

## Course content for MAI0065 *Functional Analysis*, Spring 2018

**Course book:** GERT K. PEDERSEN, *Analysis Now*, Corrected 2nd printing, Springer, New York, 1995. ISBN 978-0-387-96788-2 (Hardcover), ISBN 978-1-4612-6981-6 (Softcover).

*The following is the plan for the course, but it may be modified.*

**1.1.** Secondary reading, you should know what Zorn's lemma and the Axiom of Choice says, and be able to use them.

**1.2–1.4.** This is included.

**1.5.** You should read this chapter for orientation. I will also discuss the separation axioms (T1)–(T4) and completion of metric spaces.

**1.6.** Included. Read 1.6.6–9 for orientation, 1.6.13–14 can be skipped. I will also discuss compactness in metric spaces in more detail.

**1.7.** You should know what *locally compact* means. The rest of this section is interesting, but outside this course.

**2.1.** Read 2.1.14–18 for orientation.

**2.2.** You may skip 2.2.10.

**2.3–2.4.** Included.

**2.5.** Only 2.5.1–2 is included.

**3.1.** Included.

**3.2.** Included is 3.2.1–20 with the following exception: From 3.2.9–12 we only include Proposition 3.2.11 and that without proof.

**5.1–5.2.** We include only 5.1.1–3 and 5.2.10, plus a few extra comments and an example handed out.

**3.3.** This we have mainly as orientation, without proofs, but it is good if you read (some of) the proofs in the book. (There will be some exercises on this section.). I will not talk about 3.3.10, 3.3.13–14 and 3.3.18–20.

The following lists of the alphabet in Fraktur, Schwabacher and Gothic letters may be useful when reading Pedersen's book.

A B C D	E F G H	I J K L	M N O P	Q R S T	U V W X	Y Z
a b c d	e f g h	i j k l	m n o p	q r s t	u v w x	y z ß
𝔸 𝔹 𝔼 𝔻	𝔼 𝔽 𝔾 𝔥	𝔽 𝔾 ℓ	𝔹 𝔸 𝔻 𝔽	𝔸 𝔸 𝔼 ℓ	𝔸 𝔹 𝔸 𝔸	𝔻 ℓ
𝔞 𝔟 𝔠 𝔡	𝔢 𝔣 𝔤 𝔥	𝔦 𝔧 ℓ	𝔪 𝔫 𝔬 𝔭	𝔮 𝔯 𝔰 𝔱	𝔲 𝔳 𝔴 ℓ	𝔷 ℓ
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𝔞 𝔟 𝔠 𝔡	𝔢 𝔣 𝔤 𝔥	𝔦 𝔧 ℓ	𝔪 𝔫 𝔬 𝔭	𝔮 𝔯 𝔰 𝔱	𝔲 𝔳 𝔴 ℓ	𝔷 ℓ