

# MATH 075: COREQUISITE SUPPORT FOR PRE-CALCULUS

## Citrus College Course Outline of Record

| Heading                       | Value  |
|-------------------------------|--|
| Effective Term:               | Fall 2024                                    |
| Credits:                      | 2  |
| Total Contact Hours:          | 36   |
| Lecture Hours :               | 36   |
| Lab Hours:                    | 0  |
| Hours Arranged:               | 0  |
| Outside of Class Hours:       | 72   |
| Total Student Learning Hours: | 108  |
| Prerequisite:                 | Direct placement based on multiple measures. |
| Corequisite:                  | MATH 175.                                    |
| Transferable to CSU:          | No   |
| Transferable to UC:           | No   |
| Grading Method:               | Pass/No Pass                                 |

## Catalog Course Description

A review of the core prerequisite skills, competencies, and concepts needed in pre-calculus. Intended for majors in science, technology, engineering, and mathematics (STEM) who are concurrently enrolled in MATH 175, Pre-Calculus, at Citrus College. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, conic sections, functions including composition and inverses, an in-depth focus on quadratic functions, and a review of topics from geometry. This course is appropriate for students who are confident in their graphing and beginning algebra skills. A graphing calculator is required for this course. 36 lecture hours.

## Course Objectives

- Simplify or reorganize expressions by:
  - Performing operations on rational expressions
  - Performing operations on radical expressions
  - Applying properties of rational exponents
  - Applying properties of logarithms
- Solve each of the following:
  - Absolute value equations
  - Quadratic equations
    - 1. By extracting roots
    - 2. By completing the square
    - 3. Using the quadratic formula
  - Rational equations
  - Radical equations
  - Exponential equations
  - Logarithmic equations
- Solve systems of two equations
  - Algebraically
  - Using a graphing calculator
- Recognize and graph elementary conics
  - Circle
  - Parabola
- Solve and interpret the solutions of application problems
- Simplify or reorganize functions given a
  - Sum
  - Difference
  - Product
  - Quotient
  - Composition of two functions
- Inspect and analyze a graph in order to:
  - Determine whether the graph represents a function or is a 1-to-1 function
  - Evaluate the

function. Determine the domain and range of a function. Determine the max or min of a quadratic function

- Find the domain and range of the following functions:
  - Rational functions
  - Polynomial functions
  - Functions involving radicals
- Apply formulas to evaluate perimeter, area, surface area and volume of geometric objects

## Major Course Content

A just-in-time approach to:

1. Graphing of linear, absolute value, quadratic functions
2. Writing equations from the graphs of linear and quadratic functions
3. Using graphic, numeric and analytic methods to solve linear, quadratic, and rational equations
4. Fundamental operations with exponents and radicals and solving equations with the same
5. Solving application problems
6. Linear systems of equations
7. Exponential and logarithmic functions, their graphs, their inverse relationship and applications
8. Essential vocabulary, properties, and characteristics of geometric objects
9. Applying formulas to evaluate perimeter, area, surface area and volume of geometric objects

## Suggested Reading Other Than Required Textbook

Students will be provided with reading assignments on topics such as affective domain and growth mindset to help students overcome self-sabotaging behaviors, such as missing class, not doing homework, and non-participation in class-room activities.

## Examples of Required Writing Assignments

Students will be expected to write short self-reflection papers to help them develop meta-cognitive strategies to develop skills that will allow them to take charge of their learning of algebraic concepts, and to develop a plan of action to improve study skills to prepare for assessments in the course.

## Examples of Outside Assignments

Students will be able to use exponential and logarithmic functions to predict population growth/decay using data points and finding the growth/decay factor.

## Instruction Type(s)

Lecture, Online Education Lecture