RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

Math 106 – Technical Math

I. Basic Course Information

A. Course Number and Title: Math 106 Technical Math

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2024

D. Effective Term: Fall 2025

E. Sponsoring Department: Mathematics

F. Semester Credit Hours: 3

G. Weekly Contact Hours: 3 Lecture: 3
Laboratory: 0
Out of class student work per week: 6 hours

H. ☐ Prerequisite (s): Math 020 Elementary Algebra, MATH 020W Elementary Algebra with Workshop or appropriate score on placement test.
☐ Corequisite (s):

I. Additional Fees: none

II. Catalog Description

Prerequisites: MATH 020 Elementary Algebra, MATH 020W Elementary Algebra with Workshop or a satisfactory score on a placement test. This course serves as General Education Mathematics elective for AAS degrees only.

Intended for students in technical programs who have elementary algebra proficiency and need to apply mathematical concepts in a technical program. Topics including ratios and proportions, metric measures, geometry, practical algebra, and elementary trigonometry are covered with emphasis upon their applications to technical programs.

III. Statement of Course Need

A. This course is designed for Electrical Utility, Environmental Control or other technical preparation programs. This course equips students with mathematics skills that are essential in the technical field. The course engages students with relevant concepts and visual applications such as measurement and unit conversion, two- and three-dimensional geometry, right triangle trigonometry, pie chart and bar graph data. Basic arithmetic and algebra is reviewed and solidified with emphasis on technical applications designed to enable student success in the problem solving process.

B. No lab component

C. This course is intended as a General Education course in Mathematics for AAS degrees only. It is not intended for transfer.

IV. Place of Course in College Curriculum

A. Free Elective
B. This course serves as a General Education Elective in Mathematics for AAS degrees.
C. This course meets a mathematics requirement in Technical programs (AAS) as specified.
D. Course transferability; for New Jersey schools go to the NJ Transfer website, www.njtransfer.org. For all other colleges and universities go their individual websites.

V. Outline of Course Content

A. Review of Order of operations, Fractions, Decimals, Percent, Powers and Roots and Signed numbers.

B. Foundations and Representation of Numbers
    1. Rounding Numbers (and significant digits)
    2. Scientific and Engineering Notations
    3. Approximation, Accuracy , Error

C. Measurement and its Application: U.S. System and Metric
    1. Length
    2. Mass and Weight
    3. Volume and Area
    4. Metric and U.S. Conversion

D. Ratio and Proportion and their applications
    1. Ratio / Proportion / Percent

E. Equations, Formulas and their applications
    1. Basics of Solving Equations
    2. Translating Words to Algebraic Symbols
    3. Formulas

F. Linear Equations and their applications
    1. Graphs of linear equations
    2. Slope of a line

G. Systems of Linear Equations and their applications
    1. Solving systems of linear equations using graphing and substitution approach

H. Quadratic Equations and its applications
    1. Solve using Basic Square Root Method
    2. Solve using Quadratic Formula
    3. Graphs of quadratic equations

I. Geometry
    1. Angles
    2. Area and Volume
    3. Quadrilaterals and triangles
    4. Circles
    5. Radian Measure

J. Right Triangle Trigonometry and its applications
    1. Trigonometric ratios
    2. Solve right triangles

K. Data Representation
    1. Bar graphs
    2. Circle graphs
    3. Line graphs
    4. Other graphs

VI.

A. <u>Course Learning Outcomes</u>:

At the completion of the course, students will be able to:

1. Perform unit conversions (GE- 2)
2. Solve technical applications involving linear equations, quadratic equations and systems of linear equations (GE- 2)
3. Apply percent, ratio, and proportion to solve technical applications (GE- 2)
4. Recognize and solve applications involving the geometry of angles, polygons and circles. (GE-NJ 2)
5. Solve technical applications involving right triangle trigonometry (GE-2)
6. Express quantities in scientific and engineering notation (GE- 2)
7. Interpret and create charts and graphs for data representations (GE- 2)

B. <u>Assessment Instruments</u>

A. tests
B. projects
C. quizzes
D. final exam

VII. Grade Determinants

A. tests
B. projects
C. quizzes
D. final exam

Modes of Teaching and Learning

A. lecture/discussion
B. small-group work
C. computer-assisted and calculator instruction
D. laboratory
E. student collaboration

VIII. Texts and Materials

A. Suggested textbook**:** *Elementary Technical Mathematics,* current edition, by Ewen.
B. Scientific calculator

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

This courses uses tools that are currently owned by the mathematics department. They include Micrometer calipers, Vernier calipers, surveying transit and tripod.

X. Check One: ☐Honors Course ☐Honors Options ☒ N/A