

Math 110B – Calculus I with Precalculus Spring 2009

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Hours: MWF 2:30-3:30; TTh 4:00-5:00

and by appointment

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
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Total	800 points

The plus/minus system will be used. A rough guide to grades: A: ≥ 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.

Proposed Calendar of Topics

Thu	15	Jan	Derivative rules (2.1—2.5)
Tue	20	Jan	Trigonometry (Handout)
Thu	22	Jan	Circular Motion (Handout)
Tue	27	Jan	Implicit differentiation (2.6)
Thu	29	Jan	Gateway 1 (all sections) 8:00-9:30
Thu	29	Jan	Related rates (2.7)
Tue	3	Feb	Linear approximation (2.8)
Thu	5	Jan	Gateway 2 (all sections) 8:00-9:30
Thu	5	Feb	Graphing (Handout)
Tue	10	Feb	Review
Thu	12	Feb	Test 1 (all sections) 8:00-9:30
Thu	12	Feb	Inverse functions (Handout*)
Tue	17	Feb	Inverse trig.
Thu	19	Feb	Inclination and curvature (Handout)
Tue	24	Feb	Mean Value Theorem and antiderivatives (4.2, 4.7)
Thu	26	Feb	Differential equations (7.6)
Tue	3	Mar	Sums (Handout)
Thu	5	Mar	Area (5.1)
Tue	10	Mar	<i>Spring Break...</i>
Thu	12	Mar	<i>Spring Break...</i>
Tue	17	Mar	Review
Thu	19	Mar	Test 2 (all sections) 8:00-9:30
Thu	19	Mar	The definite integral (5.2,5.3)
Tue	24	Mar	The definite integral
Thu	26	Mar	Fundamental Theorem of Calculus (5.4)
Tue	31	Mar	Substitution (5.5)
Thu	2	Apr	Gateway 3 (last chance) 8:00-9:30
Thu	2	Apr	Prop. of the def. int. (5.4)
Tue	7	Apr	Area and volume (Handout)
Thu	9	Apr	Volume (also 7.1-3 in text)
Tue	14	Apr	Review
Thu	16	Apr	Test 3 (all sections) 8:00-9:30
Thu	16	Apr	Limits review
Tue	21	Apr	Differentiation review
Thu	23	Apr	Review
Tue	28	Apr	Review for Final Examination