COURSE DESCRIPTION CARD - SYLLABUS

Course name
Mathematics 2- Analysis [S1Teleinf1>ANMAT2]

Course

Field of study
Teleinformatics

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
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other (e.g. online)
0

Tutorials
30

Projects/seminars
0

Number of credit points

5,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of differential and integral calculus of functions of one variable. Logical thinking skills. Understanding of the limitations of one's knowledge and motivation for further education.

Course objective

Knowledge of differential and integral calculus necessary to study engineering sciences. Ability to apply the acquired knowledge to the analysis of phenomena and problems in the field of engineering.

Course-related learning outcomes

Wiedza
1. Posiada usystematyzowaną wiedzę z zakresu analizy matematycznej, zna podstawowe pojęcia i twierdzenia, rozumie zależności między nimi.
2. Zna i objaśnia zastosowania poznanych faktów i twierdzeń.
Umiejętności
1. Potrafi zastosować rachunek różniczkowy i całkowy w praktyce.
2. Rozumie czytany tekst matematyczny, potrafi pozyskiwać informacje z literatury i innych źródeł.
Kompetencje społeczne

1. Zna ograniczenia własnej wiedzy i umiejętności, rozumie konieczność dalszego dokształcania się.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: valuation of knowledge and skills during written exam.
Tutotials: two colloquia.

Programme content

Series of real numbers. Function sequences and function series. Differential and integral calculus of several variable functions. Selected ordinary differential equations of the first and second order.

Course topics

Lecture: Series of real numbers (convergence of a series, convergence tests: integral critesion, comparison test, d'Alembert's criterion, Cauchy's criterion, Leibniz criterion). Function sequences and function series (pointwise convergence and uniform convergence, exponental series, Fourier series). Partial derivatives and their application to search of extrema of functions of several variables. Double and triple integral and its applications. Selected ordinary differential equations.
Tutorials: Series of real numbers. Function series. Partial derivatives, approximate calculations, local extreme of functions of two variables. Double integrals (polar coordinates) and triple integrals (cylindrical and spherical coordinates), geometric applications. Selected ordinary differential equations of the first and second order.

Teaching methods

1. Lecture - mulimedia presentation accompanied with examples presented on the blackboard as well as asking questions to students.
2. Tutorials - solving examples on the blackboard, initiating discussions about solutions, real-time feedback from the teacher.

Bibliography

Basic
1. M. Gewert, Z. Skoczylas, Analiza matematyczna 2, Definicje, twierdzenia, wzory
2. W. Krysicki, L. Włodarski, Analiza matematyczna w zadaniach, cz. 1 i 2
3. M. Gewert, Z. Skoczylas, Analiza matematyczna 2, Przykłady i zadania
4. J. Mikołajski, Z. Sołtysiak, Zbiór zadań z matematyki dla studentów studiów technicznych, cz. 2 i 3
5. M. Gewert, Z. Skoczylas, Równania różniczkowe zwyczajne
Additional
1. D.A. McQuarrie, Matematyka dla przyrodników i inżynierów cz.1 i 2
2. W.P. Minorski, Zbiór zadań z matematyki wyższej
3. G.M. Fichtenholz, Rachunek różniczkowy i całkowy, t. 1 i 2
4. H. J. Musielakowie, Analiza matematyczna, t. 1 i 2

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	5,00
Classes requiring direct contact with the teacher	64	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	56	2,00