



Dalhousie University
Department of Mathematics and Statistics

MATH 3502
Intermediate Analysis II
Winter 2019

INSTRUCTOR:

Andrea Fraser, Assoc. Professor
Chase Building, Room 206 (by the central stairwell)
494-3062
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LECTURES:

Monday, Wednesday, Friday: 1:35 pm - 2:25 pm
Chase 319 (Colloquium Room)

COURSE DESCRIPTION:

Topics include: The full derivative for functions between Euclidean spaces, directional derivatives, Jacobian matrix, differentiability, C^1 functions, multilinear maps, higher derivatives, Taylor's theorem, extrema, inverse and implicit function theorems, extrema subject to constraints, Lagrange multipliers. Further topics may include: normed vector spaces and basic functional analysis, basic theory of manifolds in \mathbb{R}^n , Fourier series.

PREREQUISITES: MATH 3501.03

EXCLUSIONS: MATH 3500X/Y.06

COURSE OBJECTIVES:

This course provides a thorough grounding in the formalism behind the concepts and results of multivariable calculus.

TEXT:

None. All course content covered in lectures and handouts distributed in class.

IMPORTANT DATES:

8 assignments: due each Wednesday (except the first week and the weeks of the tests).
4 tests: in class on the Mondays of January 28, February 25, March 18, April 8.

COURSE ASSESSMENT:

Assignments: 20% Tests: 80%

CONVERSION OF GRADES: Follows the [Dalhousie Common Grade Scale](#).

90 – 100 A+	77 – 79.9 B+	65 – 69.9 C+	50 – 54.9 D
85 – 89.9 A	73 – 76.9 B	60 – 64.9 C	0 – 49.9 F
80 – 84.9 A-	70 – 72.9 B-	55 – 59.9 C-	

COURSE POLICIES: Attendance is expected in this course. Class discussions are an integral part of the learning process, and all students are expected to participate. All course content will be covered in lectures and in handouts distributed in class. All handouts for this course will be available in class, at the start of lecture on the day on which they are first distributed. If you are unable to attend a lecture, it is your responsibility to obtain a copy of the lecture notes or any distributed handouts from a fellow student who was present.

Lecture notes will not be posted or distributed. Taking notes during lectures is an important skill which you are expected to practice in this class. If you find it difficult to keep up, try to improve your note-taking speed. Learn to write using abbreviations, a personal shorthand, or to write while watching the board rather than your page. You might find it helpful to review your notes as soon as possible after class. This is also a good time to tidy up your notes, fill in any things you did not record, memorize new concepts, and try the exercises given in class. Be sure to seek help from your instructor (in class, by email, or by setting up a time to meet) if there are things you don't understand.

Any announcements regarding the course will be made in class, on Brightspace, or by email. You are expected to attend class and to check Brightspace and email regularly. If you miss or are late for a class, it is your responsibility to consult your peers to learn of any announcements. If you do not use your official Dalhousie email address, you should set a forward on it to an address you do use.

Assignments are designed to help you learn by prompting you to explore concepts on your own and helping you to familiarize yourself better with material. The process of interpreting what is being asked in a problem and establishing what you must show in order to solve it can be difficult at first but with perseverance will force you to improve your grasp on terminology and the subtleties of logic involved. Rather than turning to the internet or other sources of help when you are given a question, it is important that you make the effort to delve into it by yourself. If you are still having difficulty after making a genuine effort, you may consult your instructor for guidance and hints. You may also discuss assignment questions with your classmates, but you should not leave a discussion with anything in writing; your written work must be your own. You may not seek answers to assignment questions elsewhere. Attempting to solve a problem, whether you succeed or not, is a valuable learning experience which will give meaning and purpose to results you have learned, solidifying your understanding of the subject and helping you to think and question on your own.

Soliciting outside help on assignment questions (for example, at the Learning Centre, from a higher level student, or online) is considered cheating. Use of solutions to tests or assignments from a previous year to which you have somehow gained access, and use of information from websites in solving assignments, are strictly forbidden and considered plagiarism. Any student suspected of violating these rules will be required to pass an oral exam to demonstrate a full understanding of the work submitted. Further action may then be taken following Dalhousie's official plagiarism and cheating policy.

Each assignment must be completed *on the question sheet* and submitted *in class* at the *start* of lecture on the day it is due (or in the event of university closure, on the next class day the university is open). Assignments left at the instructor's office during the lecture will not be accepted. Because assignment solutions will be made available on the same day and assignment questions are frequently discussed in class, no late assignments will be accepted. This includes assignments received on the due date at any time *after* class has started or solutions have been distributed. There will be no make-up assignments under any circumstances.

Tests will be held in class on the dates listed (or in the event of university closure, on the next class day the university is open). Because solutions will be made available on the same day, absence for a test will result in a score of 0 unless a *Student Declaration of Absence* is filed.

STUDENT DECLARATION OF ABSENCE: To self-declare your absence for an assignment, **you must notify your instructor by email before 1:35 pm on the day the assignment is due.** You may submit your assignment electronically (scanned and emailed), but it must be received before 1:35 pm. If you opt instead not to submit your assignment, the score for that assignment will be dropped from your course assessment.

To self-declare your absence for a test, **you must notify your instructor by email before 1:35 pm on the day the test is to be written and you must also include in your email a copy of your official Dalhousie class schedule; failure to do so may result in a score of 0.** A make-up test will then be scheduled for you at the earliest possible date based solely on the constraints of your official Dalhousie class schedule. Be advised that this might be as early as 8:35 am on the day after your self-declared absence.

The *Student Declaration of Absence* form (which can be found in Assignments under Assessment in the MATH 3502 course space on Brightspace) must be completed and submitted via Brightspace no later than three days after the last day of a self-declared absence.

UNIVERSITY POLICIES AND STUDENT RESOURCES: Information on Dalhousie policies and student resources can be found under Syllabus in the Table of Contents of the MATH 3502 course space on Brightspace.