

Faculty of Science Course Syllabus
Department of Mathematics and Statistics
MATH 1010
Differential & Integral Calculus II
Summer 2024

Dalhousie University sits on the ancestral and unceded territory of the Mi'kmaq nation. We are all treaty people. We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.

1 General Information

Course Description: A second course in first year university calculus covering integration techniques, applications of elementary differential equations, parametric equations and curves, polar coordinates, sequences and series, convergence, power series, and Taylor series.

Prerequisites: MATH 1000.03, or MATH 1215.03 with a grade of B or better.

Textbook: Single Variable Calculus - Early Transcendentals, Latest Edition, by James Stewart.

2 Instructor & Course Delivery Details

MATH 1010 will be held online synchronously with lecture notes and recordings posted on Brightspace. Details about office hours and tutorials will be posted on Brightspace. Times below are in Atlantic Standard Time (AST).

Section	Time	Location	Instructor	email	office
1	MWF 09:05-10:55	Microsoft Teams	Deni Salja	denisalja@dal.ca	

3 Course Assessment

Homework (35%) The homework assignments will be completed on WeBWorK and the links will be posted on Brightspace; these problems are based on class content and textbook problems from the end of the relevant sections. In the interest of rewarding progress and allowing flexibility the lowest two homework assignment grades will be dropped.

Midterm (5%) The midterm will available at 9am (AST) on August 1st via Brightspace and will be submitted virtually by 11:59pm (AST) on August 2nd. It will be a similar format of the final exam but it will be take-home and only cover the material covered up to that point.

Final Exam (60%) The final exam is 3 hours long and will be held in-person on August 19, 9am-12pm (AST) in Auditorium 2 - Ondaatje of the McCain building.

Course Score:

Homework 35% + Midterm Test 5% + Final Exam 60%

The grading scheme for this course will follow the standard scale set by Dalhousie University. https://www.dal.ca/campus_life/academic-support/grades-and-student-records/grade-scale-and-definitions.html

4 Course Topics and Approximate Schedule

week 1 Review (of Riemann-sums covered in Math 1000), Areas Between Curves, Integration by Parts - §6.1, 7.1

week 2 Trig Integrals, Trig Substitution, Partial Fractions, Strategies for Integration- §7.2-7.5

week 3 Approximate Integration, Improper Integrals, Arc Length, Parametric Curves - §7.7,7.8,8.1,10.1

week 4 Calculus with Parametric Curves, Polar Coordinates, Areas and Lengths in Polar Coordinates, Sequences - §10.2, 10.3, 10.4, 11.1

week 5 Series and tests for convergence - §11.2-11.6

week 6 Strategies for Series Convergence, Power Series - §11.7,11.8

week 7 Power Series Representations of Functions, Taylor Series - §11.9,11.10

week 8 Exam

5 Homework Schedule and Guidelines

Each section has a corresponding homework assignment that will be done through WebWork and can be accessed via Brightspace. Assignments will be posted by the time the corresponding sections in the textbook are covered in class. You should aim to finish each assignment within a week of it being posted. Since the course is condensed we are covering a lot of material quickly so you should be doing a few homework problems each day if possible.

You should discuss the homework problems and course content with other human beings, in particular your classmates, TA, and instructor. You should not copy solutions to problems without understanding how to reproduce them on your own; that kind of practice will not help you on the final exam. The midterm should be done independently so that you can get some feedback on your understanding of the material and practice for the final exam.

6 General Learning Objectives

These are some things I hope students will get out of participating in the course while learning the specific topics being covered:

- Practice and develop your math-literacy
- Practice asking questions and communicating using the language and concepts introduced in the course.
- Gain experience with calculus-related modelling techniques.
- Recognize and appreciate the applications of integration, sequences and series, and different coordinate systems in science and other areas of math
- Exercise logical reasoning

7 Learning Center Support

The **MATH/STAT Learning Centre** employs graduate students in math/stats to help undergraduate students taking 1000/2000 level courses. The learning centre is physically located in Chase 119 but will be operating remotely during the summer. To access support online and see the latest schedule you can register for the Brightspace “course” at <https://www.dal.ca/faculty/science/math-stats/about/learning-centre.html>.

8 Course Policies on Missed/Late Academic Requirements

In the event that you are absent for three days or fewer resulting in missed or late academic requirements, you will be required to submit a Student Declaration of Absence Form to your instructor, see: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/academic-policies/student-absence.html

In the event that you are unable to participate in the midterm or final exam, please notify your instructor via email in advance to determine what alternatives may be possible.

9 Student Accommodations

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic under the Nova Scotia Human Rights Act. Students who require academic accommodation for either classroom participation or the writing of tests, quizzes and exams should make their request to the Office of Student Accessibility & Accommodation (OSAA) prior to or at the outset of each academic term. Please visit https://www.dal.ca/campus_life/academic-support/accessibility.html for more information and to obtain Form A - Request for Accommodation. A note taker may be required to assist a classmate. There is an honorarium provided for the note taker of \$75-100/course/term. If you are interested, please contact OSAA at access@dal.ca or 494-2836 for more information.