MATH 301/571 - Introduction to Mathematical Analysis
Fall 2020-2021

Instructor: Yasemin Şengül
Lecture hours: Wednesday 16.40 -18.30, Friday 16.40 -17.30
Recitation Hours: Tuesday 17.40 - 18.30
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Course Content

This course consists of basic mathematical concepts such as the real line. We will deal with notions like continuity and differentiation, making some use of linear algebra. We will also treat basics of integration. Most of the time we will do the analysis in the Euclidean space, and we will assume that the student is has had some Calculus, that is, he/she knows how to differentiate and integrate standard functions.

Course Material

- Jerrald E. Marsden & Michael J. Hoffman, Elementary Classical Analysis. Second edition, W. H. Freeman and Company, New York, 1993.

Objectives

The main objective of this course is to present elementary classical analysis in a concrete setting by emphasizing specific techniques that are important to analysis and its applications. We aim to introduce basic concepts such as the Euclidean space, compact and connected sets, continuous and differentiable mappings, and integration. This course help students to develop their mathematical skills, and their abilities to think analytically.

Course Outline

- Week 1: Introduction, sets and functions

- Week 2-3: The real line and the Euclidean space

- Week 4: Topology of the Euclidean space

- Week 5-6: Compact and connected sets

- Week 7-8: Continuous mappings

- Week 9-10: Differentiable mappings

- Week 11: The inverse and implicit function theorems

- Week 12-13: Integration

- Week 14: Review

Grading Policies

- There will be 1 midterm exam (30%), 6 take-home exams (30%), a final exam (30%) and an oral exam (10%).

- There will be no make-up for any of the midterm or final exams.

- The oral exam will be done randomly during the term.

- Each take-home exam work submitted must be an original piece of work done by the student himself/herself. Violation of academic integrity (cheating, plagiarism, etc.) will result in a disciplinary action.

Recitations

Some exercise problems will be solved during the recitations by the TA of the course. Attendance is not compulsory but highly recommended.

Academic Honesty

Academic dishonesty is not an acceptable way of conduct and it will not be tolerated. Cheating (e.g. copying answers from others, using unauthorized materials during an exam) and any other dishonest conduct will be immediately reported to the Dean's Office for disciplinary action in accordance with University's regulations. For more information visit https://www.sabanciuniv.edu/en/academic-integrity-statement