STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Automatics and Measurements in Electrical Power Engineering	**1010311261010314795**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**general academic**	**3 / 6**

Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Networks and Electric Power Systems	**Polish**	**obligatory**

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

No. of hours	No. of credits
Lecture: **2** Classes: **-** Laboratory: **2** Project/seminars: **1**	**5**

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

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge in the scope of electrical engineering and the work of electric power systems in normal and disturbed states
2	**Skills**	Ability to understand and to interpret passed on knowledge and to self-study in the domain connected with chosen course of studying
3	**Social competencies**	Has a consciousness of necessity to widen competences and willingness to work in a team

Assumptions and objectives of the course:

-To acquaint with basic tasks of electrical power engineering protection and with methods of measuring criterion quantities for the needs of supervision, control and protection of power system

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

Knowledge:

1. Has basic knowledge in the scope of automatics and automatic control, knows operation criteria and the rules of the chose of electric power engineering protection - [K_W22+++]

Skills:

1. Is able to design simple electrical system for various applications, using proper methods, technics and tools - [K_U03+]

Social competencies:

1. Is aware of significance of his own work and willingness to acquiesce to principles of working in group and to be responsible for collectively realized task - [K_K03++]

Assessment methods of study outcomes

-Lecture

evaluation of the knowledge on written (test) exam and oral exam

Laboratory

pre-classes verifying tests

evaluation of reports and discussion about problem matters

Project

design seminar

evaluation of realized project

Course description

-Tasks and functions of measurement-control and protection elements, digital technology. Structure of measurement lines for the needs of measuring, supervision and protection of electric power system, current and voltage measuring transformers, digital filters, basic measuring-decision algorithms

Basic bibliography:

1. Winkler W., Wiszniewski A.: Automatyka zabezpieczeniowa w systemach elektroener-getycznych. Wydanie I, WNT, Warszawa, 1999. Wydanie II, WNT, Warszawa, 2004.

Additional bibliography:

1. Szafran j., Wiszniewski A., Algorytmy pomiarowe i decyzyjne cyfrowej automatyki elektroenergetycznej, WNT Warszawa, 2001.

2. Wiszniewski A., Przekładniki w elektroenergetyce. Wyd.2, WNT Warzsawa 1992r.

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	40

Student's workload

Source of workload	hours	ECTS
Total workload	143	5
Contact hours	92	4
Practical activities	30	1