

**Mathematics 111**  
**Spring, 1993**  
**MWF 10**

**Textbook:** Varberg and Purcell, Calculus with Analytic Geometry, Sixth Edition. [Supplemental handouts will be provided as needed]

**Instructor:** William P. McKibben  
Office: Seney 303  
Phone: 4-8333

**Regular Office Hours** (generally in office - no appointments):

*Mondays* 3:30-5:00 p.m.

*Tuesdays* 10:30-11:30 a.m. and 1:30-3:00 p.m.

*Wednesdays* 1:30-3:30 p.m.

*Thursdays* 10:30-11:30 a.m. and 3:30-4:30 p.m.

*Fridays* 1:00-2:00 p.m.

**Course Content:** Math 111 is the first semester of calculus and consists of the differential calculus of algebraic and trigonometric functions, introductory material on the definite integral, and applications. Course content includes a brief review of functions; limits and continuity; the definition of the derivative; differentiation of algebraic and trigonometric functions; applications of the derivative including optimization and graphing; definition and properties of the definite integral; antiderivatives and an introduction to the method of substitution; linear motion; and applications of the definite integral including area and volumes.

**Major Tests:** The four major tests will be given at 7:45 a.m. on the following dates:

Test 1: Thursday, January 28 [Text: Chapters 1,2]

Test 2: Thursday, February 18 [Text: Chapter 3]

Test 3: Thursday, March 18 [Text: Chapter 4]

Test 4: Tuesday, April 20 [Text: Chapters 5,6]

Students are expected to take tests at the scheduled times. Any conflicts or problems 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. Emergencies will be handled on an individual basis.

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**Quizzes:** All quizzes are announced and "take home." A student must be present in class to receive a quiz. Each quiz must be done during one sitting and use only material authorized for that quiz, which will be understood to be only pencil and blank paper unless otherwise stated. Quizzes are due at class time on the class day following their distribution unless otherwise stated. Each quiz will be graded on the basis of 20 points, and the best nine (9) quizzes will be used in determining the student's grade.

**Computer Project:** The computing laboratory in Pierce Hall has available (for the IBM computers) a version of the mathematical package *DERIVE* which can be used to produce graphs. The student is to use this program to produce a portfolio of 12 different graphs of functions (not piecewise-defined) having distinctly different shapes. On each graph, important characteristics are to be identified and noted. In doing this assignment, students may not share functions, but may obtain help from computer aides on the use of the computer. *This assignment is due on Friday, April 2, at class time.*

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

Tests 1 and 2 (@ 100 points each)	200 points
Tests 3 and 4 (@ 125 points each)	250 points
Quizzes (best 9 @ 20 points each)	180 points
Computer Project	120 points
Final Exam	<u>250 points</u>
	1000 points

In general, letter grades will be determined as follows:

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

**Honor Code:** The Honor Code of Oxford College applies to all work submitted for credit in this course, including all quizzes, tests, and computer projects; all such work will be pledged to be that and only that of the individual student submitting the work.

**Homework:** Homework assignments from the textbook and on handouts are for the student's benefit and will not be collected. It is important, however, that the student complete most of the problems assigned.

**Tutoring:** Beginning January 19, student tutors will be available from 6:00 p.m. to 8:00 p.m., Monday through Thursday, in Room 201 of Language Hall. Tutoring will end on April 22.

**Help Sessions:** Help sessions will be scheduled at appropriate times during the semester. The student's attendance is optional.

**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.

**Mathematics 111**  
**Spring 1993**  
**Calendar of Topics**

**Wed., Jan. 13 - Review of Precalculus Topics [Ch. 1; Sec. 2.1, 2.2]**

**Fri., Jan. 15 - Review of Precalculus Topics [Sec. 2.3; handout]**

***Mon., Jan. 18 - Martin Luther King holiday (no class meeting)***

**Wed., Jan. 20 - Limits [Sec. 2.4, 2.5]**

**Fri., Jan. 22 - Limits [Sec. 2.6]; Continuity [Sec. 2.7]**

**Mon., Jan. 25 - Continuity [Sec. 2.7]; Review**

**Wed., Jan. 27 - Review**

**Thurs., Jan. 28 - TEST 1 at 7:45 a.m.**

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**Fri., Jan. 29 - Definition of Derivative [Sec. 3.1, 3.2]**

**Mon., Feb. 1 - Rules for Finding Derivatives [Sec. 3.3]**

**Wed., Feb. 3 - Derivatives of Sines and Cosines [Sec. 3.4]**

**Fri., Feb. 5 - Chain Rule [Sec. 3.5]**

**Mon., Feb. 8 - Leibnitz Notation [Sec. 3.6]; Higher Order  
Derivatives [Sec. 3.7]**

**Wed., Feb. 10 - Implicit Differentiation [Sec. 3.8]**

**Fri., Feb. 12 - Related Rates [Sec. 3.9]**

**Mon., Feb. 15 - Related Rates (continued); Review**

**Wed., Feb. 17 - Review**

**Thurs., Feb. 18 - TEST 2 at 7:45 a.m.**

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- Fri., Feb. 19 - Maxima and Minima on  $[a,b]$ -Global Extrema [Sec. 4.1]
- Mon., Feb. 22 - Monotonicity and Concavity [Sec. 4.2]; Local Maxima and Minima [Sec. 4.3]- Graphs of Polynomial Functions
- Wed., Feb. 24 - Further Optimization Problems [Sec. 4.4]
- Fri., Feb. 26 - Optimization Problems in Economics [Sec. 4.5]
- Mon., Mar. 1 - Limits at Infinity; Infinite Limits [Sec. 4.6]; Graphs of Rational Functions [Sec. 4.7]
- Wed., Mar. 3 - Additional Graphs [Sec. 4.7]
- Fri., Mar. 5 - Graphing (continued)
- Mon., Mar. 8 through Fri., Mar. 12 - Spring Break (no class meetings)*
- Mon., Mar. 15 - Mean Value Theorem [Sec. 4.8]
- Wed., Mar. 17 - Review
- Thurs., Mar. 18 - TEST 3 at 7:45 a.m.
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- Fri., Mar. 19 - Antiderivatives [Sec. 5.1]
- Mon., Mar. 22 - Antiderivatives (continued); Introduction to Differential Equations [Sec. 5.2]
- Wed., Mar. 24 - Differential Equations and Linear Motion (continued)
- Fri., Mar. 26 - Sums and Sigma Notation [Sec. 5.3]
- Mon., Mar. 29 - Area and the Definite Integral [Sec. 5.4, 5.5]
- Wed., Mar. 31 - The Definite Integral (continued)

- Fri., Apr. 2 - Fundamental Theorem of Calculus [Sec. 5.6]; Properties of the Definite Integral [Sec. 5.7]
  - Mon., Apr. 5 - Evaluation of Integrals; Method of Substitution [Sec. 5.8]
  - Wed., Apr. 7 - Evaluation of Integrals (continued)
  - Fri., Apr. 9 - Areas of Plane Regions [Sec. 6.1]
  - Mon., Apr. 12 - Volumes of Solids of Revolution- Disks and Washers [Sec. 6.2]
  - Wed., Apr. 14 - Volumes of Solids of Revolution- Shells [Sec. 6.3]
  - Fri., Apr. 16 - Review
  - Mon., Apr. 19 - Review
  - Tues., Apr. 20 - TEST 4 at 7:45 a.m.
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- Wed., Apr. 21 - Work [Sec. 6.5]
- Fri., Apr. 23 - Review of Course
- Mon., Apr. 26 - Review of Course-Last Class Day

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Friday, April 30 - FINAL EXAMINATION  
at 9:00 a.m.