RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

MATH-103C QUANTITATIVE REASONING

I. Basic Course Information

A. Course Number and Title: Math-103C Quantitative Reasoning

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2023

D. Effective Term: Fall 2024

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

H. ☒ Prerequisite (s): MATH 020 Elementary Algebra or MATH 020W Elementary Algebra with workshop or satisfactory score on a placement test.

☐ Corequisite (s):

☐ Prerequisite (s) and Corequisite (s):

I. Additional Fees**:** None

J. Name and E-Mail Address of Department Chair and Divisional Dean at time of approval**:**
Lori Austin: Lori.Austin@raritanval.edu (Department Chair);
Sarah Imbriglio: Sarah.Imbriglio@raritanval.edu (Division Dean).

II. Catalog Description

Prerequisite: MATH 020 Elementary Algebra, MATH 020W Elementary Algebra with Workshop or satisfactory score on placement test.
Quantitative Reasoning is designed for students who need a general education math course for their major or program. This course builds upon algebra and introduces mathematical concepts that students will apply to solve quantitative reasoning problems. Topics include concepts, methods and visual representation in numerical reasoning, statistical thinking and problem solving. Students will apply these to

problems in areas such as personal finance, environment, population, health applications and data in students' daily lives.

III. Statement of Course Need

A. This is a general education math course in quantitative reasoning built on a basic algebra prerequisite to serve students in liberal arts majors as well as career/technical programs.
B. There is no lab component to this course.
C. This course generally transfers as a Mathematics general education course dependent on the transfer institution.

IV. Place of Course in College Curriculum

A. This course is a free elective.
B. This course serves as a General Education course in mathematics.
C. This course is a program option for various AAS degree programs and various certificates.
D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

Throughout the course, current as well as historical data across many disciplines will be utilized for illustration and teaching of the concepts, as well as for student learning through problem solving and critical thinking.

A. Logic and sets
   1. Propositions and truth values
   2. Sets and Venn diagrams
   3. Analyzing arguments (symbolic, syllogistic, truth tables)

B. Numerical reasoning
   1. Ratios and proportions
   2. Unit conversions
   3. Percentage change
   4. Scaling
   5. Index numbers, such as CPI

C. Statistical thinking
   1. Measures of center
   2. Measures of spread
   3. Standard deviation
   4. Bar graphs, histograms

D. Quantitative applications
   1. Compound interest

2. Savings plans and loan payments
3. Taxes
4. Voting methods
5. Apportionment

VI. A. Course Learning Outcomes

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

1. Use numeric and graphical representations of data and functions to interpret and communicate quantitative problems. (GE-1)
2. Solve application problems utilizing ratios, proportions, percents, or unit conversions. (GE-2)
3. Solve problems from areas such as consumer index numbers, compound interest, loan payments, taxes, and voting methods. (GE-2)
4. Apply basic concepts of statistics to data. (GE-2)
5. Use technology to analyze and solve real-world quantitative applications. (GE-4)
6. Analyze the validity of mathematical and non-mathematical arguments. (GE-2)

B. Assessment Instruments

A. tests
B. projects / spreadsheet assignments
C. quizzes / homework
D. final exam

VII. Grade Determinants

The following grade determinants will be required for the course:

A. tests
B. projects / spreadsheet assignments
C. quizzes / homework
D. final exam

The methods for teaching and learning that may be used in the course:

A. lecture/discussion
B. computer-assisted instruction
C. student collaboration

VIII. Texts and Materials

A. Suggested textbook: ***Using and Understanding Mathematics***, by Jeffrey O. Bennett (EIGHTH EDITION)
   Publisher: Pearson
B. Spreadsheet software
C. 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

A. Computer labs with spreadsheet software
B. Sources containing quantitative data of interest

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

Definition: According to the Honors Council, an Honors course is one that enriches and challenges students beyond a course's regular scope and curriculum. An Honors course will offer a sophisticated use of research, introduce intellectually stimulating readings and critical perspectives, promote a higher level of critical discussion and written work, and encourage independent study projects, at the option of the instructor.

State how the Honors or Honors Option of this course conforms to this definition. For example: the difference may include additional content, text, materials, assessment instruments, and grade determinants: