

**EM386M/CAM386M FUNCTIONAL ANALYSIS IN THEORETICAL
MECHANICS**

Fall 07, # 14140/ # 67545 , MWF 11:00 - noon, WRW 312

Text: J. T. Oden, L. Demkowicz, *Applied Functional Analysis*, CRC Press, 1996

Week	Topic	Chapter
Aug.29 -Aug.31	Preliminaries: set theory, logic, relations	1.1-1.10
Sep. 5 -Sep. 7	Functions, cardinality of sets	1.11-1.14
Sep.10 -Sep.14	Elementary topology in \mathbb{R}^n	1.17-1.20
Sep.17 -Sep.21	Vector spaces	2.1-2.4
Sep.24 -Sep.28	Linear transformations	2.5-2.9
Oct.1 -Oct.5	Algebraic duals, transpose of an operator	2.10-2.13
Oct.8 -Oct.12	Inner product, abstract measure	2.14, 3.1
Oct.15 -Oct.19	Lebesgue measure	3.2-3.3
Oct.22 -Oct.26	Lebesgue integral	3.4-3.5
Oct.29 -Nov.2	Fubini's Thm, L^p -spaces	3.6-3.9
Nov.5 -Nov.9	General abstract topological spaces	4.1-4.2
Nov.12 -Nov.16	Compactness	4.3-4.5
Nov.19 -Nov.23	Metric spaces, Bolzano-Weierstrass Thm	4.6-4.9
Nov.26 -Nov.30	Banach Fixed Point Thm	4.10
Dec. 3 -Dec.7	Banach Closed Range Thm - an outlook	5.6,7,12,13,16,17

Homework: Homework assignments will be made in class. The problems assigned in the class will be collected on the first class in every week (most of time on Monday...).

Exams: There will be three (closed book) exams held in ACES 6.304, during evening hours (5:00-8:00 p.m.) according to the following schedule:

- Exam1 (through Section 1.20) Mon.,Sep.24,
- Exam2 (through Section 3.1) Mon.,Oct.29,
- Exam3 (through Section 4.9) Mon.,Dec.3.

Final Exam: Comprehensive, mandatory, closed book, given during the official scheduled time.

Grading: Is based upon the assignments, exam scores and the final exam, with these items weighted as follows:

Homework	- 15 %
Exams	- 15,20,20 %
Final	- 30 %

Discussion session (obligatory): Mon., noon - 1:00 p.m., ACES 6.442.

Instructor: Dr. Leszek Demkowicz, ACES 6.326, Office hours: Fri., 1:00-2:00 p.m.