

Syllabus for Math 400: Calculus I – Differential Calculus

Last Updated Saturday, January 09, 2010

Section 21715

5 Units

Room: Music 200

M, W 05:00 PM – 07:20 PM

Instructor Information

Professor Roy Simpson

Office: LRC 150

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Office Hours: M, W, F 09:00 AM – 10:00 AM

M, W, 03:30 PM – 04:30 PM

Plus *unofficial* digital office hours at sporadic times

Textbook and Materials

Textbook: Calculus, Early Transcendentals by Stewart (6th Ed.)

ISBN: 9780495011668

Software: None

Graphing Calculator: Required

Desire2Learn Account: Not Required

Prerequisites

MATH 370 with a grade of "C" or better; or equivalent skills demonstrated through the assessment process. You *must* submit a written verification of the prerequisite (transcripts, assessment test results, or counselor's permission) or an initiation of the challenge process by one week after the start date of the course or I *will* drop you.

Course Description

This course explores the basic concepts of analytic geometry, limits, derivatives, and integrals. Topics covered will include the graphs, derivatives, and integrals of algebraic, trigonometric, exponential, logarithmic, and hyperbolic functions, and indeterminate forms. Many applications will be covered, including those involving rectilinear motion, differentials, related rates, graphing, and optimization.

Course Objectives

Upon completion of this course, the student will be able to:

- Evaluate limits and derivatives of algebraic and transcendental functions.
- Use limit and derivative rules (properties) to solve real world problems.
- Understand and apply the concept of the Riemann Sum to develop the formal definition of the integral and techniques of integration.
- Apply the definitions of limit, derivative, and integral to prove calculus theorems.

Grading Policy

10%	Projects	90% and up	A
20%	Quizzes	80% to 90%	B
40%	Exams (4 @ 10% each)	70% to 80%	C
30%	Final (cumulative)	60% to 70%	D
0%	Participation (see notes)	Below 60%	F

PROJECTS (10%):

There will be *at least* two projects given throughout the semester.

There are no make-up projects under any circumstances.

QUIZZES (20%):

Roughly once a week we will have a quiz on the homework that has been assigned recently.

There will be no partial credit given for these quizzes.

There are no make-up quizzes.

EXAMS (40%):

There will be four 90 minute exams given throughout the semester.

There are no make-up exams.

FINAL (30%):

The final examination is *comprehensive* and will be 120 minutes.

There is no make-up for the final examination.

PARTICIPATION (0%):

Throughout the course of the semester, we will be using clickers in class. These not only give me an accurate record of your attendance, but they also allow me to assess the level of understanding for the class. Not participating will not hurt you; however, if your participation rate is above 70% *and* your correct response rate is also above 70%, then you will have earned the following benefit:

If, at the end of the semester, your course grade is within 1.5% of the next higher grade, then I will “bump you up” a letter grade.

Success in College

Time Commitment: For *each hour* of lecture, it is highly recommended to spend **at least two hours** outside of class studying and doing homework.

Critical Thinking: College courses require you to participate in your education. You will be thinking critically about problems from a perspective you've never encountered before.

Reading Assignments: You are *required* to read the sections that we are covering *prior* to coming to class.

Attendance: The College assumes that students will attend every session of a class for which they are registered. If, however, attendance is irregular, students *may* be dropped from a particular class. It is nevertheless the responsibility of the students, and not the instructors, to process a class drop by using eServices, TES (Telephone Enrollment Services) or in person with the Admissions Office. Excessive absence is defined as exceeding ten percent (10%) of the total hours of class time. Students who are not present at the first class meeting *and* are not in attendance at the beginning of the second class meeting *will* be dropped by the instructor as a "No Show." It is your responsibility to officially drop the course if you choose not to complete it.

Participate: While participation is not mandatory, it is highly encouraged. Ask questions!!!

Respect: I will not tolerate ANY form of harassment between, from, or to any person. Outbursts and other forms of disruptive behavior will be immediately dealt with and *will* be reported to campus officials.

Cheating: Don't cheat – I show no leniency. If I catch you cheating on a task, you will fail the course and will be reported to campus officials for possible academic expulsion.

TURN OFF ALL ELECTRONIC EQUIPMENT!!! If a phone goes off, POP QUIZ!!!

If You're New to College

1. You are not in high school anymore! It is absolutely necessary that you discard high school notions of teaching, learning and working, and replace them with college level notions. Our goal is not simply to coach you to reproduce what was said in the classroom.
2. Expect the material to be routinely covered at a pace that is **two to three times** as fast as in high school, and expect to be required to demonstrate greater mastery of it.
3. We only have about 60 hours of lecture - that is just over a single work week - so we cannot afford to cover every detail. Do not expect to be taught everything in the classroom. **It is your responsibility to learn the material.** Most of this learning will take place outside of the classroom. You should plan on spending two hours outside of the classroom on this material for every hour we spend in class.
4. The instructor's job is not to explain everything in excruciating detail, but to provide a framework with which to guide you in learning the concepts and methods of the course.
5. Read the textbook before and after the lectures. Read and study the examples, and work them out, along with some other exercises, as you read the text.
6. Ask questions, and work problems.
7. The purpose of the course is not to program each of you to respond to certain problem assignments, but how to think and how to learn within a certain mathematical context.
8. Finally... your professor is there to help you! Ask for his/her help as soon as you need it.

Success in Mathematics

- **Remember your learning resources.** In no particular order, they are
 - Textbook: This is your primary learning source.
 - Lecture
 - Class notes
 - Homework
 - Exams: These can be great learning tools as preparation for the final exam.
 - Media (CDs or web-based content) that came with your textbook
 - Internet
 - Office hours: The most underused, but it can be of the greatest benefit to you.
 - Fellow students: Learning together is a brilliant way to get better at a topic.
- **Be positive.** Negative thinking and indifference are self-defeating and stand in the way of accomplishment.
- **Keep up.** Attend class regularly, take notes, pay attention, and do your homework *every day*.
- **Practice, practice, practice.** Do lots of problems.
- **Pay attention to your mistakes.** If you get a wrong answer, think of it as an opportunity to learn something. Fix mistakes on homework, quizzes, and tests as soon as possible.
- **Study with a group.**
- **Understand what I did.** Refer to the notes from class and look for similar problems when doing homework to see how I did them.
- **Be organized.** Keep your notes, homework, quizzes, tests, and class work in a binder and write clearly!!!
- **Put it in your own words.** When you come to a new definition or idea, phrase it in your own words.
- **Create your own exams.**
- **Be serious.** Slacking is out of the question. If you're not going to shoot for an A, drop the course now.
- **"A" students don't ask how, they ask why:** Don't ask me *how* to do something, ask me *why* we do it. Better yet, ask *yourself* why we do it.

Supplemental items

Math Center: The Math Center (LRC 205) is open Monday – Thursday 8:00AM to 9:30PM and Friday 8:00AM to 3:00PM. This is a GREAT place to get help so please use it. You must enroll in a variable unit course in order to use the Math Center.

M.E.S.A. Program: MESA provides math, engineering and science academic development to educationally disadvantaged community college students so they excel academically and transfer to four-year institutions as science, engineering and math majors.

“Rookie” Mistakes

There are certain mistakes that will cost you dearly during exams, quizzes, and homework. You will lose **all** points on a question where you make any one of these rookie mistakes. I am not trying to be cruel, but these mistakes are generally the fault of previous instructors allowing you to “slide by” on silly mistakes. You will not be allowed to pass this course if you make these mistakes.

- **“Distributing” a power across addition or subtraction**

$$(a+b)^2 \neq a^2 + b^2$$

this is supposed to be $(a+b)^2 = (a+b)(a+b) = a^2 + 2ab + b^2$

○ EX:

$$(x+2)^2 \neq x^2 + 4$$

this is supposed to be $(x+2)^2 = (x+2)(x+2) = x^2 + 4x + 4$

$$(\sqrt{2}-2)^2 \neq 2+4 \text{ or } 2-4$$

this is supposed to be $(\sqrt{2}-2)^2 = (\sqrt{2}-2)(\sqrt{2}-2) = 2 - 4\sqrt{2} + 4 = 6 - 4\sqrt{2}$

- **“Breaking a root” across addition or subtraction**

$$\sqrt{a+b} \neq \sqrt{a} + \sqrt{b}$$

this may simplify depending on a and b

○ EX:

$$\sqrt{9+16} \neq 3+4$$

this is supposed to be $\sqrt{9+16} = \sqrt{25} = 5$

$$\sqrt{x^2+81} \neq x+9$$

this cannot be simplified

- **“Cancelling” across addition or subtraction**

$$\frac{a+b}{a} \neq 1+b \text{ or } b$$

this may simplify depending on a and b

○ EX:

$$\frac{3+7}{3} \neq 1+7 \text{ or } 7$$

this is supposed to be $\frac{3+7}{3} = \frac{10}{3}$

$$\frac{x^2+5x+7}{x^2} \neq 1+5x+7 \text{ or } 5x+7$$

this does not simplify

- **Adding before multiplying**

$$a+bx \neq (a+b)x$$

○ EX:

$$3+7x \neq 10x$$

$$3+7(x+16) \neq 10(x+16)$$