

**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: Spring 2016
- D. Effective Term: Fall 2016
- E. Sponsoring Department: Mathematics
- F. Semester Credit Hours: 3.0
- G. Weekly Contact Hours: 3.0 Lecture: 3.0
 Laboratory: 0
 Out of class student work per week: 6
- H. Prerequisite: MATH 020 Elementary Algebra MATH 020W Elementary Algebra with Workshop or satisfactory score on placement test.
- I. Laboratory Fees: none
- J. Name and Telephone Number or E-Mail Address of Department Chair at time of approval: Lynne Kowski (908) 526-1200 extension 8254
Lynne.Kowski@raritanval.edu

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.

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 meets a program requirement for various AAS and AA degree programs.
- 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. Numerical reasoning
 - 1. Data representations (manually, spreadsheet, calculator)
 - 2. Organizing data visually using charts and graphs (manually, spreadsheet)
 - 3. Representations of functions and equations (manually, spreadsheet)
 - 4. Ratios and proportions
 - 5. Weighted averages
 - 6. Percentage change and rate of change
 - 7. Units, conversions, rates
 - 8. Index numbers, such as CPI
- B. Statistical thinking
 - 1. Measures of center
 - 2. Measures of spread
 - 3. Standard deviation, z-score, and normal distributions
- C. Quantitative applications
 - 1. Personal finance
 - 2. Linear functions
 - 3. Linear regression
 - 4. Exponential functions

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

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

1. Use data and graphical representations of data and functions to interpret and communicate and interpret quantitative problems. (GE – NJ 1)
2. Solve application problems utilizing ratios, proportions or weighted averages. (GE – NJ 2)
3. Utilize percentage change and average rate of change to identify trends in and behavior of data. (GE - NJ 2)
4. Solve problems from areas such as personal finance or consumer index numbers. (GE - NJ 2)
5. Apply basic concepts of statistics to data. (GE - NJ 2)
6. Use technology to analyze and solve real-world quantitative applications. (GE - NJ 4)

B. Course Learning Outcomes

See above.

C. Assessment Instruments

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

VII. Grade Determinants

Factors that may enter into the determination of the final grade:

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

Primary formats, modes, and 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: Quantitative Reasoning: Tools for Today's Informed Citizen, by Alicia Sevilla and Kay Somers, Wiley, 2nd edition, 2013 and associated online resources
- B. Excel or other spreadsheet software
- C. Scientific or graphing 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.)

XI. Resources

- A. Computer classroom with Internet access, Excel or other spreadsheet software
- B. Computer labs with Excel or other spreadsheet software
- C. Sources containing quantitative data of interest