

Lecture plan TATM85 Funktionalanalys HT2020

LP1

N.B. Intended plan, may be changed.

1/9	Lecture 1	Metric spaces, open sets	Book 1.1–1.3
4/9	Lecture 2	Quantifiers, closed sets, convergence	Book 1.3, 1.4
7/9	Lecture 3	Continuity, Cauchy sequences, Completeness	Book 1.3-1.5
8/9	Lecture 4	Compactness	Book 2.5, Notes
11/9	Lecture 5	More on compactness + examples, completion	Book 2.5, (1.6) Notes
16/9	Lecture 6	Normed and Banach spaces	Book 2.2-2.5
18/9	Lecture 7	Series in Banach spaces, Schauder basis	Book 2.2-2.5
22/9	Lecture 8	Integration theory, outer measure,	Notes
23/9		Hand in Assignment 1, Le 1–5	
25/9	Lecture 9	Measurable sets, Lebesgue measure	Notes
28/9	Lecture 10	Measurable functions, Lebesgue integral	Notes
30/9	Lecture 11	Convergence theorems, L^p norm	Notes
2/10	Lecture 12	L^p spaces, Hölder inequality	Notes
6/10	Lecture 13	Inner product and Hilbert spaces, orthogonal projection	Book 3.1-3.3
9/10	Lecture 14	Orthogonal projection, examples, ON-sequences	Book 3.3-3.6
13/10	Lecture 15	ON-bases, Linear operators and functionals	Book 3.5, 3.6, (2.6, 2.8)
13/10		Hand in Assignment 2, Le 6–12	
16/10	Lecture 15	More on bounded linear operators and functionals	Book (2.6), 2.7, 2.8, 2.10

The theory will be presented during the lectures. Most of it can also be found in the Notes and in the indicated Sections in the textbook. Send me an email (jana.bjorn@liu.se), so you get a link to the Notes.

At the course webpage

<https://courses.mai.liu.se/GU/TATM85/>

you will find the list of Homework assignments and other information.