

MATH 464
Real Analysis
Fall 2019

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Lectures: Mondays and Wednesdays: 13:15-14:30, MB 2.265.

Office hours: _____

Textbook: *Real Analysis*, 4th Edition, by H. L. Royden, Prentice Hall, 2010.

Purchase of the book is not required – it is to be used as references to complement the material covered in class. The homework problems will be posted on Moodle.

Topics: The following topics will be covered, as time permits:

- ♦ Review: sets, functions, relations, countable sets.
- ♦ Incompleteness of the rationals, construction of the real numbers.
- ♦ Topology and properties of the real numbers.
- ♦ Metric spaces, normed linear spaces, point set topology.
- ♦ Compactness, Heine-Borel theorem, Bolzano-Weierstrass property.
- ♦ Continuous functions, connectedness, intermediate value theorem.
- ♦ Function spaces, uniform convergence, Arzela-Ascoli theorem.
- ♦ Approximation, Stone-Weierstrass theorem.
- ♦ Fixed point theorems and applications.

Homework: Homework will be assigned every week on Moodle. The solutions should be handed in the following week in class. **Late homework will not be accepted.**

Solutions should be **handwritten and submitted on paper, not electronically**. Understanding of the homework is essential to success on the exams.

Midterm Exam: There will be an in-class exam during the 7th or 8th week of classes. The exact date of the exam will be announced in class at least a week in advance. **There will be no make-up midterm exam.**

Final Exam: To be announced by the exams office. Students should plan to be present for the entire exam period and are responsible for finding out the time and location of the exam when it is announced. Any conflicts or other problems should be reported to the exams office in a timely manner.

Grading: Homework assignments 20%, Midterm exam 25%, Final exam 55% OR Homework assignments 20%, Final exam 80%.

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Graduate Students: There will be extra requirements for graduate students, to be announced.

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: <http://www.concordia.ca/students/academic-integrity.html>." [*Undergraduate Calendar, Sec 17.10.2*]