

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 Networks and Electric Power Systems	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 Lecture: 15 Classes: - Laboratory: - Project/seminars: -		No. of credits 1
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: prof.dr hab.inż.Józef lorenc email: jozef.lorenc@put.poznan.pl tel. +48 61 6652 279 Elektryczny ul. Piotrowo 3A 60-965 Poznań		
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 elektroenergetycznej., 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