Math 110B – Calculus I with Precalculus
Spring 2009

Instructor: Dr. Kevin D. Yeomans
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Textbook: *Essential Calculus: Early Transcendentals* by James Stewart; www.stewartcalculus.com

Learnlink Conference "Math 110B Spring 2009": Announcements, questions, and information may be posted at any time.

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

> **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, mathematical 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: to find the limit, derivative, antiderivative, and definite derivative of a function; to understand the basic theoretical underpinnings of these processes; to understand the relationships between these processes and rates of change; to understand the relationships between these processes and the graph of a function; and to apply these processes in solving problems on rates, extrema, area, and volume. An overall goal is to provide the student with a solid foundation for Math 112 Calculus II.

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

Tests (3 @ 125 pts)	375 points
Projects (3 @ 25 pts)	75 points
Quizzes	50 points
Gateway Test	100 points
Final	200 points
Total	800 points

The plus/minus system will be used. A rough guide to grades: A: $\geq$ 720 pts; B: 640-720 pts; C: 560-640 pts; D: 480-560 pts; F: < 480 pts or not passing the Gateway Test.

Tests: Three tests will be given at 8:00 a.m. on the following days:

February 12, March 19, April 16

Calculators will not be allowed on tests. You are expected to take tests at the scheduled times. Any conflicts or problems will be handled on an individual basis. If you have an excuse deemed legitimate by your instructor, arrangements will be made for you to take a test **prior** to the scheduled testing time.

Projects: A part of each of the three test units is a written essay which gives the students the opportunity to examine and investigate in greater depth some aspect of the unit and its connections to other concepts. The student will be able to use a calculator, notes, and textbook. However, the student must work alone. Each project is worth 25 points.

Quizzes: Quizzes will be given in class with or without prior announcement. You may expect at least 10 to be given during the semester. You will be allowed to drop no more than 25% of the lowest quiz scores. Your grade will be computed by the percentage of points you earn on the quizzes multiplied by 50.

Gateway Test: In order to pass the course, the student must pass an examination on derivatives with a score of 100%. Three attempts will be offered at 8:00 a.m. on the following days:

January 29, February 5, April 2

Each re-test will be different but very similar to the original test. A handout explaining the format of the test will be provided.

Homework: Assignments from the text and handouts will be given. These assignments will not be collected but are for your benefit. **The purpose of calculation is insight** (Gauss). It is important that you complete assignments as they are assigned and that you not wait until a few days prior to a test to do homework. Collaboration is encouraged as discussion of the concepts often leads to their clarification. **However be sure that you can solve problems unaided.** Use good style on homework. In general you need to study at least 6-8 per week on study not counting the time spent reviewing for tests.

Use Good Style: Thoughts are expressed by sentences: just so in mathematics. Written work must be in complete sentences. The same applies to daily homework. Two handouts are available for your reading and will be posted on the class conference.

Miscellaneous Support: Student tutors are available in the math center. A schedule will be posted early in the semester. Additionally, there are SI leaders assigned to the course. Check the course conference for announcements with regards to study sessions.

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.

Date	Topic	Section
Jan 14 – Wed	Review of Differentiation	2.1 to 2.5

Jan 16 – Fri	Review of Differentiation	2.1 to 2.5
Jan 19 – Mon	**MLK Holiday**	
Jan 21 – Wed	Trigonometry	Handout
Jan 23 – Fri	Trigonometry	Handout
Jan 26 – Mon	Circular Motion	Handout
Jan 28 – Wed	Implicit Differentiation	2.6
Jan 29 – Thu	**Gateway Test 1**	
Jan 30 – Fri	Implicit Differentiation	2.6
Feb 2 – Mon	Related Rates	2.7
Feb 4 – Wed	Linear Approximation	2.8
Feb 5 – Thu	**Gateway Test 2**	
Feb 6 – Fri	Graphing	Handout
Feb 9 – Mon	Graphing	Handout
Feb 11 – Wed	**Test 1 Review**	
Feb 12 – Thu	**Test 1**	
Feb 13 – Fri	Inverse Functions	Handout
Feb 16 – Mon	Inverse Trigonometric Functions	Handout
Feb 18 – Wed	Inclination and Curvature	Handout
Feb 20 – Fri	Inclination and Curvature	Handout
Feb 23- Mon	Mean Value Theorem and Antiderivatives	4.2, 4.7
Feb 25 – Wed	Differential Equations	7.6
Feb 27 – Fri	Differential Equations	7.6
2 Mar – Mon	Sums	Handout
4 Mar – Wed	Sums	Handout
6 Mar – Fri	Area	5.1
Mar 9 to Mar 13	**Spring Break**	
Mar 16 – Mon	Sums and Area	5.1
Mar 18 – Wed	**Test 2 Review**	
Mar 19 – Thu	**Test 2**	
Mar 20 – Fri	The Definite Integral	5.2
Mar 23 – Mon	The Definite Integral	5.2
Mar 25 – Wed	Fundamental Theorem of Calculus	5.4
Mar 27 – Fri	Fundamental Theorem of Calculus	5.4
Mar 30 – Mon	Substitution	5.5
Apr 1 – Wed	Properties of the Definite Integral	5.4
Apr 2 – Thu	**Gateway Test 3**	
Apr 3 – Fri	Substitution in Definite Integrals	5.5
Apr 6 – Mon	Area and Volume	7.1
Apr 8 – Wed	Volumes of Revolution	7.2
Apr 10 – Fri	Volumes of Revolution	7.3
Apr 13 – Mon	**Test 3 Review**	
Apr 15 – Wed	**Test 3 Review**	
Apr 16 – Thu	**Test 3**	
Apr 17 – Fri	Limits Review	
Apr 20 – Mon	Limits Review	
Apr 22 – Wed	Differentiation Review	
Apr 24 – Fri	Final Review	
Apr 27 – Mon	Final Review	