**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

1. **GENERAL COURSE INFORMATION**

Course Number: MATH 1831

Course Title: Business Calculus

Credit Hours: 3

Prerequisites: MATH 1828 College Algebra with a grade of C or better OR MATH 1826

College Algebra with Review with a grade of C or better OR appropriate

placement score

Division/Discipline: Academics Division/Mathematics

Course Description: A condensed study of differential and integral calculus with an emphasis on applications in the area of business and economics.

1. **INSTRUCTOR INFORMATION**
2. **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. [Most up-to-date documents are available on the College webpage.]

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at [disabilityservices@bartonccc.edu](mailto:disabilityservices@bartonccc.edu).

1. **COURSE AS VIEWED IN THE TOTAL CURRICULUM**

Business Calculus is an approved general education course at Barton Community College, which can be used to fulfill degree requirements as a fundamental mathematics course.

Business Calculus is designed to provide business and economic majors with a basic understanding of differential and integral calculus and its applications in business and economics. Students needing calculus but who are not business majors or are uncertain of their major should enroll in the 5 credit Calculus I, MATH 1832. Any student whose major program requires two or more calculus courses should also take MATH 1832 since it is a more in-depth study of differential and integral calculus.

This course transfers well to most of the regent universities as a three credit hour Basic/Business Calculus. However, requirements vary among institutions, and even within departments, and often without much notification. Thus, it is the student’s responsibility to be in contact with the transfer institution throughout his/her tenure at Barton Community College to insure that the student is enrolling in the most appropriate set of courses for the transfer program. <http://bartonccc.edu/transfer/schools>

**V. ASSESSMENT OF STUDENT LEARNING**

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

A. Utilize the definition of a limit to compute and interpret the nature of a function.

1. Evaluate the limit of a function at a point both algebraically and graphically.

2. Evaluate the limit of a function at infinity both algebraically and graphically.

3. Determine the continuity of a function using the definition of a limit.

4. Distinguish between average and instantaneous rates of change.

5. Differentiate a function using the limit definition of a derivative.

B. Apply the patterns of differentiation to find the derivative of a given function.

1. Compute a derivative of a function involving powers, exponents and sums.

2. Calculate a derivative of a function involving products and quotients.

3. Produce the derivative of a function involving compositions of functions.

4. Find the derivative of a function involving exponential and logarithmic functions.

5. Differentiate a function that is defined implicitly.

C. Compile and synthesize information concerning a function using derivation to sketch the graph of a function.

1. Detect the critical point(s) of a function using the first derivative.

2. Determine the inflection point(s) for a function using the second derivative.

3. Find the intervals of increasing and decreasing and local extrema using the first derivative.

4. Determine the concavity of a function using the second derivative.

5. Sketch the graph of a function using information gathered from the first and second derivatives.

6. Identify vertical and horizontal asymptotes of a function.

7. Analyze the graph of a function.

D. Apply differentiation to theoretical and practical situations and interpret the results.

1. Use the derivative to find the marginal profit, marginal revenue and marginal cost.

2. Use the derivative to find the equation of a tangent line to a curve at a given point.

3. Use optimization techniques to find maximum revenue, minimum average cost and maximum profit in business applications.

4. Solve related rate problems.

5. Use differentials to estimate change of profit, cost and revenue as production changes.

6. Compute the elasticity of demand.

E. Utilize the definition of an antiderivative to perform integration and interpret the nature of a function.

1. Evaluate definite integrals using the Fundamental Theorem of Calculus.

2. Integrate indefinite integrals.

3. Integrate algebraic and exponential functions.

4. Evaluate integrals of the form

1. **INSTRUCTOR’S EXPECTATIONS OF STUDENTS IN CLASS**

1. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**

1. **REFERENCES**

1. **METHODS OF INSTRUCTION AND EVALUATION**
2. **ATTENDANCE REQUIREMENTS**

**XI. COURSE OUTLINE**