UBC MATH 420/507, 2026W T1: Real Analysis I/Measure Theory & Integration

Instructor: Stephen Gustafson, gustaf@math.ubc.ca
Office hours (MATH 115): TBA
Website: the course Canvas page (all course info and materials will be posted here)
Class schedule: Mon/Wed/Fri 11:00-11:50 in MATH 202

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. A complete set of class slides/notes will be posted on the course page.

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

See the course page for a more detailed list of topics.

Evaluation: grades (which may be scaled) will be based on

- written homework assignments (likely 6 sets of them):
- two in-class midterm tests (Wed., Oct. 7; Wed., Nov. 4)
- final exam (scheduled in the exam period)

The final grade will be computed as the better of:

10 % hw + 40 % mids + 50 % final or **10 % hw + 30 % mids + 60 % final**

The written homework exercises are essential for learning the material. They will not be marked; rather, grades for each set will be awarded for submission of a serious effort (at least 75% of the problems worked out). In computing the overall homework grade, one set will be dropped. Solutions will be posted after the submission deadline, and students are responsible for checking their work using these.

Class Policies: No late homework submissions will be accepted.
There will be no make-up midterm tests. Missing a midterm test for a valid reason normally results in the weight of that test being shifted to the final exam (so 10 % hw + 20 % mids + 70 % final or 10 % hw + 15 % mids + 75 % final).
Students are encouraged to study together, but direct copying of another student's work is a serious breach of academic integrity. The final write-up of your submitted homework assignment should be your own.
The general Mathematics Department policies and information posted at
https://www.math.ubc.ca/general-syllabus-information,
including **academic integrity expectations, academic concession information, and available resources**, all apply to this course.

Generative AI Usage: Students are permitted to use artificial intelligence tools, including generative AI, to gather information, review concepts, or for help when

working on homework assignments. However, the final write-up of your submitted homework assignment should be in your own words. Use of AI tools is not permitted during midterm exams and the final exam in this course.

Weather Contingency Plan for Class Sessions and Exams: You should check ubc.ca often during bad weather or snow. If in-person activities are cancelled, an activity (e.g. recording) will be posted on Canvas for you to complete before our next in-person class. If the final exam is impacted, it will be rescheduled by student services. If you are registered to write exams at the Centre for Accessibility, I encourage you to contact your CFA advisor to discuss the weather contingency plan for this course.

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.

Learning Analytics: Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using Canvas, which captures data about your activity and provides information that can be used to improve the quality of teaching and learning. In this course, your instructor and TA may use analytics data to view overall class progress, and track individual students' progress in order to assess participation in the course.

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–last updated: Sep. 7, 2026