MATH G030: INTERMEDIATE ALGEBRA

Item	Value
Curriculum Committee Approval Date	12/03/2019
Top Code	170100 - Mathematics, General
Units	4 Total Units
Hours	72 Total Hours (Lecture Hours 72)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)
Local General Education (GE)	• GWC Mathematic Competency (GB2)

Course Description

This course is equivalent to the second year of high school algebra. Topics include absolute value, rational exponents, radicals, linear equations and inequalities, quadratic equations, inequalities, functional notation, linear and quadratic functions, conic sections, logarithms, exponential and logarithmic functions, linear systems in two and three variables, sequences, and series. A scientific calculator will be required. Not Transferable.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Solve an equation containing rational expressions.
3. Determine the equation of a line given its slope and y-intercept, its slope and a point on the line, or two points on the line.
4. Solve a quadratic equation by factoring.

Course Objectives

- 1. Apply the algebraic rules associated with various operations and functions.
- 2. Solve various equations and systems of equations.
- 3. Analyze, interpret, and generate graphs involving various functions.
- 4. Solve a variety of application problems.
- 5. Perform operations on radical expressions and solve equations containing radical expressions.

Lecture Content

Linear and Quadratic Equations Linear equations in one variable Linear equations in two variables Slope Graphing a linear equation in two variables Finding a linear equation in two variables Quadratic equations in one variable Solving quadratic equations by factoring Solving quadratic equations by completing the square The quadratic formula Solving equations quadratic in form Applications of linear and quadratic equations in one variable Solving formulas for specified variables Solving absolute value equations Inequalities Solving linear inequalities in one variable Solving linear inequalities in two variables Solving absolute value inequalities Solving quadratic inequalities in one variable Introduction to Functions Definition of function Function notation Composition of functions Variation Inverse of a function Systems of Equations Solving linear systems in two or three variables Applications of linear systems Solving nonlinear systems in two variables Rational Expressions and Equations Algebraic properties of rational expressions Simplifying compound fractions Solving rational equations Applications of rational equations Radical Expressions and Equations Rational exponents Algebraic properties of radicals Solving radical equations Complex Numbers Algebraic properties of complex numbers Solving quadratic equations over the complex numbers Exponential and Logarithmic Functions A lgebraic properties of exponential and logarithmic functions Graphing exponential and logarithmic functions Solving exponential and logarithmic equations Applications of exponential and logarithmic functions Sequences and Series Definition of a sequence Closed formulas Recursive definitions Sigma notation Formulas for terms and sums of arithmetic sequences Formulas for terms and sums of geometric sequences Binomial Theorem Conic Sections Distance formula Circles Standard equation of a circle Finding the center and radius of a circle Graphing a circle Parabolas Standard equation of a parabola Finding the vertex of a parabola Graphing a parabola Ellipses Standard equation of an ellipse Finding the vertices of an ellipse Graphing an ellipse Hyperbolas Standard equation of a hyperbola Finding the vertices and asymptotes of a hyperbola Graphing a hyperbola

Lab Content

Properties of real numbers Simplifying Polynomial expressions Rational expressions Radical expressions Solving Linear equations Quadratic equations Rational equations Radical equations Graphing and solving systems Linear equations in two variables Absolute value Rational exponents Quadratic equations and inequalities Linear and quadratic functions Conic sections Exponential and logarithmic functions

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

Lecture and/or instruction Laboratory assessment

Writing Assignments

Homework, quizzes, activities in class, presentations.

Out-of-class Assignments

Individual study that can be completed online through the online component of the course.

Demonstration of Critical Thinking

Analysis and application of mathematical techniques presented in the course. Mathematical modeling and computational methods. Understanding and application of algebraic, numerical, and graphical interpretations of high school algebra concepts.

Required Writing, Problem Solving, Skills Demonstration

Homework, quizzes, class activities, projects, and examinations covering topics presented in the course.

Eligible Disciplines

Mathematics: Masters degree in mathematics or applied mathematics OR bachelors degree in either of the above AND masters degree in

statistics, physics, or mathematics education OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Miller/ONeil/Hyde. Beginning and Intermediate Algebra , 5th ed. ALEKS: McGraw Hill, 2017

Software Resources

1. ALEKS - Beginning Intermediate Algebra. McGraw Hill, 2019 ed.