**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

**I. GENERAL COURSE INFORMATION**

Course Number: MATH 1826

Course Title: College Algebra

Credit Hours: 5

Prerequisites: MATH 1821 Basic Algebra with a grade of C or better or appropriate placement

score

Division/Discipline: Academic Division /Mathematics

Course Description: A study of polynomial, rational, exponential, and logarithmic functions and their graphs; complex numbers, systems of equations and inequalities, and an introduction to matrices and determinants with “just-in-time” instruction on Intermediate Algebra topics. Additional topics may include conic sections, partial fractions, sequence and series, discrete mathematics, probability, and the binomial theorem.

**II. INSTRUCTOR INFORMATION**

**III. 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).

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

College Algebra is an approved general education course at Barton Community College which can be used to fulfill the college-level math requirement for all associate degrees offered at Barton Community College. The purpose of the course is to familiarize students with algebraic principles and to prepare them for higher level mathematics courses.

This course is transferable to all Kansas Regents’ Institutions 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. It is the student's responsibility to obtain relevant information from intended transfer institutions to ensure that the courses the student enrolls in are the most appropriate set of courses for the transfer program. http://bartonccc.edu/transfer/schools

The learning outcomes and competencies detailed in this course syllabus meet or exceed those specified for this course by the Kansas Core Outcomes Groups project, and as approved by the Kansas Board of Regents – <http://kansasregents.org/transfer_articulation>.

**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. Identify characteristics and perform operations on functions.

1. Recognize and distinguish between functions and relations.

2. Use functional notation.

3. Determine the domain and range of a function.

4. Find the intercepts of a function.

5. Write the equation that describes a function.

6. Write the equation of a circle given its description.

7. Find arithmetic combinations and composites of functions.

8. Find the inverse of a function.

9. Use graphing transformations to sketch the graph of a function including linear, quadratic, absolute value, square root, and cubic.

10. Graph a piecewise-defined function.

11. Solve an equation involving radicals.

12. Solve an equation involving rational functions.

13. Determine if a function is symmetric around the y-axis or origin.

B. Identify characteristics and analyze polynomial functions.

1. Solve a formula for a variable.

2. Solve a linear equation in one variable.

3. Solve a linear inequality in one variable.

4. Solve a compound inequality.

5. Solve an absolute value equation.

6. Solve an absolute value inequality.

7. Rationalize radicals.

8. Perform operations with complex numbers.

9. Solve a quadratic equation using various methods.

10. Solve a polynomial equation.

11. Solve a polynomial inequality.

12. Find the slope between two points.

13. Write the equation of a line given parameters such as slope, points, and parallel/perpendicular lines.

14. Graph in Cartesian coordinates.

15. Graph linear equations using intercepts and slope.

16. Find the vertex of a quadratic function.

17. Graph a quadratic function using the vertex, intercepts and concavity.

18. Find the minimum/maximum of a quadratic function in the form of an application problem.

19. Add, subtract and multiply polynomial functions.

20. Use long division with polynomial functions.

21. Determine the degree and leading coefficient of a polynomial function.

22. Find the zeros of a polynomial function and write a polynomial function as a product of linear factors.

23. Sketch the graph of a polynomial function using concepts of end behavior, zeros, and multiplicities of zeros.

C. Identify characteristics and analyze rational functions.

1. Solve rational equations in one variable.

2. Solve a rational inequality in one variable.

3. Sketch the graph of a rational function using asymptotes, intercepts and “holes” in the graph.

D. Identify characteristics and analyze exponential functions.

1. Apply the properties of exponents to simplify integer and rational exponential expressions.

2. Solve an exponential equation in one variable.

3. Sketch the graph of an exponential function using intercepts and asymptotes.

E. Identify characteristics and analyze logarithmic functions.

1. Apply the properties of logarithms to simplify expressions.

2. Solve a logarithmic equation in one variable.

3. Sketch the graph of a logarithmic function using intercepts and asymptotes.

4. Evaluate logarithmic expressions using various methods including change-of-base to approximate.

5. Solve application problems including growth and decay and compounding interest.

6. Use models to make predictions.

F. Solve systems of equations and inequalities in two variables.

1. Solve a system of equations in two variables by various methods including graphing, substitution and addition (elimination).

2. Solve a system of inequalities in two variables by graphing.

3. Solve a system of equations in three variables using various methods including Gaussian Elimination and matrices.

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

**VII. TEXTBOOKS AND OTHER REQUIRED MATERIALS**

**VIII. REFERENCES**

**IX. METHODS OF INSTRUCTION AND EVALUATION**

**X. ATTENDANCE REQUIREMENTS**

**XI. COURSE OUTLINE**