



El Camino College
COURSE OUTLINE OF RECORD – Approved

I. GENERAL COURSE INFORMATION

Subject and Number: Mathematics 80S
Descriptive Title: Intermediate Algebra Support
Course Disciplines: Mathematics
Division: Mathematical Sciences

Catalog Description:

This course is designed to support students concurrently enrolled in Intermediate Algebra for Science, Technology, Engineering and Mathematics (Math 80). As needed, students review core skills and topics necessary to meet the intermediate algebra student learning outcomes and objectives. Students explore strategies and habits used by successful independent learners. Topics reviewed in this support course may include: computational fluency, algebraic symbolism and its use in solving problems, solving and graphing intermediate algebra functions using real-world application models, and systems of equations and inequalities in two variables. Students will study topics through multiple representations: tables, algebraic symbols, language, and graphs.

Conditions of Enrollment:

Co-requisite Mathematics 80

Course Length: X Full Term Other (Specify number of weeks):

Hours Lecture: 2.00 hours per week

Hours Laboratory: 0.00 hours per week

Course Units: 2.00

Grading Method: Pass/No Pass

Credit Status: Non-Degree Credit

Transfer CSU: No

Transfer UC: No

General Education:

El Camino College:

CSU GE:

IGETC:

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. **Application Problems:** Students will be able to use multiple representations in order to complete application problems in their intermediate algebra course
2. **Solving Equations and Manipulating Expression:** Students will be able to solve equations and manipulate expressions in their intermediate algebra course
3. **Visual and Graphical Methods:** Students will be able to use visual and graphical methods to solve problems in their intermediate algebra course.
4. **Articulating Mathematical Reasoning:** Students will be able to verbally interpret, both orally or in writing, the mathematical reasoning used in solving problems in their intermediate algebra course.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at <http://www.elcamino.edu/academics/slo/>.

B. COURSE OBJECTIVES (The major learning objectives for students enrolled in this course are listed below, along with a representative assessment method for each)

1. Demonstrate **computational fluency** at the intermediate algebra level: Students will evaluate numerical operations and algebraic expressions using integers, rational numbers and complex numbers.
Written Homework
Class Performance
2. Demonstrate fluency with **algebraic symbolism** at the intermediate algebra level: Students will understand the use of algebraic symbolism and be able to translate real-world problems into symbolic representations for a solution.
Written Homework
Class Performance
3. Demonstrate fluency with mathematical **functions** at the intermediate algebra level: Students will solve and graph linear, exponential, logarithmic, quadratic, polynomial, and rational functions.
Written Homework
Class Performance
4. Demonstrate fluency with **systems of equations and inequalities:** at the intermediate algebra level: Students will solve and graph systems of equations and inequalities in two variables.
Written Homework
Class Performance
5. Demonstrate fluency applying **mathematical modeling** at the intermediate algebra level: Students will model real-world problems using tables, graphs, algebraic functions, and interpret these results.
Written Homework
Class Performance

III. OUTLINE OF SUBJECT MATTER (Topics should be 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 Topics
Lecture	7	I	Support Concepts and Skills addressed as needed through just-in-time work to support intermediate algebra objectives and outcomes related to computational fluency , such as <ul style="list-style-type: none"> A. Basic arithmetic operations with integers, rational numbers, complex numbers, decimal numbers, and percentages in context to real-world problems B. Basic arithmetic operations using scientific notation C. Basic arithmetic involving integer and rational exponents D. Basic arithmetic operations on polynomial expressions E. Other critical concepts or skills as identified by the instructor
Lecture	8	II	Support Concepts and Skills addressed as needed through just-in-time work to support intermediate algebra objectives and outcomes related to algebraic symbolism , such as <ul style="list-style-type: none"> A. Symbolic techniques for solving linear, quadratic, rational, polynomial, radical, exponential, logarithmic, and absolute value equations and inequalities B. Symbolic techniques for simplifying, expanding, or factoring polynomials C. Graphical techniques for solving equations and inequalities D. Modeling verbally expressed problems numerically, symbolically and graphically E. Other critical concepts or skills as identified by the instructor
Lecture	7	III	Support Concepts and Skills addressed as needed through just-in-time work to support intermediate algebra objectives and outcomes related to functions , such as <ul style="list-style-type: none"> A. Operations on expressions for typical intermediate algebra functions, including those involving rational exponents, and absolute values B. Functions as rules, sets of ordered pairs, symbolic equations, and as graphs C. Invertibility of functions

			D. Graphs of typical intermediate algebra functions E. Analysis and interpretation of critical features of graphs of intermediate algebra functions, including domain, range, intercepts, and slope F. Modeling real-world problems using functions G. Other critical concepts or skills as identified by the instructor
Lecture	7	IV	Support Concepts and Skills addressed as needed through just-in-time work to support intermediate algebra objectives and outcomes related to systems of equations and inequalities , such as A. Solving systems of linear and nonlinear equations and inequalities algebraically and graphically B. Application problems using systems of equations and inequalities C. Other critical concepts or skills as identified by the instructor
Lecture	7	V	Support Concepts and Skills addressed as needed through just-in-time work to support intermediate algebra objectives and outcomes related to mathematical modeling , such as A. Modeling verbally expressed intermediate algebra problems numerically, symbolically and graphically B. Solving problems numerically, symbolically and graphically C. Other critical concepts or skills as identified by the instructor
Total Lecture Hours		36	
Total Laboratory Hours		0	
Total Hours		36	

IV. PRIMARY METHODS OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION

Check the PRIMARY method of evaluation for this course.

Problem solving demonstrations (computational or non-computational)

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION

1. Consider the function: $f(x) = 3x^2 - 2x - 1$

- What are the y-intercepts, if any?
- What are the x-intercepts, if any?
- What are the domain and range?
- Sketch the graph
- Solve for $f(x) = 4$

C. COLLEGE LEVEL CRITICAL THINKING ASSIGNMENTS

1. Consider this problem: You're going to the mall with your friends and you have \$200 to spend from your recent birthday money. You discover a store that has all jeans for \$25 and all dresses for \$50. You really, really want to take home 6 items of clothing because you "need" that many new things. Find out how many pairs of jeans and how many dresses you can buy so you use the whole \$200 (tax not included – your parents promised to pay the tax)?

1. The following table contains U.S. population data for the two most recent census years, 2000 and 2010.

Census Year	U.S. Population (in millions)
2000	281.4
2010	308.7

- a. Steve thinks the data should be modeled by a linear function.
 - I. What is the average rate of change in population per year according to this data?
 - II. Write a formula for a linear function, L , to estimate the population t years since the year 2000.
- b. Phillip thinks the data should be modeled by an exponential function.
 - I. What is the growth rate of the population per year according to this data?
 - II. Write a formula for an exponential function, E , to estimate the population t years since the year 2000.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Embedded Questions
Homework Problems
Written Homework

V. INSTRUCTIONAL METHODS: Select from this list.

Lecture
Group Activities
Discussion
Demonstration
Other: Affective Domain Activities
<http://Affective Domain Link>

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.

VI. WORK OUTSIDE OF CLASS:

Study
Answer questions
Skill practice
Required reading
Problem solving activity
Written work (such as essay/composition/report/analysis/research)

Estimated Study Hours Per Week: 4.0

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Intermediate Algebra, Tussy/Gustafson, 5th edition, Cengage Learning, 2013.

Intermediate Algebra: Functions & Authentic Applications, Jay Lehmann, 5th edition, Pearson, 2015.

B. REQUIRED TEXTS (title, author, publisher, year)

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites

Category and Justification

Math 80

Corequisite

B. Requisite Skills

Requisite Skills

Carry out numerical operations and manipulate algebraic expressions, including expressions with rational and negative exponents, complex numbers, and logarithms. MATH 40 - Use the properties of the real numbers to evaluate, simplify, and factor algebraic expressions, including expressions with fractions and radicals

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 Art Martinez

BOARD APPROVAL DATE: 1/22/2019

LAST BOARD APPROVAL DATE:

Last Reviewed and/or Revised by: Art Martinez

Date: 11/10/2018