

**EL CAMINO COLLEGE  
COURSE OUTLINE OF RECORD**

**I. COURSE DESCRIPTION**

Course Title and Number: Mathematics 43

Descriptive Title: Extended Elementary Algebra, Part II

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 33 with a minimum grade of C, or equivalent

Catalog Description:

This is the second course in the two-course Extended Elementary Algebra sequence. Students in this course explore the concept of relation and its four fundamental representations: verbal, algebraic, graphical and numerical. Students show mastery of more advanced algebraic manipulation skills, including extracting roots and more advanced factoring. Students examine systems of linear equations, as well as quadratic, reciprocal and square root relations.

**II. COURSE OBJECTIVES**

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

1. Solve systems of two linear equations with two variables symbolically, graphically and numerically.
2. Solve quadratic equations symbolically, using a variety of algebraic methods, as well as graphically.
3. Perform operations with and simplify rational and radical expressions.
4. Set up and solve application problems using quadratic equations, rational equations and systems of two linear equations with two variables.

**III. OUTLINE OF SUBJECT MATTER Math 43**

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 Algebraic Expressions</u></p> <ul style="list-style-type: none"> <li>A. Simplify algebraic expressions, including exponential expressions with integer exponents</li> <li>B. Perform arithmetic operations, including long division, on polynomials in one variable.</li> <li>C. Factor a trinomial whose leading coefficient is not 1.</li> <li>D. Simplify rational expressions and complex fractions.</li> <li>E. Perform arithmetic operations on rational expressions which contain factorable polynomials, as well as on radical expressions.</li> <li>F. Simplify square root expressions with radicands, which are perfect or non-perfect squares.</li> <li>G. Convert numbers into scientific notation.</li> <li>H. Use a calculator to simplify expressions, as well as to perform operations on numbers in scientific notation.</li> </ul>
22	<p>II <u>Equations and Inequalities</u></p> <ul style="list-style-type: none"> <li>A. Solve more difficult linear equations and inequalities with parentheses and integer, decimal and fractional coefficients. Determine when a linear equation is an identity or when it has no solution.</li> <li>B. Solve for a specified variable in a formula or in an equation containing more than one variable.</li> <li>C. Solve 2-by-2 linear systems of equations using substitution or linear combinations (also known as elimination or addition).</li> <li>D. Solve quadratic equations using factoring, the square root property, completing the square, and the quadratic formula.</li> <li>E. Use a calculator to check solutions.</li> </ul>
11	<p>III <u>Applications</u></p> <ul style="list-style-type: none"> <li>A. Set up and solve geometric problems using formulas for perimeter, area, volume, and the Pythagorean Theorem.</li> <li>B. Set up and solve a variety of application problems including those involving percentage relationships, ratios, proportions, and variation. Examples should include work, distance and mixture problems.</li> </ul>
15	<p>IV. <u>Graphing</u></p> <ul style="list-style-type: none"> <li>A. Determine the slope of a line given its graph or given two points on the line.</li> <li>B. Determine the equation of a line given: a) a point and the slope, b) the slope</li> </ul>

	and the y-intercept, or c) two points on the line. C. Solve 2-by-2 linear systems of equations by graphing. D. Graph basic parabolas and solve quadratic equations graphically.
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
- Fieldwork
- Performance exams
- Other (specify)

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

- Multiple choice
- True/false
- Completion
- Other (specify)
- Matching items

**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 systems of equations and substitution and complete the assigned problems. The following is a sample problem:

Solve the following system of equations using the substitution method:

$$2x + 3y = -2,$$

$$2x - y = 9$$

**B. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS**

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

1.

Selling Vehicles: A firm sells cars and trucks. There is room on its lot for 260 vehicles. They know that profits are greatest if there are 90 more cars than trucks on the lot. Determine the number of each type of vehicle the firm should have on the lot in order to maximize profit. Show all steps in the solution and justify your final answer.

2.

Octane Ratings: The octane rating of a gasoline is a percent measure of the amount of iso-octane in the gas. Determine the amount of 87-octane gas and 93-octane gas that should be blended in order to make 12 gallons of 91- octane gas. Show all steps in the solution and justify your final answer.

**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 class time.

**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 |



Mathematics 43

- Band/Orchestra
- Theater
- Speech
- Chorus
- Journalism
- Dance
- Intercollegiate Athletics
- Honors Course
- Blocks of Courses
- Other (specify)

2. List Degree and/or Certificate requirements that are met by this course.
3. List all El Camino College courses that also satisfy the requirements listed above in Section B.2.

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Originator: Jeffrey Cohen Submittal Date: November 1, 2001

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

Reviewed and/or Revised by:

Lars Kjeseth Date: October 11, 2006

Lars Kjeseth Date: February 27, 2007

Jacquelyne Sims Date: September 23, 2008

REQUIRED SIGNATURES FOR NON-CREDIT COURSE

College Curriculum Committee Chair

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Vice-President - Academic Affairs

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