

PMATH 451/651 - Fall 2024

Measure Theory

- INSTRUCTORS:** Matthew Kennedy
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- LECTURES:** MWF 10:30 - 11:20 PM
- TOPICS:** General measures, measurability, Caratheodory extension theorem and construction of measures, integration theory, convergence theorems, Lebesgue spaces, absolute continuity and the Radon-Nikodym theorem, differentiation, Riesz-Markov-Kakutani representation theorem.
- PREREQUISITE:** PMATH 450/650 or equivalent
- WEBPAGE:** LEARN: TBA
- OFFICE HOURS:** The instructor will hold weekly office hours.
- REFERENCES:** The course will be self-contained. However, the following references are an excellent source of information:
Measure Theory by Paul Halmos
Real and Complex Analysis by Walter Rudin
- GRADING:**
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| Assignments | 20% |
| Midterm Quiz | 20% |
| Final Exam | 60% |
- ASSIGNMENTS:** There will be five written assignments. You are expected to complete all of them and late assignments will not be accepted. The assignments are intended to be challenging. You may discuss them with classmates, but must provide your own solutions.
- MIDTERM QUIZZES:** There will be an in-class midterm quiz. It will be announced at least two weeks ahead of time.
- FINAL EXAM:** There will be a final exam scheduled by the university during the fall examination period.
- NOTES:** To excuse a missed assignment or midterm quiz, you must have a valid reason and appropriate supporting documentation, in which case the weight will be shifted to the final exam. To pass the course, you must pass the final exam.

ACADEMIC INTEGRITY: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

GRIEVANCE: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70, Student Petitions and Grievances, Section 4. When in doubt, please be certain to contact the department's administrative assistant, who will provide further assistance.

DISCIPLINE: A student is expected to know what constitutes academic integrity in order to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, an academic advisor or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline. For typical penalties, see Guidelines for the Assessment of Penalties.

APPEALS: A decision made or a penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline, may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals.

STUDENTS WITH DISABILITIES: The AccessAbility Office, located in Needles Hall, Room 1401, collaborates with academic departments to arrange appropriate accommodations for students with disabilities, without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AccessAbility Office at the beginning of each academic term.