COURSE DESCRIPTION CARD - SYLLABUS

Course name
Mathematics [N1Eltech1>Mat2]

Course

Field of study
Electrical Engineering

Year/Semester
1/2

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
22

Laboratory classes
0

Other (e.g. online)
0

Tutorials
18

Projects/seminars
0

Number of credit points

5,00

Coordinators

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Lecturers

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Prerequisites

Basic knowledge of differential calculus of single variable functions (first term).

Course objective

The aim is: - to recognize methods and applications of integral calculus of single variable functions and differential and integral calculus of functions of two variables, - to teach how to use those concepts, to make proper transformations and to use appropriate mathematical methods and tools to solve typical engineering tasks.

Course-related learning outcomes

Knowledge:
Student:
1. knows the concept of indefinite integral and methods of solving it,
2. understands the concept of definite integral and its interpretation,

3. knows the idea of partial derivatives and knows how to calculate extrema for functions of two variables,
4. comprehends the concept of double integral and is able to solve it.

Skills:
Student:
1. is able to calculate indefinite and definite integral, measures of areas, the length of curves, volumes and surface areas of solids of revolution,
2. can calculate partial derivatives, extrema for functions of two variables, total differential,
3. can calculate double integral.

Social competences:
Student iIs aware of the need to continue increasing their knowledge.

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: written exam to check theoretical knowledge and the abillity of its practical use. Exam consists of 3-5 theoretical questions and 3-5 practical tasks. Point range differs for each task. Exam is passed if student gains 50% of all points.
Classes: 2 written tests during the term. Range of notes:
50% - 3.0,
60% - 3,5,
70% - 4,0,
80% - 4,5,
90% - 5,0.

Programme content

Lecture: Indefinite integral – methods of evaluation (integration by parts and by substitution, integration of rational functions). Definite integral. Applications of the definite integral: calculation of measure of areas, the length of curves, volumes and surface areas of solids of revolution. Differential calculus of functions of two variables. Double integrals.
Classes: Indefinite integral – integration by parts and by substitution, integration of rational functions. Applications of the definite integral. Partial derivatives and extrema of functions of two variables. Double integrals.

Teaching methods

1. Interactive lecture with questions to the group of students which is supported by solving examples on board.
2. Classes during which students solve tasks on board. Teacher"s detailed assessment of students" solutions followed by discussion and comments.

Bibliography

Basic
1. W. Żakowski, M. Kołodziej, Matematyka. Cz. 2, Analiza matematyczna, WNT, Warszawa 2013.
2. I. Foltyńska, Z. Ratajczak, Z. Szafrański, Matematyka, cz. II, III, Wyd. Politechniki Poznańskiej, Poznań 2004.
3. F. Leja, Rachunek rożniczkowy i całkowy, PWN, Warszawa, 2008.
Additional
1. Krysicki W., Włodarski L.: Analiza matematyczna w zadaniach. Część I, II, PWN, Warszawa 2013.
2. Stankiewicz W.: Zadania z matematyki dla wyższych uczelni technicznych. Część I, II, PWN, Warszawa 2012.
3. M. Gewert, Z. Skoczylas, Analiza matematyczna 1 i 2, Oficyna Wyd. GiS, Wrocław 2012.

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	60	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	65	2,00