



# COURSE OUTLINE OF RECORD

Number: MATH A010

TITLE: Elementary Algebra

ORIGINATOR: Tab Livingston

EFF TERM: Fall 2015

FORMERLY KNOWN AS:

DATE OF

OUTLINE/REVIEW: 10-23-2015

CROSS LISTED COURSE:

TOP NO: 1701.00

CID:

SEMESTER UNITS: 4.0

HRS LEC: 72.0

HRS LAB: 0.0

HRS OTHER: 0.0

CONTACT HRS TOTAL: 72.0

STUDY/NON-CONTACT HRS RECOMMENDED: 144.0

## CATALOG DESCRIPTION:

Operations of algebra including first degree equations and inequalities, exponents, special products and factoring, rational expressions, graphing, radicals, systems of linear equations and quadratic equations will be presented. A minimum of five arranged hours of supplemental learning per semester in the Success Center is suggested. This course may also be offered online. Not applicable to AA/AS degree. PREREQUISITE: Math A008 with grade of 'C' or better or qualifying OCC mathematics placement score. See mathematics assessment requirement.

## JUSTIFICATION FOR COURSE:

Prerequisite course for lower division transfer math courses.

## PREREQUISITES:

- MATH A008: Pre-Algebra with a minimum grade of C or better  
or
- Qualifying OCC mathematics placement score. See mathematics assessment requirement.

## COREQUISITES:

## ADVISORIES:

## ASSIGNED DISCIPLINES:

MATERIAL FEE: Yes [ ] No [X] Amount: \$0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded [ ]

OPEN ENTRY/OPEN EXIT: Yes [X] No [ ]

TRANSFER STATUS: CSU Transferable[ ] UC/CSU Transferable[ ] Not Transferable[X]

BASIC SKILLS STATUS: Yes [X] No [ ] LEVELS BELOW TRANSFER: 2 levels below transfer level

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [X] Yes [ ]

## GE AND TRANSFER REQUIREMENTS MET:

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

## MATH A010-Elementary Algebra

1. Perform operations on real numbers and algebraic expressions.
2. Write, solve, graph and interpret linear equations and inequalities by applying the relevant mathematical principles, operations and strategies.
3. Solve nonlinear equations such as rational, radical and quadratic equations by applying the mathematical principles, operations and strategies.
4. Reduce real-world application problems into mathematical equations and solve those equations using algebraic methods.

### **COURSE OBJECTIVES:**

1. Perform operations on signed numbers.
2. Solve linear equations and inequalities.
3. Solve systems of equations in two variables by graphing, substitution and elimination.
4. Read, analyze, write equations and solve applications of elementary algebra.
5. Factor polynomials of the form  $ax^2+bx+c$ .
6. Graph linear equations and inequalities.
7. Simplify rational expressions and solve rational equations.
8. Simplify radicals and solve radical equations involving square roots.
9. Solve quadratic equations.
10. Use the quadratic formula.
11. Understand completing the square.

### **COURSE CONTENT:**

#### **LECTURE CONTENT:**

- A. Review fundamental arithmetic and geometric concepts
- B. Review real numbers and variables
  1. Signed numbers, exponents; distributive, commutative and associative properties
  2. Distinguish between terms and factors
- C. Solve linear equations and inequalities in one variable
  1. Solve linear equations with integer or fraction coefficients
  2. Solve literal equations and formulas
  3. Solve inequalities with integer or fraction coefficients and graph their solutions
- D. Solve selected word problems involving equations in one variable
  1. Translate English sentences into algebraic equations
  2. Use equations to solve applied problems.
- E. Introduce rules of exponents and basic operations of polynomials
  1. Discuss and use the algebraic rules for products, quotients and powers with integer exponents
  2. Introduce polynomials and the rules for addition and subtraction
  3. Multiplication of polynomials
  4. Division of a polynomial by a monomial or a binomial
- F. Introduce methods of factoring including GCF, grouping, trinomials and special cases
  1. Prime factorization of integers
  2. Special cases include perfect square trinomials and the difference of squares
- G. Rational expressions
  1. Combine, simplify, add, subtract, multiply and divide rational expressions
  2. Simplify complex fractions
  3. Solve equations and applications with equations containing rational expressions
- H. Graphing linear equations and inequalities in two variables
  1. Introduce the rectangular coordinate system
  2. Find the slope of a line
  3. Discuss the point-slope, slope-intercept and two-point equations for a line

4. Graph linear inequalities
- I. Introduce the concept of functions and function notation
- J. Solve systems of linear equations and inequalities
  1. Solve systems of linear equations by graphing, substitution and elimination methods
  2. Solve selected applied problems involving systems of equations
  3. Solve systems of inequalities and show the solutions graphically
- K. Introduce basic operations involving radicals and solve equations involving simple radicals
- L. Solve quadratic equations
- M. Introduce graphs of parabolas
  1. Identify the coordinates for the x and y intercepts
  2. Identify the coordinates at the vertex

**LABORATORY CONTENT:**

**METHODS OF INSTRUCTION:**

- A. Lecture:
- B. Online:
- C. Independent Study:

**INSTRUCTIONAL TECHNIQUES:**

The primary mode of instruction is the lecture/demonstration method. Some sections are laboratory based using a variety of instructional methods including textbooks, video presentations and computer based materials. Some sections may be taught using cooperative learning strategies.

The Success Center supports instructions through the use of the following methodologies;

- A. Workshops designed by faculty
- B. Study groups designed by faculty
- C. Directed/Diagnostic learning activities designed by faculty
- D. PASS (Peer Assisted Study Session) Program.
- E. Individual or drop-in tutoring.

These methodologies may be used to support any of the stated course objectives and can be determined by the instructor or recommended by the instructional associate.

**COURSE ASSIGNMENTS:**

**Reading Assignments**

Students will spend on average 1 hour per week reading from assigned textbook.

**Out-of-class Assignments**

Students will spend on average 6 hours per week on homework assignments and test preparation.

**Writing Assignments**

Students will spend on average 1 hour per week on writing assignments.

**METHODS OF STUDENT EVALUATION:**

- Midterm Exam
- Final Exam
- Short Quizzes
- Written Assignments
- Objective Examinations
- Problem Solving Exercises

**Demonstration of Critical Thinking:**

Grades are determined by performance on quizzes and exams. Some instructors may also include grades on homework, cooperative assignments or cooperative learning sessions. A comprehensive final exam is part of this course.

The Success Center participation may not exceed 10% of the total grade for the course. Instructors will be provided with verification of students' participation and progress in Success Center assignments.

Critical thinking will be evaluated through a problem-solving approach. Writing is encouraged throughout the course but is not necessarily a part of the grading or exams.

**Required Writing, Problem Solving, Skills Demonstration:**

Writing is encouraged throughout the course but is not necessarily a part of the grading or exams.

**TEXTS, READINGS, AND RESOURCES:**

**TextBooks:**

1. Bittinger, et al. *Elementary Algebra*, 9TH ed. Boston: PEARSON, 2012

**Other:**

1. Other appropriate textbook as chosen by faculty.
2. Individual instructors may encourage student solution manuals or study guides but they are not required for this course. Many instructors recommend that their students purchase scientific calculators.

**LIBRARY:**

**Adequate library resources include:** Print Materials

Non-Print Materials

Online Materials

Services

**Comments:**

**Attachments:**

[Attached Files](#)