**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

1. **GENERAL COURSE INFORMATION**

Course Number: MATH 1834

Course Title: Analytic Geometry and Calculus II

Credit Hours: 5

Prerequisites: MATH 1832 Analytic Geometry and Calculus I with a C or better

Division/Discipline: Academics Division/Mathematics

Course Description: A continuation of Analytic Geometry and Calculus I covering volume, work, advanced methods of integration, indeterminate forms, improper integrals, and series.

**II. INSTRUCTOR INFORMATION**

1. **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.

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

This course is a continuation of the Calculus sequence and is intended for those students pursuing a science, mathematics or engineering program. This course transfers for credit to all Kansas Regent Universities, and may be used to help fulfill program requirements.

The transferability of all college courses will vary among institutions, and perhaps even among departments, colleges, or programs within an institution. Institutional requirements may also change without prior notification. Students are responsible to obtain relevant information from intended transfer institutions to insure that the courses the student enrolls in are the most appropriate set of courses for the transfer program.

<http://bartonccc.edu/transfer/schools>

1. **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. Apply integration to find area and volume.

1. Find the area between two curves.

2. Find the volume of a solid using the disk (washer) and shell methods.

3. Calculate the work done on an object.

B. Develop and use integration techniques.

1. Evaluate an integral using algebraic substitution.

2. Evaluate an integral using integration by parts.

3. Integrate expressions involving powers of trigonometric functions.

4. Evaluate an integral using trigonometric substitution.

5. Evaluate an integral using partial fractions.

C. Use limits to find the antiderivative of functions.

1. Evaluate limits by applying L’Hopital’s Rule.

2. Evaluate integrals with infinite limits of integration.

3. Evaluate integrals of unbounded functions.

D. Develop and execute tests of convergence for sequences and series.

1. Determine whether a given sequence converges or diverges.

2. Find the limit of a convergent sequence.

3. Find the sum of a geometric series.

4. Use the comparison and limit-comparison test to test for convergence of a series.

5. Use the integral test to test for convergence of a series.

6. Use the ratio and root tests to test for convergence of a series.

7. Determine whether a series is absolutely convergent.

E. Develop and utilize a power series representation of a function.

1. Identify the interval of convergence of a power series.

2. Differentiate and integrate a power series.

3. Find the Taylor and Maclaurin series for a given function.

4. Approximate the value of a function using power series.

F. Analyze conic sections by identifying their characteristics.

1. Identify the vertex, focus and directrix of a parabola.

2. Identify the center, foci, and axes of an ellipse.

3. Identify the vertices, center, foci, asymptotes and transverse axis of a hyperbola.

4. Find the eccentricity of a conic section.

5. Change the coordinate system by using translation and rotation of axes for conic sections.

G. Analyze parametric equations and identify their characteristics.

1. Write the parametric equations for a given curve.

2. Graph curves given by parametric equations.

3. Find the Cartesian equation for a curve given by parametric equations.

4. Find the slope of a tangent line to a curve given by parametric equations.

5. Find the length of a curve given by parametric equations.

H. Analyze polar form of an equation and identify their characteristics.

1. Convert equations from Cartesian form to polar form and vice versa.

2. Graph equations in polar form.

3. Find the area of regions bounded by curves given by functions in polar form.

4. Find the arc length of a curve given by a function in polar form.

5. Write the equations of conic sections in polar form.

1. **INSTRUCTOR’S EXPECTATIONS OF STUDENTS IN CLASS**
2. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**
3. **REFERENCES**
4. **METHODS OF INSTRUCTION AND EVALUATION**
5. **ATTENDANCE REQUIREMENTS**

**XI. COURSE OUTLINE**