

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Electrotechnique and Electronics</b>		Code <b>1010401151010320599</b>
Field of study <b>EDUCATION IN TECHNOLOGY AND</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>3 / 5</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>2</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b> <b>4 100%</b>
<b>Responsible for subject / lecturer:</b>  Dr hab.inż. Grażyna Jastrzębska prof.nadzw. email: grazyna.jastrzebska@put.poznan.pl tel. (61) 6652382 Wydział Elektryczny ul. Piotrowo 3a 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge of physics concerning electric current and the mathematics.
2	<b>Skills</b>	Ability to solve basic problems of electrical engineering on the basis of their knowledge and supplementing the information from the indicated sources.
3	<b>Social competencies</b>	Understanding the need to broaden their skills, willingness to work as a team.
<b>Assumptions and objectives of the course:</b> Understanding the theoretical and practical problems of electrical engineering and electronics. Acquiring the ability to analyze selected AC and DC electrical circuits and rules of operation of electrical and electronic devices.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. has structured knowledge of the fundamentals of electrical engineering and electronics, including circuits for AC and DC electrical and electronic devices, allowing to understand the functioning of these devices as well - the characteristics of energy conversion related to the acquisition of energy from renewable sources. - [K_W13]		
2. knows the current state of knowledge, is familiar with the latest trends in technology and application of specific devices and alternative energy sources - [K_W17]		
<b>Skills:</b>		
1. able to use the acquired theoretical knowledge in mathematics and physics to define and explain the functioning of machinery and electrical devices, light sources and characterization of energetic changes associated with the acquisition of renewable energy, knows how to use analytical methods to formulate and solve problems in the field of measurement of physical quantities - [K_U10]		
2. Is able to use correctly standard analytical tools for solving electrical circuits and to assess the results - [K_U08]		
3. Know how to identify a technical problem, proposed scheme of solution taking into account the relevant technical aspects - [K_U16]		
<b>Social competencies:</b>		
1. ability to work independently on specific task and work in a team, taking on the various roles, work responsibly - [K_K01]		
2. is aware of and understands the importance of non-technical aspects and impacts of engineering, including its impact on the environment and the associated responsibility for decisions - [K_K06]		

<b>Assessment methods of study outcomes</b>		
Exam	3	50.1%-70.0%
	4	70.1%-90.0%
	5	od 90.1%
Test	3	50.1%-70.0%
	4	70.1%-90.0%
	5	od 90.1%
Evaluation of activity at classes	3	student has a moderate involvement in problem solving, finds a solution based on the gained knowledge when encouraged
	4	student has a commitment to solving problems, seeking solutions based on the knowledge gained
	5	student demonstrates a strong commitment to independent solving problems looking for solutions on the basis of the knowledge gained, is looking for additional sources of useful knowledge to solve problems, seek solutions in non-standard situations
<b>Course description</b>		
<p>DC circuits: methods for solving these systems, work and power of the electric current</p> <p>AC circuits: one-phase systems, methods of solving these systems with the use of complex numbers, vector diagrams, phase shift, RLC elements, resonance, impedance triangle and power triangle, work and power (active, reactive and apparent), power factor correction, three-phase systems</p> <p>Basis of construction and operation of electrical devices, transformers, AC motor.</p> <p>Basis of Electronics (semiconductors, resistors, rectifiers, filters, resonant circuits)</p> <p>Selected aspects of renewable energy sources (energy conversion into electricity, technology, applications)</p>		
<b>Basic bibliography:</b>		
<p>1. Praca zbiorowa Elektrotechnika i elektronika dla nieelektryków, Warszawa, WNT 1995</p> <p>2. Praca zbiorowa Praktyczna elektrotechnika ogólna, Warszawa, Rea 2003.</p> <p>3. Jastrzębska G.: Odnawialne źródła energii i pojazdy proekologiczne, Warszawa WNT 2009</p> <p>4. Jastrzębska G., Nawrowski R.: Zbiór zadań z Podstaw Elektrotechniki, Poznań, Wyd. P.P.2000</p>		
<b>Additional bibliography:</b>		
<p>1. Kurdziel R. Podstawy Elektrotechniki, Warszawa, WNT 1972.</p> <p>2. Karwacki W. Maszyny elektryczne Wrocław, Wyd. Pol. Wrocław. 1993.</p> <p>3. Jastrzębska G., Nawrowski R.: Zbiór zadań z Elektrotechniki Ogólnej, Poznań, Wyd. P.P.1998</p>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Participation in lectures	30	
2. Participation in exercise classes	30	
3. Preparation for exercise classes	10	
4. Preparation for 2 tests and the final test	10	
5. Participation in consultations related to the course	1	
6. Preparation for exam	20	
7. Presence at exam	2	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	103	5
Contact hours	63	3
Practical activities	40	2