


COCONINO COMMUNITY COLLEGE

COURSE OUTLINE

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General Education Criteria Reviewed by: Maxie Inigo
General Education Outcomes reviewed
Status: Permanent

Date: December 4, 1991
Date: April 17, 1998
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Date: March 23, 2001

A. Identification:

1. Subject Area: Math
2. Course Number: MAT 220  MAT 2220
3. Course Title: CALCULUS AND ANALYTIC GEOMETRY I
4. Credit Hrs: 5
5. Catalog Description:

Limits, continuity, differential and integral operations on algebraic and trigonometric functions, and applications. General Education: Mathematics. Prerequisite: *MAT 187 or placement test score(s) beyond prerequisite course(s). Five lecture.

B. Course Goals:

To develop a fundamental understanding within the student of the concepts of differentiation and integration. These concepts will be analyzed verbally, numerically, graphically, and analytically to establish essential problem solving skills and a positive attitude toward mathematics. General Education Curriculum: Mathematics

C. Course Outcomes:

Students will:

1. Review precalculus topics including solving and graphing polynomial, rational, logarithmic, exponential, and trigonometric functions.
2. Interpret and solve growth and decay application problems.
3. Analyze and evaluate limits.
4. Analyze and interpret the concept of continuity of functions.
5. Analyze the concept of the derivative verbally, numerically, and analytically.
6. Calculate derivatives of polynomial, rational, logarithmic, exponential, and trigonometric functions.
7. Calculate derivatives of the products, ratios, and composition of functions.
8. Interpret and solve applied problems using the derivative.
9. Analyze, interpret, and apply the Mean Value Theorem.
10. Define and evaluate right and left hand Reiman sums.
11. Analyze the concept of the integral verbally, numerically, graphically, and analytically.
12. Calculate integrals of basic polynomial, rational, logarithmic, exponential, and trigonometric functions.
13. Calculate integrals of basic products, ratios, and composite functions using substitution.

GECC Course
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Student Outcomes list

D. Course Assessment:

Will include:

1. Comprehensive final exam

E. Course Content:

Will include:

1. Function Review
 - a. Polynomial
 - b. Rational
 - c. Logarithmic
 - d. Exponential

- e. Trigonometric
- 2. Limits
 - a. Definition
 - b. Calculation
 - c. Application
- 3. Rates of Change and Derivative
 - a. Numerical interpretation
 - b. Graphical interpretation
 - c. Analytic interpretation
- 4. Calculating Derivatives
 - a. Basic functions
 - b. Product Rule
 - c. Quotient Rule
 - d. Chain Rule
 - e. Applications
- 5. Mean Value Theorem
 - a. Definition
 - b. Application
- 6. Reiman Sums
 - a. Definition
 - b. Application
- 7. The Definite Integral
 - a. Numerical interpretation
 - b. Graphical interpretation
 - c. Analytic interpretation
- 8. The Fundamental Theorem of Calculus
 - a. Evaluating Definite and Indefinite Integrals.
 - 1. Basic Functions
 - 2. Products, ratios and composition of functions.

*Course has additional pre or co requisite(s)