

Moravian College
Analytic Geometry and Calculus I with Review, Part 1
M, W, F: 1:10 – 2:20 p.m.
PPHAC 112

Course Description: Beginning calculus with extensive review of algebra and elementary functions. Topics include Cartesian plane, algebraic functions, limits and continuity, introduction to the concept of derivative as a limit of average rates of change, theorems on differentiation, and the differential. Prerequisite: Three years of college-preparatory mathematics.

Main ideas for the course

In working toward internalizing these main ideas for the course, we will work to meet the following objectives:

- Review mathematical concepts and techniques needed to successfully study calculus
- Reinforce students' understanding of the meaning of a function
- Work with functions algebraically, numerically, and graphically
- Introduce the concept of a limit and continuity of functions
- Develop the notion of a derivative as both a rate of change and as the slope of a tangent line to a curve
- Learn techniques for finding derivatives of algebraic and exponential functions
- Relate all concepts studied to real world problems
- Use the graphing calculator as a tool for visualizing calculus concepts

Course Outcomes

By the end of this course, the students are expected to be able to:

- identify functions and their domains using both algebraic and graphical methods.
- find the limits of algebraic functions numerically and algebraically.
- discuss limits and continuity of functions in relation to their graphs.
- determine horizontal and vertical asymptotes of rational functions.
- use the product rule and quotient rule for derivatives.
- find derivatives using the chain rule.
- find the tangent line to a function at a given point using derivatives.
- use derivatives to find velocity and acceleration in rectilinear motion problems.
- find the average and instantaneous rates of change in various situations.
- understand functions implicitly defined and determine their derivatives.

Department Outcomes

- Read and demonstrate comprehension of new mathematical material
- Write mathematics with awareness of audience, mathematical context, and proper notation and terminology
- Model a significant real world problem and solve it using mathematical techniques.
- Demonstrate awareness of the role specific mathematical concepts play in several areas of mathematics.

Text: Rogawski, J. (2012). *Calculus: Single variable (early transcendentals)*, (2nd ed.). New York, NY: W. H. Freeman and Co.

Ebersole, D., Schattschneider, D., Sevilla, A., & Somers, K. (2006). *A companion to calculus*, (2nd ed.). Belmont, CA: Brooks/Cole, Cengage Learning.

Technology: Graphing Calculator TI-83/84 recommended

Instructor: Prof. A. Rolón
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Office Hours: PPHAC 223
Monday, Wednesday: 2:30 – 3:30 p.m.

Method of Assessment:

Exam #1.....	15%
Exam #2.....	15%
Exam #3.....	15%
Quizzes.....	15%
In-Class work.....	15%
Final Exam.....	25%

Final Grade: The final grade will be given as follows:

A = 93 – 100	B+ = 88 – 89	C+ = 78 – 79	D+ = 68 – 67
A- = 90-92	B = 83 – 87	C = 73 – 77	D = 60 – 67
	B- = 80 – 82	C- = 70 – 72	F = 0 – 59

Homework problems will be assigned for each section discussed in class. It is expected that the student complete the homework problems prior to class. If you have any questions regarding any homework problem feel free to ask in class or see me during office hour.

Quizzes will reflect the problems in the homework and will be administered weekly on-campus or take-home. You must complete the quizzes on time or your score will be a zero for that quiz. No make-up quizzes will be given. In case when you have to turn in a quiz, you **MUST** be present to do so or have arranged to turn it in at an earlier time. Late quizzes will not be accepted.

Tests are more challenging. You need to apply the concepts learned to more difficult problems. You have the entire class period to complete each test. No class will be held after tests.

Sleeping WILL NOT be tolerated. You will be asked to leave class if caught sleeping. If you are tired, please stay home and get the necessary rest in order to be an active learner/participant in class.

Cell-phones/Smart phones/Tablets/iPads/i_____ etc., etc., etc., MUST be in silent mode during class. If you have an e-book and you must have your e-book reader available, please make sure that only the e-book is displayed on your device. If you are expecting a call, let the instructor know before class begins. In order to avoid temptations and embarrassment, please do not place electronic devices on the desk/table. You will be asked to pack your stuff and leave if caught using your device during class. Respect is expected and courtesy is appreciated.

***Cell phones CANNOT be used as calculators at all. I don't want to see them; I don't want to hear them. You will be asked to pack your "stuff" and leave if caught using any of these devices during class. Courtesy is appreciated.

Communication: The best way to communicate with me is via email. Please note that I will **NOT** check emails at nights (after 4:00 p.m.) or on weekends. So if you send me an email after 3:00 p.m. Friday, I will not respond to it until Monday.

ANY MISSED TEST WITHOUT PRIOR NOTIFICATION WILL RESULT IN AN AUTOMATIC ZERO. NO MAKE-UP QUIZ WILL BE GIVEN REGARDLESS OF CIRCUMSTANCE AND TURNING IN LATE QUIZZES WILL NOT BE ACCEPTED.

If you are going to be absent on a given day, **especially** a day when a quiz or a test will be administered or when a quiz is due, you must contact me before that class time (i.e. via email, phone, prior notice, note in my mailbox) and excuse yourself, otherwise you will receive a **zero** for that test. Late notices will also have the same consequences. Although you cannot make up quizzes, you *can* make-up a test if advanced notification was given to the instructor; however this will happen on my terms. I will select a time for you to make up the missed test/quiz. Failure to make the time I selected, a grade of zero will be assigned. It is best to make it to class to avoid your frustration.

Student Accommodation

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.

What can you do to help your final grade? READ! READ! READ! I hope that you will find the lectures and activities brilliant and stimulating, but I simply will not go over every detail of the book in class. You will be tested over many of those details. It is my strongest advice that you read each section at least twice. However, reading it twice in a row will do you little, if any, good. You should plan to read each section once before you do the assignment and once after you do the assignment.

Academic Honesty

Students will be expected to adhere to the standard of the Academic Honesty policy as described in the Student Handbook

(<http://www.moravian.edu/studentlife/handbook/academic/academic2.html>). Any violations of this will result in severe penalties on the assignment, a report to the Dean, and the very real possibility of failing the course.