

MATH 464 (MATH 601F)
Real Analysis
Fall 2014

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Lectures: Mondays and Wednesdays, 13:15-14:30, FG B055.

Office hours: Wednesdays, 15:00-16:00 or by appointment.

Textbook: *An Introduction to Analysis and Integration Theory*, by E. R. Phillips, Dover, 1984.

Principles of Mathematical Analysis, 3rd Edition, by W. Rudin, McGraw-Hill, 1976.

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

Purchase of these books is not required – they are to be used as references to complement the material covered in class. They will be available on reserve at Webster library.

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 approximately every week to two weeks, in class. In the case of an absence, it is the student's responsibility to find out the homework assignment and turn in the homework on time. **Late homework will not be accepted.**

Solutions should be **handwritten and submitted on paper, not electronically.** Students must follow the University's policy on Academic Integrity: <http://www.concordia.ca/students/academic-integrity.html>. 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%.
NOTE: there is no '100% final' option.

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