

**Course Syllabus: Spring 2009**  
**MATH 212: INTRODUCTION TO CALCULUS**  
**Department of Mathematics & Computer Science**  
**Virginia State University**

**Instructor:**  
**Office Location:**

**Email:**  
**Phone Number:**

**Office Hours:**

Monday	Tuesday	Wednesday	Thursday	Friday

**Course Coordinator:** Dr. Tariq Qazi, Room 306SA HM, Phone: 524-5427, E-mail: tqazi@vsu.edu

**Catalogue Description of the course:**

Calculus for Non-Science and Non-Mathematics majors. Fundamental concepts of limits, continuity, differentiability and integrability of functions and their application to problems in various disciplines. This course cannot be taken as a Mathematics elective by Mathematics majors.

**Prerequisite:** MATH 122

**Textbook for the Course**

**S. T. Tan;** College Mathematics for the Managerial, Life, and Social Sciences  
Thomson Brooks/Cole Publishing company, 7<sup>th</sup> Edition 2008

**Graphing calculator:** TI83, TI83Plus, TI84, TI84Plus.

**Learning outcomes, activities, and evaluation procedures:**

**KNOWLEDGE**

The student will learn the:

- Concept of the limit of a function at a point, its existence and its various rules.
- Concept of the continuity of a function at a point and on an interval, derivative of a function at a point, its geometrical meaning and various techniques of computing the derivatives such as , the power rule, the sum and the difference rule, the product and the Quotient rule, the Chain rule and the higher order derivatives
- Exponential and Logarithm functions and their derivatives

- Concept of antiderivative, the rules of Integration, the definite integral and the area between two curves.

**Evaluation Strategy:** Homework assignments, in-class tests and /or quizzes.

### **SKILLS**

The student will develop the skill to

- Explain the continuity/discontinuity from the graph of a function
- Find the derivative of a function using the definition and using various differentiation rules.
- Identify whether the derivative of a function exists or not.
- Use effectively a graphing calculator to determine the limit, continuity, increasing/decreasing nature, maxima/minima of a function.

**Evaluation Strategy:** Homework assignments, in-class tests and /or quizzes.

### **ABILITIES**

The students will be

- Able to understand the mathematical, graphical and physical significance of Calculus terminology like critical points, point of inflexion, rate of change, maxima & minima.
- Able to describe various properties of a function using derivative.
- Able to formulate and solve the calculus based optimization and area problems in their respective disciplines.
- Able to solve various problems arising in Business and Economics such as marginal functions, elasticity of demand etc. using Calculus

**Evaluation Strategy:** Homework assignments, in-class tests and /or quizzes.

### **GRADING SCHEME** (*Instructor will announce any variation in the grading scheme*)

There will be four tests (two before the midterm examination and two after the midterm examination), a midterm and a comprehensive final examination. Instructor may assign homework, quizzes or any other credit work. The grade will be determined by the following criteria:

#### **Midterm Grade:**

Homework (Online/written assignments/quizzes)

Class Work = 2 Tests (40% each) + Homework (15%) + Attendance/Participation (5%)

Midterm Grade = Class Work (70%) + Midterm Exam (30%).

#### **Final Grade:**

Homework (Online/written assignments/quizzes)

Class Work = 2 Tests (40% each) + Homework (15%) + Attendance/Participation /Recitation (5%)

Final Grade = Class Work (35%) + Midterm Grade (35%) + Final Exam (30%)

**TUTORIAL / ASSISTANCE:**

**Mathematics Tutoring Laboratory (Room 7S)**

*The Department of Mathematics and Computer Science will provide a mathematics tutoring laboratory in Room 7S Hunter McDaniel Building for students who need extra help. The Mathematics Laboratory will open the first day of class. The hours of operations are 9:00 AM - 6:00 PM, Monday to Friday. Ms. Eleanor Poarch-Wall is the coordinator.*

**BIBLIOGRAPHY / READING LIST**

- **Bittinger M. L.** Calculus and Its Applications, 8<sup>th</sup> Ed. 2004 Prentice Hall
- **L. J. Goldstein, D. C. Lay, D. I. Schneider** Calculus and Its Applications, 10<sup>th</sup> Ed. Prentice Hall 2004
- Any book in the library that has the application of Calculus in modeling Business problems with a title of Business calculus can be used as a reference may be used.

**The University policies on specific academic regulations concerning cheating, plagiarism, absenteeism, etc. will be adhered to in this course. These policies are stated in the VSU Undergraduate Catalog and the VSU Student Handbook.**

**Students with learning or other disabilities who are covered under the American Disability Act should privately inform the teacher of this fact so that appropriate instructional arrangements can be made.**

<b>Limits and its derivatives</b>	<b>11.4, 11.5, 11.6</b>
<b>Basic Rules of Differentiation and some applications</b>	<b>12.1 through 12.5, time permitting 12.6</b>
<b>Further applications of the derivatives</b>	<b>13.1, 13.2 and 13.4, 13.5</b>
<b>Exponential and Logarithmic functions, its application in mathematical modeling</b>	<b>14.3, 14.4, 14.5</b>

**Topics to be covered from the textbook**

<b>Integration</b>	<b>15.1, 15.3</b>
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**The midterm exam will cover chapters 11.4, 11.5, 11.6, 12.1 through 12.5, and section 13.1**