MATH C093: SUPPORT FOR PATHWAY TO CALCULUS

Item	Value
Curriculum Committee Approval Date	10/25/2024
Top Code	170100 - Mathematics, General
Units	2 Total Units
Hours	36 Total Hours (Lecture Hours 36)
Total Outside of Class Hours	0
Course Credit Status	Credit: Support Course - Non-Degree Applicable (S)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Pass/No Pass (B)

Course Description

Math C093 is a concurrent support course for MATH C135, Pathway to Calculus. It is designed to review skills necessary for success. Topics include the structure and properties of number systems; solution and graph of functions; operations of polynomials, Synthetic Division, solving rational equations; use of Pythagorean Theorem and its converse, applications of Geometry formulas. COREQUISITE: MATH C135. Not Transferable.

Course Level Student Learning Outcome(s)

1. Demonstrate proficiency of concepts to solve, graph, model, and apply various algebraic functions.
2. Apply geometry formulas.
3. Use appropriate technology such as calculators or computer software to enhance mathematical thinking, visualization, and understanding, and judge the reasonableness of the results.

Course Objectives

- 1. Solve quadratic and rational equations and inequalities.
- 2. Find the domain, range, and inverse and graph (with the translations) the following: linear, radical, polynomials, rational, exponential, and logarithmic functions.
- 3. Manipulate polynomials and solve polynomials equations using the rational zero theorem, synthetic division, the remainder theorem, and the factor theorem.
- 4. Solve radical equations and rational equations.
- 5. Solve geometry problems by using formulas.
- 6. Solve right triangles and applications by using Pythagorean theorem.

Lecture Content

Algebra Essentials Graph Inequalities Use of Interval Notation Use the Laws of Exponents Evaluate Square Roots Use a Calculator to Evaluate Exponents Geometry Essentials The Pythagorean Theorem and Its Converse Geometry Formulas Congruent Triangles and Similar Triangles Polynomials Add and Subtract Polynomials Multiply Polynomials Formulas for Special Products Divide Polynomials Using Long Division Factoring Polynomials The Difference of Two Squares Factor Perfect Squares Factor a Second-Degree Polynomial Synthetic Division Divide Polynomials Rational Expressions Multiply and Divide Rational Expressions Add and Subtract Rational Expressions The Least Common Multiple Method Simplify Complex Rational Expressions Rational Exponents Simplify Radicals Rationalize Denominators and Numerators Simplify Expressions with Rational Expressions Solving Equations and their applications Linear Equations Quadratic Equations Rational Equations Radical Equations

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Text, One Way (61)
- Cable (CA)

Instructional Techniques

The instructor shall deliver lectures of course content; assign homework and quizzes; deal with math anxiety by establishing a friendly, student-centered learning environment; relate material in the course to real life and the outside world; involve active learning; and require participation and regular, substantive interaction (RSI), including student-to-student and student-to-instructor interaction through the use of individual, small-group and whole-class discussion; apply and include technology to increase motivation such as graphing calculators, computer software; and include appropriate methods of summative assessment including midterm and final exams.

Reading Assignments

Reading assignments are included as part of study for completing homework, quizzes, midterm exam(s), final exam, interaction and discussion, and individual or group projects as assigned.

Writing Assignments

Written and computer-based assignments are included as part of study for completing homework, quizzes, midterm exam(s), final exam, interaction and discussion at Discussions board, and individual or group projects as assigned.

Out-of-class Assignments

Out-of-class assignments are included as part of study for completing homework, quizzes, midterm exam(s), final exam, and individual or group projects as assigned.

Demonstration of Critical Thinking

Students will be able to choose from a variety of approaches to solve and explain solutions and justify reasoning verbally or in writing and may be included in classroom discussions, quizzes, midterm examination(s), final examination, and projects.

Required Writing, Problem Solving, Skills Demonstration

Students will be able to choose from a variety of approaches to solve and explain solutions and justify reasoning verbally or in writing, and may be included in classroom discussions, quizzes, midterm examination(s), final examination, and projects.

Eligible Disciplines

Mathematics: Master's degree in mathematics or applied mathematics OR bachelor's degree in either of the above AND master's degree in statistics, physics, or mathematics education OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Abramson, J.. Precalculus Integrated Review, 2nd ed. Arizona State University, OpenStax, 2024

Software Resources

1. Integrated Review. MyOpenMath, 2nd ed. Open Educational Resources