

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Electronics and Power Electronics		Code 1010324261010323752
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty -	Subject offered in: polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time,part-time) part-time	
No. of hours Lecture: - Classes: - Laboratory: 10 Project/seminars: -		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 Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Jan Piłaciński email: jan.pilacinski@put.poznan.pl tel. 61-6652794 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of mathematics, electrical engineering, electronics, power electronics, and computer simulation of electronic systems
2	Skills	Analysis: Mathematical, electrical circuits, electrical and electronics. Making electrical measurements. Ability to effectively self-education and the organization of work in a team
3	Social competencies	Is aware of the need to enhance their professional skills and teamwork
Assumptions and objectives of the course: Knowledge of modeling and simulation to assist in the selection of components and design of power electronic converters.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. The student knows the semiconductor device modeling and simulation methods for basic power converters. - [K_W02+K_W14++]		
2. He/She has knowledge of the selection of semiconductor devices and design of power converters using simulation methods. - [K_W14+++]		
Skills:		
1. Student is able to develop a simulation model and make the identification of the power electronic converter indicated. - [K_U10++]		
2. She/He can determine the output data and formulate criteria for the selection of items to design power converters. - [K_U03+K_U10++]		
3. She/He can simulate the operation of basic power electronic converters for the analysis and design calculations - [K_U10++K_U02++]		
Social competencies:		
1. It has the competencies to lead a team and make decisions on the design, simulation, and operation of basic power converters. - [K_K02++K_K03++]		
Assessment methods of study outcomes		

Laboratory: - Assessment of knowledge and skills related to the implementation of the tasks of the project. Bonus points: - The activity in the classroom, - Propose to discuss further aspects of the subject, - The effectiveness of the application of the knowledge gained during solving the given problem.		
Course description		
Basic knowledge of modeling with PSpice simulator: the types of analyzes, models of semiconductor devices and of basic power converters. Selection of parameters of power converters. Identification of model parameters. Modelling and design of power converter.		
Basic bibliography: 1. Frąckowiak L.: Energoelektronika, WPP 1998. 2. Kaźmierkowski M., Matysik J.: Wprowadzenie do elektroniki i energoelektroniki. PW, 2005. 3. Tunia H., Barlik R.: Teoria przekształtników. PW, 2003. 4. Żyborski J., Lipski T.: Zabezpieczenia diod i tyrystorów. WNT, Warszawa 1979.		
Additional bibliography: 1. Król A., Moczko J.: PSPICE Symulacja i optymalizacja układów elektronicznych. Nakom, Poznań 1998. 2. Izydorczyk J: PSpice komputerowa symulacja układów elektronicznych. Wyd Helion, Gliwice 1993. 3. Nowak M., Barlik R.: Poradnik Inżyniera energoelektronika. WNT Warszawa 1998. 4. Tunia H., Winiarski B.:Energoelektronika, WNT, 1994.		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in laboratory activities	10	
2. Preparation for laboratory	20	
3. Development of the project	20	
4. Participation in the consultation on laboratory exercises	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	60	2
Contact hours	20	1
Practical activities	60	2