CLOUD COUNTY COMMUNITY COLLEGE

Our Mission: Cloud County Community College prepares students to lead successful lives and enhances the vitality of our communities.

**GENERAL INFORMATION**

**Course Number and Title:** MA 104 Technical Math

**Term and Year:**Academic Year 2022-2023

**Credit Hours**: 3

**Course Description**: This course is intended as a terminal course for students seeking an AAS degree or various certificates. This course will not fulfill prerequisites for either Intermediate Algebra or College Algebra and will not serve as a replacement for these classes to satisfy degree requirements for mathematics courses. This course covers the mathematics commonly used in technical fields at an elementary level. Topics covered may include, but are not limited to, the following: review of arithmetic operations and the Order of Operations agreement, simplifying various algebraic expressions, solving various types of equations, setting up and solving ratios, proportions and variation problems, rules for how to work with exponents and radicals, conversion of measurements between different systems, formulas for perimeter, area and volume of basic geometric objects, angles and trigonometric ratios, and personal finance tools and technologies.

**Prerequisites**: None

****Division:**** Mathematics, Science, and Technical Programs
**Department:** Mathematics and Engineering

**STUDENT LEARNING OUTCOMES AND ASSESSMENT**

**Course Learning Outcomes**

For this course, students are expected to demonstrate the skills associated with the course learning goals as described by the student learning outcomes below:

1. Demonstrate knowledge of and perform arithmetic operations on fractions, decimals, and signed numbers
2. Demonstrate knowledge and use of order of operations and scientific notation
3. Demonstrate knowledge and use of algebraic operations
4. Demonstrate knowledge of and ability to simplify rational expressions and equations including those with complex fractions
5. Demonstrate knowledge and ability to solve algebraic equations in one variable
6. Demonstrate knowledge and ability to set up and solve problems with ratios, proportions, and variation
7. Demonstrate knowledge and use of the rules for exponents and radicals, including the complex number system (limited to simplifying imaginary numbers)
8. Demonstrate knowledge and ability to solve literal equations and formulas for a single variable
9. Demonstrate knowledge and ability to make conversions between units of measure, customary and metric
10. Demonstrate knowledge and measurements of triangles, circles, polygons and geometric solids and their respective formulas for perimeter, area, circumference, and volume
11. Demonstrate knowledge and measurement of angle types
12. Demonstrate knowledge and use of the Pythagorean Theorem
13. Demonstrate knowledge and use of trigonometric ratios to find angles and sides
14. Demonstrate knowledge and use of personal finance tools and technologies including but not limited to banking, investing, and data visualization

In class, students are assessed on the mastery of these outcomes using the learning management system. Student names will not be used when reporting results. Outcomes-based assessment is used to improve the instructional planning, design, and quality of student learning throughout the college

**General Education Outcomes**

For this course, students are expected to demonstrate the skills associated with the college wide learning goals as described by the general education/program outcomes below:

GEM1. Recognize the mathematical concepts that are applicable to a scenario.

GEM2. Apply technology in analysis.

GEM3. Accurately interpret, validate, and communicate the result.

Artifacts of student work are collected from general education course and reviewed by a faculty committee to assess general education outcomes. Artifacts may also be reviewed by a professional outside the college. Student names will not be used when reviewing artifact nor reporting results. Program accomplishment is partially measured through performance on program outcomes. Outcomes-based assessment is used to improve the instructional planning, design, and quality of student learning throughout the college.

**Institutional Learning Outcomes**

For this course, students are expected to demonstrate the skills associated with the college wide learning outcomes as described below.

*Employment*

ILO\_Em1. Demonstrate knowledge of norms and expectations of professional environments.

ILO\_Em2. Demonstrate skills in working with others in a professional and constructive manner.

In class, students are assessed on the mastery of these outcomes. Student names will not be used when reporting results. Outcomes-based assessment of the institutional learning outcomes is used to ensure we are meeting the mission of the college, following the guiding values and enhance instructional planning, design, and quality of student learning throughout the college.