POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Computational algorithms [S1EiT1>AOB]

Course

Field of study
Electronics and Telecommunications

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points
6,00

Coordinators

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Lecturers

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Prerequisites

Math, physics and programming on the secondary school level.

Course objective

The course aims at providing basic information devoted to solving computational problems found in electronics and telecommunications, using algorithmic approach.

Course-related learning outcomes

Knowledge:
Knows and understands an algorithmic approach to solving basic computational probles and numerical procedures.
Knows Matlab scripting language and its applications in electrical engineering.

Knows basic numerical procedures used for linear equation set solving, integrating, differentating, etc.

Skills:
Can apply algorithmic approach for problem solving.
Can use Matlab programming environment and the scripting language.
Is able to select best computational algorithm for a given problem.

Social competences:
Understands that computational algorithms are becoming more and more sophisticated, however, is aware of their limitations.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lecture: final written exam, consisting of 5-7 problems to solve, 50% of the total number of points necessary to pass. Results are disscussed individually with students.
Laboratory classes: continuous evaluation of tasks assigned by the teacher; final grade calculated as an average of all partial grades in the range 2-5 (D-A)

Programme content

1. Introduction to algorithmic approach to problem solving:
algorithm representation, examples of simple algorithms
2. Elements of Matlab scripting language:
data types, operators, input/output, text and graphical representation of results,
loops, conditional expressions, matrix calculations, functions
3. Computational algorithms examples:
look-up tables, graphical representation of functions,
numerical integration, numerical differentation,
iterative calculations, stop conditions,
root searching, min/max searching,
linear equation set solving,
curve fitting
statistical calculations

Course topics

Teaching methods

Lecture: multimedia presentation, practical examples in Matlab environment
Laboratory classes: exercises using PC and Matlab, problems assigned by the teacher

Bibliography

Basic
MATLAB i Simulink : poradnik użytkownika / Bogumiła Mrozek, Zbigni ew Mrozek
Algorytmizacja i programowanie w Matlabie / Kazimierz Banasiak
MATLAB : dla naukowców i inżynierów / Rudra Pratap
Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	150	6,00
Classes requiring direct contact with the teacher	75	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	75	3,00