STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Computerization of the designing in the electronics**		Code **1010321351010324792**

Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 5**

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: **-** Classes: **-** Laboratory: **15** Project/seminars: **-**	No. of credits **1**

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 %**)** **1 100%** **1 100%**

Responsible for subject / lecturer:

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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, selected numerical analysis methods used to solve issues in field of theory of circuits and electrical power engineering, algorithmic way of thinking and creation of special software.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. describe and implement numerical analysis methods, such as: numerical integration, solving equations and systems of linear, nonlinear and differential equations, interpolation, approximation - [K_W10+, K_W11++]

2. recognize and select proper tools for information technology implementation - [K_W10+, K_W11++]

Skills:

1. use knowledge of the numeric analysis for selected issues in field of theory of circuits, 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 design - [K_U04+++ ,K_U10++]

Social competencies:

1. think and operate in enterprising way in the field of software creation for designing in field of electrical engineering - [K_K02++, K_K03++]

Assessment methods of study outcomes

Lab classes:

? assessment of knowledge and skills on the basis of test consisting on solving of numerical and informatics issues in field of electrical engineering,

? verification and rewarding knowledge and skills for carrying problematic issues (home works).

Obtaining additional points activity during exercises, in particular way for:

? activity on classes in any attempt to solving of the problem to solve,

? skill of co-operation in workgroups.

Course description

Discussion of convergence and stability issues of numerical solutions, problems of numerical integration of electrical quantities, approximation in technique, iterative solving of equations and systems of linear, nonlinear, ordinary and partial differential equations used in electrical engineering and application to electrotechnical methods of determined and indeterminate optimization methods.

Update 2017: Overview of selected engineering applications for design (eg. AutoCAD)

Forms of conducting classes: laboratory - individual work at the computer

Basic bibliography:

1. Kącki E.: Metody numeryczne dla inżynierów, WPŁ, Łódź 2003

2. Bolkowski S.: Teoria obwodów elektrycznych, WNT, Warszawa 1998

3. Guziak T: Metody numeryczne w elektrotechnice, PL, Lublin 2002

4. Fortuna Z.: Metody numeryczne, WNT, Warszawa 1998

Additional bibliography:

1. Baron B.: Metody numeryczne w Turbo Pascalu, Wydawnictwo Helion, Gliwice 1996.

2. John Sharp: Microsoft Visual C# 2008 krok po kroku, Wydawnictwo RM, Warszawa 2009.

Result of average student's workload

Activity	Time (working hours)
1. participation in lab exercises	15
2. participation in consultations on the lab classes	6
3. preparation for the lab classes	6
4. homeworks	6
5. preparation for the pass	6

Student's workload

Source of workload	hours	ECTS
Total workload	39	1
Contact hours	21	1
Practical activities	33	1