Mathematics 112
Fall, 2007

Textbook: Larson, Hostetler and Edwards, Calculus of a Single Variable: Early Transcendental Functions, 4th edition

Instructor: Fang Chen, Office - Pierce 121 (office hours will be posted weekly on Learnlink class conference), Phone: 770-784-4639, e-mail: fchen2@emory.edu

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.

Homework: Specific topics included in this course are attached. Although homework assignments are not collected, it is important that the student successfully complete the problems assigned.

Students will need to spend at least 2 productive hours of study for each class session, or 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.

Quizzes: All quizzes are announced and "take home"; however, the student must be present in class to receive the quiz. The student must work each quiz at one sitting and use only the reference sheet provided for this course. There should be no discussion of quizzes until after they are turned in for grades. Quizzes are due at class time on the class day indicated on the assignment sheet. There are a total of seven quizzes. Each quiz is worth 25 points and the best six quizzes will be used to help determine the student's grade.

Major Tests/Final Exam: Four major tests will be given. The final exam will be comprehensive and will be given according to the final exam schedule.

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.

Gateway Exam: In order to pass Math 112, the student must pass a Gateway exam. This exam is made up of eight problems as follows: two limits to evaluate (at least one requiring L'Hospital's Rule), two differentiation problems (any transcendental function may be included), and four integration problems (one needing u-substitution, one needing trigonometric substitution, one needing integration by parts, and one needing 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

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

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

Major tests (4 @ 100 points)	400 points
Quizzes (best 6 @ 25 points)	150 points
Gateway Test	100 points
Final Exam	250 points
TOTAL	900 points

e-Reserves/WebSite: The student is responsible for obtaining the handouts on e-Reserves through the library web page. Handouts include information and exercises to supplement the textbook.

In addition, there is a Graphing Tutorial at the following web site, which is 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, **Math112Fall2007**. Outlines for each lecture, 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 this conference. Individual concerns should be sent directly to your professor. Students should place this conference on their desktop and check frequently.

Supplemental Instruction, Tutoring and Study Groups: The SI leaders for Math112 Fall 2007 will be announced. They schedule study sessions to review calculus concepts, to help students

discover how best to study calculus. Check the course conference on Learnlink for announcements.

Contact Mr. Paul Oser, director of the Mathematics Center for tutoring hours.

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.

Tentative Calendar of Topics
(Subject to adjustments – read daily outlines on class conference Math112 Fall 2007)

Wednesday, August 29 Review Functions, Limits
e-Reserve: Introductory Topics
Notes on Transcendental Functions
A Note to Serious Calculus Students
Textbook: Chapters 1 and 2

Friday, August 31 Review Functions, Limits
Review Differentiation
e-Reserve: Introductory Topics
Textbook: Chapters 1, 2 and 3

Monday, September 3 Labor Day

Wednesday, September 5 Indeterminate Forms and L'Hôpital's Rule
Friday, September 7
Monday, September 10
e-Reserve: Introductory Topics
Textbook: Section 8.7

QUIZ 1 (Friday, September 7)

Wednesday, September 12 Graphing logarithmic and exponential functions
e-Reserve: Graphing Segment 1 – Review Graphing polynomials, rational functions
Graphing Segment 2 – Graphing logarithmic and exponential functions
Extra Notes on Graphing
Calculus Page: Graphing Tutorial, access via e-Reserve

Friday, September 14 Review Integration
e-Reserve: Integration; Math112 Reference Sheet
Textbook: Section 8.1

QUIZ 2 (Friday, September 14)

Monday, September 17 Integration by Parts
e-Reserve: Integration
Textbook: Section 8.2

Wednesday, September 19 Review for Test 1

Test 1 Thursday, September 20 at 7:45 a.m.

Friday, September 21 More Substitution
e-Reserve: Integration
Integrals involving trigonometric functions
Textbook: Section 8.3

Monday, September 24 Trigonometric Substitution
e-Reserve: Integration
Textbook: Section 8.4

Wednesday, September 26 Partial Fractions
Friday, September 28
e-Reserve: Integration
Textbook: Section 8.5

QUIZ 3 (Friday, September 28)

Monday, October 1 Improper Integrals
Wednesday, October 3
e-Reserve: Improper Integrals
Improper Integrals - Summary
Textbook: Section 8.8

Friday, October 5 Polar Coordinates and Polar Graphs
e-Reserve: Polar Coordinates
Textbook: Section 10.4

October 8 – 9 Fall Break

Wednesday, October 10 Polar Coordinates and Polar Graphs
Friday, October 12 Area in Polar Coordinates
e-Reserve: Polar Coordinates
Calculus Page: Graphing Tutorial, access via e-Reserve (Polar Section)
Textbook: Sections 10.4 and 10.5

QUIZ 4 (Friday, October 12)

Gateway 1 Thursday, October 11 at 8:30 a.m.

Monday, October 15 Review graphing and area in polar coordinates

Wednesday, October 17 Review for Test 2

Test 2 Thursday, October 18 at 7:45 a.m.

Friday, October 19 Infinite Sequences
e-Reserve: Sequences
Sequence Extra Notes
Textbook: Section 9.1

Gateway 2 Tuesday, October 23 at 8:30 a.m.

Monday, October 22 Infinite Series
Wednesday, October 24
e-Reserve: Infinite Series
Textbook: Section 9.2

Friday, October 26 No class

Monday, October 29 Integral Test and p-series
Wednesday, October 31
e-Reserve: Infinite Series
Textbook: Section 9.3

Friday, November 2 Comparisons of Series
e-Reserve: Infinite Series
Textbook: Section 9.4

Monday, November 5 Alternating Series
e-Reserve: Infinite Series
Textbook: Section 9.5

Gateway 3 Tuesday, November 6 at 8:30 a.m.

Wednesday, November 7 Ratio and Root Test
e-Reserve: Review Infinite Series
Textbook: Section 9.6

QUIZ 5 (Wednesday, November 7)

Friday, November 9 Review Infinite Series
e-Reserve: Review Infinite Series
Review for Test 3
Textbook Chapter 9

Monday, November 12 Review for Test 3
e-Reserve: Review for Test 3

Test 3 Tuesday, November 13 at 7:45 a.m.

Wednesday, November 14 Power Series
Friday, November 16
Monday, November 19 Representation of Functions by Power Series
e-Reserve: Power Series, Review Power Series, Extra Notes on Power Series
Textbook: Sections 9.8 and 9.9

QUIZ 6 (Monday, November 19)

November 21 – November 23 Thanksgiving Break

Monday, November 26 Power Series
e-Reserve: Power Series, Review Power Series, Extra Notes on Power Series
Textbook: Sections 9.8 and 9.9

Gateway 4 Tuesday, November 27 at 8:30 a.m.

Wednesday, November 28 Taylor and Maclaurin Series
Friday, November 30
e-Reserve: Power Series
Textbook: Section 9.10

QUIZ 7 (Friday, November 30)

Monday, December 3 Review Power Series

Wednesday, December 5 Review for Test 4

Test 4 Thursday, December 6 at 7:45 a.m.

Friday, December 7 Introduction to Differential Equations: Separable and Linear
e-Reserve: Differential Equations
Textbook: Section 6.3

Monday, December 10 Review for Final
e-Reserve: Review for Final

Gateway 5 – Last Chance Tuesday, December 11 at 8:30 a.m.
