

Mathematics 110B
Spring, 2005

Instructor: Mrs. Jan Smith
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Office hours:	MW	10:30 - 11:30 a.m. 2:00 - 4:00 p.m.
	T,Th	11:30 - 4:00 p.m.
	F	10:30 - 11:30 a.m.

-- Other times by appointment --

Textbook: Larson, Hostetler and Edwards, Calculus of a Single Variable: Early Transcendental Functions, D.C. Heath and Company, 3rd edition

Course Content: A two-semester course, Mathematics 110A, B provides students with an integrative approach to calculus that includes the necessary precalculus topics. Course content includes limits; continuity; the derivative; differentiation of algebraic, trigonometric, and the natural logarithmic and exponential functions; applications of derivatives; anti-derivatives; the definite integral; integration by substitution; and applications of the definite integral. Algebraic and transcendental functions are included. Math 110A does not count for a GER mathematics course. Math 110B does count for a GER mathematics course.

Content for Math 110A

Review of algebra, functions, trigonometric functions, logarithms and exponents. Calculus topics include limits, continuity, definition of derivative, differentiation, extrema, Intermediate Value Theorem, Mean Value Theorem, graphing polynomial and rational functions, optimization problems.

Content for Math 110B

Review of inverse trigonometric functions, differentiation, and graphing. New topics include implicit differentiation, logarithmic differentiation, related rates, graphing vertical tangents, sums and sigma notation, induction, antiderivatives, Fundamental Theorem of Calculus, definite integral, area, volume, separable differential equations, substitution method of integration.

Goals: By the completion of the sequence Math110A and 110B, the student should have a basic conceptual understanding of the following: (1) limits and their relationship to the graph of a function, (2) the derivative and its relationship to the graph of a function and to the concept of "rate of change," and (3) the definite integral and its relationship to area and volume. The student should be able to calculate derivatives and to evaluate limits and integrals (both definite and indefinite). The sequential course for Math 110B is Math 112, Calculus II.

Class Attendance: The student is responsible for the course material discussed in class, therefore the student is expected to attend all classes. An inordinate number of absences will be handled in accordance with the College's policies. In addition, after three absences (excused or unexcused), any unexcused absence will result in a deduction of 5 points from your grade total. Entering class late by ten or more minutes is considered an absence.

Homework: Homework assignments are for the student's benefit. It is important that the student thoughtfully complete most of the problems assigned. The student will need to spend at least 10 good hours of study each week to complete the homework assignment. Each week I will designate some homework problems to be handed in. These problems will be due by 4 p.m. on Thursday. Unless specified otherwise, they should be completed individually. You may ask me about the homework problems on any day except the day that they are due. I will not be grading all of the homework problems, just several randomly chosen from the list. Your homework should be neatly written out, include a statement of the problem, and be written in complete sentences. Sloppy work will not be graded and will be given only 15% of the possible points.

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

Gateway Exam: In order to pass this course, the student must pass an examination on differentiation. All 100 points will be given for a perfect paper. If the student has only ONE mistake, the student may choose to get a score of 80 points and not retest. More than ONE mistake is **not** considered a passing grade. The Gateway Tests are scheduled in the class calendar. Attached is an outline of the Gateway Exam.

Major Tests: Four major tests will be given. Students are expected to take tests at the scheduled times. Conflicts, problems and emergencies will be handled on an individual basis. For reasons deemed legitimate by your professor, arrangements may be made for a student to take a test prior to the testing time. Any student who needs

special accommodations must provide documentation several days in advance of the needed accommodation so that appropriate arrangements may be made.

Test 1 – Friday, Feb. 11 2:15 – 4:00 p.m.

Test 2 – Friday, Mar. 4 2:15 – 4:00 p.m.

Problem Sets: Two problem sets worth 25 pts. each will be taken home and worked individually or in small groups. Detailed information will be given at the time of distribution.

Graphing Portfolio: Students are to use software (GRAPHMATICA) to prepare a portfolio of computer-generated graphs. The portfolio is to contain at least 10 distinctly different displays of graphs. Each function is to be clearly identified by the formula. Use only algebraic, trigonometric (including inverse trigonometric), logarithmic and exponential functions or combinations of them. The student must have four or five graphical displays where the important features of the graphs are clearly labeled (maximum, minimum, inflection points, etc). The Curve Sketching Checklist (provided during the graphing section of this course) should be used to determine what graphing aspects should be labeled. These are the technical graphs. In addition to the required or technical graphs, the student should compose functions to produce pictures illustrating a theme or a story for a second set of graphs, the thematic graphs. Each portfolio should include a variety of functions (algebraic and transcendental). Evaluation of the portfolio will be based on the selection of graphs, the documentation associated with the graphs, the completeness of the technical graphs, the creativity of the thematic graphs, and the oral presentation of the portfolio. Accuracy, clarity, organization, and originality are important in your portfolio. Oral presentations will be given on the due date. Students should not wait until the week before the due date to do this project. Use your time wisely throughout the semester. Examples of previous portfolios can be reviewed in your professor's office during office hours.

Grading: The student's final course grade will be determined as follows:

Gateway Exam @ 100 pts	100 points
Two Problem Sets @ 25 pts.	50 points
Homework	50 points
Major tests (4 @ 100 points)	400 points
Graphing Portfolio	100 points
Final Exam (Comprehensive)	<u>200 points</u>
	900 points

In general, letter grades will be determined as follows:

A:	810 or more points
B:	720 – 809
C:	630 – 719
D:	540 – 629
F:	fewer than 540 points

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

Scheduled Help Outside Class: The Supplementary Instructors (SI leaders) will schedule outside of class study sessions for students. In addition, student tutors are available to help with homework problems. A schedule of tutoring hours will be provided early in the semester.

e-Reserves/WebSite: The student is responsible for obtaining the handouts on library eReserves. Handouts include information and exercises to supplement the textbook. In addition, there is a Graphing Tutorial at the following web site (also accessible through e-Reserve):
<http://www.oxford.emory.edu/OXFORD/RESTRICTED/UNIVERSITY/Classes/Chen/Calculus/Index.htm>

Learnlink: There is a class conference on Learnlink, **Math110B Spring 2005**. Announcements from your SI leaders and from your instructors will be posted. Students may ask questions and make requests of a general nature on this conference. Individual concerns should be sent directly to your professor.

Written Style: Neatness is one way of showing courtesy toward your instructor and pride in your work. Thoughts in mathematics are expressed in sentences, such as " $1 + 1 = 2$ ". There is a subject " $1 + 1$ ", a verb "=", and a predicate "2". The student should strive to be neat and to use mathematical symbols appropriately.

THE HONOR CODE OF OXFORD COLLEGE APPLIES TO ALL WORK SUBMITTED FOR CREDIT IN THIS COURSE. BY YOUR SIGNATURE ON SUCH WORK YOU PLEDGE THAT WORK WAS DONE IN ACCORDANCE WITH THE RULES STIPULATED ON THE WORK OR IN THIS SYLLABUS.