COURSE TITLE: College Algebra with Trigonometry

COURSE SUBJECT AND NUMBER: MATH 150

DEPARTMENT: Mathematics and Engineering Science

CREDIT HOURS: 4

CONTACT HOURS: 4 lecture

SEMESTER COURSE IS OFFERED: ☒Fall ☒Spring ☒Summer

OFFERED DISTANCE LEARNING: Yes

PREREQUISITE(S): Yes If 'Yes', list: One course in algebra plus an additional course in geometry or algebra II at the high school or college level

COREQUISITE(S): No If 'Yes', list:

PREREQUISITE(S) OR COREQUISITE(S): No If 'Yes', list:

TEXT(S): Open Educational Resources (OER)

LAB FEE: No

FINAL EXAM/FINAL PROJECT: Yes Final Exam

ORIGINAL SUBMISSION DATE:

CURRICULUM COMMITTEE APPROVED REVISION DATE: 04/07/14

PREPARED BY: Math Faculty
COURSE DESCRIPTION: The course includes a review of algebra and numerical trigonometry. Topics include factoring, rational expressions, solving linear and quadratic equations, solving simultaneous linear equations, functions, lines, exponentials, logarithms, numerical trigonometry and solving triangles. This course requires the use of a scientific calculator. The course may be followed by MATH 165, Basic Calculus with Analytical Geometry or MATH 170, Precalculus.

ACTIVITIES AND ASSIGNMENTS: May include but are not limited to: quizzes, in-class assignments, take-home assignments, homework and unit tests.

GRADE COMPUTATION: (In general terms as defined by college policy. Specifics, including Z grade, will be defined on the instructor's syllabus.)
Class average: 50-75%
Final Exam: 25-50%

ADA COMPLIANCE: In compliance with the Americans with Disabilities Act of 1990 and with Section 504 of the Rehabilitation Act, Hudson Valley Community College is committed to ensuring educational access and accommodations for all its registered students, in order to fully participate in programs and course activities or to meet course requirements. Hudson Valley Community College's students with documented disabilities and medical conditions are encouraged to access these services by registering with the Center for Access and Assistive Technology to discuss their particular needs for accommodations. For information or an appointment contact the Center for Access and Assistive Technology, located in room 130 of the Siek Campus Center or call 518-629-7154/TDD:518-629-7596.

STUDENT BEHAVIORAL OBJECTIVES:
Students will be able to:
• perform binary operations on a rational or radical expression and simplify
• solve linear, quadratic, radical, rational, exponential and logarithmic equations
• solve a system of two linear equations graphically and algebraically
• evaluate algebraic and transcendental functions
• graph linear, quadratic, exponential, and trigonometric functions of the form $y = a \sin(x)$ and $y = a \cos(x)$
• solve and graph linear inequalities in one variable
• perform binary operations with complex numbers and simplify
• solve applied problems using the tools of algebra and trigonometry

TOPIC OUTLINE:

• Algebraic and radical expressions and equations; linear inequalities
  • addition, subtraction, multiplication and division of algebraic and radical expressions including long division of polynomials
  • integral exponents
  • solving first degree and radical equations
- solving word problems: uniform motion and financial
- solving inequalities and number line graphs

- Rational expressions and equations
  - factoring: common factors, binomial and trinomial factoring, factor by grouping
  - rational powers
  - solving radical quadratic equations using factoring and/or square root principle
  - arithmetic operations with algebraic fractions
  - complex fractions
  - fractional equations
  - solving literal equations

- Functions; right and oblique triangles
  - domain (from the function and graph) and range (graphically)
  - inverses
  - composition of functions
  - right triangle trig and the Pythagorean Theorem
  - laws of sines (including the ambiguous case) and cosines
  - co-functions, reciprocal trig functions, and inverse trig functions
  - radian measure
  - arc length
  - graphing sine and cosine (amplitude and reflection across x–axis only; no phase shift; no other transformations)

- Exponential and logarithmic functions; complex numbers
  - graphing of exponential and logarithmic equations
  - solving exponential and logarithmic equations
  - applications of exponential and logarithmic equations
  - arithmetic operations and powers with complex numbers

- Linear, quadratic and radical equations; systems of linear equations
- graphing functions: lines and parabolas
- slopes; intercepts of lines
- intercepts of parabolas
- writing the equation of a line
- solving systems of two linear equations algebraically and graphically
- solving systems of three linear equations algebraically
- solving quadratics by factoring, completing the square and quadratic formula
- applications of quadratic functions