

Calculus II (Math 173) — Winter, 2008

Location and Time: 101 Bouillon, MTWThF, 1:00 —1:50 A.M.

Instructor: Dr. Dan Curtis

Office: 107a Bouillon

Office Hours: MTWThF 11:00 – 11:50. Actually, you can come by my office at any time and, unless I am occupied, I will be happy to talk with you.

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Final Exam: Tuesday, March 11, 12:00 – 2:00 pm

Textbook: Thomas' Calculus: Early Transcendentals by G. B. Thomas, et al, Eleventh Edition. **The textbook is required.**

Calculator: A graphing calculator will be useful for this course. 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.

Course Content: The course will cover material from chapters 5, 6, 7, and 8 of the text. You should read the book. The examples in the text will supplement those given in class and the discussion and examples given in the text will provide reinforcement for material presented in class.

Class Notebook: Each student will maintain a Class Notebook, which will contain solutions to all assigned homework problems as well as other worksheets and materials that may be handed out in class from time to time. These notebooks will be collected and graded four times during the quarter and these grades will count toward your course grade.

Classwork and Homework: You are expected to attend class daily. **Homework** will be assigned (see the **Problem Assignment** section of this syllabus) and these problems will be included in your Class Notebook. These will count toward your notebook grade each time these notebooks are collected.

Some time will be available during class to discuss the homework problems and your instructor is available during office hours. Use will be made of graphing calculators during class, on homework, and on exams (but note the comment made above).

Course Prerequisites: Calculus I is a formal prerequisite for this course. You must know the basic rules for differentiation: sum rule, product rule, quotient rule and chain rule. You must also know the formulas for the derivatives of the basic functions, including powers, roots, exponentials, logarithms, trigonometric and inverse trigonometric functions (arcsin, arccos, and arctan). See the list in this syllabus.

Learner Outcomes: Upon successful completion of this course, the student will understand:

- the concept of definite integral and basic properties of integrals;
- how integrals can be approximated by Riemann sums and by other numerical approximation schemes;
- the various interpretations of the integral as displacement, area, volume, work, density, center of mass, probability distributions and densities;
- the concept of antiderivative and its applications;
- the Fundamental Theorem of Calculus
- analytical methods for constructing antiderivatives, including integration by parts, various substitution methods, and the method of partial fractions;

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

1. Three 100-point in-class exams counting for up to 300 points.
2. On the day of each exam and on the day of the final exam Class Notebooks will be collected and given a grade of up to 25 points. Thus the total possible points for the Class Notebooks is 100 points.
3. A comprehensive final exam worth 100 points.

A perfect score on each of the above categories would result in a total of 500 points. Your course grade will be determined by the percentage p of these points you earn, according the following scale.

$90 \leq p$	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+		

Note: 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!)

Class Schedule (40 class days)

Date	Class Activity	Date	Class Activity
12/31		02/11	Exam 2
01/01		02/12	
01/02		02/13	
01/03	Classes Begin	02/14	
01/04		02/15	
01/07		02/18	Holiday: President's Day
01/08		02/19	
01/09		02/20	
01/10		02/21	
01/11		02/22	
01/14		02/25	
01/15		02/26	
01/16		02/27	
01/17		02/28	
01/18		02/29	
01/21	Holiday: Martin Luther King	03/03	Exam 3
01/22	Exam 1	03/04	
01/23		03/05	
01/24		03/06	
01/25		03/07	Last day of classes
01/28		03/10	Prof. Dev./ Student Study Day
01/29		03/11	Final Exam (12:00-2:00 pm)
01/30		03/12	
01/31		03/13	
02/01		03/14	
02/04			
02/05			
02/06			
02/07			
02/08			

Formulas to Know From Calculus I

Specific Functions:

$$\frac{d}{dx}(x^r) = rx^{r-1}$$

$$\frac{d}{dx}(\sin x) = \cos x$$

$$\frac{d}{dx}(\cos x) = -\sin x$$

$$\frac{d}{dx}(\tan x) = \sec^2 x = \frac{1}{\cos^2 x}$$

$$\frac{d}{dx}(\arctan x) = \frac{1}{1+x^2}$$

$$\frac{d}{dx}(\arcsin x) = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}(\arccos x) = \frac{-1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}(\sinh x) = \cosh x$$

$$\frac{d}{dx}(\cosh x) = \sinh x$$

$$\frac{d}{dx}(\tanh x) = \operatorname{sech}^2 x = \frac{1}{\cosh^2 x}$$

$$\frac{d}{dx}(e^x) = e^x$$

$$\frac{d}{dx}(a^x) = (\ln a)a^x$$

$$\frac{d}{dx}(\ln x) = \frac{1}{x}$$

General Formulas

$$\frac{d}{dx}(f(x) + g(x)) = f'(x) + g'(x) \text{ or}$$

$$\frac{d}{dx}(f(x) - g(x)) = f'(x) - g'(x) \text{ or}$$

$$\frac{d}{dx}(cf(x)) = cf'(x) \text{ or}$$

$$\frac{d}{dx}(f(x)g(x)) = f(x)g'(x) + g(x)f'(x) \text{ or}$$

$$\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{g(x)f'(x) - f(x)g'(x)}{(g(x))^2} \text{ or}$$

$$\frac{d}{dx}(f(g(x))) = f'(g(x))g'(x) \text{ or}$$

$$\frac{d}{dx}(u + v) = \frac{du}{dx} + \frac{dv}{dx}$$

$$\frac{d}{dx}(u - v) = \frac{du}{dx} - \frac{dv}{dx}$$

$$\frac{d}{dx}(cu) = c \frac{du}{dx}$$

$$\frac{d}{dx}(uv) = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$\frac{dy}{dx} = \frac{dy}{du} \frac{du}{dx}$$

Problem Assignments

Section	Problems
5.1	2,6,11,12
5.2	1,3,8,17,19
5.3	1,2,4,6,8,10
5.4	2,4,6,8,10,24
5.5	2,6,14,16,20
5.6	2,4,14,17,34,36
6.1	1,2,4,7,16,18,38
6.2	7,8,10,27,28,29
6.3	2,4,10,19,20,21
6.4	2,3,8,12,24,28
6.5	2a,4a,10,14
6.6	1,2,4,7,8,15,17
6.7	2,4,5,6,13
7.1	2,4,9,12,28
7.2	2,5,6,8
7.3	4,6,8
7.4	6,8,10,12,14,16
8.1	2,4,22,24,37,38,48
8.2	2,5,8,26,34,40
8.3	2,4,6,10,12,22
8.4	2,4,6,10,12,36
8.5	2,4,8,29
8.8	1,2,6,11,21,26

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