STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Study work**		Code **1010311261010310859**
Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 6**
Elective path/specialty **High Voltage Engineering**	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: **-** Classes: **-** Laboratory: **-** Project/seminars: **2**		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**		ECTS distribution (number and %) **2 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has the knowledge in materials science, electrical engineering, electric power engineering, high voltage engineering, construction of high voltage equipment
2	**Skills**	Student has the ability to effective self-learning in the scope of chosen field of study. Has basic ability of power equipment design
3	**Social competencies**	Student is aware of expanding his knowledge, ability, competences, can work and cooperate in group. Is aware of environment protection and influence of HV equipment on the environment

Assumptions and objectives of the course:

Project work made individually by each student. Demonstration of the ability of designing the high voltage power equipment on the basis of knowledge obtained in time of studies and knowledge of current standards and regulations

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

Knowledge:

1. Student has extended knowledge in the scope of construction and operation of electric power equipment - [K_W08+++]
2. Student has basic knowledge in the scope of design and selection of high voltage power equipment - [K_W23++]

Skills:

1. Student is able to design complex electrical system for use in power engineering utilizing proper methods, techniques and tools. - [K_U03+++]
2. Student is able to use technical literature, catalogues, technical manuals. Is able to integrate obtained informations, properly interpret and draw conclusions. - [K_U05++]
3. Student is able to prepare technical documentation for engineering task realization. Is able to discuss the results of the problem - [K_U07+++]

Social competencies:

1. Student is able to work creatively and with initiative in the field of electric power engineering, taking into consideration of designed systems on environment. - [K_K04+++]

Assessment methods of study outcomes

Project seminar classes. Evaluation of individually prepared project

Course description

Designing of high voltage power cable and cable line supplying the customer. Designing of substation distributing equipment ? cable terminations and joints, bus bars, insulators, transformer, switching and measurement devices. Calculation of maximum ampacity of power line taking into consideration power cable construction, route requirements, transmission loses limitation. Correct selection of conducting and insulating materials according to voltage value, demanded power, terrain conditions

Basic bibliography:

1. IEC 287: Calculation of the continuous current rating of cables, International Electrotechnical Commission Publication, 1994
2. Włodarski R., Bucholc J., Linie kablowe bardzo wysokich napięć. Projektowanie i budowa. WNT Warszawa, 1979
3. Mościcka-Grzesiak H., Inżynieria wysokich napięć w elektroenergetyce, tom I/II, Wydawnictwo Politechniki Poznańskiej 1996/99

Additional bibliography:

1. Babij J., Kutzner J., Zasady doboru urządzeń elektrycznych rozdzielni i stacji, Wydawnictwo Politechniki Poznańskiej
2. Kuffel E., Zaengl W., Kuffel J., High Voltage Engineering. Fundamentals, Butterworth-Heineman, 2001

Result of average student's workload

Activity	Time (working hours)
1. Participation in project classes	30
2. Consultations	5
3. Project realisation	20

Student's workload

Source of workload	hours	ECTS
Total workload	55	2
Contact hours	35	1
Practical activities	50	2