


COCONINO COMMUNITY COLLEGE

COURSE OUTLINE

Prepared by: Chris Braun
General Education criteria reviewed by: Maxie Inigo
Revised By: Kathryn Kozak
General Education Outcomes reviewed:
Status: Permanent

Date: November 1, 1994
Date: October 1998
Date: November 24, 1999
Date: March 23, 2001

A. Identification

1. Subject Area: Math
2. Course Number: MAT 241  CHM 2241
3. Course Title: CALCULUS AND ANALYTIC GEOMETRY III
4. Credit hours: 4
5. Catalog Description:
Multidimensional calculus. Includes conic sections, polar coordinates, partial derivatives, gradients, directional derivatives, extreme, multiple and iterated integrals, vector calculus, line integrals, and Green's Theorem. General Education: Mathematics. Prerequisite: *MAT 230. Four lecture.

B. Course Goals

To build student confidence in the use of the fundamental principles of calculus and analytic geometry in relation to engineering and the physical sciences, and to develop problem solving skills.

C. Course Outcomes:

Students will:

1. Graph and find the extrema of conics
2. Determine the equation of conics and classify the various types of conics
3. Parametrize equations and graph them
4. Integrate and differentiate parametric equations
5. Find the polar form of an equation and convert back to rectangular form
6. Graph polar equations
7. Calculate arc lengths
8. Graph and perform basic operations with vectors
9. Graph planes and surfaces and determine their equations
10. Solve problems related to the properties of planes and surfaces
11. Convert equations to spherical and cylindrical form and back to rectangular form
12. Graph, integrate, and differentiate vector valued functions
13. Work applications problems related to vector valued functions
14. Demonstrate an understanding of functions of several variables including their graphs, continuity, partial derivatives, directional derivatives, gradients, tangent planes, normal lines and extrema
15. Evaluate multiple integrals
16. Calculate areas and volumes
17. Demonstrate an understanding of vector fields and some of their properties including conservativity, potential functions, and line integrals
18. Define and apply Green's Theorem

GECC Course
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Student Outcomes list

D. Course Assessment:

Minimum Course Assessment will include:

1. Comprehensive Final Exam

E. Course Content :

Will include:

1. Conics
2. Parametric equations and polar coordinates
3. Vectors, Planar and Solid Geometry
4. Vector valued functions
5. Multivariate functions
6. Multiple Integrals
7. Vector Analysis: Vector fields, line integrals, and Green's Theorem

*Course has additional pre or co requisite(s)