RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

MATH 113 PRECALCULUS II

I. Basic Course Information

A. Course Number and Title: MATH 113 Precalculus II

B. New or Modified Course: Modified Course

C. Date of Proposal: Semester: Fall Year: 2024

D. Effective Term: Fall 2025

E. Sponsoring Department: Mathematics and Computer Science

F. Semester Credit Hours: 3

G. Weekly Contact Hours: 4
Lecture: 3
In Class Practice/Exploratory session: 1
Out of class student work per week: 8

H. ☒ Prerequisites: MATH 112 Precalculus I, with a grade of C or higher
☐ Corequisite (s):

I. Laboratory Fees: No

II. Catalog Description

Prerequisite: MATH 112 Precalculus I, with a grade of C or higher. This course is designed as the second semester of a two semester sequence for students preparing to study calculus. Topics include the study of trigonometric functions and other topics from trigonometry and analytic geometry.

III. Statement of Course Need

A. This course is the first in a two course sequence that prepares students for the study of Calculus.
B. This course has a lab component that allows for in class practice of the lecture material through paper lab assignments.
C. This course transfers as a mathematics course in most liberal arts programs.

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 A.S., A.A.S. and A.A. degrees.
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. Trigonometric Functions
    1. Radian and degree measure
    2. Circular and right triangle trigonometry
    3. Trigonometric graphs
    4. Inverse trigonometric functions
    5. Trigonometric models

B. Analytic Trigonometry
    1. Trigonometric identities
    2. Trigonometric equations
    3. Trigonometric formulas
    4. Law of Sines, Law of Cosines
    5. Vectors

C. Topics in Analytic Geometry
    1. Parabolas
    2. Hyperbolas
    3. Ellipses
    4. Polar coordinates and polar graphs (optional)

VI. A. Course Learning Outcomes

At the completion of the course Students will be able to:

1. apply mathematical arguments to problems. (GE-2)
2. solve problems quantitatively and symbolically. (GE-2)
3. Specify the graphical and algebraic characteristics of trigonometric functions.
4. Solve application problems using the Law of Cosines, the Law of Sines, vectors, and Right Triangle Trigonometry.
5. Verify identities and solve equations by using fundamental trigonometric identities, double angle, product-to-sum, sum-to-product, sum, difference, and half-angle.
6. Identify the characteristics of the conic sections graphically and algebraically.

B. <u>Assessment Instruments</u>

Student learning outcomes are assessed using a combination of the following:

A. tests
B. final examination
C. projects
D. laboratory products
E. quizzes

VII. Grade Determinants

Final grades are determined by a combination of the following:

A. cumulative final examination
B. tests
C. Exploratory/Practice assignments
D. projects
E. individual teacher determinants

Instructors can use a variety of modes of teaching including, but not limited to the following:

A. lecture/discussion
B. small-group work
C. computer-assisted instruction
D. Exploratory/Practice assignments
E. student oral presentations
F. student collaboration
G. independent study

VIII. Texts and Materials

The following text and materials are required for the course:

A. Suggested Textbook: *Precalculus* by Blitzer, published by Pearson Prentice Hall
B. Scientific calculator is required.

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 unusual resources are needed.

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

This course does not have an honors option because there is a dedicated course (Math 114H) for students wishing to take an honors level Precalculus course.