MATH 16 Course Outline as of Fall 1999

CATALOG INFORMATION

Dept and Nbr: MATH 16   Title: INTRO MATH ANALYSIS
Full Title: Introduction to Mathematical Analysis
Last Reviewed: 1/9/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	4.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00   Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly:

Catalog Description:
Exponential and logarithmic function, limits, differential and integral calculus in one variable with applications, partial derivatives. Emphasis on applications in business and economics.

Prerequisites/Corequisites:
MATH 155.

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Exponential and logarithmic functions, limits, differential and integral calculus in one variable with applications, partial derivatives. Emphasis on application in business and economics. (Grade or P/NP)
Prerequisites/Corequisites: MATH 155.
Recommended:
Limits on Enrollment:
Transfer Credit: CSU;UC. (CAN MATH34)

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area		Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 1981	
	MC	Math Competency		
CSU GE:	Transfer Area		Effective:	Inactive:
	B4	Math/Quantitative Reasoning	Fall 1981	
IGETC:	Transfer Area		Effective:	Inactive:
	2A	Mathematical Concepts & Quantitative Reasoning	Fall 1981	

CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:
UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:

CID:
CID Descriptor: MATH 140   Business Calculus
SRJC Equivalent Course(s):   MATH16

Certificate/Major Applicable:
Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:
To be successful, students should be able to:
1. Perform advanced operations with functions (using symbolic, graphical, and numerical representations) and apply knowledge to modeling problems.
2. Define and graph inverse functions.
3. Define and apply characteristics functions in graphing polynomial, rational, algebraic, exponential, and logarthmic functions.
4. Solve equations graphically and algebraically.
5. Calculate limits and use limit notation.
6. Define the derivative and calculate derivatives of polynomial, rational, algebraic, exponential, and logarithmic functions.
7. Use techniques of differentiation, including product, quotient and chain rules.
8. Apply derivatives to graphing, optimization, business and economic applications.
9. Calculate antiderivatives.
10. Evaluate definite integrals using the fundamental theorem of calculus.
11. Calculate limits and use limit notation with multivariable functions.
12. Use partial differentiation and the method of LaGrange multipliers in optimization problems.

Topics and Scope:

FUNCTIONS
 Symbolic, graphical, and numerical representations, Operations and
 composition, Inverse functions, Modeling.
GRAPHS OF FUNCTIONS
 Definition and characteristics, Graphical solutions and numerical
 solutions of equations, Graphs of polynomial rational, algebraic,
 exponential and logarithmic functions, Graphs of Inverse functions.
DIFFERENTIAL CALCULUS
 Limit of function. Derivatives(including exponential and logarithmic
 functions). Techniques of differentiation, (including product,
 quotient, and chain rules), Applications of the derivatives
 including max/min). Antiderivatives.
INTEGRAL CALCULUS
 The Fundamental Theorem of Calculus, Integration by substitution,
 Tables of integrals, Applications of integration.
MULTIVARIABLE CALCULUS
 Multrivariable functions and limits, Partial differentiation.
 Relative max/min in two variables and Lagrange multipliers.

Assignment:

1. The student will have daily outside reading, problem set assignments
    from required text(s), or instructor chosen supplementary materials.
2. Instructional methodology may include, but not limited to: lecture,
    demonstrations, oral recitation, discussion, supervised practice,
    independent study, outside project or other assignments.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills
and/or require students to select, organize and explain ideas
in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that
demonstrate competence in computational or non-
computational problem solving skills.

Homework problems, Exams	Problem solving 25 - 75%

Skill Demonstrations: All skill-based and physical
demonstrations used for assessment purposes including skill
performance exams.

Performance exams	Skill Demonstrations 20 - 40%

Exams: All forms of formal testing, other than skill
performance exams.

Multiple choice

Exams
5 - 25%

Other: Includes any assessment tools that do not logically
fit into the above categories.

PROJECT - ORAL OR WRITTEN

Other Category
0 - 15%

Representative Textbooks and Materials:
Text(s) required of each student will be selected by the department,
a committee by the department, or the responsible instructor from the
books currently available. Choices in the past have included:
Calculus for the Managerial, Life and Social Sciences, (4th), 1998.
by Tan, Calculus (6th). by Marvin Bittinger, Massachusetts:
Addison-Wesley, 1997.