MATHEMATICS 420/507

Real Analysis I/Measure Theory and Integration

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

CLASSES:
- Time of lectures: Monday, Wednesday, Friday, 9:00–9:50
- Location of lectures: LSC (Life Sciences Centre) 1003

INSTRUCTOR:

- Joel Feldman
- Math building room 221
- 604-822-5660
- feldman@math.ubc.ca
- `http://www.math.ubc.ca/~feldman/`
- office hours: Monday 2:00–3:00, Tuesday 11:00–12:00, Thursday 2:00–3:00 or by appointment

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

I will post all handouts, lecture notes, 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.
- S. Axler, Measure, Integration & Real Analysis. Available free at `http://measure.axler.net/`

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 10 weekly problem sets. The best 9 will account for 50% of the final mark.
- The final exam will account for 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.
- Late homework assignments normally receive a grade of 0. Missing a homework normally results in a mark of 0. Exceptions may be granted based on University Policy V-135.
  See `http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,329,0,0`.

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UNIVERSITY POLICIES:
UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website `https://senate.ubc.ca/policies-resources-support-student-success`.

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