

FACULTY OF ELECTRICAL  
ENGINEERING**SUBJECT CARD**

Name in Polish: **Elektroenergetyka-zajęcia terenowe**  
 Name in English: **Electrical Power Engineering - excursionary activities**  
 Main field of study (if applicable): **Electrical Engineering**  
 Specialization (if applicable): **Renewable Energy Systems**  
 Level and form of studies: **2nd level, full-time**  
 Kind of subject: **optional**  
 Subject code: **ELR052138**  
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	15				15
Number of hours of total student workload (CNPS):	60				30
Form of crediting:	crediting with grade				crediting with grade
For group of courses mark (X) final course:					
Number of ECTS points:	2				1
including number of ECTS points for practical (P) classes :					1
including number of ECTS points for direct teacher-student contact (BK) classes:	1.40				0.70

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. The student has ordered theoretical knowledge necessary to develop a detailed topic in the broadly understood power system and control systems area.
2. Can properly apply the knowledge learned to prepare an article and a multimedia presentation.
3. Can cooperate in an international group.

**SUBJECT OBJECTIVES**

- C1. Extension and transplantation of knowledge in the field of electrical power engineering in the context of industrial practice.  
 C2. Expansion of skills to develop independently and present selected topics in power engineering.  
 C3. Acquisition of skills related to active participation in the discussion on presented of results.

**SUBJECT LEARNING OUTCOMES***relating to knowledge:*

- PEU\_W01 He knows about methods of control of RES systems, in particular those related to real industrial objects.  
 PEU\_W02 He knows about algorithms of control of RES systems, in particular those related to real industrial objects.

*relating to skills:*

- PEU\_U01 He can independently characterize and evaluate the utility values of basic RES systems in relation to the problems of functioning in the electric power system.  
 PEU\_U02 He can evaluate the importance of RES control systems for cooperation with the power network.

*relating to social competences:*

- PEU\_K01 He can translate general principles and values of academic community into practical attitudes and behaviours during the international educational trip.

## PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	Introduction. Principles of work and credit. Papers characteristics.	2
Lec 2	Characteristics of RES objects - in relation to visited industrial objects (field activities) part.1.	2
Lec 3	Characteristics of RES objects - in relation to visited industrial objects (field activities) part.2.	2
Lec 4	Methods of control of RES objects - in relation to visited industrial objects (field activities) part 1.	2
Lec 5	Methods of control of RES objects - in relation to visited industrial objects (field activities) part 2.	2
Lec 6	Practical restrictions on the control of RES objects - in relation to visited industrial objects (field activities) part.1.	2
Lec 7	Practical restrictions on the control of RES objects - in relation to visited industrial objects (field activities) part.2.	2
Lec 8	Summary. Discussion of the results of written assignments.	1
Total hours:		<b>15</b>

Form of classes - seminar		Number of hours:
Sem 1	Requirements, individual subjects, nature of work, division into groups, conditions of credit.	2
Sem 2	Se2-8. Presentation of the performed analysis for a given problem in the field of power engineering.	13
Total hours:		<b>15</b>

## TEACHING TOOLS USED

- N1. Field courses in industry, power plants, etc. and a seminar using multimedia presentations.  
 N2. Substantive discussion on the presented issues.

## EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation <i>F - forming (during semester) P - concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(w)	PEU_W01 PEU_W02	Evaluation of the article / written report (distinguished works recommended to KNS)
P(w)	P=F1	
F1(s)	PEU_U01 PEU_U02 PEU_K01	Evaluation of multimedia presentation.
F2(s)	PEU_U01 PEU_U02 PEU_K01	Active participation in the didactic trip related to power engineering.
P(s)	P=0.7*F1+0.3*F2	

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

- [1] Ehrlich, Robert (1938- ). Renewable energy : a first course / Boca Raton [etc.] : CRC Press/Taylor & Francis Group, cop. 2013
- [2] Goodstal, Gary. Electrical theory for renewable energy Clifton Park : Delmar Cengage Learning, cop. 2013
- [3] Thomashow, Mitchell. The nine elements of a sustainable campus / Cambridge, Mass. London, The MIT Press, cop. 2014

### SECONDARY LITERATURE:

- [1] Literature related directly to the individual subject of student work

## SUBJECT SUPERVISOR

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