



**Department of Mathematics and Computer & Information Science**

**CALCULUS FOR BUSINESS & ECONOMICS MA 2300**

**Departmental Syllabus**

**TEXTBOOK:** **College Mathematics for Business Economics, Life Sciences and Social Sciences**, 14th Edition, by Barnett, Ziegler, and Byleen, Pearson 2018, ISBN-13: 978-0134674148.

**Prerequisite:** A grade of C or higher in Precalculus for Business & Economics –MA2080

**COURSE DESCRIPTION:** Topics include limits, differentiation, and integration. Relevant applications from the areas of business, economics, and the social sciences will be discussed.

**COURSE OBJECTIVES:** To provide students majoring in the School of Business with a foundation in differential calculus and an introduction to integral calculus. Emphasis is placed on business and economic applications, problem solving and graphing skills, applied methodologies, models and introduction to optimization.

**COURSE LEARNING OUTCOMES:**

Students will demonstrate mathematical skills and quantitative reasoning, including the ability to

- interpret and draw inferences from appropriate mathematical models such as formulas, graphs, tables and calculus results;
- represent mathematical information symbolically, visually, numerically, or verbally as appropriate; and
- employ quantitative methods in calculus which includes knowledge and ability in the areas of arithmetic, algebra, and geometry to solve problems.

**ATTENDANCE:** Class attendance is required and a record of attendance will be kept. If you miss a class it is your responsibility to find out what material was covered in class, what the homework was and if any announcements have been made about the schedule for upcoming exams.

**COURSE EVALUATION & GRADING:** Your grade will be based on exams, quizzes, class work, and homework. There will be in class cumulative final exam. The grading scale is as follows:

<b>A</b> = [94, 100]	<b>B<sup>+</sup></b> = [87, 89]	<b>C<sup>+</sup></b> = [77, 79]	<b>D<sup>+</sup></b> = [67, 69]	<b>F</b> = [0, 59]
<b>A<sup>~</sup></b> = [90, 93]	<b>B</b> = [84, 86]	<b>C</b> = [74, 76]	<b>D</b> = [64, 66]	

	<b>B</b> $\approx$ = [80, 83]	<b>C</b> $\approx$ = [70, 73]	<b>D</b> $\approx$ = [60, 63]	
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**TUTORIAL:** Drop-in tutorial is available in the Mathematics Learning Center during the Fall and Spring semesters.

**ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS:** If you have or suspect you may have a physical, psychological, medical or learning disability that may impact your course work, please contact The Office of Services for Students with Disabilities (OSSD), Office NAB room 2064, Phone: 516-876-3009. All support services are free and all contacts with the OSSD are strictly confidential.

## TOPICS TO BE COVERED

**Textbook** College Mathematics for Business Economics, Life Sciences and Social Sciences, 14th Edition

### 9: LIMITS AND THE DERIVATIVE

- 9.1 Introduction to Limits
- 9.2 Infinite Limits and Limits at Infinity
- 9.3 Continuity
- 9.4 The Derivative
- 9.5 Basic Differentiation Properties
- 9.6 Differentials
- 9.7 Marginal Analysis in Business and Economics

### 10: ADDITIONAL DERIVATIVE TOPICS

- 10.1 The Constant  $e$  and Continuous Compound Interest
- 10.2 Derivatives of Exponential and Logarithmic Functions
- 10.3 Derivatives of Products and Quotients
- 10.4 The Chain Rule
- 10.5 Implicit Differentiation
- 10.6 Related Rates
- 10.7 Elasticity of Demand

### 11: GRAPHING AND OPTIMIZATION

- 11.1 First Derivative and Graphs
- 11.2 Second Derivative and Graphs
- 11.3 L'Hôpital's Rule
- 11.4 Curve Sketching Techniques
- 11.5 Absolute Maxima and Minima
- 11.6 Optimization

### 12: INTEGRATION

- 12.1 Antiderivatives and Indefinite Integrals
- 12.2 Integration by Substitution
- 12.3 Differential Equations; Growth and Decay
- 12.4 The Definite Integral
- 12.5 The Fundamental Theorem of Calculus

### 13: ADDITIONAL INTEGRATION TOPICS

- 13.1 Area Between Curves
- 13.2 Applications in Business and Economics