RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

MATH 101R Number Systems w/Review

I. Basic Course Information

A. Course Number and Title:	MATH 101R Number Systems w/Review
B. New or Modified Course:	Modified
C. Date of Proposal:	Semester: Fall Year: 2017
D. Effective Term:	Fall 2018
E. Sponsoring Department:	Mathematics
F. Semester Credit Hours:	3
G. Weekly Contact Hours:	Lecture: 4 (3 credit, 1 non-credit) Laboratory: 0 Out of class student work per week: 8
H. Prerequisites/Corequisites:	Satisfactory score on a 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 x8254 or Lynne.kowski@raritanval.edu

II. Catalog Description

Prerequisites: Satisfactory score on a placement test. A survey course designed to serve the needs of liberal arts majors. The topics are the same as those in Number Systems with additional focus on reviewing appropriate algebra foundations as needed. Topics include systems of numeration, sets and set operations, logic, problem solving strategies, modular arithmetic, Euclidean geometry, and number theory. MATH 101R will **not** satisfy mathematics requirements for students in science, mathematics, and Business Administration AS programs.

III. Statement of Course Need

A. Students in non math-intensive majors who currently place in the upper range of the Elementary Algebra domain of the Accuplacer are required to complete Elementary Algebra before enrolling in a college level course. This course merges appropriate content from Elementary Algebra with the content in Number Systems to provide students with review as needed throughout the course, allowing them to complete their math requirement in one semester. Students successfully completing this course will have earned 3 credits in Number Systems, the additional non-credit of lecture is needed for the additional algebra review integrated into the course.

B. There is no lab component.

C. This course generally transfers as a mathematics general education course.

IV. Place of Course in College Curriculum

A. Free Elective
B. This course serves as a General Education course in Mathematics.
C. This course meets a program requirement for AAS Computer Networking, AAS Computer Programming.
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

A. Reasoning
   1. Inductive Reasoning & Deductive Reasoning
   2. Problem Solving

B. Sets
   1. Concepts
   2. Operations
   3. Representation
   4. Applications

C. Logic
   1. Logical operators
   2. Truth tables
   3. Symbolic and syllogistic arguments

D. Systems of Numeration
   1. Historic Numeration Systems
   2. Non-decimal number bases and computation

E. Number theory and the real number system

1. Arithmetic, geometric, and Fibonacci sequences

F. Geometry
   1. Points, lines, planes, angles
   2. Volume and Surface Area of solids
   3. Transformation and Tessellations

G. Mathematical Systems
   1. Finite and Infinite Mathematical systems
   2. Modular arithmetic

H. Algebra Skills Reviewed throughout Course
   1. Properties of real numbers
   2. Order of operations
   3. Simplifying variable expressions
   4. First-degree equations with one unknown
   5. Inequalities
   6. Formulas
   7. Exponents; radical expressions

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 fundamental set concepts to make valid conclusions. (GE-NJ2)
2. Analyze the validity of mathematical and non-mathematical arguments. (GE-NJ 2)
3. Solve problems using deductive and inductive reasoning ~~and strategies.~~ (GE-NJ 2)
4. Identify basic Euclidean geometry of points, lines, planes and angles. (GE-NJ 2).
5. Convert among various numeration systems including. Mathematical bases. (GE-NJ 2)

B. Course Learning Outcomes:

See above

C. <u>Assessment Instruments may include</u>

A. midterm and final examination
B. projects and/or collaborative activities
C. quizzes
D. homework
E. computer assignments

VII. Grade Determinants

All the following grade determinants that will be *required* for the course.

A. midterm and final exam
B. projects/activities
C. quizzes
D. computer assignments

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

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

VIII. Texts and Materials

A. Suggested textbook**:** *A Survey of Mathematics with Applications*, current edition, by Angel, Abbott, and Runde, custom edition for RVCC
B. scientific calculator
C. Pearson MyMathLab

(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

No other resources will be needed.