

# Real Analysis: Course information

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## 1 Preliminary course plan

Lecture no.	Topic
1	Introduction, Preliminaries
2	Definition and properties of real numbers
3	Cauchy sequences, upper and lower limits
4	Bolzano-Weierstrass theorem
5	"Problem session"
6	Topology in $\mathbb{R}^n$ , Metric spaces and their topology
7	Compactness, Heine-Borel lemma
8	Continuous functions
9	Baire's theorem
10	"Problem session"
11	Normed vector spaces, series
12	Differentiable functions: mean-value theorem and its consequences
13	Taylor series
14	Riemann integral
15	"Problem session"
16	Sequences and series of functions: uniform convergence(1)
17	Sequences and series of functions: uniform convergence(2)
18	Equicontinuous families, Arzelà-Ascoli theorem
19	Stone-Weierstrass theorem, power series
20	"Problem session"
21	Banach's fixed point theorem and applications(1)
22	Banach's fixed point theorem and applications(2)
23	Inverse and implicit function theorems(1)
24	Inverse and implicit function theorems(2)
25	Summary/Repetition
26	Exam (don't forget to register!)

## Course literature

- [R] : W. Rudin, *Principles of mathematical analysis*, third ed., McGraw-Hill Book Co., New York-Auckland-Düsseldorf, 1976, International Series in Pure and Applied Mathematics.

- <https://people.kth.se/~dogge/files/analysis.pdf>. The note that I will be using for the course.

## Grade guide

18p pass, 25p pass with credit, 32p pass with distinction (out of max 40p)