.) Fuel cell. Hydrogen as fuel.
 - e.) Applications (in the world and in Poland), examples. hybrid solutions, performance. costs.
3. Energy storage (battery, flywheel, hydraulic accumulator, superconductor).
4. Proecological vehicles (electric, hybrid, solar).

Introductory courses and the required pre-knowledge:

The student should obtain basic and specialist knowledge of the teoretical and practical problems of method of energy conversion from unconventional sources of energy into electricity and their applications.

Courses form and teaching methods:

Lecture, project, laboratory, individual work with students.

Form and terms of complete the course - requirements and assessment methods:

Oral and written examination

Basic Bibliography:

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Additional Bibliography:

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