Department of Mathematics & Statistics
Concordia University

MATH 203

Differential & Integral Calculus I

Summer 2022

Instructor*: _____

Email: _____

Office Hours: _____

*Students should get the above information from their instructor during class time. The instructor is the person to contact should there be any questions about the course.

Textbook: *Thomas' Calculus: Early Transcendentals, Single Variable, (ed. 14).*
The e-text, including MyLabMath, can be purchased through the Concordia BookStop:
https://www.bkstr.com/concordiastore/home

Prerequisite: Math 201 or an equivalent Functions course.

Pre-test: A pre-test is posted on the Meta Moodle site of this course, to help students determine whether their mathematical prerequisites are strong enough to take this course. Students are encouraged to go to the Meta site, click on "README: About the Pre-test", and then take the test itself to see where they stand.

Office Hours: Your professor will announce her/his office hours, during which she/he will be available to give a reasonable amount of help. Note, however, that if you miss a class, it is not reasonable to expect your professor to cover the missed material for you.

Tutorials: It takes a great deal of practice to succeed in this course. To complement lectures, the Department has organized weekly tutorials, wherein tutors will guide students through solutions to problems on topics covered in class the week prior. Emphasis will be placed on material with which students have difficulties. Students are strongly encouraged to actively participate in these problem-solving sessions.

Math Help Centre: Over and above tutorials, students may avail themselves of a Math Help Centre staffed by graduate students. For a schedule, see the Department webpage:
https://www.concordia.ca/artsci/math-stats/services/math-help-centre.html.

WeBWorK: Every student will be given access to an online system called **WeBWorK**. The system offers many exercises and practice problems. Students must use this system to do online assignments (see Assignments below). Before each exam (midterm and final), numerous practice problems will be posted on **WeBWorK** to aid students in their preparation.

MyLab Math: Every student who purchases the textbook will be given access to one more online system called **MyLab Math**. This system contains an e-version of the textbook, as well as various other excellent resources, including practice exercises, typical examples on different topics, often with solutions, videos, etc., which can help you master the course material.

Assignments: Students must submit assignments online using **WeBWorK.** Late assignments **will not** be accepted. Assignments constitute 10% of your final grade. Working regularly on assignments is essential for success in this course. Students are also strongly encouraged to do as many problems as their time permits from the list of recommended problems included in this outline, as well as work on the practice exercises in **WeBWorK** and in **MyLab Math**.

Calculators: Only calculators approved by the Department (with a sticker attached as proof of approval), such as **Sharp EL 531** or the **Casio FX 300MS**, available at the Concordia Bookstore, are permitted for the class test and final examination. See for the list of approved calculators https://www.concordia.ca/artsci/math-stats/services.html#calculators

Midterm Test: There will be one **midterm test,** based on the material of lectures 1-6, which will contribute up to 25% to your final grade (see the **Grading Scheme** below). **The midterm test will be held during lecture time.**

NOTE: It is the Department's policy that tests missed for any reason, including illness, cannot be made up.

Students who are unable to write the midterm test for a valid reason must write to their instructor to request a 90% final exam. Such a request will not be granted unless it is made in writing (by email), the reason is valid, and is supported by documentation or other evidence. Valid reasons for missing a midterm test include: conflicts with other exams or religious observances (must be reported to the instructor in advance); illness (Short-Term Absence form or valid medical note required); bereavement. Students who miss the midterm test but do not request a 90% final, as described above, will not be granted a 90% final, and will forfeit the marks for the midterm test.

Travel arrangements are not considered a valid reason for missing the midterm test.

Final Exam: A three-hour cumulative final examination (covering all course content) will be given at a date, time and location to be determined by the Exams Office.

NOTE: Students are responsible for finding out the date and time of their final exam once the schedule is posted by the Exams Office. Conflicts or problems with the scheduling of the final exam must be reported directly to the Exams Office, not to the instructor.

Grading Scheme: The final grade will be based on the highest of (a) and (b) below:

a) 10% for the assignments, 25% for the midterm test, 65% for the final exam.
b) 10% for the assignments, 10% for the midterm test, 80% for the final exam.

NOTE: If you miss the midterm test for a valid reason and make a written request, with supporting documentation/evidence, that is approved by your instructor, then your final grade will be based on: 10% for the assignments, 90% for the final exam.

IMPORTANT: **NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE**.

CONTENTS

Note: All of Chapter 1 is a review of material that is covered in prerequisite courses, and is important for this course. If you don't thoroughly understand this preliminary material, it is particularly important that you learn it through assignment questions and recommended problems. If you still feel you don't know it well enough after the first class or so (you should also try the pre-test mentioned at the beginning of this outline), you should consider dropping the course and taking MATH 201 instead.

Lectures	Topics			Recommended Problems
1	1.1	Representations of Functions	p.11:	3, 5, 7, 9, 13, 21, 23, 27, 49, 51
	1.2	Combining Functions; Shifting & Scaling Graphs	p.18:	1, 3, 5, 7, 9, 15, 17, 19, 21, 23, 25
	1.3	Trigonometric Functions	p.27:	7, 9, 11, 15, 19, 25, 29, 37, 41, 47, 49
2	1.5	Exponential Functions	p.37:	3, 7, 9, 11, 13, 15, 21, 25, 27, 33
	1.6	Inverse Functions and Logarithms	p.49:	9, 17, 21, 29, 31, 41, 47, 53, 61, 63, 71
3	2.1	Rates of change and Tangent Lines	p.61:	1, 3, 5, 23, 25
	2.2	Limit of a Function and Limit Laws	p.71:	3, 5, 13, 15, 19, 25, 27, 35, 37, 55, 65
	2.4	One-Sided Limits	p.88:	3, 7, 9, 15, 17, 19, 33, 37
	2.6	Limits Involving Infinity; Asymptotes	p.112:	1, 9, 11, 21, 27, 35, 41, 69, 71, 87, 89
4	2.5	Continuity	p.100:	5, 13, 19, 29, 31, 41, 45, 49, 61
	3.1	Tangent Lines and the Derivatives	p.123:	5, 11, 17, 21, 25, 31, 33
	3.2	The Derivative as a Function	p.130:	3, 9, 11, 17, 23, 25, 55, 59
5	3.3	Differentiation rules	p.142:	5, 7, 11, 15, 21, 23, 29, 43, 47, 61
	3.4	The Derivative as a Rate of Change	p.150:	5, 7, 9, 13, 15, 19, 23
6	3.5	Derivatives of Trigonometric Functions	p.158:	3, 7, 11, 13, 19, 23, 31, 37
	3.6	The Chain Rule	p.166:	5, 7, 13, 21, 23, 31, 35, 37, 45, 63, 77
7	3.7	Implicit differentiation	p.172:	1, 5, 11, 15, 25, 27, 37, 39, 41
	3.8	Derivatives of Inverse Functions and Logs	p.183:	7, 11, 27, 31, 33, 37, 39, 51, 53, 89, 95
8	3.9	Inverse Trigonometric Functions (start with the review of inverse sin & cos, § 1.6)	p.189:	5, 9, 11, 17, 25, 29, 39, 43, 45
	3.10	Related rates	p.196:	7, 11, 13, 15, 17, 21, 23, 27, 31, 33, 39
9	3.11	Linearization and Differentials	p.209:	5, 11, 17, 19, 23, 33, 39, 45, 49, 55, 59
	4.1	Extreme Values of Functions on Intervals	p.227:	5, 17, 23, 31, 37, 39, 53, 63, 69, 89
10	4.2	Mean Value Theorem	p.235:	5, 11, 13, 21, 25, 27, 29, 61, 63, 65
	4.5	Indeterminate forms and L'Hôpital's Rule	p.262:	9, 11, 15, 17, 21, 43, 47, 51, 53, 61, 63
11	4.3	Monotonic Functions	p.241:	5, 7, 19, 27, 29, 54, 57, 61
	4.4	Concavity and Curve Sketching	p.251:	5, 9, 13, 17, 31, 37, 43, 63, 81, 85, 99
12	4.6	Applied Optimization	p.269:	3, 5, 7, 9, 11, 13, 15, 19, 29, 37, 39, 41
13	**REVIEW**			

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: concordia.ca/students/academic-integrity." *[Undergraduate Calendar, Sec 17.10.2]*

Use of Zoom
Zoom is included as an institutionally-approved technology. This means we have been assured of the privacy protections needed to use freely within the classroom)

Zoom may be used in this course to facilitate learning at a distance. It may be used to record some or all of the lectures and/or other activities in this course. If you wish to ensure that your image is not recorded, speak to your instructor as soon as possible.

Also, please note that you may not share recordings of your classes and that the instructor will only share class recordings for the purpose of course delivery and development. Any other sharing may be in violation of the law and applicable University policies, and may be subject to penalties.

Behaviour
All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the Code of Rights and Responsibilities which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in University activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property
Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use their own means of recording any elements of an online class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities. As specified in the Policy on Intellectual Property, the University does not claim any ownership of or interest in any student IP. All university members retain copyright over their work.

Extraordinary circumstances
In the event of extraordinary circumstances and pursuant to the Academic Regulations the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.