

**Math 166**  
**Analytic Geometry and Calculus with Review-Part II**  
**Spring 2013**

**Instructor:** N. Wetcher

Office: Room 223 PPHAC

Telephone Number (610) 861-1335

e-mail address mensw01@moravian.edu

Office Hours: M,W,F 10:15-10:45 am

or by appointment

**Course Goals:**

The students will

- review basic concepts of limits and derivatives
- review basic definitions and identities for trigonometric functions
- develop and use the derivatives of the trigonometric functions
- develop the rules for derivative of inverse trig functions and logarithmic functions
- use L'Hopital's rule to find limits of indeterminate forms
- learn how to differentiate formulas implicitly
- understand the relationship between the graph of a function and its derivative
- sketch the graph of a function using derivatives and limits
- apply the concept of derivative to solving problems including optimization, related rates and economics
- find antiderivatives of the basic functions
- explore the relationship between definite integrals and derivatives
- gain an appreciation of the Fundamental Theorems of Calculus
- find areas, distances and net change using definite integrals

**Course Materials:**

Texts: Calculus, Single Variable, 2nd Edition by Jon Rogawski

A Companion to Calculus, 2nd ed. by Ebersole, Schattschneider, Seville, Sommers

Calculator: The TI 83+ or TI 84+ calculator is recommended and will be used for presentations, but any comparable graphing calculator with which the student is familiar with is acceptable.

**Attendance:**

- Regular attendance is necessary in order to be most successful. Poor attendance will affect a student's class participation grade.
- students are expected to notify me if they cannot be in class on a scheduled test or quiz day
- Make-ups for tests and quizzes due to excused absences will be given in class on the day the student returns to class unless alternate arrangements have been made

## Academic Honesty:

Please refer to Moravian's "Policy on Academic Honesty" that is outlined in the current Student Handbook.

Specifically, for this class

- You may use any notes, books or library resources for homework assignments (graded or non-graded). You may also work with other students on these assignments, but, you must indicate those with whom you conferred as well as be responsible to explain all solutions by yourself.
- All tests and quizzes are to be completed by you alone, without the aid of books, notes or formula sheets unless specifically permitted by the instructor.
- Graphing calculators will be required as indicated by the instructor for answering questions on assignments, tests and quizzes; however, a complete discussion as to how they were used may be required.

## Special Considerations:

Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center.

## Evaluation and Grading:

Practice is vital for developing the required Calculus skills. It is expected that the student does all homework problems assigned. Some will be graded while the rest could be checked for completion.

The student will be evaluated on the basis of three tests, five quizzes, six graded homework assignments and a cumulative final exam. Class work will be used when deciding "borderline" final grades. **Assignments submitted late will be graded with a 20% penalty for each day that they are late.**

The percent breakdown of the Final Grade is as follows.

|                  |     |
|------------------|-----|
| Tests            | 45% |
| Quizzes          | 15% |
| Graded Homeworks | 15% |
| Final Exam       | 25% |

The Final Grade will be computed according to the following guideline.

| AVERAGE | GRADE | AVERAGE | GRADE |
|---------|-------|---------|-------|
| 92-100% | A     | 72-77%  | C     |
| 90-91%  | A-    | 70-71%  | C-    |
| 88-89%  | B+    | 68-69%  | D+    |
| 82-87%  | B     | 62-67%  | D     |
| 80-81%  | B-    | 60-61%  | D-    |
| 78-79%  | C+    | 0-59%   | F     |

## Math 166 Assignments

| Topic                                                        | Rogawski | CTC | Assignment                               |
|--------------------------------------------------------------|----------|-----|------------------------------------------|
| Derivative Review                                            | Review   |     | 204: 33,35,55,57                         |
| Angle measures                                               |          | 8.A | 237:1(Worksheet)                         |
| Definition and Evaluation of Trig Functions                  |          | 8.B | 247: 1(Worksheet cont.), 6, 7            |
| Trigonometric Functions                                      | 1.4      |     | 31: 9, 11,13,19,21,                      |
| Properties of Trig Functions                                 |          | 8.C | 259: 1, 2, 3                             |
| Domain, Range, and Graphs of Trig Functions                  |          | 8.D | 265: 1, 2                                |
| <b>Quiz 1</b>                                                |          |     |                                          |
| Trigonometric Limits                                         | 2.6      |     | 99: 17,19,21,29,31,33,37                 |
| Derivatives of Trig Functions                                | 3.6      |     | 167: 1-27 odd, 31,45                     |
| Chain Rule (revisited)                                       | 3.7      |     | 175: 17, 19, 29,37,51,55                 |
| Inverse Trig Function                                        | 1.5      |     | 42: 23, 27,29,31,33                      |
| Derivatives of Inverse Functions                             | 3.8      |     | 181: 19,23,25,33                         |
| <b>Quiz 2</b>                                                |          |     |                                          |
| Logarithm review                                             |          | 15A | 385: 5a.c.f                              |
| Derivatives of General Exponential and Logarithmic Functions | 3.9      |     | 187:1-11odd, 15, 17, 21,23,25,31, 41, 45 |
| <b>TEST 1 (Tentatively February 8)</b>                       |          |     |                                          |
| Problem-Solving Strategies for Related Rates Problems        |          | 11B | 319: 2,3                                 |
| Setting up Equations for Related Rates Problems              |          | 11A | 320:2,4,6                                |
| Related Rates                                                | 3.11     |     | 199: 1-17 odd,23                         |
| <b>Quiz 3</b>                                                |          |     |                                          |

| <b>Topic</b>                          | <b>Rogawski</b> | <b>CTC</b> | <b>Assignment</b>                                 |
|---------------------------------------|-----------------|------------|---------------------------------------------------|
| Linear Approximation and Applications | 4.1             |            | 213: 1,3,7,9,13,17,37                             |
| Extreme and Critical Values           |                 | 16A        | 408: 2, 3                                         |
| Extreme Values                        | 4.2             |            | 222: 1,3,5,9,21,31,33,35,37,39,47,<br>51,55,61,65 |
| The Mean Value Theorem and Mononicity | 4.3             |            | 232: 1, 3, 5, 15-25 odd, 31,37,43,51              |

**TEST 2** (Tentatively March 1)

|                                |     |     |                                                         |
|--------------------------------|-----|-----|---------------------------------------------------------|
| The Shape of a Graph           | 4.4 |     | 238: 1-11 odd, 17, 23, 27,25,27,31<br>37-45 odd, 53, 55 |
| Graphical Interpretation       |     | 17B | 432-433:1-3                                             |
| L'Hopital's Rule               | 4.5 |     | 246: 1, 3,9,11,13,19,21,25,27,39                        |
| Putting It All Together        |     | 17C | 438: 5                                                  |
| Graph Sketching and Asymptotes | 4.6 |     | 255: 13, 19,25,31,53,55,57,59                           |

**Quiz 4**

|                                                      |     |     |                                  |
|------------------------------------------------------|-----|-----|----------------------------------|
| Setting Up Equations to Solve Extreme Value Problems |     | 16B | 414:1, 2, 4, 6(for 1, 2,4)       |
| Applied Optimization                                 | 4.7 |     | 262:1, 3, 5,9 ,11,19,33,.39      |
| Anti-derivatives                                     | 4.9 |     | 281:1-29odd,47-53odd,63-69odd,75 |

**TEST 3** (Tentatively April 8)

| <b>Topic</b>                                | <b>Rogawski</b> | <b>CTC</b> | <b>Assignment</b>                                     |
|---------------------------------------------|-----------------|------------|-------------------------------------------------------|
| Approximating and Computing Areas           | 5.1             |            | 296:7, 13, 17, 21, 23, 27                             |
| The Definite Integral                       | 5.2             |            | 307:1-9 odd, 13, 15,23,25,27,<br>33,35,37,43,45,55,57 |
| Area under a Curve as a Definite Integral   |                 | 20A        | 491:3,4, 5                                            |
| The Fundamental Theorem of Calculus, Part 1 | 5.3             |            | 314:1-25 odd, 33, 37, 39                              |
| The Fundamental Theorem of Calculus, Part 2 | 5.4             |            | 320:7-23odd, 29, 31                                   |

**Quiz 5**

|                                      |     |  |              |
|--------------------------------------|-----|--|--------------|
| Net Change as the Integral of a Rate | 5.5 |  | 326:1-15 odd |
|--------------------------------------|-----|--|--------------|

**FINAL EXAM**

**Sunday, April 28-1:30 pm (Section A)**

**Tuesday, April 30-1:30pm (Section B)**