Mathematics 111, Calculus I
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Course Description

Mathematics 111 is the first semester of introductory calculus. 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; simple integration by substitution; and applications of the definite integral.

Mathematics 111 is a beginning course. No prior exposure to calculus is needed. However, a good solid background in pre-calculus (algebra, logarithms and exponents, and trigonometry) is extremely important.

Goals

By the completion of this course, the student should be able to:

1) Evaluate limits and interpret the results in relation to the graph of a function;
2) Define the derivative and relate this definition to the graph of a function and to the concept of "rate of change;"
3) Give proofs of the rules of differentiation.
4) Differentiate algebraic, trigonometric, logarithmic and exponential functions.
5) Apply the derivative to the graphs of functions, to optimization situations and related-rate problems.
6) Define the definite integral and its relationship to area and to volume.
7) Evaluate definite and indefinite integrals using algebra techniques and u-substitution.

In general, each student should be able to calculate derivatives, to evaluate limits and to evaluate integrals (both definite and indefinite). Students should be able to apply appropriately their calculations and evaluations. In addition, students should understand the concepts of limit, continuity, derivative, anti-derivative, and have a beginning understanding of proof. The primary purpose of this course is to provide a solid foundation for success in Mathematics 112 since both Mathematics 111 and 112 provide the student with a year of college calculus.

Text

The following book will serve as a reference volume for this course: *Single Variable Calculus: Early Transcendentals, 7th Edition, by* James Stewart. The primary source material for this course will be the math center online (see the "Resources" section on the third page), although Stewart's text provides students with additional practice problems and explanation that they may find valuable.

Attendance

Students are responsible for all material covered in class and any changes to the syllabus that may be announced. Any conflicts between the course schedule and religious holy days are to be negotiated in advance with one's instructor.

Quizzes

Some number of quizzes will be given throughout the semester. Quizzes need not be announced ahead of time. The bottom 10% of your quiz grades will be dropped. A weighted average of all of the remaining quizzes (and any projects assigned) will be used to determine how many of the 150 points for quizzes/projects are earned towards the overall grade. For example, if one had an average of 80% on your quizzes and projects, then one would receive 120 points toward one's final grade. There is no provision for making up a quiz. You will receive a zero on any missed quiz. Grades on projects are treated identically to those on quizzes, except that project grades may not be dropped.

Homework/Projects

Timely completion of the daily homework assignments is crucial to success in this course in addition to serving as an excellent preparation for the quizzes. Some homework/projects will be assigned and collected for a grade during the semester (and we will give you advance notice when is the case), but generally these are assigned just for your benefit and will not be collected.

Gateway Exam

In order to pass this course, the student must pass an examination on derivatives. All 50 points will be given for a perfect paper on the Gateway Exam. There will be three opportunities for the student to earn all 50 points with a perfect paper. If the student has only ONE mistake, the student may choose to keep a score of 35 points and not retest. More than ONE mistake is not considered a passing grade. Students making at least 35 on Gateway Exam 1 will receive a bonus of 20 points. Each student needs to take each scheduled gateway exam until the student passes. Students may re-test for a better score with no penalty. Passing the Gateway Exam is a requirement for passing this course.

Example Gateway Exams are available on the Math Center website. The Gateway Exams will be given on the days indicated in the online class schedule. Any student not passing one of the scheduled Gateway Exams and who attempted all three exams may petition the instructor to take a fourth Gateway Exam during the last week of classes or on Reading Day.

Major Tests

Five tests will be given in class and the tentative dates for these exams are listed in the course calendar online -- although these times and dates are subject to change. Students are expected to be present for all scheduled tests. 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 are done so at the discretion of the instructor and will likely 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.

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

Grading

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

Major tests (5 @ 100 points)	500 points
Quizzes (lowest 10% dropped)	150 points
Homework	50 points
Gateway Test	50 points
Final Exam	250 points
TOTAL	1000 points

In general, letter grades will be determined as follows, based on points each student earns:

A: 900 or more points
B: 800-899 points
C: 700-799 points
D: 600-699 points
F: fewer than 600 points

Grades of A-, B+, B-, C+, C-, D+ may be assigned for sums of points near the above cut-off totals. However, the assignment of such grades ultimately depends on the overall class distribution of point totals.

"Good Style" will be important…

All necessary work must be correctly shown in a clear and organized fashion for full credit. Organization and clarity of thought are essential to mathematical thinking. Therefore, points will be deducted for a lack of organization, illegible or sloppy work, and the inappropriate use of mathematical symbols, even if answers found are correct. Students will be provided examples of what is considered "acceptably clear and organized work".

Students should remember that thoughts in mathematics are expressed in sentences, such as "1 + 1 = 2." There is a subject "1 + 1", a verb "=", and a predicate "2". Note that "=" should not be treated as a comma ",". When using an equality symbol, one should make sure that both sides of the equation are actually equivalent. For example, the work shown below would be marked incorrect as the first and last expressions equal 6, but the middle two expressions have no value associated with them.

$$\lim_{x\to 3}\left(\frac{x^2-9}{x-3}\right)=\frac{(x+3)(x-3)}{(x-3)}=x+3=6 \qquad \text{(Wrong!)}$$

Resources

The Math Center Online

One can find class announcements, tutorial videos, notes, homework and additional practice exercises for this course at http://mathcenter.oxford.emory.edu. This website will be an essential resource for students in this class.

Tutoring

Paul Oser, the Math Center Director (and also one of the Math 111 instructors), is available for free, individual tutoring in the Math Center in Pierce Hall from 3-6 PM Mondays through Thursdays. Student tutors will also be available during these same times and in some cases, in the evenings and on Sundays. The complete schedule will be forthcoming. Students are encouraged to do their homework in this area, where help is available as needed.

Office Hours

These will be posted on the math center website by individual instructor. Students are welcome to use these times to come by and ask specific questions related to this course of your instructor.

Supplemental Instruction (SI) Sessions

Our student SI leaders will schedule review sessions each week, the topic for which will be posted on the class conference. While they are optional, each student is encouraged to attend regularly.

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.