STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Electric power protection automatics**	Code **1010311361010311551**	
Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 6**
Elective path/specialty **Power Networks and Electric Power System**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	

No. of hours				No. of credits **1**
Lecture: **15** Classes: **-** Laboratory: **-** Project/seminars: **-**				

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**	ECTS distribution (number and %**)** **1 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	They have knowledge of the basics of electrical engineering, electric power industry
2	**Skills**	They can autonomously calculations for electricity networks
3	**Social competencies**	They are aware of the need to supplement the expertise and to cooperate in a group

Assumptions and objectives of the course:

-The gain bases of specific knowledge for the work of power electric grid and the activities of the automatic protection

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

Knowledge:

1. They know the basic definitions of the parameters of the measure transformers and relays - [K_W05 +]

2. They have knowledge of the normal job requirements of a system-load capacity. They have knowledge of the job requirements of a system in short-circuit time ? the thermal and dynamic effects of short circuit current - [K_W11++]

3. They have knowledge of the division and function of electric power automatic protection; of the selection of setting of basic relays. - [K_W22+++]

Skills:

1. They can broaden their knowledge using a complementary literature - [K_U09+]

2. They can analyze the working conditions of electric power automatic protection equipment in the power system - [K_U13++, K_U22++]

Social competencies:

1. They are aware of the social effects of the proper use of electricity and the negative effects of its absence caused by the failure of power system - [K_K02++]

Assessment methods of study outcomes

- evaluation of the knowledge and skills shown out on the written exam

Course description

-Review the tasks of power automatic in the power system. A closer understanding of electric power automatic protection task with preliminary round on preventive, eliminative and restitutive. Where the automatic obtain information from - principle of the selection of measure transformers, calculation of short circuit currents. Operating principles and selection of set values of the simplest relays.

Basic bibliography:

1. Żydanowicz J. Elektroenergetyczna automatyka zabezpieczeniowa.   WNT -Warszawa, tom I (1979), tom II (1985), tom III (1989)

2. Winkler W., Wiszniewski A. Automatyka zabezpieczeniowa w systemach elektroenergetycznych. WNT ? Warszawa 1999

3. Włodzimierz Korniluk, Krzysztof Woliński :Elektroenergetyczna Automatyka Zabezpieczeniowa, WPB, Białystok 2012.

Additional bibliography:

1. Lorenc J.: Admitancyjne zabezpieczenia ziemnozwarciowe. Wydawnictwo Politechniki Poznańskiej 2007 .

2. Wiszniewski A.: Algorytmy pomiarów cyfrowych w automatyce elektroenergtycznej.,   Warszawa, WNT 1990.

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Participation in consultations	2
3. Prepare for the exam	10

Student's workload

Source of workload	hours	ECTS
Total workload	27	1
Contact hours	17	1
Practical activities	0	0