Department of Mathematics & Statistics
Concordia University

MATH 203, Sec. AA
Differential & Integral Calculus I
Summer 2020

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Office Hours: Refer course Moodle page.

Preface: Due to exceptional circumstances, this course will be taught and all assessments will be done completely ONLINE. Given the subject matter and nature of this course, at least one of the exams, including **the midterm and/or the final exam will be given online through the Concordia Online Exams (COLE) platform with online proctoring.** For more details, see the ADDENDUM at the end of this Course Outline.

Text: *Thomas' Calculus: Early Transcendentals, Single Variable, (ed. 14)* Books a la Carte Edition Plus MyLab Math, (Pearson).

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 if their prerequisite mathematical background is 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.

Tutorials: The material in this course requires a lot of practice. The Department has therefore organized special ONLINE tutorial sessions conducted every week to provide additional support to students outside the online lecture environment. These online sessions are conducted by tutors who will help with solving problems on the topics learned in class that week, with particular emphasis on the material that students may have difficulties with in this course. Students are strongly encouraged to participate and be active at these problem-solving sessions. Tutorials are an important resource to help students succeed in this course.

Math Help Centre: In addition to Tutorials, a Math Help Centre staffed by graduate students is available. The schedule of its operation will be posted on 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 provides you with many exercises. Students will use this system to do assignments (see **Assignments** below). In addition, before the midterm test and before the final exam, a number of practice problems will be posted in **WeBWorK** to help you review the material of the course.

MyLab Math: Every student who purchases the loose-leaf version of 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 a large number of various resources, like practice exercises, typical examples on different topics, often with solutions, video materials, etc., that help you master the course material.

Assignments: Students are expected to submit assignments using **WeBWorK**. Late assignments **will not** be accepted. Assignments contribute 10% to the final grade. Working regularly on the assignments is essential for success in this course. Students are also strongly advised 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 opened in **WeBWorK** and in **MyLab Math**.

Midterm Test: There will be one **midterm test** in Week 4 (based on the material of weeks 1-3) which will contribute up to 40% to your final grade (see the Grading Scheme below).
NOTE: It is the Department's policy that tests missed for any reason, **including illness,** cannot be made up. If you miss the midterm test **because of illness** *(medical note required)* the final exam will count for 90% of your final grade, and the Assignments will count for the remaining 10%.

Final Exam: The final examination will be given online through the COLE platform. The exam will cover all the course material, and will contribute up to 65% to the final grade (see the Grading Scheme)

NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Conflicts with the final exam schedule must be reported directly to **the Examinations Office, not to your instructor**. It is the Department's and the Examinations Office's policy that **students are to be available until the end of the final exam period. Conflicts due to travel plans will not be accommodated.**

Grading Scheme: The final grade will be based on the higher of (a) or (b) below:
a) 10% for the assignments, 40% for the midterm test, 50% for the final exam.
b) 10% for the assignments, 25% for the midterm test, 65% for the final exam.

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]

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Note: All of Chapter 1 is a review of material that is covered in prerequisite courses, and is important for this course. The material that is skipped in this review will be introduced briefly later in the course when needed. <u>If you don't know this preliminary material thoroughly, or</u> if you feel you don't know it well enough after the first class or so you may want to consider dropping the course and taking MATH 201 instead.

Weeks/Lectures		Topics		Recommended Problems
1/1	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, 47, 49
1/2	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, 63, 71
2/3	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, 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, 71, 87, 89
2/4	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
3/5	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
3/6	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
4		**MIDTERM TEST** (based on the material of weeks 1-3, Lectures 1-6)		
4/7	3.7	Implicit differentiation	p.172:	1, 5, 11, 15, 25, 27, 37, 39, 41
	3.8	Derivatives of Inverse Functions, Logs	p.183:	7, 11, 27, 31, 33, 37, 39, 53, 89, 95
5/8	3.9	Inverse Trigonometric Functions (start with the review of inverses in § 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, 33, 39
5/9	3.11	Linearization and Differentials	p.209:	5, 11, 17, 19, 23, 33, 39, 45, 49, 59
	4.1	Extreme Values of Functions	p.227:	5, 17, 23, 31, 37, 39, 53, 63, 69, 89
6/10	4.2	Mean Value Theorem	p.235:	5, 11, 13, 21, 25, 27, 29, 61, 63, 65
	4.5	Indeterminate forms, L'Hôpital's Rule	p.262:	9, 11, 15, 17, 21, 43, 47, 53, 61, 63
6/11	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, 81, 85, 99
7/12	4.6	Applied Optimization	p.269:	3, 5, 7, 9, 11, 13, 15, 19, 29, 37, 41
7		**REVIEW CLASS (*time permitting*)**		

Addendum: Due to exceptional circumstances, this course will be taught and all assessments will be done completely online. Given the subject matter and nature of this course, a midterm and/or a final online exam will be provided through the Concordia Online Exams (COLE) platform with online proctoring. More information about this may be found at the COLE website.

Please note the following respect to online proctored exams:

- That the exam will take place during the exam period at the designated date and time set by the professor (midterm) or the Exams Office (final). All exam times will be set to Eastern Standard Time.
- That your image, voice and screen activity may be recorded throughout the duration of the exam.
- That you must show your Concordia University Identification card to validate your identity. Alternative government issued photo identification will be accepted, though it is not recommended. Only identification in English or French will be accepted.
- That the recording will be encrypted and will only be viewed by authorized university personnel (no external entity has authorization to review the recording).
- That you will be responsible for ensuring appropriate properly functioning technology (webcam, a microphone, Chrome browser and an ability to download the Proctorio extension, as well as a reliable internet connection with a minimum of a 3G connection).
- That you should enter the virtual test site and become familiar with the software that will be used for their exam before starting the exam.
- That you will need a quiet place within which to take the exam. Earplugs or noise- cancelling headphones that are not connected to a device may also be used to allow you to focus for the duration of the exam.

Students who are unable to write an exam because they are unable to meet the above conditions and requirements are advised that they will need to drop the course. More information can be provided on the next offering of this course by consulting the Department. Students are advised that the drop deadline (DNE) for this course is May 11.

Students who require additional accommodations for their exams due to a documented disability should contact the Access Centre for Students with Disabilities as soon as possible. If you face issues during the exam, you should inform your professor of those issues immediately. Please note that there are in-exam supports you should spend time getting to know. Visit the COLE website for more information.