

COCONINO COMMUNITY COLLEGE
COURSE OUTLINE

Reviewed by: Philip Martinez

Spring 2017

Status: Permanent

A. Identification:

1. Subject Area: Math
2. Course Number: 230
3. Course Title: Calculus and Analytic Geometry II
4. Credit Hour: 5
5. Catalog Description: Applications and methods of integration, Taylor polynomials and series, differential equations, multivariable functions and vectors. General Education: Mathematics. Prerequisite: MAT 220. Five lecture.

B. Course Goals: To build student confidence in the use of fundamental principles and concepts of calculus. Material will be presented graphically, numerically and analytically to develop the students' problem solving skills.

C. Course Outcomes:

Upon successful completion of this course students will:

1. integrate complex functions by parts and using tables;
2. calculate Integral approximations and errors;
3. integrate improper integrals;
4. use integration techniques to solve applied problems involving geometry, density, physics and economics;
5. find Taylor polynomials and use them to approximate functions;
6. find, analyze, and apply Taylor series;
7. identify differential equations and their solutions graphically, numerically and analytically;
8. solve differential equations and application problems using separation of variables;
9. investigate multivariable functions graphically, numerically, and analytically and apply to three dimensional space;
10. investigate vectors and vector properties graphically, numerically, and analytically and their application in two and three dimensions.

D. Course Content will include:

1. Integration techniques
 - a. Integration by parts
 - b. Tables
 - c. Approximations
 - d. Improper integrals
2. Applications of the definite integral
 - a. Geometric Applications
 - i. Areas between curves
 - ii. Disk and shell methods of finding volumes
 - b. Physics Applications
 - i. Work
 - ii. Center of Mass
 - c. Economic Applications

3. Infinite Series
 - a. series and convergence
 - b. Taylor polynomials
 - c. Taylor series
 - d. Geometric series

4. Differential Equations
 - a. Solutions
 - b. Slope fields
 - c. Separation of variables
 - d. Growth and Decay

5. Multivariable functions
 - a. functions of two variables
 - b. Three - Dimensional space
 - c. Applications
 - d. Functions of more than two variables

6. Vectors
 - a. Space coordinates
 - b. Dot product
 - c. Cross product