MATH 0012S - JUST IN TIME SUPPORT FOR MATH 12 COLLEGE ALGEBRA

Catalog Description

Corequisite: Concurrent enrollment in Math 12
Hours: 36 lecture
Description: Just in time support covering the core prerequisite skills, competencies, and concepts from College Algebra. Intended for students who are concurrently enrolled in Math 12. Topics include competencies from Intermediate Algebra that are needed to understand the basics of College Algebra. (not degree applicable) (pass/no pass grading)

Course Student Learning Outcomes

- CSLO #1: Solve equations and word problems, including linear, quadratic, polynomial, rational, absolute value, and radical equations.
- CSLO #2: Simplify algebraic expressions using the order of operations, properties of exponents/radicals, and mechanics of fractions.
- CSLO #3: Graph linear functions, quadratic functions, and circles.
- CSLO #4: Solve systems of equations using graphing, substitution, and elimination.

Effective Term

Spring 2021

Course Type

Credit - Nondegree-applicable

Contact Hours

36

Outside of Class Hours

72

Total Student Learning Hours

108

Course Objectives

Students will be able to:
1. Solve equations, including linear, quadratic, polynomial, rational, absolute value, and radical equations;
2. Simplify algebraic expressions using the order of operations, properties of exponents/radicals, and mechanics of fractions;
3. Solve word problems leading to linear, quadratic, polynomial, rational, absolute value, and radical equations;
4. Graph linear and quadratic functions;
5. Solve systems of equations using graphing, substitution, and elimination;
6. Identify and graph circles and parabolas, labeling the center and vertex.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- Not Transferable

Methods of Evaluation

- Classroom Discussions
  - Example: 1. In class, small group collaborative learning activity - Students will compare how different types of functions can be used in modeling data sets from business, science, and nature. They will then choose the most appropriate model in each case and make predictions based on the chosen models. 2. After reading about Galileo's contribution to astronomy, investigate the projectile motion of an object thrown near the Earth's surface and its curved path under the force of gravity.
- Problem Solving Examinations
  - Example: 1. Find the real and complex roots of a given polynomial equation. This question is graded based on the clarity, appropriate mathematical vocabulary, the correctness of the method used and of the roots found. 2. Solve a system of equations by graphing, substitution, and elimination. This question is graded based on the clarity, appropriate mathematical vocabulary, and the correctness of the solutions found.
- Projects
  - Example: 1. Students work in groups using department catapults to launch balls and measure the length of the launch on the ground. Measure the height at the halfway point of the launch. Use the ordered pairs to create an equation for the parabolic path of the balls. 2. You want to drive from Rocklin to Reno to Elko. It is 98 miles from Rocklin to Reno and 214 miles from Reno to Elko. You want to make the total trip in five hours. You can drive five miles per hour faster on the trip from Reno to Elko than you can from Rocklin to Reno. What speed should you drive from Rocklin to Reno? Students work in groups graphing times vs speed to investigate the solution. Represent this problem both graphically and algebraically.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. In class, small group collaborative learning activity - Students will compare how different types of functions can be used in modeling data sets from business, science, and nature. They will then choose the most appropriate model in each case, and make predictions based on the chosen models.

2. After reading about Galileo's contribution to astronomy, investigate the projectile motion of an object thrown near the Earth's surface and its curved path under the force of gravity.

Distance Learning

1. In small virtual groups, students will compare how different types of functions can be used in modeling data sets from business, science, and nature. They will then choose the most appropriate model in each case, and make predictions based on the chosen models.
2. After reading about Galileo's contribution to astronomy, investigate the projectile motion of an object thrown near the Earth's surface and its curved path under the force of gravity.

Typical Out of Class Assignments
Reading Assignments

1. In the text, read about real world applications of parabolas. Note the significance of the vertex. 2. Read Standard and Poor's 500 to investigate the relative risk of stocks.

Writing, Problem Solving or Performance

1. Build a model of a playpen that expresses area as a function of length of the playpen, holding the width constant. 2. Investigate the pricing of various sized orders of chicken nuggets at fast food restaurants and determine the real-world context for slope and the y-intercept.

Other (Term projects, research papers, portfolios, etc.)
Required Materials

- College Algebra
  - Author: Sullivan
  - Publisher: Pearson/Prentice Hall
  - Publication Date: 2016
  - Text Edition: 10th
  - Classic Textbook?: No
  - OER Link:
  - OER:
- College Algebra
  - Author: Abramson
  - Publisher: OpenStax
  - Publication Date: 2017
  - Text Edition: 1st
  - Classic Textbook?: No
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.