

EL CAMINO COLLEGE COURSE OUTLINE OF RECORD

I. COURSE DESCRIPTION

Course Title and Number : Mathematics 130 (Official)

Descriptive Title : College Algebra

Discipline : Mathematics

Division : Mathematical Sciences

Course Length : Full Term
 Other (specify:)

Hours Lecture : 3

Hours Laboratory : 0

Course Units : 3

Grading Method : Letter
 Pass/No Pass
 Both
 No Grade

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

Transfer CSU : Yes (Effective Date: Prior to 7/92)
 No

Transfer UC : Yes (Approval Date: Spring, 1994)
 Pending
 No

Conditions of Enrollment: Specify Prerequisite, Corequisite, Recommended Preparation, Enrollment Limitation, or None.

Prerequisite: Mathematics 73 or Mathematics 80 with a minimum grade of C in prerequisite, or qualification by testing (El Camino College Mathematics Placement Test) and assessment

Catalog Description :

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

II. COURSE OBJECTIVES

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

1. Solve polynomial, rational, radical, exponential, and logarithmic equations.
2. Solve quadratic and rational inequalities.
3. Determine the domain, range, and graph (with transformations) of the following: polynomial, rational, exponential and logarithmic functions.
4. Determine the composition of functions and the inverse of one-to-one functions.
5. Use the Rational Zero, Remainder, and Factor theorems and synthetic division to solve polynomial equations.
6. Solve problems involving arithmetic and geometric sequences and series.
7. Solve problems involving combinatorics and the Binomial Theorem.
8. Solve application problems.
9. Solve problems using a scientific (or graphing) calculator and/or computer algebra systems.

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 Topics
6	I. POLYNOMIALS AND RATIONAL EXPRESSIONS A. Polynomials B. Radical and rational expressions C. Integer and rational exponent expressions
9	II. EQUATIONS AND INEQUALITIES A. Complex numbers B. Quadratic, rational, and radical equations, and equations with rational exponents, and applications C. Quadratic and rational inequalities in one variable
9	III. FUNCTIONS AND GRAPHS A. Inverse functions and the composition of functions B. Graphs of relations and functions C. Transformations and symmetry of graphs of functions
9	IV. POLYNOMIAL AND RATIONAL FUNCTIONS A. Quadratic, polynomial and rational functions, and the Remainder and Factor Theorems B. Roots of polynomial functions, the Rational Zero Theorem, and synthetic division
9	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
6	VI. SEQUENCES AND SERIES A. Arithmetic sequences and series and their applications B. Geometric sequences and series and their applications
6	VII. COMBINATORICS AND THE BINOMIAL THEOREM A. The counting principle, permutations and combinations B. The Binomial Theorem
54	TOTAL 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)
- Skill demonstrations

A minimum of one response in 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
- Written homework
- Term or other papers
- Reading reports
- Laboratory reports
- Other (specify)

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

- Exams
- Laboratory reports
- Quizzes
- Homework problems
- Fieldwork
- 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 the 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.

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.

B. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS

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

1. 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.
2. Determine the number of different possible seating arrangements to seat 6 out of 10 people in a row of 6 chairs. Show all work.

C. WORK OUTSIDE OF CLASS

Two hours of 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)

VI. INSTRUCTIONAL METHODOLOGY

Check all planned instructional activities that apply:

- Lecture
- Lab
- Discussion
- Multimedia presentations
- Demonstration
- Group activities
- Role play/simulation
- Guest speakers
- Field trips
- Other (specify)

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 selection is 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)

College Algebra, 5th Edition, by Stewart, Redlin, and Watson, Brooks/Cole, 2009

B. REQUIRED SUPPLEMENTARY READINGS**C. OTHER REQUIRED MATERIALS**

Graphing or scientific 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.

A. PREREQUISITE AND/OR COREQUISITE

1. Indicate if this course has a prerequisite, corequisite, both, or none.

- Prerequisite
 Corequisite

2. Indicate Type. Check all that apply.

- Sequential
 Computational/Communication Skills
 Health and Safety
 Non-Course
 Standard (If this is a Standard Prerequisite or Corequisite, attach CCC Form D.)

3. Entrance Skills/Knowledge

List the required skills and/or knowledge without which a student would be highly unlikely to receive a grade of A, B, C, or Credit (or for Health and Safety, would endanger self or others) in this course.

1. Solve problems involving linear and quadratic functions.
 2. Solve applications problems involving linear and quadratic functions, using numerical, symbolic, and graphical methods.

B. ENROLLMENT LIMITATION

1. Indicate the category which describes the Enrollment Limitation for this course.

- 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.

Originator: Marc Glucksman

Submittal

Date: December 9, 1991

BOARD APPROVAL DATE:

Reviewed and/or Revised by:

Milan Georgevich

Date: Fall, 1998

Milan Georgevich

Date: February, 2009

Date: