

**EL CAMINO COLLEGE  
COURSE OUTLINE OF RECORD**

**I. COURSE DESCRIPTION**

Course Title and Number: Mathematics 33

Descriptive Title: Extended Elementary Algebra, Part I

Discipline: Mathematics

Division: Mathematical Sciences

Course Length:  Full Term  Other (specify): \_\_\_\_\_

Hours Lecture: 4 Hours Laboratory: \_\_\_\_\_ Course Units: 3

Grading Method:  Letter  Credit/No Credit  Both  No Grade

Course Type:  Credit, Degree Applicable  Credit, Not Degree Applicable  Non-Credit

Transfer CSU:  Yes Effective Date \_\_\_\_\_  No

Transfer UC:  Yes Approval Date \_\_\_\_\_  Pending  No

Conditions of Enrollment:

Specify Prerequisite Corequisite, Recommended Preparation, Enrollment Limitation or None.

Prerequisite: Mathematics 23 or Mathematics 25 with a minimum grade of C in prerequisite, or qualification by testing (El Camino College Mathematics Placement Test) and assessment.

Catalog Description:

This is the first course in the two-course Extended Elementary Algebra sequence, which begins at a slower pace than elementary algebra. Students examine the connections between the order of operations on real numbers and the elementary algebraic ideas of variables, expressions and equations. Students explore the four fundamental representations of relations between two variables: verbal, algebraic, graphical and numerical. Linear relations serve as the primary example, but students also study quadratic relations. Students are expected to master basic numeric and algebraic manipulation skills, including combining like terms, expanding products and elementary factoring.

**II. COURSE OBJECTIVES**

List the major objectives of the course. These must be stated in behaviorally measurable terms.

1. Use the properties of operations on the real numbers, including the order of operations, to evaluate, simplify and factor algebraic expressions.
2. Solve linear equations and inequalities.
3. Solve quadratic equations by factoring.
4. Set up and solve application problems using linear equations and inequalities.

5. Graph linear equations by plotting points or by using intercepts and the slope.
6. Starting with a linear model in tabular, graphical or symbolic form, translate the model into the other forms.

### III. OUTLINE OF SUBJECT MATTER

The topics should be detailed enough to enable an instructor to determine the major areas that should be covered and so that the course may have consistency from instructor to instructor and semester to semester.

Approximate Time in hours	Major Topic
24	<p>I. <u>Basic Operations and Manipulations with Rational Numbers and Algebraic Expressions</u></p> <ol style="list-style-type: none"> <li>A. Review the basic properties of the operations, including the order of operations, on the set of real numbers, as well as on its important subsets: whole numbers, integers and rational. Properties include commutativity, associativity, and the distributive properties.</li> <li>B. Identify the base and the exponent when given an exponential expression with whole number exponents. Use the properties of exponents appropriately.</li> <li>C. Recognize equivalence when it occurs, particularly with fractions, decimals and percents.</li> <li>D. Evaluate algebraic expressions and formulas.</li> <li>E. Use a calculator to simplify expressions and evaluate expressions.</li> <li>F. Perform arithmetic operations on polynomials, including addition, subtraction and multiplication. Simplify algebraic expressions by using properties of operations on real numbers, combining like terms, and the order of operations.</li> <li>G. In a polynomial, identify constants, variables, terms, variable terms, the degree of a variable term and the coefficient of a variable term. Identify monomials, binomials and trinomials.</li> <li>H. Factor a 2- or 3-term polynomial over the integers, where the polynomial is the difference of squares, a perfect square trinomial, a trinomial with a leading coefficient of 1, or one of the above with an additional common monomial factor in each term. Factor 4-term polynomials by grouping.</li> <li>I. Perform operations on rational expressions which contain only monomial denominators.</li> </ol>
22	<p>II <u>Equations and Inequalities</u></p> <ol style="list-style-type: none"> <li>A. Using the properties of equality, solve one- and two-step linear equations and inequalities containing integer, fraction and decimal coefficients.</li> <li>B. Solve linear equations that have parentheses and integer coefficients.</li> <li>C. Solve quadratic equations using factoring and the Zero Product property.</li> <li>D. Use a calculator to check solutions.</li> </ol>

11	<p>III <u>Applications</u></p> <p>A. Translate a given English expression or a word problem into a mathematical expression, equation, or inequality.</p> <p>B. Read, interpret and create bar, line and pie graphs.</p> <p>C. Set up and solve geometric problems using formulas for perimeter, area, volume, where lengths are integers, fractions or decimals.</p> <p>D. Set up and solve a variety of application problems including those involving percentage relationships and ratio and proportions. Examples should include basic percent equations, simple interest and distance.</p>
15	<p>IV. <u>Graphing</u></p> <p>A. Graph ordered pairs on a coordinate plane.</p> <p>B. Identify the coordinates of a point graphed in a coordinate plane. Label points with their coordinates.</p> <p>C. Graph vertical lines, horizontal lines and linear equations in standard or slope-intercept form.</p> <p>D. Graph the solution of a linear inequality in one variable on a number line.</p>
Total: 72 Hours	

**IV . METHODS OF EVALUATION**

**A. CREDIT, DEGREE APPLICABLE AND CREDIT, NOT DEGREE APPLICABLE COURSES**

Check the PRIMARY method of evaluation for this course.

- Substantial writing assignments
- Problem solving demonstrations (computational or non-computational)
- Skills demonstrations

A minimum of one response in the categories 1, 2, or 3 below, as applicable, is required. However, you may check all that apply.

1. Indicate the types of writing assignments used as primary or secondary methods of evaluation for this course.

- Essay exams
- Reading reports
- Written homework
- Laboratory reports
- Term or other papers
- Other (specify)

2. Indicate the types of problem-solving demonstrations used as primary or secondary methods of evaluation for this course.

- Exams
- Homework problems
- Laboratory reports
- Fieldwork
- Quizzes
- Other (specify)

3. Indicate the types of skill demonstrations used as primary or secondary methods of

evaluation for this course.

- Class performance
- Performance exams

- Fieldwork
- Other (specify)

4. If objective exams are also used, check all that apply.

- Multiple choice
- Completion
- Matching items

- True/false
- Other (specify)

## B. NON-CREDIT COURSE

Indicate the methods of evaluation that will be used to determine that stated objectives have been met.

## V. COURSEWORK

### A. TYPICAL ASSIGNMENT

Provide an example of a typical assignment. This assignment must correspond to the PRIMARY method of evaluation indicated in Section IV, Methods of Evaluation. That is, it must be a writing assignment or, if more appropriate, an assignment involving problem solving or skill demonstration.

Read the section of the text corresponding to polynomials in several variables and then complete the assigned problems. The following is a sample problem:

Multiply and simplify:  $(ab+cd^2)(ab-cd^2)$

### B. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS

Cite two specific assignments that demonstrate college-level critical thinking. (Required for degree applicable courses only.)

1.

Grade Average: Nadia is taking a literature course in which four tests are given. To get a B, a student must average at least 80 on the four tests. Nadia scored 82, 76 and 78 on the first three tests. What scores on the last test will earn her at least a B? Show all of your work and present your answer in a short paragraph.

2.

Toll Charges: The equation  $y = 0.027x + 0.19$  can be used to determine the approximate cost,  $y$ , in dollars, of driving  $x$  miles on the Indiana toll road. Determine the mileages  $x$  for which the cost will be at most \$6. Justify your answer in a sentence or two.

### C. WORK OUTSIDE OF CLASS

Two hours work outside of class are required for each hour of lecture or equivalent. Each student in this course will be required to participate in the following work outside of class time. Check all that apply.

- Study
- Answer questions

- Skill practice
- Required reading
- Problem solving activity
- Written work (such as essay/composition/report/analysis/research)
- Journal (done on a continuing basis throughout the semester)
- Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting)
- Course is lab only - minimum required hours satisfied by scheduled lab time
- Other (specify) One and one quarter hours of student work outside of class are required for each hour of lecture.

## VI. INSTRUCTIONAL METHODOLOGY

A. Check all planned instructional activities that apply:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Lecture       | <input checked="" type="checkbox"/> Group Activities   |
| <input type="checkbox"/> Lab                      | <input type="checkbox"/> Role play/simulation  |
| <input checked="" type="checkbox"/> Discussion    | <input type="checkbox"/> Guest Speakers  |
| <input type="checkbox"/> Multimedia presentations | <input type="checkbox"/> Field trips   |
| <input type="checkbox"/> Demonstration            | <input checked="" type="checkbox"/> Other (specify) individual assistance and calculator instruction |

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instructional delivery shall provide access, full inclusion, and effective communication for students with disabilities.

## VII. TEXTS AND MATERIALS

If multiple selections are offered, only representative texts need be listed. An up-to-date list of required and recommended materials is maintained in the division office.

### A. REQUIRED TEXTS (title, author, publisher, year)

Elementary Algebra, third edition, Tussy and Gustafson, Thomson Brooks/Cole, 2005

### B. REQUIRED SUPPLEMENTARY READINGS

### C. OTHER REQUIRED MATERIALS

Scientific or graphing calculator

## VIII. CONDITIONS OF ENROLLMENT

If this course has a Prerequisite or Corequisite, complete section A. If this course has an Enrollment Limitation complete section B.



BOARD APPROVAL DATE: \_\_\_\_\_

Reviewed and/or Revised by:

Lars Kjeseth Date: October 11, 2006

Lars Kjeseth Date: February 27, 2007

Jacquelyne Sims, Marc Glucksman Date: September 23, 2008

REQUIRED SIGNATURES FOR NON-CREDIT COURSE

College Curriculum Committee Chair

\_\_\_\_\_

Vice-President - Academic Affairs

\_\_\_\_\_