

# Calculus I (Math 172) — Fall, 2010

**Location and Time:** 111 Bouillon, MTWTh, 12:00 -12:50 pm  
103 Bouillon, F, 12:00 -12:50 pm

**Instructor:** Dr. Dan Curtis

**Office:** 107a Bouillon

**Office Hours:** MTWTF 11:00 – 11:50, or by appointment.

**Help Sessions:** There will be two help sessions each week, where you can go to get extra help from me. They are:

Bu 111, Tuesday, 4:00-5:30 pm and Bu111, Thursday, 4:00-5:30 pm.

Attendance at these help sessions is completely up to you; the sessions are available for you if you wish to take advantage of them. I will work with those who attend, but no new course material will be covered.

**Mathematica Seminar:** There will be a *Mathematica* session each week, Wednesday, 4:00-5:30 pm, Bu 103. This is for those wanting to learn about *Mathematica*, get answers to questions, talk with other interested students, etc. This is independent of this course but may be of interest to you.

**CWU e-mail:** curtiswd@cwu.edu

**Web Page:** [www.cwu.edu/~curtiswd](http://www.cwu.edu/~curtiswd)

**Final Exam:** Friday, December 10, 12:00 – 2:00 pm

**Textbook:** Calculus by Gilbert Strang. **The textbook is required.** The book is available in hardcover form from the bookstore, but it can also be downloaded free of charge in pdf form from the website:

<http://ocw.mit.edu/resources/res-18-001-calculus-online-textbook-spring-2005/textbook/>

The book can be downloaded as a single pdf, or you can download the individual chapters. For this course you will need chapters 1-4. Also available for download from the same website is a Student Study Guide, Book Table of Contents, Answers to Odd-Numbered Problems, and an Equation sheet containing useful equations, formulas and numerical constants.

**Calculator:** A scientific calculator is required for this course. The TI-83+ is recommended. The calculator (and computers in general) can be a powerful tool for understanding mathematical ideas and for solving problems ... provided you learn how (and when) to use it. Some more advanced calculators can now do both differentiation and integration. However, in this course you will learn methods for doing things by hand and will have to do them by hand on exams.

**The *Mathematica* Software Package:** *Mathematica* is a system for doing mathematics on a computer. It is available on all the computers in Bu 103 computer lab as well as on those in the Library computer lab in Room 154. For more information about *Mathematica*, see their website:

[www.wolfram.com](http://www.wolfram.com)

Students can purchase their own copies of *Mathematica* from that website; this is not necessary for this course, but if you get interested in the software it might be of interest to you. I will be using *Mathematica* every day in class to give demonstrations and illustrate concepts, so you will get an idea of the impressive capabilities of this software. On Fridays we will meet in the Bu 103 lab where you will use *Mathematica* to do assignments and learn some of the basic features of this software.

**Course Content:** The course will cover material from chapters 1-4 of the text. You should read the book. The examples in the text will supplement those given in class and the discussion given in the text will provide extra discussion will provide reinforcement for material presented in class. In addition to the materials in the text, there will be additional materials provided in the form of handouts.

**Course Conduct:** You are expected to attend class daily. Homework will be assigned, but will not be graded. However, if you expect to do well in this course, you must do the homework. Some time will be available during class to discuss the homework problems and your instructor is available during office hours and during the help sessions mentioned above. Use will be made of scientific calculators during class, on homework, and on exams (but note the comment made above).

**Course Prerequisites:** A solid background in algebra is essential for success in this course. Also, basic knowledge of the trigonometric functions is assumed.

**Learner Outcomes:** Upon successful completion of this course, the student will be able to:

- Compute limits of elementary functions, using basic limit theorems and l'Hospital's rule.
- Compute the derivative of a function directly from the definition in simple cases.
- Compute derivatives of functions using the basic rules: sum rule, product rule, quotient rule, chain rule.
- Find the tangent and normal line for a function at a specified point on its graph.
- Use derivatives to analyze one-dimensional particle motion.
- Use derivatives to solve one-variable optimization problems.
- Formulate and solve related-rate problems.

**Grading:** Your course grade will be determined by the following:

1. Three 100-point in-class exams counting for up to 300 points. See the schedule below for the dates of these exams.
2. Seven quizzes, worth 10 points each. Your lowest quiz score will be dropped. Therefore the quizzes are worth a maximum of 60 points. See the schedule below for the dates of these quizzes.
3. A comprehensive final exam worth 100 points.

A perfect score on both of the above categories would result in a total of 460 points. Your course grade will be determined by the percentage  $p$  of these points you earn:

$90 \leq p$	A	$65 \leq p < 77.5$	C
$89 \leq p < 90$	A-	$64 \leq p < 65$	C-
$87.5 \leq p < 89$	B+	$62.5 \leq p < 64$	D+
$80 \leq p < 87.5$	B	$50 \leq p < 62.5$	D
$79 \leq p < 80$	B-	$p < 50$	F
$77.5 \leq p < 79$	C+		

### **Policy on Missed Exams and Quizzes**

1. **No makeups will be given for quizzes missed.** If you miss a quiz, it will be the one you get to drop.
2. If you must miss an exam you should let me know *in advance*. If there is a compelling reason for missing the exam a makeup may be given. (Desire to take a vacation during the quarter is not a compelling reason!)

**Students with disabilities:** If you require accommodation based on a documented disability, have emergency medical information to share, or need special arrangements in case of emergency evacuation, please discuss the situation with me as soon as possible

**Course Schedule (49 class days)**

<b>Date</b>	<b>Class Activity</b>	<b>Date</b>	<b>Class Activity</b>
09/20		11/01	Exam 2
09/21		11/02	
09/22	Classes begin	11/03	
09/23		11/04	
09/24		11/05	
09/27	Quiz 1	11/08	Quiz 5
09/28		11/09	
09/29		11/10	
09/30		11/11	HOLIDAY: Veterans Day
10/01		11/12	
10/04	Quiz 2	11/15	Quiz 6
10/05		11/16	
10/06		11/17	
10/07		11/18	
10/08		11/19	
10/11	Exam 1	11/22	Exam 3
10/12		11/23	
10/13		11/24	Thanksgiving Break
10/14		11/25	Thanksgiving Break
10/15		11/26	Thanksgiving Break
10/18	Quiz 3	11/29	Quiz 7
10/19		11/30	
10/20		12/01	
10/21		12/02	
10/22		12/03	Last day of classes
10/25	Quiz 4	12/06	Student study day
10/26		12/07	
10/27		12/08	
10/28		12/09	
10/29		12/10	Final Exam (12:00-2:00 pm)

## Problem Assignments

Section	Problems
1.1	RT, 1-20,32-35,45,46
1.2	Skip section
1.3	RT, 1-10,14,15,23-25
1.4	RT, 1-14,25-30,37
1.5	RT, 1,2,7,23-28,37
1.6	Read and look at the pictures
1.7	Read for historical context and the role of computers
2.1	RT, 1-13, 17, 21, 36
2.2	RT, 1-17, 21, 28, 30, 37-44
2.3	RT, 1-21, 28,29,35,37
2.4	RT, 1-5,10-11,18-19,26,29
2.5	RT, 1-39
2.6	RT, 1-4, 7-20
2.7	RT, 1-10 (note the answer may be "none exist")
3.1	RT, 1-21, 23-31 (odds)
3.2	RT, 1-21(odds), 25,27,28,29,31-34,35,36,38, 41-45,50,66,67,69,71,72
3.3	RT, 1-31 (odds), 39, 43, 45
3.4	RT, 3-17 (odds), 30-32, 33-39 (odds)
3.5	RT, 3-13 (odds), 15-20, 23,25,37,41,42
3.6	RT, 1-9 (odds), 17,19, 23, 24, 27,33, 34
3.7	RT, 1-4, 8, 9, 11, 13, 21
3.8	RT, 1,4,5,7,10-12,15-29 (odds), 32,36,38
4.1	RT, 1-16, 17,19,21,23,25,27,28,31,39,43,45-54
4.2	RT, 1-13 (odds), 19,20,21,23,24,25,27-31
4.3	RT, 1-11 (odds), 12,13,14,17-27 (odds), 39-45 (odds),57,59
4.4	RT, 1-47 (odds)