

SUFFOLK COUNTY COMMUNITY COLLEGE
COLLEGE-WIDE COURSE SYLLABUS

MAT006 (formerly MA06)

I. COURSE TITLE:

Pre-Algebra and Algebra I

II. CATALOG DESCRIPTION:

Review of arithmetic skills and introduction to the basic concepts of algebra. Topics include arithmetic skills, geometry, language of algebra, order of operations, signed numbers, linear equations, two equations in two unknowns, polynomials, solving quadratic equations by factoring, and selected verbal problems. Graded on an SA-SB-SC-R-U-W basis. *Does not fulfill requirements for any degree or certificate.* Serves as a prerequisite for any course for which MAT007 is a prerequisite.

A-E-G / 5 cr. hrs.

III. COURSE GOALS:

- A. Reinforce basic arithmetic and algebra skills.
- B. Introduce elementary problem solving techniques.
- C. Introduce the concept of a line and graphing in two dimensions.

IV. COURSE OBJECTIVES:

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

- A. perform the four arithmetic operations, addition, subtraction, multiplication, and division with the following sets of numbers: whole numbers, fractions, decimals, and signed numbers;
- B. correctly evaluate expressions with the following sets of numbers: whole numbers, fractions, decimals, and signed numbers;
- C. be able to write equivalent forms of a fraction, mixed number, decimal, and percent;
- D. know the meaning of ratio and proportion and be able to solve a proportion;
- E. acquire a clear understanding of the concepts of perimeter, area, and volume when applied to simple geometric figures;
- F. understand the use of variables of real numbers and the use of order of operations;
- G. understand the field properties of real numbers (associative, commutative, identities, inverses, and distributive properties) and be able to apply these properties in manipulating algebraic expressions;
- H. solve linear equations and inequalities in one variable and develop the ability to analyze verbal problems and solve them;
- I. perform polynomial addition, subtraction, multiplication, division, and factoring; solve polynomial equations that can be factored and apply these techniques to verbal problems;
- J. simplify and perform basic operations on rational expressions; solve rational equations using factoring techniques;
- K. understand radicals and simplify expressions involving radicals;
- L. graph lines using: table of values, intercepts, slope.

V. Topics Outline with Timeline Topics	Approximate Time (Including Examinations)
<u>A. Review of Arithmetic Skills</u> 1. operations on Whole Numbers 2. operations on Fractions 3. operations on decimals 4. ratio/proportion/percent/unit conversions 5. exponents and square roots 6. order of operations	1½ weeks
<u>B. Real Numbers and Variables</u> 1. operations on signed numbers 2. properties of real numbers 3. simplifying expressions 4. combining like terms 5. evaluating expressions	1 ½ weeks
<u>C. Linear Equations and Inequalities</u> 1. solving linear equations 2. solving verbal problems 3. applications using geometric formulas (include discussion of units of measure) 4. solving linear inequalities 5. basic formula manipulation	3 weeks
<u>D. Exponents and Polynomials</u> 1. rules of exponents (including negative exponents) 2. scientific notation 3. addition, subtraction, and multiplication 4. division by a monomial 5. polynomial long division (optional)	1 ½ weeks
<u>E. Factoring</u> 1. greatest common factor 2. trinomials 3. difference of two squares 4. solving quadratic equations by factoring	2 weeks
<u>F. Algebraic Fractions</u> 1. operations with algebraic fractions 2. solving equations 3. ratio and proportion	2 weeks
<u>G. Graphing</u> 1. the Cartesian coordinate system 2. graphs of linear equations 3. definition of slope, parallel and perpendicular lines 4. using slope-intercept form of a linear equation to graph lines	2 weeks
<u>H. Systems of Equations</u> 1. solve using substitution 2. solve using elimination 3. solve using graphing	1 week
<u>I. Common Roots and Radicals</u> 1. Definition 2. Properties 3. Simplification of a single radical	½ week

VI. Evaluation of Student Performance:

To be determined by the instructor

VII. Programs that require this course:

None

VIII. Courses that require this course as a prerequisite:

BIO101, BIO103, BIO105, BIO109, BIO111, BIO130-132, BIO109, BIO141, SCI127H, CHE100, CHE120, CHE122, CST112, ESC101, ESC102, MET101, MET102, AST101, AST102, ESC124, ESC202, MAT107, MAT108, MAT101, MAT102, MAT103, MAT111, MAT115H, MAT112, MAR111, MAR115, MAR105, OPD101, PHY110

IX. Supporting Information:

Mathematics tutoring services, as well as video and computer aids, are provided for all students through the Math Learning Center (Ammerman Campus, Riverhead 235), the Center for Academic Excellence (Grant Campus, Health, Sports and Education Center 129), and the Academic Skills Center (Eastern Campus, Orient 213).