RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

MATH 030R Intermediate Algebra with Review

I. Basic Course Information

A. Course Number and Title: MATH030R Intermediate Algebra with Review

B. New or Modified Course: Modified

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

D. Effective Term: Fall 2024

E. Sponsoring Department: Math and Computer Science

F. Semester Credit Hours**:** 6 (NC)

G. Weekly Contact Hours**:** 6 Lecture**:** 6
Laboratory**:** 0
Out of class student work per week: 12 hours

H. ☒ Prerequisite (s): MATH020, MATH020W or appropriate placement score
☐ 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**:** Dr. Lori Austin Lori.Austin@raritanval.edu

Divisional Dean at time of approval: Dr. Sarah Imbriglio
Sarah.Imbriglio@raritanval.edu

II. Catalog Description

Prerequisite(s): Math 020 Elementary Algebra, Math 020W Elementary Algebra w/Workshop or appropriate placement score.
This course is designed to review and expand on the concepts in Elementary Algebra and prepare students for success in Precalculus I, Statistics I, Math Reasoning: Logic and

Numerical Systems or Math Reasoning: Geometry and Statistics. The topics are the same as those in Intermediate Algebra with additional focus on reviewing algebra foundations. The topics include advanced factoring, systems of equations and inequalities, numerical and graphical solutions of linear and quadratic equations and inequalities, rational and radical expressions and equations, integer and rational exponents, absolute value equations, introduction to functions and their graphs, introduction to circles.

III. Statement of Course Need

A. Students in math-intensive majors, requiring Precalculus I, Statistics I, Math Reasoning: Logic and Numerical Systems or Math Reasoning: Geometry and Statistics, who currently place into Elementary Algebra, are required to complete both Elementary and Intermediate Algebra before they are eligible for a college level course. The current Intermediate Algebra course builds upon concepts taught in Elementary Algebra. By expanding the Intermediate Algebra course to include a review of basic algebra, students who meet the criteria for Intermediate Algebra w/Basic Algebra Review can complete their remedial math requirement in one semester.

B. There is no computer lab component.

C. This course is not designed for transfer.

IV. Place of Course in College Curriculum

A. This is a remedial course and carries no college credit.

V. Outline of Course Content

A. Linear Equations and Inequalities
   1. Graphing linear equations and inequalities
   2. Slopes and rates of change
   3. Slope intercept and point-slope forms
   4. Linear applications

B. Systems of Linear Equations in Two Variables
   1. Solving systems of equations algebraically
   2. Systems of linear inequalities and their graphs

C. Polynomials and Exponents
   1. Operations of polynomials
   2. Integer exponents
   3. Division of polynomials

D. Factoring Polynomials and Solving Quadratic Equations
   1. Factoring trinomials
   2. Special types of factoring

3. Solving quadratic equations by factoring
4 Solving higher degree polynomial equations by factoring

E. Rational Expressions and Equations
1. Operations with rational expressions
2. Complex rational expressions
3. Rational equations, formulas and applications

F. Introduction to Functions
1. Basic concepts and functions and their representations
2. Linear functions and their graphs
3. Compound inequalities
4. Other functions and graphs, including absolute value functions
5. Absolute value equations and inequalities

G. Radical Expressions and Functions
1. Radical expressions
2. Simplifying rational exponents
3. Operations with radicals
4. Radical equations and their applications
5. Complex numbers
6. The distance formula
7. Introduction to circles

H. Quadratic Equations and Inequalities
1. Quadratic functions and their graphs
2. Solving quadratic equations by the square root property, completing the square and the quadratic formula.
3. Equations in quadratic form
4. Quadratic applications
5. Quadratic Inequalities in one variable

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

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

1. Develop and graph linear equations. (GE-2)
2. Solve systems of linear equations and inequalities. (GE-2)
3. Factor and divide polynomial expressions. (GE-2)
4. Solve and graph quadratic equations and inequalities. (GE-2)
5. Simplify rational expressions and solve rational equations. (GE-2)
6. Simplify expressions that contain integer and rational exponents. (GE-2)
7. Solve absolute value equations and inequalities. (GE-2)
8. Simplify radical expressions and solve radical equations. (GE-2)
9. Solve application problems. (GE-2)

B. Assessment Instruments

1. Classwork/homework/quizzes
2. Chapter tests (required)
3. Departmental final exam (required)
4. Online homework assignments (required)

VII. Grade Determinants

A. Chapter tests (required)
B. Assignments/homework/quizzes
C. Final exam (required)
D. Online homework assignments (required)
E. Other teacher determined items

The departmental cumulative final exam will be used to assess all of the learning outcomes listed in Section VI, Part A.

A. Lecture/active learning
B. Small-group work
C. Computer-assisted instruction

VIII. Texts and Materials

A. Suggested textbook: Beginning and Intermediate Algebra with Applications and Visualization by Gary K. Rockswold &Terry A.Krieger, 4th edition, Pearson.

The following statement should be included in the outline:
(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

Suggested resource: MyMathLab, Pearson

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.