

**MATH 205**  
Differential & Integral Calculus II  
*Fall 2022*

Instructor\*: \_\_\_\_\_

Office/Tel No.: \_\_\_\_\_

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 203 or an equivalent Calculus I course.

**Office Hours:** Your professor will announce her/his office hours during which she/he will be also available to give a reasonable amount of help. Note, however, that if you missed 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, are conducted by tutors who will help with solving problems on the topics learned in class that week, with emphasis on the material that students may have particular difficulties within this course. Students are strongly encouraged to actively participate in these problem-solving sessions which can contribute very significantly to students success in this course.

**Math Help Centre:** A Math Help Centre staffed by graduate students is available. The schedule of its operation and its location will be posted in the Department and on the Department webpage <http://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 e-text 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 online using **WeBWorK**. Late assignments **will not** be accepted. Assignments contribute 10% to your 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 possible 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) are permitted for the class test and final examination. For a list of Approved calculators see <http://www.concordia.ca/artsci/math-stats/services.html> #calculators.

**Midterm Test:** There will be one **midterm test**, based on the material of weeks 1-6, (as listed in the CONTENTS below), which will contribute up to 25% to your final grade (see the **Grading Scheme** below). The test will be **common** for all sections of this course and will be held on **Sunday October 30, 2022, at 13:30 (i.e. 1:30 P.M.)**.

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.

**NOTE:** If you are taking another MATH 200 level course with a common midterm test **at exactly the same time as this one**, you may choose which of the two tests you want to write. You must then inform the instructor of the other course that you will not write that test because of the time conflict between the two courses. In this case, the 90%-10% formula will apply to that other course.

**Final Exam:** The final examination will be three hours long and will cover all the material in the course.

**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 or problems with the scheduling of the final exam must be reported directly to the Examinations Office, not to your instructor.

**Grading Scheme:** The final grade will be based on the higher of (a) or (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.

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

## CONTENTS

Weeks	Sections	Topic	Page	Recommended problems
1	5.1	Area and Estimating with Finite Sums	308	1, 3, 5, 7, 11, 15, 17
	5.2	Sigma Notation and Limits of Finite Sum	316	1, 3, 5, 7, 9, 17, 23, 25, 35
	5.3	The Definite Integral	326	3, 7, 9, 13, 15, 17, 21, 43,45,65, 67
2	4.8	Antiderivatives	287	5, 9, 13, 15, 21,23, 29, 39, 45, 61
	5.4	The Fundamental Theorem of Calculus	339	3, 7, 11, 13, 23, 29, 39, 43, 47, 51
3	5.5	Indefinite Integrals & the Substitution Method	348	3, 7, 9, 11, 21, 23, 31, 37, 47, 57
	5.6	Definite Integral Substitutions, Area Between Curves.	355	1, 5, 7, 11, 17, 25, 29, 37, 39, 41, 65, 69, 73, 75, 77, 79, 85, 97
4	8.1	Using Basic Integration Formulas	465	1, 3, 5, 9, 13, 19, 21, 31, 33, 39, 41
	8.2	Integration by Parts	471	1, 3, 5, 9, 11, 13, 17, 23, 25, 27, 31, 33, 35, 43, 45, 55
5	8.3	Trigonometric Integrals	479	3, 11, 13, 17, 19, 21, 23, 37,41, 63
	8.4	Trigonometric Substitution	484	1,3, 5, 9, 11, 13, 15, 17, 21, 37, 39
6	8.5	Integration of Rational Functions by Partial Fractions	491	1, 5, 7, 9, 11, 15, 17, 21, 27, 29, 33, 39, 45, 47, 49
	6.1	Volumes Using Cross-Sections (emphasis on the <i>disk/washer method</i> )	375	17, 19, 21, 23, 27, 31, 33, 35, 43, 45, 55, 57
7	8.8	Improper Integrals	517	1, 5, 7, 13, 17, 21, 25, 45, 59, 65
8	10.1	Sequences	586	5, 7, 9, 15, 21, 25, 27, 31, 33, 35, 39, 41, 43, 45, 49, 51, 73, 77
	10.2	Infinite Series	597	3, 7, 19, 35, 37, 41, 45, 55, 57, 81
9	10.3	The Integral Test	604	3, 5, 7, 11, 17, 19, 21, 37, 39, 61
	10.4	The Comparison Tests	610	3,5, 7, 9, 15, 23, 25, 33, 35, 45
10	10.5	Absolute Convergence, Ratio and Root Tests	616	3, 5, 7, 11,13, 17, 19, 21, 27, 37
	10.6	Alternating Series & Conditional Convergence	622	3, 5, 7, 9, 11, 19, 21, 31,33, 39, 41
11	10.7	Power Series (omit Multiplication of Series)	633	3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 27, 33, 37, 41, 61
12	10.8	Taylor and Maclaurin series	640	3, 5, 7, 9, 13, 15, 23, 29, 35, 37, 39, 41, 37, 39, 43
13		<b>REVIEW</b>		

### 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: <https://www.concordia.ca/conduct/academic-integrity.html>" [Undergraduate Calendar, Sec 17.10.2]

### 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.

#### **Use of Zoom**

**Note: 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 might 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.

#### **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.