Math 408N: Differential Calculus for Science, Spring 2012

Mondays, Wednesdays, and Fridays, 11:00am–11:50am in CMA A2.320

Unique Numbers 55305, 55310, and 55315

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Course Description, Prerequisites, and Objectives: This is an introduction to Calculus. It covers limits, derivatives, integrals, and applications. It is restricted to students in the College of Natural Sciences. You must fulfil the ALEKS assessment requirement to take this course. Successful students will leave this course with an understanding of the basic concepts of Calculus, and the associated computational abilities.

Textbook: *Calculus: Early Transcendentals*, 7^{th} edition, by James Stewart.

Quest: This course makes use of the web-based Quest content delivery and homework server system maintained by the College of Natural Sciences. This homework service will require a $22 charge per student for its use, which goes toward the maintenance and operation of the resource. Please go to http://quest.cns.utexas.edu to log in to the Quest system for this class. After the 12^{th} day of class, when you log into Quest you will be asked to pay via credit card on a secure payment site. You have the option to wait up to 30 days to pay while still continuing to use Quest for your assignments. If you are taking more than one course using Quest, you will not be charged more than $50/semester. Quest provides mandatory instructional material for this course, just as your textbook does. For payment questions, email quest.billing@cns.utexas.edu.

Initial Assessment: There will be a timed initial Quest assessment given by the College of Natural Sciences at the beginning of the course. It will be available between January 19 and January 23. You will receive more information about it via email.

Homework: There are three types of homework assignments.

> **Preparatory Assignments:** These will be given in Quest and will be assigned and completed before lecture. There will usually be three per week. They will introduce material before it is discussed in greater depth in class. The problems in these assignments are scored, but you can redo each problem until you get it right. The lowest seven of these scores will be dropped at the end of the semester.
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> **Written Assignments:** These will cover material that has been discussed in class. There will usually be two assignments per week, due on Wednesdays and Fridays at the beginning of lecture. Two of the assigned problems will be graded. During discussion, you will have the opportunity to work on two homework-like problems. If you submit solutions for these in discussion, you will automatically get full credit for one of the two graded homework problems on the corresponding assignment. The lowest five of these scores will be dropped at the end of the semester.
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> **Review Assignments:** These will be given in Quest and will review each week's material. There will usually be one per week. The lowest two of these scores will be dropped at the end of the semester.

Exams: There will be written midterm exams in this course given in class on February 17 and March 30. There will be a written final exam on Friday, May 11, from 2:00 p.m. to 5:00 p.m. The location will be announced later in the semester. The University's final exam policies can be found at http://registrar.utexas.edu/students/exams/policies. You are responsible for being on campus during the final exam period. No external resources (books, notes, calculators, etc.) will be allowed on any exams. The lower of the two midterm grades will be replaced with your final exam grade, assuming that the latter is higher.

Make-Up Work: Because of the dropped assignments, no make-up homework or exams will be allowed.

Grading: This course is graded using the following weights:

2%	Initial Assessment
5%	Preparatory Homework
5%	Written Homework
5%	Weekly Review Homework
83%	Exams (equally weighted)

The scale will not be stricter than the standard one (90 or above is an A, 80 or above is a B, etc.). The final scale will not be determined before the end of the semester.

Dropping: If you drop a class on or before February 1, the class will not show up on your transcript. If you drop a class after that date, the course will show up on the transcript with a "Q" grade. After April 2, it is not possible to drop a course except for extenuating (usually non-academic) circumstances. See the registrar's calendar at http://registrar.utexas.edu/calendars/11-12 for a detailed list of important academic dates.

Expectations: I expect you to attend class. This means, among other things, coming to class on time and prepared, as well as staying on task during class. Before class begins, you should turn off cell phones and any other electronic devices you have brought. If you come to class late, or must leave early, please sit near the back of the room to minimize the disturbance. If you miss class for any reason, contact a fellow student to see what you missed. Do not contact me or the TA asking for class notes. I expect you to follow the advice given under *Tips for Success* on the course website. (Note what is said regarding written homework.) I also expect you to avoid the advice given under *Tips for Failure* on the course website.

Documented Disability Statement: Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or (866) 329-3986 (video phone). More information can be found at the SSD website: http://www.utexas.edu/diversity/ddce/ssd/.

University Honor Code: Do not cheat. It will be punished to the fullest extent that university policy allows. Cheating on homework includes, but is not limited to, copying another person's work verbatim and presenting it as your own. I encourage you, however, to ask each other questions, and to help each other learn material outside of class. Cheating on the exams includes, but is not limited to, using a calculator or **ANY** other electronic device.

Calendar: This is a **tentative** calendar for the topics covered during lectures.

January 18	introduction
January 20	trigonometry review
January 23	exponentials/logarithms review
January 25	graphing review
January 27	introduction to limits
January 30	limits failing to exist
February 1	the limit laws
February 3	continuity
February 6	limits at infinity
February 8	the tangent problem
February 10	the derivative
February 13	derivatives as linear approximations
February 15	higher-order derivatives
February 17	Exam 1
February 20	derivatives of polynomials and exponentials
February 22	exponential growth/decay
February 24	the product rule
February 27	the quotient rule
February 29	trigonometric derivatives
March 2	more trigonometric derivatives
March 5	the chain rule
March 7	more on the chain rule
March 9	implicit differentiation
March 19	related rates
March 21	more on related rates
March 23	derivatives of logarithmic functions
March 26	max/min problems
March 28	more max/min problems
March 30	Exam 2
April 2	The Mean Value Theorem
April 4	derivatives and the shapes of graphs
April 6	summary of curve sketching
April 9	indeterminate forms
April 11	L'Hopital's rule
April 13	comparing growth rates of functions
April 16	optimization
April 18	more on optimization
April 20	antiderivatives
April 23	area and distance
April 25	the definite integral
April 27	more on the definite integral
April 30	The Fundamental Theorem of Calculus
May 2	applications to distance
May 4	review
May 11	Final Exam