

**Title:** Calculus II for the Social and Life Sciences

**Catalog**

**Description:** Continuation of Math 26A, integration and applications to the Social Sciences and Life Sciences. Multivariate analysis including partial differentiation and maximization subject to constraints: elementary differential equations: sequences and series. Calculus of the trigonometric functions as time allows. Students will be given periodic writing assignments that encourage them to think through concepts of the course.

**Prerequisites:** Math 26A or AP credit for Calculus AB in high school.

**Learning**

**Objectives:** Know the definition of the definite integral as the limit of sums and use finite sums to approximate the area under a curve.  
Know the Fundamental Theorem of Calculus and use this theorem to evaluate definite integrals.  
Use the definite integral in a variety of applications such as finding the area between curves or volume of revolution and use the fundamental theorem to evaluate these integrals.  
Extend the derivative from functions of one variable to functions of several variables and use partial derivatives to solve optimization problems.

**Text:** Calculus - An Applied Approach (7<sup>th</sup> ed) by Larson / Edwards

**Coverage:** Chapters 5 thru 7 and parts of 10

**Writing**

**Component:** This is an area B4 GE course and has a writing component. To satisfy the writing requirement graded assignments involving writing and understanding of complex technical prose, interpretation of theoretical ideas, and the use of mathematical ideas will be part of the course.

**Assignments:** A variety of reading and problem solving assignments will be part of the course.

**Examinations:** There will be three midterm examinations and a comprehensive final examination for this course.

The examination schedule is given below.

Midterm I	Feb. 16
Midterm II	Mar. 16
Midterm III	Apr. 27
Final	May 18

**Grading:** Written work is scored on the following scale and your grade in this course is assigned according to the following percentages.

Homework	150 (10.0%)	88% - 100%	A
Midterms (150 pts each)	450 (45.0%)	76% - 87%	B
Final	400 (40.0%)	65% - 76%	C
		50% - 64%	D
Total	1000	below 50%	F

**Topics covered: Math 26B**

I. Topics in Integration 4 weeks

- a. Definite integrals, area, and the Fundamental Theorem
- b. Area between curves
- c. Average values and volumes
- d. Integration techniques
- e. Numerical integration techniques
- f. Improper integrals

II. Differential Equations 3 weeks

- a. Separation of variables
- b. Applications
- c. First order linear differential equations

III. Multivariable Calculus 4 weeks

- a. Functions of several variables
- b. Graphing in three dimensions
- c. Partial derivatives
- d. Extrema
- e. Multiple integration

IV. Taylor Polynomials and Series 3 weeks

- a. Taylor polynomials
- b. Sequences and series
- c. Geometric series
- d. Power series and Taylor series

V. Trigonometric functions (optional)

As time allows

- a. The trigonometric functions
- b. Differentiation and integration of the trigonometric functions
- c. Inverse trigonometric functions
- d. Taylor polynomial approximation of trigonometric functions