

Analysis 3 - Introduction

Martin Licht

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Welcome to Analysis 3 - MATH-203(d) !

Organizational outline

- ▶ Weekly lectures: Wednesday 8:00-10:00 and Thursday 13:00-14:00
- ▶ Online only:
 - ▶ 18.09.24
 - ▶ 02.10.24
 - ▶ 09.10.24
 - ▶ 27.11.24
- ▶ Weekly exercises: Thursday 14:00-16:00
- ▶ Exercise sheets published weekly

Prerequisites

- ▶ A solid understanding of Analysis 1 and 2.
- ▶ Familiarity with sequences and series, continuity, derivatives, integrals.
- ▶ Basic knowledge of linear algebra (vectors) and topology (open sets) is helpful.

Course Content Outline

▶ **Part 1: Vector analysis**

- ▶ Differential operators of vector analysis
- ▶ curves and curve integrals
- ▶ surfaces and surface integrals
- ▶ Theorems of Green, Gauss, and Stokes

▶ **Part 2: Fourier analysis**

- ▶ Fourier series
- ▶ Fourier transform, convolutions
- ▶ Applications to differential equations

Course Materials

- ▶ Textbook *Benard Dacorogna, Chiara Tanteri: Analyse avancé pour ingénieurs.*

Expectations and Guidelines

- ▶ Regular attendance and active participation in lectures and exercises.
- ▶ Collaboration for exercises is encouraged

Communication and Support

- ▶ Course announcements will be posted on the website.
- ▶ Email the instructor for personal inquiries or to schedule appointments.

Final Exam

- ▶ Prospectively first Tuesday of the first exam week, in the morning
- ▶ Comprehensive, covering all course materials.
- ▶ Cheat sheet: physical paper, two-sided, hand-written or printend, any content
- ▶ ca. 60% multiple choice, ca. 40% open questions
- ▶ Mostly common exam for all four Analysis III classes for scientists/engineers (Antolin, Licht, Monin, Strütt)
- ▶ Each exam will contain special topics by the lecturer

Preparation Tips:

- ▶ Start early and review all course materials.
- ▶ Practice sample problems from the textbook.
- ▶ Form study groups for discussion and problem-solving.