COURSE OUTLINE

Course Number	Course Title	Credits
MAT 042	**Foundation Math for Non-STEM**	**3**

Hours: Lecture/Lab/Other	Co- or Pre-requisite	Implementation Semester & Year
0/6	**None**	**Spring 2022**

Catalog description:

Foundation mathematics course designed for students with experience in algebra but need strengthening mastery of the fundamentals. Topics include linear equations, linear inequalities, absolute value equations, absolute value inequalities, exponents, polynomials, factoring, and quadratic equations. Those who complete this course may register for MAT115, MAT120, MAT125, or MAT140. [This course does not fulfill mathematics elective requirements.]

General Education Category:
Not GenEd

Course coordinator:
Jamie Beth Fleischner
609-570-3807
fleischj@mccc.edu

Required texts & Other materials:

- ALEKS software: 18-week ALEKS360 access
- Calculator: Students must have a scientific calculator. Students will not be able to use the calculator on a cell phone. A calculator with symbolic manipulation is also not allowed.
- Notebook

Course Student Learning Outcomes (SLO):

Upon successful completion of this course the student will be able to:

1. Develop a strategy for solving linear equations and inequalities in one variable. [Supports ILG2,4,11]
2. Develop a strategy for solving absolute value equations and inequalities in one variable. [Supports ILG2,4,11]
3. Synthesize the rules of exponents and polynomial operations to simplify algebraic expressions to a standard form. [Supports ILG2,4,11]
4. Distinguish polynomials in order to apply correct techniques of factoring. [Supports ILG2,4,11]
5. Develop a strategy for solving quadratic equations. [Supports ILG2,4,11]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Units of study in detail – Unit Student Learning Outcomes:

Unit I Linear Equations and Inequalities [Supports SLO 1,2]

The student will be able to:

- Solve two-step linear equations by combining like terms involving integers, fractions and decimals.
- Apply the operations of addition, subtraction, multiplication, and division to solve two-step linear equations.
- Apply the properties of real numbers to calculate a solution to a linear equation with a variable in the denominator.
- Recognize and apply the distributive property to solve linear equations.
- Determine and apply the properties needed to solve linear equations with variables on both sides of the equation.
- Apply the operations of addition, subtraction, multiplication, and division to solveliteral equations.
- Translate written English phrases into algebraic expressions.
- Solve application problems involving linear equations and inequalities.
- Define, solve, and graph solutions to simple and compound linear inequalities, as well as compound linear inequalities using “and” & “or” terminology. Express the solution in interval notation.
- Apply appropriate methods to solve application problems involving inequalities.

Unit II Absolute Value Equations and Inequalities [Supports SLO 2]

The student will be able to:

- Solve absolute value equations algebraically.
- Apply the operations of addition, subtraction, multiplication, and division to solve two-step absolute value equations.
- Determine and apply the properties needed to solve absolute value equations with variables on both sides of the equation.
- Define, solve, and graph solutions to absolute value inequalities. Express the solution in interval notation.

Unit III Exponents and Polynomials [Supports SLO 3]

The student will be able to:

- Classify and evaluate polynomials.
- Apply the mathematical operations of addition and subtraction to polynomials.
- Apply the product rule to simplify expressions involving exponents.
- Apply the quotient rule to simplify expressions involving exponents.
- Apply the power to a power rule to simplify expressions involving exponents.
- Apply the rules of exponents to simplify expressions involving negative exponents.
- Apply rules for integer exponents to scientific notation.
- Solve application problems involving polynomials and scientific notation.
- Perform addition and subtraction of polynomials and simplify the answers.
- Apply the rules of exponents and order of operations to simplify expressions, multiply polynomials, and divide polynomials.

Unit IV Factoring [Supports SLO 4]

The student will be able to:

- Identify the greatest common factor and use it to factor a polynomial.
- Factor by grouping.
- Factor quadratic expressions, $ax^2 + bx + c$ when $a = 1$ and when $a \neq 1$.
- Factor trinomials of higher order by removing a GCF first, then factoring the remaining quadratic expression.
- Factoring special products such as difference of two squares, perfect square trinomials, and the sum/difference of two cubes.

Unit V Quadratic Equations [Supports SLO 5]

The student will be able to:

- Solve quadratic equations by applying the Zero Factor Property.
- Solve quadratic equations using the quadratic formula to find real solutions.
- Solve quadratic equations by applying the completing the square technique.
- Identify and solve an equation that is quadratic in form.
- Determine a quadratic equation when given its roots and leading coefficient.

Evaluation of student learning:

All course student-learning outcomes will be assessed by the following activities. Test questions will be selected to evenly assess all expected outcomes.

Grades will be assigned as detailed below:

- Attendance/Writing Assignments – 10%
- Unit Tests (5) – 30%
- Final Exam – 60%