

MATH 123, Survey of Calculus, Spring, 2010

Walla Walla University

BULLETIN DESCRIPTION: Introduction to calculus, including topics such as functions, limits, derivatives, and integration in one or more variables; applications from business and social sciences. Does not apply toward a major or minor in mathematics. Credit will not be allowed for both MATH 123 and MATH 181. Prerequisite: MATH 117 or 121 (minimum grade of C-) or a satisfactory departmental placement.

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

OFFICE HOURS: 2 TuWTh, 3 M, 1 F, Other Office hours by appointment

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

- the geometrical significance of derivatives and integrals
- derivatives and their application to solve simple problems
- calculus techniques and their application to simple business-oriented problems

TEXT: *Calculus and Its Applications*, 12th ed., by Goldstein, Lay, Schneider, and Asmar, Pearson/Prentice Hall, 2010, ISBN 0-321-57130-4

ASSESSMENT: All assessment will be based on both correctness and quality including the quality of your presentation.

Category		Weight	
Homework & quizzes		15%	
Three tests		50%	
Final exam		35%	
Grade	Percent	Grade	Percent
A	91-100%	C	70-74%
A-	89-90%	C-	65-69%
B+	86-88%	D+	62-64%
B	83-85%	D	58-61%
B-	80-82%	D	55-57%
C+	75-70%	F	0-54%



HOMEWORK: The surest way to succeed in MATH 123 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 assignment that you will do on paper. 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.

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 2-3:50, Tuesday, June 8. 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. Any 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 further disciplinary action taken by the Associate Vice President for Academic Administration.

TOPICS BY WEEK:

Week 1

- Introduction to calculus
- Slope of a line
- The Slope of a Curve at a Point
- The Derivative

Week 2

- Limits and the Derivative
- Differentiability and Continuity
- Some Rules for Differentiation
- More About Derivatives

Week 3

- The Derivative as a Rate of Change
- Test #1
- Describing Graphs of Functions
- The First and Second Derivative Rules

Week 4

- Curve Sketching
- Optimization Problems
- Further Optimization Problems
- Applications of Derivatives to Business and Economics

Week 5

- The Product and Quotient Rules
- The Chain Rule and the General Power Rule
- Implicit Differentiation and Related Rates

Week 6

- Test #2
- The Exponential Function e^x
- Exponential Growth and Decay

Week 7

- Compound Interest
- Antidifferentiation
- Areas and Riemann Sums
- Exampl
- Definite Integrals and the Fundamental Theorem

Week 8

- Areas in the plane
- Applications of the Definite Integral
- Techniques of Integration

Week 9

- Functions of Several Variables
- Maple example
- Partial Derivatives Maple example
- Maxima and Minima of Functions of Several Variables
- Test #3

Week 10

- Lagrange Multipliers and Constrained Optimization
- The Method of Least Squares

Week 11

- Final Examination 2-3:50, Tuesday, June 8