

**RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE**

MATH 101 Number Systems

I. Basic Course Information

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| A. Course Number and Title: | MATH 101 Number Systems |
| B. New or Modified Course: | Modified |
| C. Date of Proposal: | Semester: Fall 2017 |
| D. Effective Term | Fall 2018 |
| E. Sponsoring Department: | Mathematics |
| F. Semester Credit Hours: | 3 |
| G. Weekly Contact Hours: | Lecture: 3
Laboratory: 0
Out of class student work per week: 6 |
| H. Prerequisites/Corequisites: | MATH 020 Elementary Algebra or MATH 020W Elementary Algebra with workshop or 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: MATH 020 Elementary Algebra, MATH 020W Elementary Algebra with workshop or satisfactory score on a placement test. A survey course designed to serve the needs of liberal arts majors. Topics include systems of numeration, sets and set operations, logic, problem solving strategies, modular arithmetic, Euclidean geometry, and number theory. MATH 101 will **not** satisfy mathematics requirements for students in science, mathematics, and Business Administration AS programs.

III. Statement of Course Need:

- A. This is a survey course designed to serve the needs of liberal arts majors.

- B. There is no lab component to this course.
- C. This course transfers as a mathematics general education course to many schools accepting mathematics for liberal arts majors.

IV. Place of Course in College Curriculum

- A. Free elective.
- B. The course serves as a General Education course in Mathematics.
- C. The 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; 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

VI. Educational Goals and 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 (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. Assessment Instruments may include

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

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

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. student collaboration

VIII. Texts and Materials

- A. Suggested textbook: *A Survey of Mathematics with Applications*, current edition, by Angel, Abbott, and Runde, Pearson Publishing
- 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

No other resources will be needed.

X. Honors Option

This course does not have an honors option.