

Math 3233 Course Outline

Winter 2026

Instructor: A.J. Dean, **email:** andrew.j.dean@lakeheadu.ca

Office hours: Mondays and Wednesdays 10:00am to 11:00am (RB 2009).

References: An Analysis Textbook, by A.J. Dean, to be distributed in class. This will be the main textbook. The following are additional references you may find useful: Principles of Mathematical Analysis, by Walter Rudin; Introduction to Real Analysis, by Bartle and Sherbert; and The Elements of Real Analysis, by Bartle.

The textbook is distributed for free, and the other optional references are available from the Lakehead University library. Students are not required to buy any additional course materials for this class.

Learner Outcomes: Successful students of this course will be able to: Recognise and construct examples of metric spaces; determine topological properties of sets in metric spaces, including connectivity, compactness, closure and interior; and construct proofs of basic results in topology using open/closed sets, limit points, connectivity, and compactness: compute limits of functions; determine continuity of functions and construct proofs of basic results on limits and continuity; understand the basic definition and properties of the derivative of a function; understand the basic definition and properties of the Riemann integral, and determine integrability of functions; understand the difference between different modes of convergence, including uniform, root-mean-square, and point-wise convergence of sequences of functions, and demonstrate these properties from the definitions in concrete examples; use the Weierstrass M-Test to demonstrate uniform convergence of series of functions, and determine when term by term differentiation and integration of series is justified. Students will also learn to present mathematical proofs in analysis at a blackboard to an audience of their peers in a clear and effective manor.

Grading Scheme: There will be two term tests worth 20% each. The homework will count for 20%, and the final exam will be worth 40%.

Homework: Each week, a homework assignment will be circulated by email. They will be due at 10pm Thunder Bay time on Friday evenings, unless otherwise announced. Solutions to the homework assignments are to be submitted via email.

Schedule: Test #1 will be on Monday February 2, and Test #2 will be on Monday March 2. The final exam will be scheduled by the registrar's office.

Term Tests and Final Exam: The three term tests will be written during class time in the class room. The dates are on the schedule. The material the tests will cover will be announced in class and by email as the dates draw near. The final exam will cover the whole course, and is scheduled by the registrar's office. All tests and the exam will be **closed book, with no books, notes, calculators, cell phones, smart watches, or other aids allowed.**

Marking Disputes: If you feel you have been treated unfairly in the marking of a test **put your complaint in writing on the paper and return it to the instructor.** In the case of an assignment, **put your complaint in writing in an email to the instructor.**

Drop Date: The final date to withdraw from this course without academic penalty is Friday March 6.

Special Exams: Students who fail this course but attain a mark of 40% may be entitled to write a special exam. See the calendar for details.

Academic Dishonesty: All cases of academic dishonesty will be dealt with according to the university's Academic Integrity Code.

Accommodations: Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit: <http://studentaccessibility.lakeheadu.ca>