



**El Camino College**  
**COURSE OUTLINE OF RECORD – Approved**

**I. GENERAL COURSE INFORMATION**

**Subject and Number:** Mathematics 130  
**Descriptive Title:** College Algebra  
**Course Disciplines:** Mathematics  
**Division:** Mathematical Sciences

**Catalog Description:**

In this course, students will explore polynomial, radical, rational, exponential, and logarithmic functions and their graphs, as well as sequences and series.

Note: This is a preparatory course for Calculus I for the Biological, Management, and Social Sciences (Mathematics 160).

**Conditions of Enrollment:**

**Prerequisite:** Mathematics 80 with a minimum grade of C or qualification by appropriate assessment

<b>Course Length:</b>	<b>X Full Term</b>	<b>Other (Specify number of weeks):</b>
<b>Hours Lecture:</b>	<b>3.00 hours per week</b>	<b>TBA</b>
<b>Hours Laboratory:</b>	<b>0 hours per week</b>	<b>TBA</b>
<b>Course Units:</b>	<b>3.00</b>	

**Grading Method:** Letter  
**Credit Status:** Associate Degree Credit

**Transfer CSU:** X Effective Date: Prior to July 1992  
**Transfer UC:** X Effective Date: Spring 1994

**General Education:**

**El Camino College:**

**4B – Language and Rationality – Communication and Analytical Thinking**

Term: Other: Approved

**6 – Mathematics Competency**

Term: Other:

**CSU GE:**

**B4 - Mathematics/Quantitative Thinking**

Term: Fall 1999 Other:

**IGETC:**

**2A - Mathematical Concepts and Quantitative Reasoning**

Term: Fall 1999 Other:

## II. OUTCOMES AND OBJECTIVES

### A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. Solve nonlinear inequalities and a variety of equations, such as: polynomial, rational, radical, exponential, and logarithmic.
2. Solve problems using graphical methods involving a variety of functions, such as: polynomial, rational, radical, exponential, and logarithmic.
3. Solve problems using sequences and series.
4. Solve college algebra level application problems and use technology.

### B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

1. Solve polynomial, rational, radical, exponential, and logarithmic equations, and solve formulas for a variable.
  - a. Objective Exams
2. Solve linear and nonlinear inequalities.
  - b. Objective Exams
3. Determine the domain, range, and graph (with transformations) of the following: polynomial, rational, exponential and logarithmic functions.
  - c. Objective Exams
4. Determine the composition of functions and the inverse of one-to-one functions.
  - d. Objective Exams
5. Solve problems involving arithmetic and geometric sequences and series.
  - e. Objective Exams
6. Analyze the graph of a function and determine the domain, range, extrema, and average rate of change.
  - f. Objective Exams
7. Solve college level application problems from the mathematics of finance including compound interest, present value, and annuity.
  - g. Objective Exams
8. Solve problems using a scientific (or graphing) calculator and/or computer algebra systems.
  - h. Objective Exams

**III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)**

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	6	I	POLYNOMIALS AND RATIONAL EXPRESSIONS A. Polynomials B. Radical and rational expressions C. Integer and rational exponent expressions D. Factoring of expressions with rational exponents, rationalizing of numerators, and simplifying the difference quotient
Lecture	9	II	EQUATIONS AND INEQUALITIES A. Quadratic, rational, and radical equations, and equations with rational exponents, and applications B. Linear and nonlinear (polynomial and rational) inequalities in one variable C. Solving formulas for a specified variable
Lecture	12	III	FUNCTIONS AND GRAPHS A. Inverse functions and the composition of functions B. Graphs of relations, functions, and piecewise defined functions C. Transformations and symmetry of graphs of functions D. Find domain, range and extrema from analyzing graphs of functions E. Average rate of change of a function
Lecture	6	IV	POLYNOMIAL AND RATIONAL FUNCTIONS A. Quadratic Functions and their Graphs B. Higher Degree Polynomial Functions and their Graphs C. Rational Functions and their Graphs
Lecture	12	V	EXPONENTIAL AND LOGARITHMIC FUNCTIONS A. Graphs of exponential and logarithmic functions B. Exponential and logarithmic equations C. Application problems involving exponential and logarithmic functions
Lecture	6	VI	SEQUENCES AND SERIES A. Arithmetic sequences and series and their applications B. Geometric sequences and series and their applications
Lecture	3	VII	THE MATHEMATICS OF FINANCE A. Amount of an annuity B. Present value of an annuity C. Installment payments on a loan
Total Lecture Hours		54	
Total Laboratory Hours		0	
Total Hours		54	

#### IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

##### A. PRIMARY METHOD OF EVALUATION:

Problem solving demonstrations (computational or non-computational)

##### B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:

For the rational function  $h(x) = (9x - 12)/(9 - 3x)$ ,

(a) Determine and clearly state all intercepts and asymptotes.

(b) Use the information from (a) and any necessary points to sketch the graph.

Show all work.

##### C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

Determine the half-life of a 350 mg sample of a radioactive element that decays to 300 mg in 36 hours. Round the final answer to two decimal places. Show all work.

The purchase value of an office computer is \$12,500. Its annual depreciation is \$1875. Determine the value of the computer after 6 years.

##### D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Objective Exams

Quizzes

Homework Problems

#### V. INSTRUCTIONAL METHODS

Lecture

**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, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.**

#### VI. WORK OUTSIDE OF CLASS

Study

Answer questions

Required reading

Problem solving activities

**Estimated Independent Study Hours per Week: 6**

#### VII. TEXTS AND MATERIALS

##### A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Stewart, Redlin, and Watson. College Algebra. 7<sup>th</sup> ed. Cengage Learning, 2016.

##### B. ALTERNATIVE TEXTBOOKS

##### C. REQUIRED SUPPLEMENTARY READINGS

##### D. OTHER REQUIRED MATERIALS

Graphing or scientific calculator

**VIII. CONDITIONS OF ENROLLMENT****A. Requisites (Course and Non-Course Prerequisites and Corequisites)**

Requisites	Category and Justification
Course Prerequisite Mathematics-80 or	Sequential
Non-Course Prerequisite	Due to the sequential nature of this course, a student must know the material from the prerequisite.

**B. Requisite Skills**

Requisite Skills
1. Solve problems involving linear and quadratic functions. MATH 80 - Solve problems involving a variety of function types, including linear, quadratic, polynomial, rational, radical, exponential, and logarithmic functions.
2. Solve applications problems involving linear and quadratic functions, using numerical, symbolic, and graphical methods. MATH 80 - Using numerical, symbolic and graphical methods, model application problems, solve them and interpret the results in the context of the problem.

**C. Recommended Preparations (Course and Non-Course)**

Recommended Preparation	Category and Justification

**D. Recommended Skills**

Recommended Skills

**E. Enrollment Limitations**

Enrollment Limitations and Category	Enrollment Limitations Impact

Course created by Marc Glucksman on 12/09/1991.

**BOARD APPROVAL DATE:**

**LAST BOARD APPROVAL DATE: 03/23/2020**

**Last Reviewed and/or Revised by: Benjamin Mitchell on 10/20/2019**

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