

APPROVED COURSE

MATH 55

CATALOG INFORMATION

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Dept & Nbr: MATH 55 Title: CALC BUS & MGT  
Full Title: CALCULUS FOR BUSINESS AND MANAGEMENT

Units	Course Hours	Per Week	Nbr of Weeks	Course Hours	Total
Max: 3.0	Lecture	3.0	17 (18)	Lecture	54.0
Min: 3.0	Lab	0.0		Lab	0.0
	Contact DHR	0.0		Contact DHR	0.0
	Contact Total	3.0		Contact Total	54.0
	Non-contact DHR	0.0		Non-contact DHR	0.0

Title 5 Category: 01 AA Degree Applic  
Grading: GR Graded  
Repeatability: 00 Not repeatable except under Sec. #58161b  
Also listed as:

CATALOG DESCRIPTION:

Presents a study of the techniques of calculus with emphasis placed on the application of these concepts to business and management related problems. The applications of derivatives and integrals of functions including polynomials, rational, exponential and logarithmic functions are studied.

PREREQUISITES:

MATH 42 or equivalent with a grade of C or better

COREQUISITES:

RECOMMENDED PREPARATION:

No advisories.

LIMITS ON ENROLLMENT:

SCHEDULE OF CLASSES INFORMATION:

Prerequisites: MATH 42 or equivalent with a grade of C or better  
Presents a study of the techniques of calculus with emphasis placed on the application of these concepts to business and management related problems. For UC, MATH 55, 65 maximum credit one course. NOTE: Class requires a graphing calculator. (Graded)  
Transfer Credit: CSU; UC. (CAN MATH 34)

ARTICULATION and CERTIFICATE INFORMATION

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ASSOCIATE DEGREE: Effective: FALL 1992 Inactive:  
Area: B COMMUNICATN/ANALYTICL THINKING  
CSU GE: Effective: FALL 1992 Inactive:  
Transfer area: B4 MATH/QUANTITATIVE REASONING

APPROVED COURSE

MATH 55

IGETC: Effective: FALL 1992 Inactive:  
Transfer area: 2A Math/Quantitative Reasoning

CSU TRANSFER: TRANSFERABLE Effective: FALL 1992 Inactive:

UC TRANSFER: TRANSFERABLE Effective: FALL 1992 Inactive:

CAN:  
MATH 34 Grp Nbr: 01 Effective: FALL 1995 Inactive:

CERTIF/MAJOR APPLICABLE: N NOT A CERTIFICATE-APPLICABLE COURSE

APPROVAL AND DATES

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Version 01 Submitted by: JUDY BARCLAY Date: 11/05/1999  
Department approved: Date:  
Curriculum approved: 11/05/1999 Version approved: 11/05/1999  
Prerequisites approved: 11/05/1999 Last reviewed: 11/05/1999  
Term effective: FALL 1992 Last taught: Inactive:

COURSE CONTENT

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OUTCOME AND OBJECTIVES:

Upon completion of the course the student should be able to:

1. Apply algebra concepts to equations arising in business applications, such as cost, profit and revenue equations.
2. Find the derivatives of polynomial, rational, exponential, and logarithmic functions.
3. Use the derivative rules to find the derivatives of functions involving constants, sums, differences, products, quotients and powers involving real exponents.
4. Sketch the graph of functions using horizontal and vertical asymptotes x and y intercepts, and first and second derivatives to determine intervals where the function is increasing and decreasing, maximum and minimum values and intervals of concavity.
5. Analyze the marginals of cost, profit and revenue when given the appropriate function.
6. Determine maxima and minima in optimization problems using the derivative.
7. Analyze functions in relationship to function limits and continuity of functions.
8. Use differential approximations to estimate incremental changes in business applications.
9. Find the derivatives of the composition of functions using the chain rule.
10. Discuss the concept of the derivative as it relates to rate of change and tangent lines.
11. Analyze revenue, cost, profit and maximum and minimum of each from a graphical standpoint.
12. Find definite and indefinite integrals by using the general integral formulas, integration by substitution and integration by parts.
13. Use the definite and indefinite integrals in business application.

APPROVED COURSE

MATH 55

TOPICS AND SCOPE:

Functions and their graphs  
Exponential and logarithmic functions  
Derivative development and derivation rules  
Limits and continuity  
Increments, tangent lines, and rate of change  
Definition of derivatives  
Derivatives of constant, sums, products, quotients, power forms and  
general power rule  
Derivatives of logarithmic and exponential functions  
Chain rule  
Implicit differentiation and related rates  
Derivative application  
Marginals in analysis of business applications  
First and second derivatives used in graphing  
Optimization, absolute maxima and minima  
Curve sketching using asymptotes  
Differentials  
Integration  
Antiderivatives and indefinite integrals  
Integration by substitution  
Definite integral  
Area between 2 curves  
Definite integral as a limit of sum  
Application in business and economics

ASSIGNMENTS:

Assignments might include any or all of the following.  
1. A reading assignment to help prepare the student for new material to be  
discussed in later class sessions.  
2. Written assignments designed to practice the algebra required in  
developing the calculus concepts.  
3. Written assignments using calculus in problem solving.  
Each written assignment will include a variety of problems taken from  
each exercise set.  
Primarily College Level.

CLASS PARTICIPATION AND ASSIGNMENTS REQUIRE AND DEVELOP CRITICAL THINKING.  
Many of the problems to be worked by students in the assignment will  
require critical thinking. An example is listed below:

Objective 10:

Depreciation - Office equipment was purchased for \$20,000 and is assumed  
to have a scrap value of \$2,000 after 10 years. If its value is  
depreciated linearly (for tax purposes) from \$20,000 to \$2,000, then the  
value  $V(t)$  after  $t$  years is given by

$$V(t) = 20000 - 1800t \quad 0 \leq t \leq 10$$

- Find the average rate of change in the value of the equipment from 2  
years to 6 years.
- Find the average rate of change in the value of the equipment from 3  
years to 5 years.
- Find the average rate of change in the value of the equipment from  
 $t_1$  years to  $t_2$  years.

METHODS OF EVALUATION:

APPROVED COURSE

MATH 55

This is a degree-applicable course, but substantial writing assignments are NOT appropriate, because the course primarily:

- Is computational
- Involves skill demonstrations or problem solving

The problem-solving assignments required:

- Homework problems
- Quizzes
- Exams
- Other: Cumulative final exam

The types of skill demonstrations required:

None

The types of objective examinations used in the course:

None

Other category:

None

REPRESENTATIVE TEXTBOOKS:

- Larson, Roland, and Bruce Edwards. "Brief Calculus"  
"An Applied Approach". Boston: Houghton, Mifflin and Company,  
current edition.  
Primarily college Level.

RATIONALE

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RESOURCES REQUIRED

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APPROVED COURSE

MATH 55

MISCELLANEOUS

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Advisory generate desc: N NO  
Area department: MATH Mathematics  
Audit flag: N NOT AUDITABLE  
Basic skills: X NOT BASIC SKILLS  
Classification: A Liberal Arts and Sciences Education Cour  
Cost level: 00 NOT USED  
CVU/CVC status: VALUE NOT FOUND  
Disciplines: UNKNOW UNKNOWN  
Division: 57 Math  
Faculty service area: MAT80A MATH & STATISTICS (EXCEPT 41)  
Fee: \$0.00  
In-service: X NOT AN IN-SERVICE COURSE  
Level below transfer: X NOT APPLICABLE  
Matric-requiring: M Requires math assessment  
Maximum class size: 0  
Maximum wait list: 0  
Method of instruction: 02 LECTURE  
Non-credit category: X NOT APPLICABLE, CREDIT COURSE  
Open entry/exit: N Not open entry/open exit  
Pacs activity: 1701 Mathematics, General  
Pacs program project: 0000 Unrestricted  
Preq/coreq generate desc: N NO  
Preq/coreq provisional: N NO  
Preq/coreq reg check: Y PREREQUISITE RULES EXIST  
Repeat group id:  
Requires instructor sig: N INSTRUCTOR'S SIGNATURE NOT REQUIRED  
SAM classification: E Non-occupational  
Selected/special topic: N NOT A SELECTED TOPIC COURSE  
Special class: X NOT A SPECIAL COURSE  
TOP code: 1701.00 Mathematics, General  
Work-based learning N DOES NOT INCLUDE WORK-BASED LEARNING  
Workload: 0.0000

