

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Electronics		Code 1010331141010330033
Field of study Control Engineering and Robotics	Profile of study (general academic, practical) general academic	Year /Semester 2 / 4
Elective path/specialty -	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: 2 Classes: - Laboratory: 2 Project/seminars: -		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 technical sciences		ECTS distribution (number and %) 5 100%
Responsible for subject / lecturer: dr inż. Jan Deskur email: Jan.Deskur@put.poznan.pl tel. +48 61 665 2735 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	K_W02: K_W08:
2	Skills	K_U01: K_U04:
3	Social competencies	K_K_02:
Assumptions and objectives of the course: Knowledge concerning principles of operation of power electronics converters, rectifiers, AC/AC converters, AC/DC converters and inverters.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. K_W12 - [K_W12] 2. K_W19 - [K_W19]		
Skills:		
1. K_U06 - [K_U06] 2. K_U20 - [K_U20] 3. K_U23 - [K_U23]		
Social competencies:		
1. K_K04 - [K_K04]		
Assessment methods of study outcomes		
- Written and (optionally) oral examination, - Laboratory: attendance in exercises, evaluation of written reports on laboratory exercises.		
Course description		

<p>- Lectures: Introduction to power electronics. Overview of power semiconductor switches. Line-frequency phase commutated converters: analysis, simplified energy and signal models. Switch-mode converters: analysis , averaged models. DC/DC converters, inverters. Resonant converters. Power supply applications. Electric utility applications. Current harmonics. Developmental prospects of power electronics: new types of devices, "intelligent" modules.</p> <p>- Laboratory: thyristor phase controlled rectifiers , switch-mode DC/DC converters , inverters.</p>		
<p>Basic bibliography:</p> <p>1. Lecture materials provided by the teacher in electronic form.</p> <p>2. Wprowadzenie do elektroniki i energoelektroniki, Marian P. Kaźmierkowski, Jerzy T. Matysik, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2005</p> <p>3. Energoelektronika, część I - Półprzewodnikowe przyrządy i moduły energoelektroniczne, Leszek Frąckowiak, Stefan Januszewski , Wyd. Politechniki Poznańskiej, Poznań, 2003</p>		
<p>Additional bibliography:</p> <p>1. Power Electronics: Converters, Applications and Design, Ned Mohan, Tore M. Undeland, Wiliam P. Robins, Wiley, 2003</p>		
<p>Result of average student's workload</p>		
<p>Activity</p>	<p>Time (working hours)</p>	
1. Lectures	30	
2. Laboratory excersises	30	
3. Preparation to laboratory excersises, elaboration of reports	45	
4. Preparation to examination.	15	
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	175	5
Contact hours	62	2
Practical activities	42	2