

**SOUTHERN UNIVERSITY AND A&M COLLEGE  
DEPARTMENT OF MATHEMATICS**

**MATH 203  
CALCULUS FOR BUSINESS AND SOCIAL SCIENCES**

**Catalog Description:** Topics include functions, limits, continuity, differentiation of algebraic, logarithmic, and exponential functions, introductions to maxima/minima, application of differential calculus, integral calculus, partial derivatives, and probability.

**Instructor's Emphasis:** This is a 3 hour credit course in business calculus, designed for students in business, economics, and the management sciences. Differential and integral calculus of a real valued function of one variable---its concepts, interpretations and applications in the business/economics setting---is the focus of this course.

**Intended Audience:** This course is designed for students in business, economics, and the management sciences.

**Course Credit:** 3 hours

**Prerequisites:** Successful completion of each of Mathematics 135 or its equivalent, and Mathematics 200.

**Text:** Mathematics with Applications, 9<sup>th</sup> ed, Lial, Hungerford, and Holcomb, Addison Wesley, 2007.

**General Goals:** The goal of Math 203 is to introduce the basic concepts and skills of business calculus.

**Learning Outcomes:** Upon exiting this course,

1. The student will be able to demonstrate the ability to compute limits by determining limits of functions involving algebraic, exponential, logarithmic, and compositions of such, using the appropriate numerical, algebraic, and/or graphical method.
2. The student will be able to demonstrate the ability to find first order and higher order derivatives of functions involving algebraic, exponential, logarithmic, and compositions of such, by calculating the derivative using the appropriate rules and strategies.
3. The student will be able to demonstrate the understanding of the derivative in marginal function analysis by finding marginal cost, marginal revenue, and marginal profit at different levels of production.
4. The student will be able to demonstrate the understanding of the derivative in marginal function analysis by optimizing cost, revenue, and profit in mathematical models of real world situations.

**Assessment Measures:** Assessment measures include instructor created homework, quizzes, and examinations.

**Homework Assignments:** Odd numbered Exercise Problems found at the end of each covered sections have their answers at the back of the book. You are strongly urged to work out at least every other odd numbered

problem, and please let the Instructor know if you have any trouble. The **Student's Solutions Manual** (ISBN 0-321-33595-3) provides detailed solutions to all odd-numbered exercises and all Chapter Review and Case Study exercises.

### **Examinations**

- Four hourly examinations and final examination are recommended.
- A calculator is required on some or all of the questions on each test.
- Calculator sharing will not be allowed.
- A Blue Book and a Scantron™ sheet are among the materials that may be required for the Final Examination.
- Final Examination is as scheduled in the *Spring 2008 Class Schedule & Student Registration Bulletin*.

**Course Grading Scale:** See professor.

### **Course Contents:**

#### **Optional Review: Chapter 3 Functions and Graphs**

- 3.1. Functions
- 3.2. Graphs of Functions

#### **Chapter 4 Exponential and Logarithmic Functions**

- 4.1. Exponential Functions
- 4.2. Applications of Exponential Functions
- 4.3. Logarithmic Functions
- 4.4. Logarithmic and Exponential Equations

### **Chapter 11 Differential Calculus**

- 11.1. Limits
- 11.2. One-sided Limits and Limits Involving Infinity
- 11.3. Rates of Change
- 11.4. Tangent Lines and Derivatives
- 11.5. Techniques for Finding Derivatives
- 11.6. Derivatives of Products and Quotients
- 11.7. The Chain Rule
- 11.8. Derivatives of Exponential and Logarithmic Functions
- 11.9. Continuity and Differentiability

### **Chapter 12 Applications of the Derivative**

- 12.1. Derivatives and Graphs
- 12.2. The Second Derivative
- 12.3. Optimization Applications
- 12.4. Curve Sketching

### **Chapter 13 Integral Calculus (Optional)**

- 13.1. Antiderivatives
- 13.2. Integration by Substitution

## Other Information:

**Recommended Calculator:** Students are expected to have access to a computer program or calculator that:

- finds roots of equations,
- draws graphs of functions in an arbitrary viewing window,
- computes the derivative of a function numerically, and
- integrates functions numerically.

**Class Attendance:** All students enrolled in this course are expected to attend class regularly. Excessive absences and tardiness will not be tolerated. The student is responsible for keeping up with coursework, whether or not an absence is excused. When a student receives FOUR absences, his/her academic standing in the course may be compromised. Extenuating circumstances surrounding tardiness and absences will be handled on a case by case basis.

**Punctuality:** Please be aware that coming to class late is a distraction that must be avoided out of respect and courtesy to the class. Let the instructor know if consistent tardiness is caused by some unavoidable schoolwork or family emergency related reasons.

**Academic Honesty and Integrity:** As spelled out in the *Students' Handbook*, strict adherence to honesty and integrity in work submitted for credit is expected from every student enrolled in this course.

## STUDENT RESOURCES:

1. **Videos:** The Mathematics Lab houses Digital Video Tutor that are text specific videos lectures on the calculus concepts covered in the course. Additionally help in person may be obtained from your Professor or the tutors in the Math Lab.

2. **On-line Help:**

*InterAct Math Tutorial Website:* [www.interactmath.com](http://www.interactmath.com)

This is an interactive tutorial website that provides algorithmically generated practice exercises that correlate directly with the exercises in the textbook. Every exercise is accompanied by an interactive guided solution that provides helpful feedback for incorrect answers, and student can view a worked-out sample problem that steps them through an exercise similar to the one they're working on.

*MathXL:* [www.mathxl.com](http://www.mathxl.com)

MathXL is a powerful online homework, tutorial, and assessment system that accompanies your mathematics textbook. Students can take chapter tests in MathXL and receive personalized study plans based on their test results. The study plan diagnoses weaknesses and links students directly to tutorial exercises for the objectives they need to study and retest.

*Addison-Wesley Math Tutor Center:* [www.aw.com/tutorcenter](http://www.aw.com/tutorcenter)

The Addison-Wesley Math Tutor Center is staffed by qualified mathematics instructors who provide students with tutoring on examples and exercises answered at the back of the textbook. Tutoring is available via toll-free telephone, fax, e-mail, or whiteboard technology – which allows tutors and students to actually see the problems worked while they “talk” in real time over the Internet. This service is available seven hours a day five days a week. An access code is required.

## DISABILITY STATEMENT:

Students that are considered as having a disability are to provide the professor with a letter from the Department of Special Education stating the appropriate accommodations required of this course. If you have a documented disability, then please discuss it with personnel at 771-3950 in Room 125 of Blanks Hall.

**SUGGESTED OR REQUIRED READING:** See professor.