

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Computer-aided design of power devices		Code 1010311361010316894
Field of study Electrical Engineering	Profile of study (general academic, practical) general academic	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: 30		No. of credits 2
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 technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr hab. inż. Hubert Morańda email: hubert.moranda@put.poznan.pl tel. 61 665 2035 Wydział Elektryczny ul. Piotrowo 3A 61-138 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student knows the basics of electrical engineering, power engineering, basic numerical methods.
2	Skills	Student can independently solve simple tasks in the field of electrical engineering, power engineering, and use of the available computer programs.
3	Social competencies	Is aware of the work of the group.
Assumptions and objectives of the course: Fact-finding of selected numerical methods and computer programs supporting the process of modeling of physical phenomena and design of electrical equipment.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Knowledge about design, construction and operations of electrical equipment - [K_W08+++] 2. Student has knowledge of the structure and operation of transformers and electrical machines - [K_W13++] 3. He has knowledge of the physical phenomena occurring in high-voltage insulation systems, systems to high voltage and protection rools - [K_W26++]		
Skills:		
1. Ability to formulate an algorithms, writing programming, and ability to use software tools in electrical engineering - [K_U04 + + +] - [K_U04++++] 2. Student can use the known methods, mathematical models and computer simulators to analyze and evaluate the electrical components and systems - [K_U10++] 3. Sudent can properly choose available programing environments, simulators and program tools to support computer aided development - [K_U13++]		
Social competencies:		
1. Understands the necessity and knows the possibility for learning throughout whole life (second-and third-degree and post-graduate) and raise the competence - [K_K01+++]		
Assessment methods of study outcomes		

Result of project.		
Course description		
Introduction to using of artificial neural networks simulator (ANN). Exercises of input the data and its description. Creating and teaching the ANN on simple math using the default parameters of the simulator. Testing the influence of ANN simulator parameters changing on teaching SSN results. Exercises on presentation of SSN computing results. Teaching of the neural network the recognition states of logical gates. The use of ANN to modelling of graphs describing the measurements results. The use of ANN to modelling of social phenomena. Designing of ANN to identify defects of the selected insulation system.		
Basic bibliography:		
1. R. Tadeusiewicz, Sieci neuronowe, Akademicka Oficyna Wydawnicza RM, Warszawa 1993, Seria: Problemy Współczesnej Nauki i Techniki. Informatyka.		
2. R. Tadeusiewicz, Elementarne wprowadzenie do techniki sieci neuronowych z przykładowymi programami, Wyd. Akademicka Oficyna Wydawnicza PLJ, Warszawa 1998, Seria: Problemy Współczesnej Nauki. Informatyka.		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Preparing for lectures	12	
2. Participation in lectures	30	
3. Realisation of project	20	
4. Consultation	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	64	2
Contact hours	32	1
Practical activities	50	2