

Course Code: MAT 143 (IAI M1 900-B)

Course Title: Calculus for Business and Social Sciences

Department: Mathematics

Effective Date: Summer 2026

PCS Code: 1.1 - Baccalaureate/Transfer

CIP Code: 27.0301

Repeatability: 0

Credit Hours

Catalog Notation: 4-0-4

Credit Hour Distribution:

Lecture: 4

Lab: 0

Clinical: 0

Total: 4

General Course Information

Catalog Description

Mathematical analysis of polynomial calculus with applications to business and social sciences; algebraic review, derivatives and integrals of algebraic functions, limit and continuity theory, logarithmic and exponential functions, and partial derivatives. Credit not given for both MAT 143 and MAT 128.

General Course Objectives

Students will be able to apply the concepts of calculus to applications in business and the social sciences. The students will further develop their skills in problem solving, quantitative reasoning, and the use of technology.

Minimum Placement Levels

English

None

Reading

None

Math

None

Prerequisites

Credit in MAT 124 with a grade of C or higher, or placement

Methods of Evaluation

4-5 exams, 8-30 quizzes/assignments, and a cumulative final exam.

Instructional Materials and Additional Supplies

Calculus for Business, Economics, and the Social and Life Sciences Brief Edition, 11th edition, Hoffman and Bradley, McGraw-Hill 978-0-07-353238-7 - Print Text

Required: TI-84 Plus graphing calculator; \$85-\$120.

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|--|--|---------------|-----------|----------------|
| Review and Preparation for the Study of Calculus | <ol style="list-style-type: none"> Use functional notation; graph functions and relations. Use various forms of linear equations. Create functional models for word problems. Discuss limits and continuity. | 8 | 0 | 0 |
| Differentiation | <ol style="list-style-type: none"> Describe the intuitive idea of a derivative. Use the rules and techniques of differentiation. Use differential approximation. Apply the derivative. Determine the derivative of a function defined implicitly. | 9 | 0 | 0 |
| Application of Differentiation | <ol style="list-style-type: none"> Apply the concept of the first and second derivative to max-min problems and to analyze functions through the use of the derivative. | 8 | 0 | 0 |
| Exponential and Logarithmic Functions | <ol style="list-style-type: none"> Use the properties of exponents and logarithms. Create exponential models of practical word problems. Differentiate logarithmic and exponential functions. | 7 | 0 | 0 |
| Integration; Indefinite, Definite, Applications of Integration, Differential Equations | <ol style="list-style-type: none"> Integrate through antidifferentiation. Integrate polynomial, exponential, and logarithmic functions. Use the technique of substitution. Evaluate a definite integral. Find areas by integration. Solve applied problems using integration. Solve simple differential equations. Use integration by parts. | 12 | 0 | 0 |
| Functions and Several Variables | <ol style="list-style-type: none"> Calculate partial derivatives. Use the chain rule and calculate total differentials. Discuss the concept of level curves. Find the relative maxima and minima using partial derivatives. Solve practical max-min problems. | 7 | 0 | 0 |
| Review and Tests | <ol style="list-style-type: none"> Earn at least a 70 percent on each of four hour exams and the comprehensive final exam. | 9 | 0 | 0 |

Total Contact Hours

| Lecture Hours | Lab Hours | Clinical Hours |
|---------------|-----------|----------------|
| 60 | 0 | 0 |