

MATHEMATICS 420/507 Section 101

Real Analysis I/Measure Theory and Integration

PREREQUISITE:

- A score of 68% or higher in MATH 321.

INSTRUCTOR:

- Joel Feldman
- Math building room 221
- 822-5660
- feldman@math.ubc.ca
- <http://www.math.ubc.ca/~feldman/>
- office hours: Monday 10:00–11:00, Tuesday 11:00–12:00, Thursday 2:00–3:00

TEXT: Gerald B. Folland, *Real Analysis*, Modern Techniques and Their Applications, Second edition. There is a list of errata at <http://www.math.washington.edu/~folland/Homepage/reals.pdf>.

I will post all handouts, problem sets, etc. on the web at

<http://www.math.ubc.ca/~feldman/m420/>

OTHER REFERENCES:

- H. L. Royden, *Real Analysis*.
- W. Rudin, *Real and Complex Analysis*.
- E. H. Lieb and M. Loss, *Analysis*.

TOPICS:

1. Measures (§1):
 - Sigma-algebras, measures
 - Borel and Lebesgue measures
2. Integration (§2):
 - Measurable functions, integration
 - Convergence, product measures
3. Differentiation (§3):
 - Signed measures, Lebesgue-Radon-Nikodym Theorem
4. L^p Spaces (§6):
 - L^p Spaces, Holder and Minkowski inequalities
 - Dual spaces

GRADING:

- There will be weekly problem sets accounting for about 50% of the final mark.
- The final exam will account for about 50% of the final mark.
- Grades **will** probably **be scaled**.

POLICIES:

- Working together on homework is encouraged, but you should write your solutions on your own.
- The final examination will be strictly closed book: no formula sheets or calculators will be allowed.
- There is no supplemental examination in this course.
- Missing a homework normally results in a mark of 0. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency.

	Mon	Wed	Fri
Sep	1 no class	3	5
	8	10	12
	15	17 Problem Set 1	19
Oct	22	24 Problem Set 2	26
	29	1 Problem Set 3	3
	6	8 Problem Set 4	10
	13 no class	15 Problem Set 5	17
	20	22 Problem Set 6	24
	27	29 Problem Set 7	31
	Nov	3	5 Problem Set 8
10		12 Problem Set 9	14
17		19 Problem Set 10	21
24		26	28