Mathematics 110A
Fall, 2008

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Class Meeting Times: 9:35 a.m., 10:40 a.m., 11: 45 a.m., 12:50 p.m., MWF

Textbook: James Stewart, *Essential Calculus: Early Transcendentals.*

Course Content: Mathematics 110A is the first part of a two-semester course, Mathematics 110A/B, which provides students with an integrative approach to Calculus I that includes the necessary precalculus topics.

> **Content of Mathematics 110A**: Review of algebra, functions, trigonometric functions, logarithms and exponents. Calculus topics include limits, continuity, derivative, differentiation, extrema, Intermediate Value Theorem, Mean Value Theorem, graphing polynomial and rational functions, optimization problems.
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> **Content of Mathematics 110B**: Review of inverse trigonometric functions and differentiation, and graphing. New topics include implicit differentiation, logarithmic differentiation, related rates, graphing vertical tangents, logarithmic and exponential graphs, sums and sigma notation, induction, antiderivatives, Fundamental Theorem of Calculus, definite integral, area, volume, separable differential equations, substitution method of integration.

Course Goals: After completion of the sequence Mathematics 110A/B, the student should be able to do the following:

- Find the limit, derivative, antiderivative, and definite integral of a function;
- Understand the basic theoretical underpinnings of these processes;
- Understand the relationships between these processes and rates of change;
- Understand the relationships between these processes and the graph of a function;
- Apply these processes in solving problems on rates, extrema, area, volume.

An overall goal is to provide the student with a solid foundation for Mathematics 112.

Grading: Evaluation will be based on the following written work:

Tests (4 @ 100 pts)	400 points
Gateway Exam	100 points
Quizzes	100 points
Homework	50 points
Final	200 points
Total	850 points

In general, letter grades will be determined as follows:

A: 91% and above; B: 81 – 90%; C: 71 – 80 %; D: 61 - 70 points; F: less than 59%

Grades of A-, B+, B-, C+, C-, D+ may be assigned for sums of points near the above cut-off scores in total points.

Homework: Assignments from the textbook and handouts are for the benefit of the students. Completion of the daily homework assignment is critical to your success in this course and an excellent preparation for the quizzes. Collaboration is encouraged. However, each student should be sure that he or she can **solve problems unaided by notes, the textbook, or other people**. Use good style on homework. Daily practice develops valuable mental habits. In general the student will need to study at least six good hours per week

exclusive of the time spent on quizzes and review for tests. Some homework will be collected for a grade during the semester.

Gateway Exam: In order to pass this course a student must pass an examination on basic algebra and trigonometry. The goal is for the student to master fundamental skills needed in order to be successful at learning calculus. There are eight problems on each test. To pass this test, a student must complete at least six problems correctly. Points will be earned as follows: all eight problems correct = 100 points, seven problems correct = 80 points, six problems correct = 60 points.

The student will be given **three** opportunities to pass the exam on the following dates: **September 30**, **October 7** and **November 11**. A more detailed guide will be provided prior to the first exam.

Tests and the Final Exam: Calculators **will not** be allowed on tests. Tests will be given on **September 18**, **October 16**, **November 6** and **December 2**. The student is expected to take tests at the scheduled times. Any conflicts or problems will be handled on an individual basis. For excuses deemed legitimate arrangements will be made to take a test **prior to** the testing time.

A comprehensive final exam will be given at the time scheduled by the Registrar. (You may wish to fill in the appropriate time for yourself.)

Class Attendance: The student is responsible for all work covered in class. Furthermore, students are expected to have done the reading for each class. In addition to the regular class meetings, there will be optional SI and help sessions.

Written Style: Thoughts are expressed by sentences: just so in mathematics. Pay attention to your textbook: it is written in sentences. **Your written work must be in complete sentences.** Note "1 + 1 = 2" is a complete sentence (it has a subject "1+1", verb "=" and predicate "2"). Use mathematical symbols wherever appropriate; do not use a lot of words. Your work needs to be neat and orderly to be intelligible. It is a common practice to rewrite solutions once they are found. See Priestley, "Clean Writing in Mathematics," pp. 413--420 in *Calculus: A Historical Approach.*

SI/Help Sessions/Tutoring: The SI program is a program of supplemental instruction. The supplemental instructor (SI) is a student who has taken the course before, has a good understanding of the material (but probably not as complete as the instructor), and knows how to succeed in the course. The SI leads organized study sessions. They are not tutoring sessions and are not for going over homework. The sessions will help to make the student's efforts more productive.

Help sessions will be scheduled as there is demand for them. Attendance is optional.

Student tutors will be available and a schedule will be announced.

Blackboard: The student is responsible for obtaining the handouts on Blackboard. Handouts include information and exercises to supplement the textbook.

Calculators: Calculators **will not** be allowed on tests.

Religious Holiday Observance: Any conflicts between the course schedule and religious holidays are to be negotiated in advance by the student with the instructor.

Honor Code: The Honor Code of Oxford College applies to all work submitted for credit in this course. To receive credit for work submitted you must place your name on it. By placing your name on such work, you pledge that the work has been done in accordance with the given instructions and that you have witnessed no Honor Code violations in the conduct of the assignment.

Tentative Course Calendar – Subject to Change

27-Aug	Wednesday	Algebra Review; Handout A: Algebra Review
29-Aug	Friday	Algebra Review
3-Sep	Wednesday	Algebraic Functions, Piecewise Functions
5-Sep	Friday	Functions
8-Sep	Monday	Functions
10-Sep	Wednesday	Limit
12-Sep	Friday	Limit
15-Sep	Monday	Continuity
17-Sep	Wednesday	Test 1 Review
18-Sep	**Thursday**	**Test 1, 8 a.m. – 9: 30 a.m.**
19-Sep	Friday	Intermediate Value Theorem, Properties of continuous functions
22-Sep	Monday	Limit involving infinity
24-Sep	Wednesday	Limit involving infinity
26-Sep	Friday	Definition of Derivatives
29-Sep	Monday	Angles and definition of trigonometry
30-Sep	**Tuesday**	**Gateway Test 1, 8:30 a.m. – 9:30 a.m.**
1-Oct	Wednesday	Trigonometry
3-Oct	Friday	Graphs of trigonometric functions
6-Oct	Monday	Trigonometric identities
7-Oct	**Tuesday**	**Gateway Test 2, 8:30 a.m. – 9:30 a.m.**
8-Oct	Wednesday	Logarithmic and exponential functions
10-Oct	Friday	Logarithmic and exponential functions
15-Oct	Wednesday	Test 2 Review
16-Oct	**Thursday**	**Test 2, 8 a.m. – 9: 30 a.m.**
17-Oct	Friday	Logarithmic and exponential functions
20-Oct	Monday	Differentiation rules
22-Oct	Wednesday	Differentiation rules
24-Oct	Friday	Derivative of trig, log and exp functions
27-Oct	Monday	Differentiations -- chain rule
29-Oct	Wednesday	Differentiations -- chain rule
31-Oct	Friday	Continuity and differentiability
3-Nov	Monday	Maxima and Minima
5-Nov	Wednesday	Test 3 Review
6-Nov	**Thursday**	**Test 3, 8 a.m. – 9: 30 a.m.**
7-Nov	Friday	Maxima and Minima
10-Nov	Monday	Mean value theorem of derivatives
11-Nov	**Tuesday**	**Gateway Test 3 – Last Chance, 8:30 a.m. – 9:30 a.m.**
12-Nov	Wednesday	Optimization
14-Nov	Friday	Optimization
17-Nov	Monday	Graphing polynomial
19-Nov	Wednesday	Graphing polynomial
21-Nov	Friday	Graphing rational function
24-Nov	Monday	Graphing rational function
1-Dec	Monday	Test 4 Review
2-Dec	**Tuesday**	**Test 4, 8 a.m. – 9: 30 a.m.**
3-Dec	Wednesday	Final Review
5-Dec	Friday	Final Review
8-Dec	Monday	Final Review