MATH G115S: COLLEGE ALGEBRA WITH SUPPORT

Item	Value
Curriculum Committee Approval Date	04/05/2022
Top Code	170100 - Mathematics, General
Units	6 Total Units
Hours	108 Total Hours (Lecture Hours 108)
Total Outside of Class Hours	0
Course Credit Status	Credit: Support Course - Degree Applicable (T)
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 designed for students planning to enroll in MATH G140 or MATH G180. Topics include matrices and determinants, theory of equations and systems, graphing equations and functions, logarithmic and exponential functions and their graphs, polynomial and rational functions, conics sections, sequences and series, counting, and probability. In addition to this college algebra content, the course offers additional supplement instruction in basic algebra skills and concepts needed for college algebra. A scientific calculator is recommended. Enrollment Limitation: MATH G115; students who complete MATH G115S may not enroll in or receive credit for MATH G115. PREREQUISITE: Course taught at the level of intermediate algebra or appropriate math placement. Transfer Credit: CSU; UC.

Course Objectives

- 1. Perform basic operations of real numbers.
- 2. Solve linear, quadratic, and rational equations.
- 3. Solve polynomial and rational inequalities.
- 4. Solve a system of equations of two variables.
- 5. Identify relations and transformations for a function and its graph.
- 6. Determine the domain and range of a function.
- 7. Interpret the concept of a function and its properties.
- 8. Use the calculator in conjunction with the above objectives.
- 9. Demonstrate algebra skills required for success in Calculus (MATH G140 or MATH G180).
- 10. Demonstrate algebraic techniques associated with equations and inequalities.
- 11. Graph equations and functions, polynomial and rational functions, exponential and logarithmic functions, and conic sections.
- 12. Solve systems of equations and inequalities.
- 13. Find limits of sequences and series.

Lecture Content

Equations and inequalities Linear equations Quadratic equations Inequalities Equations and inequalities involving absolute values Graphs Graphs of equations Circles Lines Functions and their graphs Functions Graphs of functions Properties of functions Library of functions and piecewise-defined functions Graphing transformations Polynomial and rational functions Polynomial functions and their graphs Rational functions and their graphs Zeros of a polynomial Exponential and logarithmic functions Composite functions Inverse functions Exponential functions Logarithmic functions Solving exponential and logarithmic equations Conic sections The parabola The ellipse The hyperbola Systems of equations and inequalities Substitution and elimination Matrices Determinants Matrix algebra Partial fraction decomposition Systems of nonlinear equations Systems of inequalities Sequences, series, and Binomial Theorem Arithmetic sequences and series Geometric sequences and series The Binomial Theorem Learning skills Study skills Time management Coping with math anxiety Test-taking skills Operations of real and complex numbers Arithmetic Simplifying Rationalizing the denominator Conjugation Sets Graphs, relations, and functions Finding the domain and range of a function Function notation Arithmetic Inverse functions Polynomials Factoring Arithmetic Finding roots (zeros) of polynomials Graphing Solving polynomial inequalities Rational expressions Simplifying Arithmetic Finding the roots of rational functions Solving rational inequalities Geometry Coordinate plane Systems of equations Solving systems of equations with 2 or 3 variables using elimination and substitution methods

Method(s) of Instruction

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

Reading Assignments

Text and websites

Writing Assignments

Exams and quizzes Homework assignments Projects or reports

Out-of-class Assignments

Homework assignments Participation in online discussion Board for hybrid or online courses Take-home quizzes, exams/projects Watching online lecture videos for online or hybrid courses

Demonstration of Critical Thinking

Students will demonstrate critical thinking and problem-solving skills by using logic, in conjunction with past mathematical solving techniques, to solve and interpret a variety of applications not previously seen. Demonstrations will be shown by completing assignments, participating in discussions, and completing required exams and quizzes.

Required Writing, Problem Solving, Skills Demonstration

Demonstrating of problem solving by solving mathematical problems either in exams, quizzes, homework assignments or projects.

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, Gerken. College Algebra, 2nd ed. Mc Graw Hill, 2018
2. Required Lial, Hornsby, Schneider, Daniels. College Algebra, 13th ed. Pearson, 2020 3. Required Abramson, North. College Algebra with Corequisite Support, 2 ed. OpenStax (OER), 2021