

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Computerization of the designing in the electronics		Code 1010321241010324792
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	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: - 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: Prof. dr hab. inż. Ryszard Nawrowski email: ryszard.nawrowski@put.poznan.pl tel. 616652788 Elektryczny ul. Piotrowo 3A, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Information in field of Mathematics, Numerical Analysis, Informatics, Theory of circuits, Electrical engineering, Electrical Power Engineering.
2	Skills	Skills in understanding and interpretation of information and effective self-education in field of science related with chosen academic discipline.
3	Social competencies	Student should have consciousness of necessity of improving his competences, readiness to work individual and cooperate within groups.
Assumptions and objectives of the course: Presentation of: basics of design, rules for creating project documentation, selected numerical analysis methods used to solve issues in field of theory of circuits and electrical power engineering, parts of codes in c#.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. describe: range of project, designed object, implemented numerical analysis methods, such as: numerical integration, solving equations and systems of linear, nonlinear and differential equations, basic methods of optimization - [K_W02+++, K_W04+++, K_W11++] 2. recognize and select tools for information technology implementation - [K_W02+++, K_W04+++, K_W11++]		
Skills: 1. use knowledge of the Numeric analysis for selected issues in field of theory of circuits and electrical power engineering, necessary to implement design tasks - [K_U04+++, K_U10++, K_U13++] 2. get information from literature and web, work individual, solve exercises in the field of the computerization of designing - [K_U04+++, K_U10++]		
Social competencies: 1. think and operate in enterprising way in the field of software creation for designing in electrical engineering - [K_K01++, K_K02++, K_K03++]		
Assessment methods of study outcomes		

<p>Lecture:</p> <ul style="list-style-type: none"> - assess the knowledge and skills listed on the written and oral exam of the computerization of designing in electrical engineering. <p>Obtaining additional points for activity during exercises, in particular way for:</p> <ul style="list-style-type: none"> - proposing to discuss additional aspects of the subject, - effective use of knowledge obtained during solving of given problem, - comments related to improve teaching material, - aesthetics of solved problems ? within self-education. 		
Course description		
<p>Presentation of: rules of designing and creating projects documentation, convergence and stability of numerical solutions, calculations errors, issues of numerical integration of electrical quantities, numerical solutions of equations and systems of equations: linear, nonlinear, differential and partial differential used in electrical engineering and methods of determined and not determined optimization.</p>		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Kącki E.: "Metody numeryczne dla inżynierów", WPL, Łódź 2003. 2. Bolkowski S.: "Teoria obwodów elektrycznych", WNT, Warszawa 1998. 3. Fortuna Z.: "Metody numeryczne", WNT, Warszawa 1998. 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. Baron B.: "Metody numeryczne w Turbo Pascalu", Wydawnictwo Helion, Gliwice 1996. 2. Normy i katalogi do danego projektu. 		
Result of average student's workload		
Activity	Time (working hours)	
1. participation in the lectures	30	
2. participate in the consultations on of the lecture	4	
3. preparation for the exam	20	
4. participation in the exam	5	
Student's workload		
Source of workload	hours	ECTS
Total workload	59	2
Contact hours	39	1
Practical activities	0	0