MATH 16 Course Outline as of Fall 2006

CATALOG INFORMATION

Dept and Nbr: MATH 16 Title: INTRO TO 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 functions, limits, differential and integral calculus in one variable with applications, partial derivatives, and calculator techniques. Emphasis on applications in business and economics.

Prerequisites/Corequisites: Completion of MATH 155 or higher (VE) OR Completion of MATH 155 or higher (VF)

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, and calculator techniques. Emphasis on applications in business and economics. (Grade or P/NP) Prerequisites/Corequisites: Completion of MATH 155 or higher (VE) OR Completion of MATH 155 or higher (VF) Recommended:

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area B MC	Communication and Analytical Thinking Math Competency		Effective: Fall 1981	Inactive:
CSU GE:	Transfer Area B4	Math/Quantitat	2	Effective: Fall 1981	Inactive:
IGETC:	Transfer Area 2A	Mathematical C Quantitative Re	1	Effective: Fall 1981	Inactive:
CSU Transfer	Transferable	Effective:	Fall 1981	Inactive:	
UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:	
CID:			_		

Business Calculus

MATH16

Certificate/Maj	jor Applicable:	

Major Applicable Course

CID Descriptor:MATH 140

SRJC Equivalent Course(s):

COURSE CONTENT

Outcomes and Objectives:

Upon successful completion of the course, students will 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. Recognize, describe and utilize in graphing the characteristics of polynomial, rational, algebraic, exponential and logarithmic 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. Use derivatives as an aid to graphing, in optimization problems, and to analyze 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:

Instructional methodology may include, but is not limited to: lecture, demonstrations, oral recitation, discussion, supervised practice, independent study, outside project or other assignments.

- I. Functions
 - A. Symbolic, Graphical, and Numerical Representations
 - B. Operations and Composition
 - C. Inverse Functions
 - D. Modeling with Functions
- II. Graphs Of Functions
 - A. Definition and Characteristics
 - B. Graphical Solutions and Numerical Solutions of Equations
 - C. Graphs of Polynomial, Rational, Algebraic, Exponential and
 - Logarithmic Functions
 - D. Graphs of Inverse Functions
- III. Differential Calculus
 - A. Limits of Functions
 - B. Derivatives (Including Exponential and Logarithmic Functions)
 - C. Techniques of Differentiation (Including Product, Quotient, and Chain Rules)
 - D. Applications of the Derivatives (Including Optimization)
 - E. Antiderivatives
- IV. Integral Calculus
 - A. The Fundamental Theorem of Calculus
 - B. Integration by Substitution
 - C. Tables of Integrals
 - D. Applications of Integration
- V. Multivariable Calculus
 - A. Multivariable Functions and Limits
 - B. Partial Differentiation
 - C. Relative Max/Min in Two Variables
 - D. Lagrange Multipliers

Assignment:

- 1. Daily reading outside of class (approximately 0-50 pages per week).
- 2. Problem set assignments from required text(s)or supplementary materials chosen by the instructor.
- 3. Exams and quizzes.
- 4. Projects.

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 are more appropriate for this course.

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

Homework problems

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

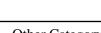
None

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

Multiple choice, Projects (eg, computer explor. or game analysis)

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

Projects



Representative Textbooks and Materials:

Text(s) required of each student will be selected by the department, a committee of the department, or the responsible instructor from the books currently available. Representative texts include: Calculus With Applications (8th ed.). Lial, Margaret; Greenwell, Raymond; Ritchey, Nathan. Addison Wesley: 2005. Calculus And Its Applications (8th ed.). Goldstein, Larry; Lay, David; Schneider, David. Prentice Hall (10th ed.).

W	r	iting
		0%

Problem solving 5 - 20%

Skill Demonstrations 0 - 0%

Exams 70 - 95%

Other Category 0 - 10%