

UBC MATH 420/507, 2023W T1: Real Analysis I/Measure Theory & Integration

Acknowledgement UBC's Point Grey Campus is located on the traditional, ancestral, unceded territory of the Musqueam people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

Instructor: Stephen Gustafson, MATH 115, gustaf@math.ubc.ca

Office hours: Mon/Wed 2-3

Website: the course Canvas page

Class schedule: Mon/Wed/Fri (+ Thu, Oct. 12) 11:00-11:50 in MATH 104

References: the main textbook for this course is

- G.B. Folland, *Real Analysis: Modern Techniques and Their Applications*.

See the course page for a list of additional references. Slides/notes will be posted.

Topics: roughly the first 3 chapters of Folland. In brief,

- Ch.1: sigma algebras, outer measures, measures; Lebesgue measure
- Ch.2: measurable functions, integration; Lebesgue integral; convergence of functions, convergence theorems
- Ch.3: Radon-Nikodym theorem; differentiation
- Ch.6.1: introduction to L^p spaces

Evaluation: grades, which may be scaled, will be based on

- written homework assignments (best 4 of 6): 35 %
- online quizzes (best 4 of 6): 15 %
- final exam (scheduled in the exam period): 50 %

Class Policies: Stay home if you are not feeling well. The grading scheme is specifically designed not to penalize missing some time/classes due to illness. *Late assignments will not be accepted and missed quizzes will not be made up.*

Students are encouraged to study together, but blatant copying of another student's work is a serious breach of academic integrity. The final write-up of your homework assignment should be your own. Similarly, quizzes must be taken individually, without any form of collaboration. For general Math Department syllabus information, see <https://www.math.ubc.ca/general-syllabus-information>.

UBC 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.

-last updated: Sep. 29, 2023