

Common Course Outline
MATH 135
Applied Algebra and Trigonometry
3 Semester Hours

The Community College of Baltimore County

Description

Math 135 – 3 Credits
Applied Algebra and Trigonometry

Covers a wide range of real world applications of college-level algebraic and trigonometric topics, such as linear and quadratic equations, right-triangle trigonometry and vectors, and exponents and logarithms, and students will develop problem-solving skills relevant to their disciplines. This course is primarily for students in certain technically oriented disciplines. Prerequisites: ENGL 051, RDNG 052 and MATH 083.

Overall Course Objectives

Upon successful completion of this course students will be able to:

1. define various algebraic functions;
2. express concepts of algebra and trigonometry using appropriate terminology;
3. solve linear and quadratic equations in applied settings;
4. solve problems involving trigonometry, vectors, exponents, and logarithms;
5. express mathematical information in table, graphical, formulaic, and written formats;
6. apply a working knowledge of mathematical applications relevant to such fields of study as Drafting, Allied Health and to such programs as Radiation Therapy, Ultrasound, and Med Lab Tech;
7. analyze data and determine an appropriate mathematical function that describes the data;
8. apply appropriate mathematical theories, dependent upon the nature of the specific data, to make informed decisions;
9. apply appropriate technology to the solution of mathematical problems;
10. identify efficient and inefficient methods for problem solving;
11. utilize the Internet and other resources to research course-related topics;
12. construct a solution to real world problems using problem solving methods individually and in groups’
13. examine the mathematical contributions made by people from diverse cultures throughout history; and
14. articulate a solution to mathematical problems.

Major Topics

I. Review

- A. Arithmetic operations on algebraic expressions
- B. Scientific notation
- C. Ratio and Proportion
- D. Formula evaluation
- E. Rewriting application formulas in terms of any variable
- F. Evaluating application formulas for a given variable
- G. Factoring simple trinomials
- H. Laws of Exponents
- I. Linear Equations – slope, intercept

II. Basic Algebraic Operations

- A. Significant digits
- B. Converting measurements from one unit to another
- C. Solving word problems using direct and inverse variation

III. Functions and graphs

- A. Linear functions, quadratic functions, and tables of data
- B. Representations of a function (e.g., table, graph, formula)

IV. Solve equations

- A. 2x2 systems of linear equations and applications
- B. Solving quadratic equations with the quadratic formula

V. Trigonometric functions

- A. Six trigonometric functions of any angle given in degrees or radians
- B. Solving right triangles and word problem applications thereof
- C. Linear velocity, arc length, and sector area application word problems
- D. Law of sines and cosines and solving application word problems
- E. Vectors (algebraic and geometric) and application word problems

VI. Exponential and logarithmic functions

- A. Exponential function and exponential word problems (e.g., growth and decay)
- B. Logarithmic (common and natural) functions
- C. Properties of logarithms and solving word problems

Course Requirements

Students will collaborate via group work and/or oral presentation of problem solutions. There will be multiple opportunities for the instructor to assess student progress in the course through classwork and/or homework.

Grading: Grading procedures will be determined by the individual faculty member but will include the following:

1. Tests, Exams, and/or Quizzes: At least two written examinations will be given. Individual faculty will notify students of testing procedures to be used.
2. Comprehensive Final Exam: The course will include a comprehensive final exam, which may include a final project.

3. Other projects: Individual faculty will notify students of other projects that are assigned. These may include individual work, group work, and oral presentation of homework solutions.

Final Grades: Grades will be determined by individual faculty members.

Individual faculty members may include additional course objectives, major topics, and other course requirements to the minimum expectations stated in the Common Course Outline.

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