

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Project of high voltage insulating systems		Code 1010312331010314899
Field of study Electrical Engineering	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty High Voltage Engineering	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: 15 Project/seminars: 15		No. of credits 5
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: dr hab. inż. Zbigniew Nadolny, prof. nadzw. email: zbigniew.nadolny@put.poznan.pl tel. 61-665-2298 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	He/she has knowledge in frame of electrical engineering material science and knows fundamental principles related to electrical circuits theory. He/she has fundamental knowledge about high voltage engineering. He/she has knowledge in frame of overvoltage protection of buildings and lines.
2	Skills	He/she can build simple electrical system. He/she can make measurements of physical properties related to insulation systems. He/she can make measurements of high voltage using various methods.
3	Social competencies	He/she can work and cooperate in group. He/she knows influence of high voltage insulation systems on natural environment.
Assumptions and objectives of the course: The aim of the discipline is to know fundamental principles of design and physical and electric engineering principles related to work of high voltage insulation systems.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. He/she has extended knowledge in frame of design of high voltage insulation systems considering their influence on environment. - [K_W05++] 2. He/she has extended knowledge in frame of work of high voltage insulation systems. - [K_W15+++]		
Skills: 1. He/she can design electric power systems related to work in power systems. - [K_U13+++] 2. He/she can propos the improvement of actual solutions in frame of high voltage insulation systems. - [K_U18++]		
Social competencies: 1. He/she can design high voltage insulation systems taking under consideration prize of the materials. - [K_K01+++]		
Assessment methods of study outcomes		

<p>Lectures ? Assessment of knowledge and skills proved on tests, Laboratories: ? Tests and preemie of knowledge which is necessary to realize fundamental tasks in some fields of laboratory, ? Continuous assessment on each laboratory ? preemie of knowledge increase, ? Assessment of knowledge and skills connected to realization of laboratory tasks, assessment of report, Project: ? Assessment of prepared projects.</p>		
Course description		
<p>The disciplines consists of following problems: analysis of electric and magnetic fields in layer and non-layer insulation systems for DC and AC; characteristics of electric strength of air as a function of distance between electrodes; analysis of Rogowski profile; analysis of electric field stress in plate, cylindrical, spherical and sharp systems. In frame of the discipline modern methods of reduction of electric field stress on chosen insulation systems are presented. The influence of contaminants on electric field stress distribution in analyzed, too.</p>		
Basic bibliography:		
<p>1. Gacek Z., Design of high voltage insulation systems used in electric power systems, Wydawnictwo Politechniki Śląskiej, Gliwice 2002. 2. Florkowska B., Electric strength of gas high voltage insulation systems, Uczelniane Wydawnictwo Naukowo-Dydaktyczne, Kraków 2003. 3. Szpor S., Electric strength and insulation technology, Państwowe Wydawnictwo Naukowe, Warszawa 1959. 4. Gacek Z., High voltage engineering. Wydawnictwo Politechniki Śląskiej, Gliwice 1999.</p>		
Additional bibliography:		
<p>1. Gacek Z., High voltage technology, Wydawnictwo Politechniki Śląskiej, Gliwice 2006.</p>		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	15	
2. Participation in laboratories	15	
3. Participation in projects	15	
4. Participation in exam.	1	
5. Preparation to exam.	20	
6. Consultations.	20	
7. Preparation to laboratories	10	
8. Preparation of laboratory reports.	10	
9. Preparation of the project.	20	
Student's workload		
Source of workload	hours	ECTS
Total workload	126	5
Contact hours	66	3
Practical activities	70	3