

MATH 180 – SPRING 2009

CALCULUS AND ANALYTIC GEOMETRY

Instructor: Alina Birca
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Office: Building 61 – Room 1658
Office hours: MW: 11:50 am– 12:30 pm, 3:00 – 3:50 pm
F: 10:30 – 11:30 pm
Text: Thomas' *Calculus Early Transcendentals* (11th Edition) by Thomas, Weir, Hass, Giordano
Section MW #122354 7:15 – 9:20 pm

Course Objectives

This course studies the meaning, computation and application of the derivative with an introduction to the integral. Topics include the definition of the derivative, limits, rules for differentiating polynomial, rational, exponential, logarithmic and trigonometric functions, applications of the derivative, and an introduction to the definite integral. Upon completion of this course, the student will be able to:

- Develop an intuitive understanding of the limit through the use of tables, graphs, and formulas.
- Understand the definition of continuity and differentiability particularly as they apply to the Mean Value Theorem.
- Understand the definition of a derivative as an instantaneous rate of change and use the finite difference quotients to approximate the derivative numerically.
- Interpret the derivative as the slope of a tangent line and use this interpretation to approximate the derivative function graphically.
- Compute derivatives analytically using product, quotient, chain rules, or implicit differentiation.
- Apply first and second derivatives to find relative extrema and points of inflection.
- Recognize and use derivatives to solve rate of change problems, answer optimization questions and graph functions.
- Understand the definition of the definite integral as a limit of Riemann sums and use the definition to approximate the definite integral numerically.
- Compute antiderivatives of elementary functions.
- Interpret the definite integral as area and use this interpretation to approximate the definite integral graphically or numerically.
- Interpret the definite integral of a rate of change as the total change in original function and use to state the First Fundamental Theorem of Calculus.
- Apply studied principles and skills to new situations in addition to situations that mirror those on the homework and those shown in class.

Methods of Instruction

This course will combine lecture, teamwork, and class discussion. Students will be required to do homework, group problems, quizzes and examinations.

Attendance and Participation

Understanding math requires more than just reading a textbook. Listening and participating in the class activities are as important as solving problems. College policy requires that you attend every class meeting. Moreover, I do notice when you do not show up. If your grade is on a borderline, those with regular attendance are more likely to be on the higher side of the line. In addition, you miss the material from that day and that day's quiz. Do not be late to class. The homework is due at the beginning of the class. You may also miss the quiz if you are late. NOTE: You the student are responsible for dropping the course should you decide not to continue in it. If you stop attending and doing the work and you fail to drop, you will receive a failing grade in this course. **You may be dropped from this class if you miss class during the first 2 weeks of instruction.** Your seat will be given to a student who has been attending each day.

Prerequisites

There is an official prerequisite for this course (Math 160 – Precalculus), and I expect that you demonstrate college algebra and trigonometry skills. It is your responsibility to know the prerequisite material.

Study time & Extra help

You are expected to study two hours outside class for every hour in class. This means at least eight hours per week on homework for this class. If you have trouble completing assignments or understanding the mathematics, get help as soon as you need it. My office hours and email are listed above. Free tutorial services are available at T-MARC in building 61, first floor (Monday - Thursday 8:30 am - 8:00 pm, Friday 8:30 am - 2:30 pm). On Saturdays, you may use the Learning Assistance Center, Building 6, room 101.

Late Work

Be prepared with all assignments on the day they are due. As a rule, I do not accept late written work nor are there any make up tests or quizzes.

Academic Honesty

Plagiarism or cheating will not be tolerated. There will be a zero on the assignment and risk failing the course.

Calculators

A graphing calculator will be necessary for some of the problems. You could rent a graphing calculator from T-MARC. No graphing calculators are allowed during the tests. No cell phones are allowed during the tests. If you have a phone or pager, please turn it to vibrate and sit close to the door in case you need to use it in an emergency. Thank you.

Organization, Grading and Requirements

You will need a 3-hole binder with 3 separators, labeled as follows:

LECTURES

HOMEWORK

TESTS & QUIZZES

- **LECTURES** – Pay attention in class to what I say and do, and make careful notes. In particular, note the problems I work on the board, and copy the complete solutions as well as the theory presented in each section. Work as neatly as you can. Write your symbols clearly, and make sure the exercises are clearly separated from each other. Do not hesitate to ask questions in class. It is not a sign of weakness, but of strength. There are always other students with the same question who are too shy to ask.
- **HOMEWORK** – Before you start on homework assignments, rework the problems I worked in class as well as all examples from the textbook. This will reinforce what you have learned. Make sure you check your previous work against the solution sections posted on my website. Print out the solutions from my website for your reference.
- Keep all quizzes and tests that are returned to you in your binder. Use them when you study for future tests and for the final exam.

Assignments in the course are divided into five areas and are worth a total of 1000 points. Those earning 900 points or more will be awarded an A, 800 to 899 points a B, 700 to 799 points a C, 600 to 699 points a D and less than 599 points an F.

Homework 120 points

Homework and reading will be assigned each week. See due dates on the Tentative Class Schedule. I might collect and grade the homework or I might give you a 5 or 10-minute homework quiz. You may use your homework during the quiz. Staple each section separately, as I might collect and grade only some of the assigned sections. Homework is due at the beginning of the class. Read carefully all the directions from the homework handout. Late homework will not be accepted for any reason. The homework-quiz might be given at any time: at the beginning of the class, during the class, or at the end of the class. There is no make-up homework quiz. The lowest homework score will be dropped. You are encouraged to discuss assignments with your classmates; however, you are required to write up your work independently. Copied homework will not be tolerated and identical, or nearly identical, assignments will share a single homework score. I will make every effort to address homework questions in class as time permits. Please feel free to visit me during office hours or contact me by email if you need additional help.

Quizzes 250 points*

Five quizzes will be given (see Tentative Class Schedule). They may be given at the beginning or at the end of the class. These quizzes will be similar to the exercises and examples done in class as well as homework problems assigned from the topics covered up to that point. For an exercise to be complete there needs to be a detailed solution to the problem. Do not just write down an answer. **No proof, no credit given!** Each quiz is worth 50 points.

Tests 300 points*

Two tests will be given over the major areas addressed in the course. Each test is worth 150 points. For an exercise to be complete there needs to be a detailed solution to the problem. Do not just write down an answer. **No proof, no credit given!**

Activity Labs +20/40 points*

Two computer projects will be assigned during the semester. Information and due dates about them will follow. Each project is worth 20 points or – 40 (negative 40) if not done.

Comprehensive final 290 points*

The final is a 2 ½ hour exam and it is held on June 8. The final is a cumulative exam. You may use the final exam percent score to replace your lowest test score (a test with a score of zero cannot be replaced by the final score). You must take the final to pass this class.

Tentative Class Schedule

DATE	TOPICS	ASSIGNMENTS DUE
Monday	February 23	Chapter 1 (review)
Wednesday	February 25	Chapter 1 (review), 2.1
Monday	March 2	2.1, 2.2
Wednesday	March 4	2.3
Monday	March 9	2.4, 2.5
Wednesday	March 11	2.6
Monday	March 16	2.7
Wednesday	March 18	Review 3.1
Monday	March 23	Test 1
Wednesday	March 25	3.2
Monday	March 30	3.3, 3.4
Wednesday	April 1	3.5, 3.6
Monday	April 6	3.7
Wednesday	April 8	3.8
Monday	April 13	3.9, 3.10
Wednesday	April 15	4.1, 4.2
Monday	April 20	4.3, 4.4
Wednesday	April 22	4.5
Monday	April 27	4.6
Wednesday	April 29	4.7, 4.8
Monday	May 4	Review
Wednesday	May 6	Test 2
Monday	May 11	5.1, 5.2
Wednesday	May 13	5.3, 5.4
Monday	May 18	5.5
Wednesday	May 20	5.6
Monday	May 25	7.1, 7.2, 7.3
Wednesday	May 27	Holiday (Memorial Day)
Monday	June 1	8.2
Wednesday	June 3	Review
Monday	June 8	FINAL 7:30 – 10:00 pm

Grade Sheet

Homework 1		
Homework 2	+	
Homework 3	+	
Homework 4	+	
Homework 5	+	
Homework 6	+	
Homework 7	+	
Homework 8	+	
Homework 9	+	
Homework 10	+	
Homework 11	+	
Homework 12	+	
Homework 13	+	
HOMEWORK (best 12)	=	/ 120
Quiz 1		/50
Quiz 2	+	/50
Quiz 3	+	/50
Quiz 4	+	/50
Quiz 5	+	/50
QUIZZES	=	/250
Activity Lab 1		/20
Activity Lab 2	+	/20
ACTIVITY LABS	=	/40
Test 1		/150
Test 2	+	/150
TESTS	=	/300
FINAL EXAM	=	/290
TOTAL	=	/1000

