

**Math 108**  
**Functions and Derivatives with Applications**  
**Fall 2008**

**Instructor:** F. Schultheis

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**Office Hours:** MW 1:00-2:30 pm, and by appointment.

**Required text:** Calculus: For Business, Economics, Life Sciences, and Social Sciences, by Barnett, Ziegler and Byleen, 11th edition

**Course Goals:**

This course is designed to develop the calculus concepts that will benefit those students interested in the business and social sciences. The approach used will be especially useful for students who need to study calculus but would benefit by a review of necessary precalculus topics. The course will include the use of a graphing calculator which will enhance the student's understanding of the concepts presented. Upon completing the course, successful students will be able to work with functions algebraically, graphically, and numerically, and use them to model problems, understand the derivative conceptually as well as know how to calculate derivatives using the various techniques studied in class, improve their communication and technical writing skills by discussing mathematical problems and presenting solutions in written and oral form.

**Course Description**

The course meets MWF from 10:10 to 11:20 in PPHAC 117. Homework assignments will be given at each class meeting. Students are expected to complete these assignments by the next class meeting, where they will be discussed. No one can learn mathematics without doing it themselves and so, **to the student, homework is the most important part of the course**. Since class participation is important, students are expected to attend every class.

**Calculator:**

The TI 83+ calculator is recommended and will be used for presentations, but any comparable graphing calculator with which the student is familiar with is acceptable. Students with different graphing calculators bear the responsibility of making it emulate the TI-83.

**Grading:**

Your final grade will be based on weekly quizzes (100 points), class assignments/participation (50 points), 3 hourly exams (100 points each), and a comprehensive final exam (175-200 points). Attendance and effort will be considered when determining class participation. The following grading scale is used when for assigning your final grade.

		87 – 89	<i>B+</i>	77 – 79	<i>C+</i>	67 – 69	<i>D+</i>	$\leq 59$	<i>F</i>
93 – 100	<i>A</i>	83 – 86	<i>B</i>	73 – 76	<i>C</i>	63 – 66	<i>D</i>		
90 – 92	<i>A-</i>	80 – 82	<i>B-</i>	70 – 72	<i>C-</i>	60 – 62	<i>D-</i>		

**Attendance:**

Regular attendance is necessary in order to be most successful. Poor attendance will affect a student's class participation grade. You will lose 20% from your class participation grade for each unexcused absence. If you are sleeping in class, you are not there. If you feel the need to leave class before it is over, even if you come back, you are not there. In other words, in any of these cases you will be considered absent and will lose 20% of your class participation grade.

**There will be no make-up for missed quizzes. Make-up tests are given only in extreme cases. If a student has to miss a test it is the student's responsibility to contact the instructor as early as possible.**

### ACADEMIC HONESTY POLICY GUIDELINES MATHEMATICS COURSES

The Mathematics and Computer Science Department supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Student Handbook (pp. 27-32). The following statements will help clarify the policies of members of the Mathematics faculty.

In all homework assignments which are to be graded, you may use your class notes and any books or library sources. When you use the ideas or thoughts of others, however, you must acknowledge the source. For graded homework assignments, you may not use a solution manual or the help, orally or in written form, of an individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources you will be violating the Academic Honesty Policy of Moravian College. For homework which is not to be graded, if you choose, you may work with your fellow students. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and ungraded. All in-class or take-home tests and quizzes are to be completed by you alone without the aid of books, study sheets, or formula sheets unless specifically allowed by your instructor for a particular test.

## Math 108 Tentative Assigned Problems–Spring 2008

### Topic Section Problems

Functions 2-1 Pages 59-61, # 33,35,53-69odd,73,75,91

Elementary Functions: Graphs 2-2 Pages 73-74 # 9-17 odd,29,31-39 odd  
43,45

Linear Equations and Inequalities 1-1 Page 11 # 1,9,17,31

Linear Functions and Straight Lines 1-2 Pages 25-27 # 5-15 odd, 27,29,33,

Quadratic Functions 2-3 Pages 90-92 # 23,25,27,39,57,59

Introduction to Limits 3-1 Pages 141-143 #1-25 odd,39,41,47,49,55,57

Continuity 3-2 Pages 151-153 #11-23 odd, 27-37 odd,49,51,59

Infinite Limits 3-3 Pages 165-166 # 9-25 odd ,31-43 odd

### TEST 1 (Tentatively September 26)

The Derivative 3-4 Pages 180-181 # 3,7,9,11,27,29,39,59

Basic Differentiation Properties 3-5 Pages 189-190 # 1-17odd, 25-45odd,49,51,53,55,  
71,81

Differentials 3-6 Pages 197-198 #1,7,11,15,17,19,21,23,37

Marginal Analysis in Business and Economics 3-7 Pages 206 # 1,3,5,7,11,13,15

### TEST 2 (Tentatively October 15)

Exponential Functions 2-4 Pages 102-104 # 3,5,15,17,19,43,45,47,61,63,73

Logarithmic Functions 2-5 Pages 116-117 # 1,3,7,9,13,19,31,33,35,37,73,75

The Constant  $e$  and Continuously Compounded Interest 4-1 Pages 221–222  
# 1,3,5,7,9,17,19

Derivatives of Exponential and Logarithmic Functions 4-2 Pages 231- 232  
#1-21odd,27-35 odd,51

Derivatives of Products and Quotients 4-3 Pages 239-40 # 1-13 odd, 39,45,73,83

The Chain Rule 4-4 Pages 248-249 # 17-49 odd, 63,65,67

Implicit Differentiation 4-5 Page 256 #1-11 odd,17,19,27

Related Rates 4-6 Pages 261-262 # 1-11 odd,17,19,25,27

### TEST 3 (Tentatively November 16)

First Derivatives and Graphs 5-1 Pages 289-291 #19-29 odd,37,39,43,47,49,79

Second Derivatives and Graphs 5-2 Pages 307-308 # 7-21 odd, 29,31

L'Hopital's Rule 5-3 Page 320 #1-13 odd, 19,21

Curve Sketching Techniques 5-4 Pages 332 #11,31,23,31

Absolute Maxima and Minima 5-5 Pages 341-342 # 11-19 odd,27,29,41

Optimization 5-6 Pages 352-353 # 1-13 odd,17,19,21,23,25

### FINAL EXAM (Date T.B.A.)