POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Computerization of design in electrical engineering [N1Eltech1>KPwE2]

Course

Field of study
Electrical Engineering

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
10

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

Messages from the lecture in the previous semester and mathematics and physics at the matriculation level. Basic knowledge of computer science and programming. Ability to understand and interpret the transmitted messages and effective self-education in the field related to the chosen field of study.

Course objective

Acquiring the ability to implement in the computer environment (MS Visual Studio C #) selected numerical methods in solving problems in the field of circuit theory and power engineering, learning examples of tools for design in the field of broadly understood electrical engineering.

Course-related learning outcomes

Knowledge:
Knows computer methods used for numerical calculations (integration, solving equations and systems of linear, nonlinear and differential equations, basic optimization methods).

Skills:
Is able to apply knowledge of numerical methods to solve selected issues in the field of electrical circuits

and power engineering necessary to carry out project tasks.He can obtain information from literature and the Internet, work individually, solve tasks in the field of design computerization.

Social competences:
Is able to think and act in an entrepreneurial manner in the field of creating IT applications for design in the field of electrical engineering

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Knowledge acquired during the lecture is verified during an exam consisting of 5-10 (open) equally scored questions. Passing threshold: 50% of points. Final issues, on the basis of which questions are prepared, will be sent to students by e-mail using the university e-mail system or through the Moodle system.

Programme content

Basic issues regarding the implementation of numerical methods in Ms Visual C #. Understanding the basics of using AutCAD and the Matlab Simulink environment.

Course topics

Examples of approximation and interpolation methods and their application in technical issues (e.g. Lagrange interpolation, mean square approximation). Computer methods enabling the analysis of current flow in electric circuits in steady states containing linear elements (Jacobi, Gauss-Siedl, SOR simple iteration method) and non-linear (Newton method), as well as in transient states (Euler and Rune-Kutta method).Basic methods for optimization in technique (e.g. gradient method and genetic algorithm).

Teaching methods

Lecture: multimedia presentation, illustrated with examples on the board, initiating discussions during the lecture. Additional materials are placed in the Moodle system.

Bibliography

Basic
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 2002
4. Fortuna Z.: Metody numeryczne, WNT, Warszawa 1998
Additional
1. John Sharp: Microsoft Visual C# 2008 krok po kroku, Wydawnictwo RM, Warszawa 2009

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,00