# MATH 181, Analytic Geometry and Calculus I, Autumn, 2012 Walla Walla University

**BULLETIN DESCRIPTION:** Study of functions, limits, continuity, derivatives, definite integrals, and the Fundamental Theorem of Calculus. Credit will not be allowed for both MATH 123 and MATH 181. Prerequisite: MATH 117 or 122 or satisfactory departmental placement. See technology requirements ( http://math.wallawalla.edu/).

INSTRUCTOR: Dr. Kenneth L. Wiggins, 338 KRH, 527-2088, ken.wiggins@wallawalla.edu

**OFFICE HOURS:** 2 MTuWTh, 12 F, Other Office hours by appointment

**OBJECTIVES:** After finishing this course, the student should be able to organize and effectively communicate ideas involving:

- limits and continuity
- geometric interpretation of derivatives, differentiation rules, applications, max-min problems, related rates, Rolles Theorem, The Mean Value Theorem.
- antiderivatives, definite integrals, The Fundamental Theorem of Calculus

**TEXTBOOK:** Calculus, 2nd ed., Jon Rogawski, 2012, WH Freeman and Company, ISBN 1-4292-3190-4

**ASSESSMENT:** Except for WeBWorK assignments, all assessment will be based on both correctness and quality, including the quality of your presentation.

Category			Weight
Homework & quizzes			20%
Three tests			50%
Final exam			30%
Grade	Percent	Grade	Precent
А	91-100%	С	70-74%
A-	89-90%	C-	65-69%
B+	86-88%	D+	62-64%
В	83-85%	D	58-61%
B-	80-82%	D-	55-57%
C+	75-79%	F	0-54%



**FEEDBACK:** All materials that you submit will be evaluated in a timely manner (typically 2 weeks). Tests will be scored and be accessible for viewing by a student before the next test. The score for each class requirement may be accessed at http://math.wallawalla.edu/grades/, which will be updated near the time of each test.



**HOMEWORK:** The surest way to succeed in MATH 181 is to study each day. To aid you in your study, homework problems will be assigned each day. Most of this homework will be done on the computer, but you will hand in a weekly written assignment. Be sure to show all work neatly and indicate your answers clearly. The weekly assignments are given specifically for you to practice clear and precise presentations. Please fold your paper homework lengthwise and label it as illustrated in the diagram above. Your written homework will be due Friday mornings at the beginning of class.

QUIZZES: Occasionally quizzes may be given over the lectures and homework.

**TESTS:** Three 50-minute examinations will be given during the quarter. These will cover the lectures and the homework, and you will take these tests without calculators.

**FINAL EXAMINATION:** This test is scheduled for 12-1:50 PM, Wednesday, December 12. Attendance is required, so make your travel plans early with this appointment in mind.

**CLASS ATTENDANCE:** Students are expected to attend all classes. In addition, students are expected to give their full attention to the class discussions, and to be courteous, respectful, and supportive of the learning environment. Cell phones, computers, personal organizers, and all other electronic devices are not to be used by students during class. Modifications to the homework assignments or test schedule may be announced in class.

**DISABILITIES:** If you have a physical and/or learning disability and require accommodations, please contact your instructor or the Special Services office at 527-2366. This syllabus is available in alternative print formats upon request. Please ask your instructor.

**SPECIAL CONSIDERATION FOR EXTRA EFFORT:** Your lowest test grade will be dropped and replaced with your final examination grade if you meet the following conditions: You must

- Be present, on time, and attentive for at least 37 or the 39 scheduled class sessions
- Turn in at least 95% of the homework on time.
- Make a higher grade on the final examination than you did on your lowest test.

**ACADEMIC INTEGRITY:** Some collaboration on homework is allowed, but the work you submit for grading must be your own. A ny type of cheating on a test or examination, including but not limited to copying another student's work or using unauthorized notes or electronic equipment, will result in a zero grade for the test or a failing grade for the quarter, and possibly futher disciplinary action taken by the Associate Vice President for Academic Administration.

## **TOPICS BY WEEK:**

Week 1

- Calculator tips, A Preview of Calculus; Limits, Rates of Change, and Tangent Lines
- Limits: A Numerical and Graphical Approach
- Basic Limit Laws
- Limits and Continuity

### Week 2

- Evaluating Limits Algebraically
- Trigonometric Limits
- Limits at Infinity
- Intermediate Value Theorem

## Week 3

- The Formal Definition of a Limit
- Catch Up/Review
- Test #1
- Definition of the Derivative

## Week 4

- The Derivative as a Function
- Product and Quotient Rules
- Rates of Change
- Higher Derivatives

### Week 5

- Trigonometric Functions
- The Chain Rule
- Implicit Differentiation
- Related Rates

#### Week 6

• Catch Up/Review;

- Test #2
- Linear Approximation and Applications
- Extreme Values

## Week 7

- The Mean Value Theorem and Monotonicity
- The Shape of a Graph
- Graph Sketching and Asymptotes
- Applied Optimization

### Week 8

- Newtons Method
- Differentials
- Antiderivatives
- Approximating and Computing Area

### Week 9

- Catch Up/Review
- Test #3
- The Definite Integral
- The Fundamental Theorem of Calculus Part I

## Week 10

- The Fundamental Theorem of Calculus Part II
- Net Change as the Integral of a Rate
- Substitution Method
- Catch Up/Review

## Week 11

• Final Examination