

# MATH 100: CALCULUS I

## SUMMER 2012, SECTION A01

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Class: TWF 10:30–11:20 in DSB C118  
Tutorial: R 11:30–12:20 in CLE A212  
Office Hours: TWF 11:30–12:30  
and by appointment  
Webpage: <http://web.uvic.ca/~siefkenj/math100>

Welcome to the wonderful world of calculus—a subject steeped in 350 years of tradition and clarification, and one which has revolutionized science, engineering, and of course mathematics. In this course, we will study in detail the first half of calculus, the derivative, and the beginnings of the second half of calculus, the integral (which will be studied in great detail in Math 101).

As you join me in learning the most powerful analytic tool humankind has ever known, keep in mind that although hundreds of thousands have trod the path of calculus before you, the journey won't necessarily be easy. We are, after all, talking about a subject that took thousands of years after the invention of writing for humankind to discover.

**Prerequisites:** The university requires a minimum grade of B in one of Principles of Mathematics 12, Pre-calculus 12, or equivalent, or a passing grade in Math 120, or a passing mark on the Placement Test. If you have any questions about the university requirements and registration for this class, please direct them to *Carol Anne Sargent* at [msadmin@uvic.ca](mailto:msadmin@uvic.ca). In practical terms, these requirements mean that you should understand what a function is, how to factor and solve equations (involving polynomials, exponents, logarithms), how to graph equations, and how to solve inequalities. You should also know the basic geometric formulas like area and perimeter equations for circles, rectangles, and trapezoids. Having these skills means that you can answer all of the questions on the worksheet provided under “Precalculus Review” on the course webpage.

**Course Format:** This course will be unlike other math courses you may have had. It will more closely resemble that of a Liberal Arts course—that is, there will be *assigned video watching* and/or *assigned reading* each week. During class, we will discuss and work through questions that illustrate different subtleties of the material.

In a typical class, I will start by posting a multiple choice question, which everyone will individually work through. Then, using clickers, I will survey the class (not for a mark), to see what, if any, consensus there is as to the answer. Everyone will then have the opportunity to discuss with their neighbor why certain answers are correct or not. When we all understand the question and its nuances, we will move on to a new question.

Unlike in a traditional math class, my goal is not to talk for an hour while a room full of students copies down what I say into notebooks. Instead, my goal is to guide you in interpreting and internalizing the material that already has an excellent exposition in your textbook. This is sometimes referred to as *synthesis*, and is by far the most challenging part of learning.

**Tutorials:** The partner to the lecture component of class is the tutorial. Every Thursday I prepare several down-to-earth questions which you will work on during tutorial with the help and guidance of the tutorial instructor.

# Required Materials

**Textbook:** *Calculus Early Transcendentals (7<sup>th</sup> edition)* by Edwards & Penny. This book will also serve you in Math 101 and Math 200.

**Clickers:** During class, we will be using clickers (remote-control-type devices that let you electronically answer multiple-choice questions). UVic uses *iClicker* brand clickers. If you already have a clicker from another UVic class (for example, PSYC100, CHEM101, CSC100, CSC105, etc.), you may use the same one. If not, you may purchase one at the UVic book store. After obtaining a clicker, *it needs to be registered for use at UVic* by logging onto [www.uvic.ca/mypage](http://www.uvic.ca/mypage) and proceeding to Student Services→iClicker and typing in the iClicker serial number.

**Calculators:** Though the course is designed so that the arithmetic is all doable by hand, you may supplement yourself with a calculator, specifically, the department-approved **Sharp EL-510R**. You are welcome to use this calculator on homeworks and exams (and it is the only calculator approved for use in any math course at UVic).

# Evaluation

Your mark in this course has the following components:

- 2% — Class Participation
- 8% — Homework
- 10% — First Midterm (Friday, May 25)
- 15% — Second Midterm (Friday, June 15)
- 15% — Third Midterm (Friday, July 13)
- 50% — Final Exam (Date TBD)

**Participation:** You get a free 2% just by showing up to class and using your clicker to participate (which means responding to clicker questions, no need to get the right answer). This 2% is awarded if you participate in at least 80% of classes, so there is no need to worry about your participation mark if you need to miss a small number of class days to manage unforeseen events. If you do not participate in at least 80% of classes, none of the 2% participation mark will be awarded.

**Homework:** 8 homework assignments will give you direct and individual feedback on how well you are learning Calculus. These are (and should be!) more involved than practice problems from the textbook. To get the full benefit from assignments, you should first do the core/suggested problems from the textbook and then work on the assignment. I will drop your lowest 2 assignment scores when computing your homework mark. If you miss an assignment for a justified or unjustified reason, I will count it as one of the two scores that will be dropped.

**Midterms:** I have carefully planned the midterm dates, so please ensure you are available for each midterm. If you miss a midterm for a justified reason (illness, family affliction, or other reason recognized by UVic's policies), I can excuse it for you by weighting other tests more heavily. However, *there will be no makeup exams*.

**Final Exam:** The final exam will be scheduled by the Records Office. **Students are strongly advised NOT to make final plans for travel or employment during the final examination period since special arrangements will NOT be made for examinations that may conflict with such plans.** Off-schedule Final Examinations are not given except in accordance with the regulations on *Illness, Accident, or Family Affliction at Exam Time* in the UVic Calendar. Deferred status is only granted for Final Examinations.

The percent-to-letter-grade is the new university-wide percent-based grade table:

Letter	A+	A	A-	B+	B	B-	C+	C	D
Percent	≥ 90	≥ 85	≥ 80	≥ 77	≥ 73	≥ 70	≥ 65	≥ 60	≥ 50

# Keys to Success

Learning calculus is a big task, and it doesn't come without effort! It will require a lot of time outside of class, but the payoff is significant. I am confident that if you put in the required effort, which means doing all of the assigned reading, all of the core and practice problems, and additional studying for concepts you're having trouble with, you will perform well.

**Assigned Reading and Videos:** The course webpage lists what videos and/or readings are required to be done prior to each lecture day. Reading math or watching a math video is an acquired skill that differs from reading a novel or watching a movie because retaining content is the principal goal. To assist you, I will post on the course webpage a series of questions corresponding to each reading/video assignment. After reading/watching the assigned material, you should be able to answer these questions, and if you cannot, you need to re-read/re-watch the relevant portions.

**Core Problems/Suggested Exercises:** The following is a list of core problems and suggested exercises from the textbook. These are not to be turned in, but you should work through them as part of your study. A great way to do this is to work in the Math Assistance Centre, where tutors can help you if you get stuck on any of the questions.

Book Section	Core Problems	Suggested Problems
2.1	5, 11, 13, 15, 21, 23, 27, 29, 31, 33, 37, 41	2, 8, 12, 16, 22, 24, 26, 28, 30, 32, 34, 35, 36, 42
2.2	1, 9, 13, 17, 21, 29, 35, 39, 43, 49, 55, 57, 61	2, 6, 12, 18, 22, 30, 34, 38, 44, 50, 54, 58, 60
2.3	5, 11, 17, 23, 25, 27, 31, 33, 41, 51, 55, 59	2, 6, 12, 22, 26, 28, 32, 34, 40, 50, 58, 60, 72
2.4	1, 7, 9, 13, 19, 23, 27, 31, 35, 43, 51, 55, 59, 71	2, 8, 10, 14, 16, 20, 24, 28, 44, 52, 56, 60, 68, 72
3.1	9, 11, 19, 23, 29, 33, 37, 41, 43, 45, 49, 53	10, 12, 20, 24, 28, 32, 36, 38, 40, 44, 48, 52
3.2	1, 7, 13, 19, 25, 31, 37, 43, 49, 53, 55, 61, 67	2, 8, 14, 20, 26, 32, 38, 42, 50, 52, 56, 63, 68
3.3	5, 9, 12, 13, 26, 29, 48, 52, 61, 66	1, 11, 15, 17, 21, 23, 25, 37, 43, 51, 60
3.4	1, 6, 9, 28, 30, 16, 45, 46, 55, 57–62, 64, 69	3, 7, 23, 31, 39, 47, 53, 63, 66
3.5	1, 3, 7, 8, 9, 20, 25, 38, 47–52, 55	2, 6, 19, 23, 27, 29, 31, 39, 41, 44
3.6	2, 3, 9, 10, 14, 15, 18, 29, 36, 40, 41	1, 5, 7, 11, 16, 19, 20, 23, 25, 26, 31, 37
3.7	3, 8, 14, 15, 19, 21, 49, 63, 67, 69, 72, 73, 88	12, 20, 32, 34, 37, 50, 68, 87
3.8	1, 3, 5, 11, 13, 21, 25, 27, 35, 41, 51, 56, 60, 62, 65	7, 9, 33, 46, 52, 59, 70
3.9	3, 5, 11, 17, 23, 25, 27, 35, 37, 43, 45, 53, 57, 59	4, 6, 14, 16, 20, 24, 32, 36, 38, 56, 60
3.10	3, 7, 11, 15, 19, 21, 25, 33, 42, 43	4, 8, 10, 16, 20, 22, 26, 34, 36, 44
4.2	7, 17, 19, 21, 23, 29, 33, 41, 45, 49	8, 14, 16, 22, 24, 32, 34, 42, 48, 50
4.3	1, 3, 5, 9, 19, 23, 29, 35, 37, 41, 47, 61	2, 6, 8, 18, 20, 30, 36, 40, 44, 46, 62
4.4	1, 3, 7, 11, 19, 23, 27, 31, 41, 48, 55	5, 8, 12, 20, 26, 29, 32, 42, 46, 50
4.5	3, 7, 9, 17, 23, 25, 29, 43, 49, 57	4, 11, 12, 20, 24, 26, 28, 44, 52, 56
4.6	1, 24, 26, 29, 32, 33, 35, 36, 45, 48, 63, 71, 76, 77–82	27, 30, 31, 34, 37, 41, 44, 46, 49, 50, 64, 73
4.7	2, 8, 11, 13, 15, 1728, 35, 37, 42, 48, 53, 69	3, 6, 10, 12, 15, 46, 47, 50
4.8	1, 4, 5, 6, 8, 19, 21, 23, 26, 29, 35, 45, 63	1, 2, 10, 13, 16, 22, 25, 39, 40, 42, 45
4.9	2, 3, 4, 7, 9, 13, 15, 16, 17, 19, 22, 30, 48	1, 5, 8, 10, 15, 18, 21, 24, 49
5.2	3, 4, 7, 8, 17, 22, 27, 32, 34, 37, 39, 46, 56, 70, 76	2, 13, 14, 15, 35, 38, 41, 47, 53, 57, 67
5.3	1, 4, 12, 14, 19, 26, 29, 33, 38, 46, 47	6, 7, 8, 16, 17, 28, 30, 49, 50
5.4	1, 3, 11, 13, 19, 21, 31, 43, 45, 47	2, 4, 14, 16, 18, 26, 36, 44, 46, 48
5.5	1, 3, 5, 19, 27, 33, 39, 43, 45, 47, 65	2, 4, 14, 26, 30, 40, 44, 46, 48, 64
5.6	1, 13, 15, 19, 21, 33, 45, 47, 49, 55, 57, 67, 69	2, 18, 22, 24, 36, 46, 48, 52, 56, 60, 65
5.7	1, 5, 11, 13, 15, 17, 19, 27, 31, 33, 47, 49, 53, 55, 59	2, 6, 7, 9, 10, 22, 29, 32, 50, 52
5.8	1, 5, 7, 11, 13, 15, 19, 25, 35, 37, 39, 41, 43, 49	2, 6, 12, 14, 20, 24, 34, 40, 42, 44
5.9	1, 3, 7, 13, 17, 19, 21, 23	2, 4, 8, 14, 18, 20, 22, 24, 26

**Math Assistance:** Math experts are available in the *Math Assistance Centre* located in the library. This is a free service staffed by graduate students who can assist you in understanding any math concepts you are having trouble with. You are free to use the Math Assistance Centre as a study area and request help when needed. For hours visit <http://www.math.uvic.ca/~msassist/>. The department also has a list of private tutors available from our main office in SSM A425.

# Provisional Schedule

Week	Dates	Book Section(s)	Homework	Midterms
1	7/05–11/05	Overview, 2.1, 2.2		
2	14/05–18/05	2.3, 2.4, 3.1	Homework 1 due Tue 15/05	
3	21/05–25/05	3.2, 3.3	Homework 2 due Tue 22/05	Midterm 1 Fri 25/05 (Precalc Review + Chapter 2)
4	28/05–1/06	3.4, 3.5, 3.6		
5	4/06–8/06	3.7, 3.8, 3.9	Homework 3 due Thurs 7/06	
6	11/06–15/06	3.10, 4.2		Midterm 2 Fri 15/06 (Up to Chapter 3)
7	18/06–22/06	4.3, 4.4, 4.5	Homework 4 due Thurs 21/06	
8	25/06–29/06	4.6, 4.7, 4.8	Homework 5 due Thurs 28/06	
9	4/07–6/07	4.9	Homework 6 due Thurs 5/07	
10	9/07–13/07	5.2, 5.3		Midterm 3 Fri 13/07 (Up to section 5.2)
11	16/07–20/07	5.4, 5.5	Homework 7 due Thurs 19/07	
12	23/07–27/07	5.6, 5.7	Homework 8 due Thurs 26/07	
13	30/07–3/08	5.8, 5.9		