

Calculus II (Math 173) — Spring, 2008

Location and Time: 102 Bouillon, MTWThF, 11:00 —11:50 am

Instructor: Dr. Dan Curtis

Office: 107a Bouillon

Office Hours: MTWThF 12:00 – 12:50. Actually, you can come by my office at any time and, unless I am occupied, I will be happy to talk with you.

Help Sessions: T, Th, 4:00-5:00 pm, Bouillon 101

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Final Exam: Tuesday, June 3, 2008, 8:00-10:00 am

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

Calculator: A scientific 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.

Classwork and Homework: You are expected to attend class daily. **Homework** will be assigned (see the **Problem Assignment** section of this syllabus) but **not** handed in for grading. However, it is essential that you do a lot of problems on your own, if you hope to master the material. Time will be available during class to discuss the homework problems and your instructor is available during office hours. Use will be made of calculators during class, on homework, and on exams (but note the comment made above).

Weekly Quizzes: Each **Thursday** there will be a quiz with questions taken from material covered during the preceding Thursday-Tuesday period. Each quiz will be worth a maximum of 10 points toward the final grade. There will be a total of ten quizzes during the quarter and you can **drop your lowest score**. However, there will be **no makeup quizzes** given for any reason. If you miss a quiz, it will be the one you drop. Because your lowest quiz score will be dropped, the total possible quiz points is 90.

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, mass, center of mass, and forces due to fluid pressure;
- 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. There are ten quizzes, of which your highest 9 will count. Thus the total possible points for these quizzes is 90 points.
3. A comprehensive final exam worth 100 points.

A perfect score on each of the above categories would result in a total of 490 points. Your course grade will be determined by the percentage p of these points you earn, according to 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 (45 instruction class days)

Date	Class Activity	Date	Class Activity
03/24		05/05	
03/25	Classes Begin	05/06	
03/26		05/07	
03/27	Quiz 1	05/08	Quiz 7
03/28		05/09	
03/31		05/12	
04/01		05/13	
04/02		05/14	
04/03	Quiz 2	05/15	Quiz 8
04/04		05/16	
04/07	Exam 1	05/19	Exam 3
04/08		05/20	
04/09		05/21	
04/10	Quiz 3	05/22	Quiz 9
04/11		05/23	
04/14		05/26	Holiday: Memorial Day
04/15		05/27	
04/16		05/28	
04/17	Quiz 4	05/29	Quiz 10
04/18		05/30	Last day of classes
04/21		06/02	Prof. Dev./ Student Study Day
04/22		06/03	Final Exam: 8:00-10:00 am
04/23		06/04	
04/24	Quiz 5	06/05	
04/25		06/06	
04/28	Exam 2		
04/29			
04/30			
05/01	Quiz 6		
05/02			

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	1,3,11,12,15
5.2	1,3,7,8,17,19
5.3	1-8,9,11,13
5.4	1-21 (odd),61,63
5.5	1-23 (odd), 59,61
5.6	1-15 (odd),47-61 (odd)
6.1	1,2,3,5,7,15-31 (odd),39-49 (odd)
6.2	1-23 (odd)
6.3	1-15 (odd)
6.4	1-4,5-19 (odd),33,35,37
6.6	1,2,4,7,8,15,17
6.7	1-6,13,17
7.4	5,7,9,11-19 (odd)
8.1	1-29 (odd),37,39,41,47,49,51
8.2	1-21 (odd), 31,33,35
8.3	1-21 (odd), 29,31,33
8.4	1-19 (odd)
8.5	1-19 (odd),29,35,
8.8	1-29 (odd),37,39,49

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