MATH 170-02 Calculus I
Summer 2014 · Syllabus

Class Information

Instructor: Dr. Lauren Williams
Class Meeting: Hirt M209, MWR 5:15 - 7:35 PM
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Office Hours: Mon 4 - 5, Wed 4 - 5 and 7:45 - 8:30, Thurs 4 - 5, and by appointment
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Course Description

This is the initial course in a sequence of courses on the fundamental ideas of the calculus of one variable. It is here that truly significant applications of mathematics begin. Topics included are functions, continuity, limits, derivatives, maxima and minima and antiderivatives. Projects may be assigned requiring the students to use a Symbolic Computer Algebra System. Satisfies either the common or distribution core requirements in mathematics.

Course Objectives

On successful completion of the course, students should be able to:

- recognize, recall, and apply properties of functions, such as their domain and range, intercepts, and inverses.

- have an intuitive understanding of a limit, and be able to evaluate a variety of limits.

- identify discontinuities of a function presented either graphically or algebraically.

- find the derivative of functions using the limit definition.

- find the derivative of sums, products, and quotients of composite polynomial, trigonometric, exponential, and logarithmic functions.

- understand conceptual relationships between derivatives, rates of change, and tangent lines.

- use properties of functions and derivatives to graph polynomials and rational functions.

- apply differentiation procedures to solve related rates and extreme value problems.

- identify and evaluate limits involving indeterminate forms.

- compute definite and indefinite integrals using formulas and substitution.

- understand the relationship between the integral and the derivative.

- read and interpret mathematical theorems, including checking that hypotheses are satisfied and reaching correct conclusions.

Textbook
Calculus Early Transcendentals, Tenth Edition, by Anton, Bivens, and Davis. We will be covering chapters 0-5 in the textbook. You will not be required to bring the textbook to class, so feel free to purchase or rent an electronic version of the book if you prefer.

Attendance and Homework Quizzes
Attendance is required for this course. As this is a shortened semester, just one absence means missing a significant amount of material. Let me know as soon as possible if you expect to miss more than one class.

There will be several problems assigned from each section of the textbook. In class quizzes, with questions taken from the homework, will be given in nearly every class meeting (see the class schedule for exact dates and sections covered on each quiz). **There are no make ups for quizzes.** The two lowest quiz grades will be dropped. You may not use calculators, notes, or the textbook when taking quizzes.

Exams
There will be three in class exams on the dates below. You will be given an exact list of topics, along with a review sheet posted on the class website, approximately on week before each exam. The use of notes, textbooks, calculators or other electronic devices is not permitted during an exam.

- Thursday, June 19

- Thursday, July 10

- Thursday, July 31

Final Grades
Grades will be calculated out of 400 points as follows:

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300 points - Exams (3 at 100 points each)

100 points - Homework Quizzes (two lowest grades dropped)

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Grading scale:

F	D	D+	C	C+	B	B+	A
0-59	60-64	65-69	70-77	78-83	84-89	90-93	94-100

Mathematics Department Student Learning Outcomes
The following student learning outcomes will be assessed via your final exams:

- Derives algebraic and analytic expressions from other such expressions using sound mechanical techniques

- Solves problems in mathematics which require conceptual understanding for their solutions

Learning Differences
In keeping with college policy, any student with a disability who needs academic accommodations must call Learning Differences Program secretary at 824-3017, to arrange a confidential appointment with the director of the Learning Differences Program during the first week of classes.

Course Schedule

The schedule below is approximate - topics covered on a particular day are subject to change. Exams and quizzes will take place as scheduled, with adjustments to material covered made when necessary. Any changes to material covered on quizzes will be announced in class.

Date	Section	Homework Problems	Quiz/Exam
June 2	0.1 Functions	1, 3, 7, 23	
	0.2 New Functions from Old	27, 29, 33, 35	
June 4	0.3 Familes of Functions	15, 25, 31	
	0.4 Inverse Functions	3, 9, 13, 27	
June 5	0.5 Exponential and Log Functions	11, 15, 23, 27	Quiz - §0.1, 0.2
	1.1 Limits, An Intuitive Approach	1, 3, 7, 21	
June 9	1.2 Computing Limits	1, 3, 7, 21, 37	Quiz - §0.3, 0.4
	1.3 Limits at Infinity	3, 9, 13, 21, 33	
June 11	1.5 Continuity	1, 11, 17, 21, 29	Quiz - §0.5, 1.1
June 12	1.6 Continuity of Trig, Exp Functions	1, 21, 23, 31, 67a	Quiz - §1.2, 1.3
June 16	2.1 Tangent Lines, Rates of Change	3, 11, 13, 15	Quiz - §1.5
	2.2 The Derivative Function	7, 9, 13, 23	
June 18	2.3 Techniques of Differentiation	7, 11, 15, 17, 21, 41	Quiz - §1.6, 2.1
June 19			**Exam I**
June 23	2.4 Product and Quotient Rule	3, 7, 11, 15, 21, 31	
June 25	2.5 Derivatives of Trig Functions	1, 5, 11, 15, 17, 21, 31	Quiz - §2.3
June 26	2.6 The Chain Rule	3, 7, 11, 19, 23, 35, 39	Quiz - §2.4
June 30	3.1 Implicit Differentiation	3, 5, 9, 15	Quiz - §2.5
	3.2 Derivatives of Log Functions	1, 7, 13, 25, 35, 37	
July 2	3.3 Derivatives of Exp, Inverse Trig	15, 19, 23, 37, 43, 51	Quiz - §2.6
July 3	3.4 Related Rates	5, 13, 19, 27	Quiz - §3.1, 3.2
July 7	3.6 L'Hopital's Rule	1, 7, 17, 21, 23, 43	Quiz - §3.3
July 9	4.1 Increasing/Decreasing/Concavity	1, 7, 15, 19, 21, 29	Quiz - §3.4
July 10			**Exam II**
July 14	4.2 Extrema/Graphing Polynomials	37, 43, 45, 47	
	4.3 Graphing Rational Functions	1, 3, 13	
July 16	4.4 Absolute Extrema	7, 13, 21, 25, 27	Quiz - §4.1
	4.5 Applied Max/Min Problems	3, 11, 21, 31	
July 17	4.7 Newton's Method	1, 5	Quiz - §4.2, 4.3
	4.8 Mean Value Theorem	1, 3, 5, 7, 25	
July 21	5.1 Overview of the Area Problem	13, 15	Quiz - §4.4, 4.5
	5.2 The Indefinite Integral	9, 11, 13, 15, 23, 29	
July 23	5.3 Integration by Substitution	1, 7, 17, 21, 27, 33, 39, 53	Quiz - §4.7, 4.8
July 24	5.5 The Definite Integral	13, 21, 33	Quiz - §5.1, 5.2
	5.6 The Fundamental Theorem of Calc	5, 9, 13, 21, 27, 63	
July 28	5.9 Definite Integrals by Substitution	5, 9, 13, 17, 37, 45, 49	Quiz - §5.3
July 30	Selected Topics, Review		Quiz - §5.5, 5.6
July 31			**Exam III**