

MATH 205
Differential & Integral Calculus II
Winter 2016

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: *Single Variable Calculus*, by James Stewart, 8th Edition (Customized);

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: The material in this course requires a lot of practice. There is not enough class time to do all the examples and problems needed to learn the material thoroughly. The Department has therefore organized special tutorial sessions conducted once per week for one hour for every section of this course to provide additional support to students outside the lecture class time. These 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 you succeed in this course.

Math Help Centre: 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: <https://www.concordia.ca/artsci/math-stats/services/math-help-centre.html>.

WeBWorkK: Every student will be given access to an online system called **WeBWorkK**. The system provides you with many exercises and practice problems. Students will use this system to do online assignments (see **Assignments** below). In addition, before the midterm test and a before the final exam, a number of practice problems will be posted in WeBWorkK to help you review the material of the course.

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 encouraged to do as many problems as their time permits from the list of recommended problems included in this outline, as well as practice problems. A solution manual for all odd-numbered questions is packaged with the textbook.

Calculators: Only calculators approved by the Department (with a sticker attached as a 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 <https://www.concordia.ca/content/dam/artsci/math-stats/docs/AppCalculatorList.pdf> for a list of approved and non-approved calculators.

Midterm Test: There will be one **midterm test**, based on the material of weeks 1-6, 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 **Saturday March 5, 2016 at 10:00 A.M.** Students who will not be able to write the test that day for a valid reason, e.g. religious (to be reported to the section's **instructor** in advance) or illness (*a valid medical note required*), may write an alternate midterm test on **Sunday March 13, 2016 at 10:00 A.M.**

NOTE: It is the Department's policy that tests missed for any reason, **including illness**, cannot be made up. If you miss both the midterm and alternate 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 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**. It is the Department's policy 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,
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

A: numbered according to Stewart, 8th Edition.

Weeks	Sections	Topic	Page	Recommended problems
1	5.1	Areas	375	1, 3, 5, 7, 17
	5.2	The Definite Integral	388	3, 7, 9, 17, 21, 37, 39
2	4.9	Antiderivatives	355	5, 7, 9, 13, 17, 25, 33, 39, 45, 61
	5.3	The Fundamental Theorem of Calculus	399	7, 11, 13, 15, 23, 27, 39, 43
3	5.4	Indefinite Integrals	409	3, 7, 9, 11, 21, 23, 33, 37, 41
	5.5	The Substitution Rule	418	1, 5, 7, 9, 17, 25, 37, 39, 41, 49, 69, 73, 77, 81
4	7.1	Integration by Parts	476	1, 3, 7, 9, 15, 23, 29, 37, 39, 41
	6.1	Areas Between Curves	434	1, 5, 11, 15, 25, 27, 31
	6.5	Average value of a function	463	1, 3, 7, 9, 19
5	7.2	Trigonometric Integrals	484	1, 3, 7, 9, 11, 13, 17, 21, 25, 35, 45
	7.3	Trigonometric Substitution	491	1, 3, 5, 9, 11, 13, 19, 23, 27, 29
6	7.4	Integration of Rational Functions by Partial Fractions	501	1, 3, 7, 9, 11, 15, 31, 39, 47, 61
	6.2	Volumes (emphasis on the <i>disk/washer method</i>)	446	3, 7, 9, 11, 13, 15, 17
7		Pre-Midterm Review (time permitting)		
	7.8	Improper Integrals	534	1, 5, 11, 13, 15, 17, 19, 29, 33, 39
8	11.1	Sequences	704	5, 7, 9, 15, 21, 23, 25, 27, 29, 31, 33, 37, 39, 41, 49, 51
	11.2	Series	715	9, 17, 19, 21, 25, 29, 37, 41, 45, 57
9	11.3	The Integral Test	725	3, 5, 7, 13, 15, 17, 19, 21, 27, 29
	11.4	The Comparison Tests	731	3, 7, 9, 13, 17, 21, 25, 29, 35, 39
10	11.5	Alternating Series	736	3, 5, 7, 11, 13, 17, 19, 21, 27, 33
	11.6	Absolute Convergence, Ratio and Root Tests	742	3, 5, 7, 9, 15, 21, 27, 31, 33, 37, 39
11	11.8	Power Series	751	3, 5, 7, 9, 13, 15, 17, 19, 23, 25
	11.9	Representation of Functions as Power Series	757	1, 3, 5, 7, 9, 15, 17, 19, 21, 23, 27
12	11.10	Taylor and Maclaurin series (omit Taylor inequality and the Binomial series)	771	5, 7, 9, 13, 15, 21, 29, 35, 39, 41, 47, 49, 53, 55, 63, 65
13		REVIEW		

B: numbered according to Stewart, 7th Edition.

Weeks	Sections	Topic	Page	Recommended problems
1	5.1	Areas	369	3, 5, 11, 15, 19
	5.2	The Definite Integral	382	3, 7, 9, 17, 21, 37, 39
2	4.9	Antiderivatives	348	5, 7, 9, 13, 17, 25, 33, 39, 45, 61
	5.3	The Fundamental Theorem of Calculus	394	7, 11, 13, 15, 23, 27, 39, 43
3	5.4	Indefinite Integrals	403	7, 11, 17, 19, 23, 31, 37, 43
	5.5	The Substitution Rule	413	1, 5, 7, 9, 19, 21, 25, 29, 31, 53, 63, 67
4	7.1	Integration by Parts	468	1, 3, 7, 15, 17, 23, 31, 37, 47, 53
	6.1	Areas Between Curves	427	1, 5, 11, 15, 25, 27, 31, 49
	6.5	Average value of a function	451	5, 7, 9, 19
5	7.2	Trigonometric Integrals	476	1, 5, 7, 11, 13, 17, 21, 23, 31, 39
	7.3	Trigonometric Substitution	483	5, 9, 11, 13, 17, 21, 23, 27, 29
6	7.4	Integration of Rational Functions by Partial Fractions	481	1, 3, 7, 9, 11, 15, 31, 39, 47, 61
	6.2	Volumes (emphasis on the <i>disk/washer method</i>)	438	3, 7, 9, 11, 13, 15, 17
7	Pre-Midterm Review (time permitting)			
	7.8	Improper Integrals	527	1, 5, 7, 11, 15, 17, 21, 25, 29, 39
8	11.1	Sequences	700	5, 7, 15, 19, 23, 25, 27, 31, 33, 37, 39, 41, 65
	11.2	Series	711	9, 17, 19, 21, 25, 29, 37, 49
9	11.3	The Integral Test	720	3, 5, 7, 13, 19, 21, 27, 29
	11.4	The Comparison Tests	726	3, 7, 9, 17, 21, 25, 29, 39
10	11.5	Alternating Series	731	3, 5, 7, 13, 19, 21, 27, 29
	11.6	Absolute Convergence, Ratio and Root Tests	737	3, 7, 9, 17, 21, 25, 29, 39
11	11.8	Power Series	745	3, 5, 7, 9, 13, 17, 19, 23, 23, 25
	11.9	Representation of Functions as Power Series	751	3, 7, 9, 15, 19, 23, 27
12	11.10	Taylor and Maclaurin series (omit Taylor inequality and the Binomial series)	765	5, 7, 9, 13, 17, 29, 41, 47, 49, 55, 63, 65
13		REVIEW		