Mathematics 112/112Z, Fall, 2010

Textbook: Stewart, Single Variable Calculus: 6th edition

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Office Hours: Tuesdays, Wednesdays 2:30 – 4:30 pm (subject to change) or by appointments

Content: Mathematics 112 is the second semester of calculus and is designed specifically for students who have completed a semester of college calculus (Math 111, Math 111Z, Math110B, or AP Calculus). Course content includes methods of integration, improper integrals, polar coordinates, sequences and infinite series, power series, and introduction to differential equations. Specific topics by class day are attached.

Goals: At the completion of the class, students should have (1) a basic understanding of derivative, of antiderivative, and of limit; (2) a basic understanding of power series and be able to determine the domain of appropriate power series. Students should also be able to (1) use the rules of differentiation as they apply to algebraic and transcendental functions; (2) evaluate a variety of limits; (3) sketch graphs of transcendental functions by building on concepts from Calculus I; (4) demonstrate appropriately the methods of integration (substitution, integration by parts, trigonometric substitution, partial fractions) and use these methods with typical indefinite, definite, and improper integrals; (5) graph and find area using simple polar coordinate expressions; (6) determine convergence of appropriate infinite series by giving logical arguments; (7) derive a power series expression for certain transcendental expressions using a geometric series or Taylor's Theorem; (8) solve simple first-order differential equations.

Attendance: The student is expected to attend all classes since the student is responsible for work covered in class and for any announcements made in class. An inordinate amount of absences will be handled in accordance with school policies.

Quizzes: About 10 quizzes will be given in class. Most of them will be unannounced. Details will be explained in class.

Homework: Specific topics included in this course are attached. Homework will be assigned in the outlines posted after each lecture on the Blackboard site. Homework will be collected and graded regularly. Although only selected problems will be checked, it is important that the student successfully complete all the problems assigned.

Students will need to spend at least 2 productive hours of study for each class session, or about 6 to 8 hours per week. Students should not get behind or wait until the night before a test to study. Sleep is important prior to tests.

Gateway Test: In order to pass Math 112/112Z, the student must pass a Gateway exam. This exam is made up of eight problems as follows: two limits to evaluate (including using L'Hospital's Rule), two differentiation problems (any transcendental function may be included), and four integration problems (using any of the techniques such as u-substitution, trigonometric substitution, integration by parts, and partial fractions). To pass this test, a student must work at least six problems correctly. Points will be earned as follows:

all eight problems correct	100 points
seven problems correct	90 points
six problems correct	80 points

Major Tests: Four major tests will be given. All of the tests will be comprehensive. Test 4 will be worth more points.

Each student is expected to take tests at the scheduled times. Any conflicts or problems will be handled on an individual basis. If the excuse is considered legitimate by your instructor, arrangements will be made to take a test on the afternoon **prior to** the testing time. Emergencies will be handled on an individual basis. Documented special accommodations for test taking must be cleared several days prior to the test date so that appropriate arrangements can be made.

Calculators: Calculators will **not** be allowed on any work handed in for grades.

Grading: The final course grade will be determined as follows:

Major Tests (3 @ 100 points and 1 @ 150 points)	450 points
Gateway Test	100 points
Homework	100 points
Quizzes (10 @ 5 points)	50 points
TOTAL	700 points

In general, letter grades will be determined as follows:

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

Grades of A-, B+, B-, C+, C-, D+ may be assigned for percentages near the above cut-offs.

Blackboard Website: There is a course website on the Blackboard: http://classes.emory.edu Outlines for each lecture (including homework assignment and extra handouts) will be posted after every class. Announcements, scheduled SI sessions, questions related to problems, and other information can be posted at any time. Students may ask questions and make requests of a general nature on the site (individual concerns should be sent directly to your professor). The student is responsible for checking the site every day and obtaining homework assignment, extra handouts and other related information.

Supplemental Instruction, Tutoring and Study Groups: The SI leaders will be announced. They schedule study sessions to review calculus concepts, to help students discover how best to study calculus. Check the Blackboard for announcements.

Contact Mr. Paul Oser, Director of the Mathematics Center for tutoring hours, most likely M-TH, 3-6 pm.

Study groups, organized by students are highly recommended.

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.

Schedule of Topics (subject to adjustments)

25-Aug	Wednesday	Review Functions, Limits
27-Aug	Friday	Review Functions, Limits, Differentiation
30-Aug	Monday	L'Hopital's Rule
1-Sep	Wednesday	L'Hopital's Rule
3-Sep	Friday	L'Hopital's Rule
8-Sep	Wednesday	Graphing logarithmic and exponential functions
10-Sep	Friday	Review Integration
13-Sep	Monday	Integration by Parts
15-Sep	Wednesday	Review for Test 1
16-Sep	**Thursday**	**Test 1, 7:45 AM – 9:30 AM**
17-Sep	Friday	Integrals with Trig Functions
20-Sep	Monday	Trigonometric Substitution
22-Sep	Wednesday	Partial Fractions
24-Sep	Friday	Partial Fractions
27-Sep	Monday	Improper Integrals
29-Sep	Wednesday	Improper Integrals
30-Sep	**Thursday**	**Gateway Test 1, 8:30 AM – 9:30 AM**
1-Oct	Friday	Mathematical Induction
4-Oct	Monday	Review for Test 2
5-Oct	**Tuesday**	**Test 2, 7:45 AM – 9:30 AM**
6-Oct	Wednesday	Infinite Sequences
8-Oct	Friday	Introduction to Differential Equations: Separable
13-Oct	Wednesday	Infinite Series
15-Oct	Friday	Infinite Series
18-Oct	Monday	n-th Term Test and Integral test
20-Oct	Wednesday	Integral test and p-series
21-Oct	**Thursday**	**Gateway Test 2, 8:30 AM – 9:30 AM**
22-Oct	Friday	Integral test and p-series
25-Oct	Monday	Comparisons of Series
27-Oct	Wednesday	Alternating Series
29-Oct	Friday	Ratio and Root Test
1-Nov	Monday	Review Infinite Series
3-Nov	Wednesday	Power Series
5-Nov	Friday	Power Series
8-Nov	Monday	Review for Test 3
9-Nov	**Tuesday**	**Test 3, 7:45 AM – 9:30 AM**
10-Nov	Wednesday	Power Series
12-Nov	Friday	Power Series
15-Nov	Monday	Taylor and Maclaurin Series
17-Nov	Wednesday	Taylor and Maclaurin Series
19-Nov	Friday	Review Power Series
22-Nov	Monday	Polar Coordinates
29-Nov	Monday	Polar Coordinates
30-Nov	**Tuesday**	**Gateway Test 3, 8:30 AM – 9:30 AM – Last Chance!**
1-Dec	Wednesday	Polar Coordinates
3-Dec	Friday	Review graphing and area in polar coordinates
6-Dec	Monday	Review for Test 4
7-Dec	**Tuesday**	**Test 4, 7:45 AM – 9:30 AM**