

*Note: Student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.*

## Syllabus for Math 110, Fall 2015 – Oxford College of Emory University

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**Course Content:** Mathematics 110 provides students with an integrative approach to Calculus I that includes the necessary precalculus topics: review of algebra; functions; trigonometric, inverse trigonometric, logarithmic and exponential functions. Calculus topics include limits, continuity, the definition of the derivative, differentiation, extrema, the Intermediate Value Theorem, antiderivatives and optimization problems.

**Textbook:** James Stewart, Single Variable Calculus: Early Transcendentals, 7<sup>th</sup> or 8<sup>th</sup> Edition. Try to read the relevant sections of the book before coming to class: believe us, this is a very useful habit.

**Course Goals:** Upon successful completion of Math 110 students will:

1. Be able to perform complex algebraic manipulations.
2. Be able to graph and compute with algebraic and transcendental functions.
3. Understand conceptually limits and their relationship to the graph of a function.
4. Understand conceptually the derivative and its relationship to the concept of "rate of change".
5. Be able to calculate derivatives and evaluate limits.
6. Be well prepared for Math 111 and 119.

**Classes:** The student is expected to attend all classes since the student is responsible for any work covered and/or announcements made in class. An inordinate amount of absences will be handled in accordance with school policies. In addition to the regular class meetings, there will also be some tests scheduled on Tuesday or Thursday mornings.

**Homework:** Homework is assigned almost every day of class. Students should expect to spend at least 2 productive hours of study for each class session, or about 6 to 8 hours per week.

Students are encouraged to ask questions of the instructor about any problems with which they struggled in these assignments – either at appropriate times during class or during the instructor's office hours. These exercises usually will not be collected but are for the benefit of the student. That said, quizzes based on the homework may be given.

**Quizzes:** Some number of in-class quizzes will be given and most of them will be unannounced. The student must be present in class to take each quiz. No make-up quizzes will be given regardless of the circumstances, however the lowest two quiz grades will be dropped.

**Gateway Exams:** In order to pass this course the student must pass an examination in algebra, graphs and transcendental (trigonometric, logarithmic and exponential) functions. The student will be allowed three opportunities to pass it (see schedule below)

Each test will be different but very similar to the original test.

- Friday, October 16<sup>th</sup> (in class)
- Thursday, November 12<sup>th</sup> (8:00 AM)
- Tuesday, November 24<sup>th</sup> (8:00 AM)

**Tests:** Three major tests will be given. All of the tests will be comprehensive. Calculators will not be allowed on tests. Each student is expected to take tests at their scheduled times. Any conflicts should be brought to the instructor's attention as soon as possible. If a legitimate reason exists for missing a test – as determined by the instructor – then the test must be taken prior to the regularly scheduled date. In the unusual circumstance where taking the test early is not possible, *students should be aware that any make-up tests given will be designed to be more difficult to offset the additional time given for study*. Students must provide written documentation in advance of any special accommodations required for testing. This includes additional time or other needs. The final exam cannot be rescheduled.

The tests will be given on the following days:

- Test 1 - Tuesday, September 22<sup>nd</sup>
- Test 2 - Tuesday, October 27<sup>th</sup>
- Test 3 – Part I: Wednesday, December 2<sup>nd</sup>, Part II: Friday, December 4<sup>th</sup>

**Final Exam:** A cumulative final exam will be given in accordance with the schedule below:

- Thursday, December 10<sup>th</sup> 2:00 – 5:00 p.m. Section 9A (9:30 – 10:35, Chen)
- Friday, December 11<sup>th</sup> 2:00 – 5:00 p.m. Section 10A (10:45 – 11:50, Chen)
- Friday, December 11<sup>th</sup> 2:00 – 5:00 p.m. Section 10B (10:45 – 11:50, Oser)

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

Quizzes	100 points
Gateway Exams	100 points
Tests (3 @ 100 pts)	300 points
Final	150 points
Total	650 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 60%

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>. Homework assignments, extra handouts, announcements, scheduled SI sessions, questions related to problems, and other material can be posted at any time. Students are responsible for checking the site every day and obtaining related information.

**Supplemental Instruction/Help Sessions/Tutoring/Study groups:** The supplemental instruction (SI) leaders will be announced. They schedule study sessions to review calculus concepts and to help students discover how best to study calculus. The SI is a student who has taken the course (or a similar course) before, has a good understanding of the material (but probably not as complete as the instructor), and knows how to be a successful student. Check the Blackboard for scheduled sessions.

Help sessions will be scheduled as there is demand for them. Attendance is optional.

Contact Christina Lee for tutoring hours (most likely, they will be Mondays through Thursdays, 3–6 pm).

Study groups, organized by students are highly recommended.

**Written Style:** Expressing complete thoughts and arguments require complete sentences. In mathematics, where clarity of thought is paramount, this is no less true. Granted, with mathematical symbols one can write these sentences very efficiently – but they are sentences nonetheless. Consider " $1+1 = 2$ ". This is a complete sentence (it has a subject " $1+1$ ", verb " $=$ " and predicate " $2$ ").

To this end, your written work in this class should be in complete sentences. Use mathematical symbols wherever appropriate. Your work also needs to be neat and orderly to be intelligible. For more information, see the "Calculus Style Guide" on Blackboard.

**Tips for Success:** Calculus is hard, but it can be made easier by intelligent and efficient study habits. The famous mathematician Carl Friedrich Gauss said the purpose of calculation is insight. Insight is an understanding into why things work the way they do. This should be the goal of working out problems. Students should know why each step is correct and why each step was the right step to take. Note, this is more than knowing that each step is correct.

Although the homework exercises are not graded, it is important for the success of the student that they be completed as soon after covering the material as possible. Calculators may be used when appropriate, but the student should keep in mind that they are not permitted on the tests. While collaboration is encouraged, each student should be sure that ultimately he or she can solve problems unaided by notes, the textbook, a calculator, or other people.

Practice good style on homework. With all honesty, "clean style helps to clean up messy thinking".

In general the student should expect to study at least six good hours per week in addition to time spent reviewing for tests.

Tests are performances, similar to those by athletes, musicians, and dancers. Prepare for them in similar ways. Begin practicing for them weeks in advance.

The topics we will cover are very useful and fundamental in the sciences, business and engineering, among other fields, and we want you all to succeed. However, success in the course will require your diligence and hard work. Be sure to keep up with the assignments and to attend class. Talk to your instructors as soon as you are having problems - don't wait until the week of a test. These skills and study habits will help you in calculus, in other courses, and in life beyond Oxford College.

You may always ask the instructors any question about an assignment. They will answer at their discretion.

Good luck and we hope this will be an enjoyable experience for all of you!

**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.**

# Math 110 Calendar, Fall 2015

(subject to change at the discretion of the instructors)

Monday	Tuesday	Wednesday	Thursday	Friday
Aug 24 <sup>th</sup>	Aug 25 <sup>th</sup>	Aug 26 <sup>th</sup>  § "Handout A" Algebra Review	Aug 27 <sup>th</sup>	Aug 28 <sup>th</sup>  § 1.2 Quadratics, Polynomials, and Rational Functions
Aug 31 <sup>st</sup>  § 1.1 Piecewise Defined Functions	Sep 1 <sup>st</sup>	Sep 2 <sup>nd</sup>  § 1.3 Combinations of Functions and Inverse Functions	Sep 3 <sup>rd</sup>	Sep 4 <sup>th</sup>  § NTF A Trigonometric Functions
Sep 7 <sup>th</sup>  <i>No Class</i> <i>Labor Day Holiday</i>	Sep 8 <sup>th</sup>	Sep 9 <sup>th</sup>  § NTF B Trigonometric Identities	Sep 10 <sup>th</sup>	Sep 11 <sup>th</sup>  § NTF C Graphing Trigonometric Functions
Sep 14 <sup>th</sup>  § NTF D Solving Trigonometric Equations	Sep 15 <sup>th</sup>	Sep 16 <sup>th</sup>  § NTF E Inverse Trigonometric Functions	Sep 17 <sup>th</sup>	Sep 18 <sup>th</sup>  § Notes Sigma Notation
Sep 21 <sup>st</sup>  REVIEW	Sep 22 <sup>nd</sup>  <b>TEST 1</b> <b>8:00 AM</b>	Sep 23 <sup>rd</sup>  § 2.2 The Limit of a Function	Sep 24 <sup>th</sup>	Sep 25 <sup>th</sup>  § 2.3 Calculating Limits
Sep 28 <sup>th</sup>  § 2.2 Infinite Limits	Sep 29 <sup>th</sup>	Sep 30 <sup>th</sup>  § 2.6 Limits at Infinity	Oct 1 <sup>st</sup>	Oct 2 <sup>nd</sup>  § 2.5 Continuity
Oct 5 <sup>th</sup>  § 2.5 Continuity	Oct 6 <sup>th</sup>	Oct 7 <sup>th</sup>  § NTF F Exponential Functions	Oct 8 <sup>th</sup>	Oct 9 <sup>th</sup>  § NTF F Logarithmic Functions

Monday	Tuesday	Wednesday	Thursday	Friday
Oct 12 <sup>th</sup>  <i>Midsemester Break</i>	Oct 13 <sup>th</sup>  <i>Midsemester Break</i>	Oct 14 <sup>th</sup>  § <u>Notes</u> Applications and Limits involving Trigonometry	Oct 15 <sup>th</sup>	Oct 16 <sup>th</sup>  <b>Gateway Exam 1<sup>st</sup> Attempt (In Class)</b>
Oct 19 <sup>th</sup>  § <u>Notes</u> Binomial Theorem	Oct 20 <sup>th</sup>	Oct 21 <sup>st</sup>  § <u>2.7</u> Introduction to Derivatives	Oct 22 <sup>nd</sup>	Oct 23 <sup>rd</sup>  § <u>2.7</u> Using the Definition of the Derivative
Oct 26 <sup>th</sup>  REVIEW	Oct 27 <sup>th</sup>  <b>TEST 2 8:00 AM</b>	Oct 28 <sup>th</sup>  § <u>3.1</u> Derivatives of Polynomials and Exponential Functions	Oct 29 <sup>th</sup>	Oct 30 <sup>th</sup>  § <u>3.2</u> Product and Quotient Rules
Nov 2 <sup>nd</sup>  § <u>3.3</u> Derivatives of Trigonometric Functions	Nov 3 <sup>rd</sup>	Nov 4 <sup>th</sup>  § <u>3.4</u> The Chain Rule	Nov 5 <sup>th</sup>	Nov 6 <sup>th</sup>  § <u>3.6</u> Derivatives of Logarithmic Functions
Nov 9 <sup>th</sup>  § <u>Notes</u> Combining Derivative Rules	Nov 10 <sup>th</sup>	Nov 11 <sup>th</sup>  § <u>4.1</u> Maximum and Minimum Values	Nov 12 <sup>th</sup>  <b>8:00 AM Gateway Exam 2<sup>nd</sup> Attempt</b>	Nov 13 <sup>th</sup>  § <u>4.3</u> Increasing & Decreasing, Concavity
Nov 16 <sup>th</sup>  § <u>4.7</u> Optimization	Nov 17 <sup>th</sup>	Nov 18 <sup>th</sup>  § <u>4.7</u> Optimization	Nov 19 <sup>th</sup>	Nov 20 <sup>th</sup>  § <u>4.9</u> Antiderivatives (basic functions, u-sub, linear motion) <i>(and Evaluations)</i>
Nov 23 <sup>rd</sup>  § <u>5.5</u> Antiderivatives	Nov 24 <sup>th</sup>  <b>8:00 AM Gateway Exam 3<sup>rd</sup> Attempt</b>	Nov 25 <sup>th</sup>  <i>Thanksgiving Recess</i>	Nov 26 <sup>th</sup>  <i>Thanksgiving Recess</i>	Nov 27 <sup>th</sup>  <i>Thanksgiving Recess</i>
Nov 30 <sup>th</sup>  § <u>5.5</u> Antiderivatives	Dec 1 <sup>st</sup>  EVENING REVIEW SESSION	Dec 2 <sup>nd</sup>  <b>TEST 3 – Part I (In Class)</b>	Dec 3 <sup>rd</sup>	Dec 4 <sup>th</sup>  <b>TEST 3 – Part II (In Class)</b>
Dec 7 <sup>th</sup>  REVIEW	Dec 8 <sup>th</sup>  <i>Last day of classes</i>	Dec 9 <sup>th</sup>  <i>Reading Day</i>	Dec 10 <sup>th</sup>	Dec 11 <sup>th</sup>