

COURSE DESCRIPTION
CALCULUS I
MA 125–6D

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Lei Zhang
Office: Campbell Hall 480A
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Office Hours: Friday 12pm-1pm

Meeting times: MW 2:00-3:50pm
Meeting location: HR 105
Prerequisite: Grade of C or better in MA 106, MA 107 or equivalent
Credits: 4 semester hours
Textbook: *Essential Calculus — Early Transcendentals* by James Stewart,
Thomson-Brooks/Cole, 2006, Chapters 1 — 4.

Important dates:

First day of classes: August 22, 2007
Last day to drop without paying full tuition: August 29, 2007
Labor Day Holiday: September 3
Thanksgiving Holiday: November 21-November 25, 2007
Last day to withdraw with a “W”: October 22, 2007
Last day of classes: December 5, 2007

Major exams: Test I: near Monday, September 17;
Test II: near Monday, October 8;
Test III: near Wednesday, October 31 ;
Test IV: near Monday, December 3.

(These dates are approximate and may be slightly shifted due to unforeseen circumstances.)

Final exam: Friday, December 7, 2007 ,7:15-9:45 pm. The location will be announced.

Course policies:

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at *dss@uab.edu*.

Date: August 16, 2007.

- The two lowest quiz grades and the two lowest homework grade will be dropped to account for any missed assignments due to illness or any other circumstance. If a test is missed due to a serious verifiable circumstance or official university business, the test grade will be replaced with the properly rescaled final exam score. You have to advise the instructor of such circumstances at the earliest possibility.
- No books, notes, or calculators will be allowed during any of the tests or quizzes.

Methods of teaching and learning:

- 2 class meetings of 110 minutes per week consisting of lectures and discussions of examples and homework problems. Time for quizzes and four in-class tests is also included.
- Students are expected to undertake at least 8 hours of private study and homework per week.
- The online homework system ThomsonNOW will be used (look for more information below).

Aims of the course:

Upon successful completion of the course a student

- understands limits from a numerical, graphical and analytic point of view;
- uses limits to define the concepts of continuity and differentiability;
- has a solid understanding of the major results of differential calculus;
- can apply the rules of differentiation;
- is able to apply derivatives to problems related to rates of changes, linear approximations, optimization, and curve sketching; and
- knows the concept of antiderivatives and its use in determining distances and areas.

Course content:

- Motivation: Slopes of tangents, velocity and other difference quotients
- Definition of limit, limit laws, limits involving infinity
- Continuity and classification of discontinuities (singularities), Intermediate Value Theorem
- Tangents, velocities, other rates of change, definition of derivative, and derivatives as functions
- Derivatives of polynomial, exponential functions and trigonometric functions
- Product and quotient rules
- Chain rule, implicit differentiation, related rates
- Derivatives of inverse trigonometric and logarithmic functions
- Indeterminate forms, l'Hospital's Rule
- Linear Approximations and Newton's Method
- Maximum and minimum values, Mean Value Theorem, shapes of curves
- Optimization problems
- Antiderivatives, distances, area

Assessment procedures:

- Student achievement will be assessed by the following measures:
 - Regular online homework. Homework will be due one week after assignment. Feedback is provided when wrong answers are given. Students are encouraged to retake the homework problems (with randomly changed parameters) until they obtain correct answers. An unlimited number of takes is allowed during the week in which the set is available. Homework contributes 15% to the course average. Problems on tests are modeled after homework problems. Staying on top of homework is therefore extremely important.
 - Sporadic unannounced quizzes. Quiz problems are taken from the homework problem sets. This allows students to gauge whether they are ready to work problems in a test situation. Quizzes contribute 15% to the course average.
 - Four 50-minute tests in class including short questions for which either full credit or no credit is awarded (Part I) as well as problems requiring in depth understanding for which partial credit is awarded where appropriate. Each test contributes 10% to the course average.
 - A 150-minute comprehensive final examination including Part I and Part II type problems. The final contributes 30% to the course average.
- Your course performance is the maximum of your course average and your final exam grade (each is a number between 0 and 100).
- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	62-74	50-61	below 50
Final Grade:	A	B	C	D	F

Tips:

- Help is available in the Math Study Hall (CH445). Go to the following web-site for hours of operation. <http://www.math.uab.edu/mathhelp.html>
- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.

How to get started on Thomson Now:

- (1) Go to www.ilrn.com and click on *Create An Account*.
- (2) Click on *Student*.
- (3) Choose your school after searching for *Birmingham*.
- (4) Click the radio button under *Course Key* and enter the following course key:

E-322MJJ5BBGPCF

Click Continue.

- (5) Enter your account information.
- (6) You will receive a confirmation email after registering.
- (7) After your first registration, you can sign in as returning user.

Ideally you will be able to do homework on your home computer. If this is not possible, you can find many computers on campus which will support iLrn, for example in Sterne Library, in the ETS lab in the education building, or in the Mathematics Computer Lab in CH445. Many departments also have computer labs, which should be accessible by their majors.

Should you run into technical problems Thomson provides technical support (by either email or phone). The phone number for technical support is (888) 281-2990. Of course, you should also contact the instructor if problems can not be resolved easily.