STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Wind power plants**	Code **1010314391010326912**

Field of study **Power Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **5 / 9**

Elective path/specialty **Ecological Sources of the electric energy**	Subject offered in: **polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **part-time**

No. of hours Lecture: **9** Classes: **-** Laboratory: **-** Project/seminars: **9**	No. of credits **2**

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art **technical sciences** **Technical sciences**	ECTS distribution (number and %**)** **2 100%** **2 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of mathematics and physics.
2	**Skills**	Ability to effectively self in a field related to the chosen specialty.
3	**Social competencies**	Broaden their awareness of the need for competence, willingness to work together as a team.

Assumptions and objectives of the course:

Knowledge of both theoretical and practical issues related to the design, testing, measurement and wind power systems technologies. Understanding the issues related to co-operation of wind turbines with the power system.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. it has a basic knowledge of renewable energy including wind power. He knows and understands the phenomena, processes and equipment to allow for conversion to electricity and heat - [K_W09++]

2. he knows the current state of technology and the development of wind energy technology - [K_W020+]

Skills:

1. can obtain information from different sources and on this basis can apply and formulate and justify opinions. He can choose the research methodology - [K_U01+, K_U10+]

2. able to work independently and in a team - [K-U02+]

Social competencies:

1. is aware of the importance of engineering and non-technical aspects understands and effects - [K_K02+]

2. is aware of the responsibility for the work carried out individually and in a team - [K_K04+]

Assessment methods of study outcomes

Lecture:

- assess the knowledge and skills demonstrated by the successful completion of a written test and a combined problem.

Projects:

- continuous evaluation for each course, combined with bonus.

- final assessment of knowledge and skills after the completion of the design task.

Getting extra points:

- the effectiveness of the application of the knowledge gained during solving the tasks of the project.

Course description

Systems operation and control of wind power plants. Wind Energy Zone in Poland as a function of OPG. Analysis of the microprocessor control system. The impact of point sources on the grid. The project connecting the wind turbine to the grid. Technical conditions. Arrangements.

Basic bibliography:

1. Lewandowski W.: "Proekologiczne źródła energii odnawialnej", WNT, Warszawa 2007.

2. Lubośny Z.: "Elektrownie wiatrowe w systemie elektroenergetycznym", WNT, Warszawa 2006.

Additional bibliography:

1. Gałuszak M., Paruch J., Praca zbiorowa: "Poradnik. Odnawialne i niekonwencjonalne źródła energii elektrycznej", Wydawnictwo TARBONUS, Tarnobrzeg 2008.

Result of average student's workload

Activity	Time (working hours)
1. participation in class lectures	9
2. participation in project activities	9
3. part in the consultation for lectures	4
4. part in the consultation for project activities	6
5. preparation of design and development activities of the project	20
6. preparation for the completion of the lecture	15
7. participate in the completion of class lectures	2

Student's workload

Source of workload	hours	ECTS
Total workload	65	2
Contact hours	35	1
Practical activities	30	1