



I. GENERAL COURSE INFORMATION

Subject and Number: Mathematics 73
Descriptive Title: Intermediate Algebra for General Education
Course Disciplines: Mathematics
Division: Mathematical Sciences

Catalog Description:

This intermediate algebra course is designed for students who are not considering further study in the sciences, technology, engineering, or mathematics. In the context of studying basic functions and their graphs, students strengthen and expand their algebra skills. Functions studied include linear, quadratic, polynomial, rational, and radical functions, as well as the absolute value function. Particular emphasis is placed on the operations on functions, solving equations and inequalities, as well as using functions to model real life situations. Other topics include solving systems of equations and applications.

Note: Mathematics 73 serves as a prerequisite course for all transfer level mathematics course sequences, except the STEM and Business calculus sequences (Mathematics 130, 160, 165, 170, 180, 190, 191, and 220).

Conditions of Enrollment:

Prerequisite: Mathematics 40 with a minimum grade of C in prerequisite or qualification by appropriate assessment.

Course Length:	X Full Term	Other (Specify number of weeks):
Hours Lecture:	5.00 hours per week	TBA
Laboratory:	0 hours per week	TBA
Course Units:	5.00	

Grading Method: Letter
Credit Status: Associate Degree Credit

Transfer CSU: No
Transfer UC: No

General Education:

El Camino College:
6 – Mathematics Competency

Term: _____ Other: _____

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. Given information on two sides of a right triangle, the student will be able to correctly determine the third side using the Pythagorean Theorem and write the solution in simplest exact form.
2. The student demonstrates the ability to interpret, draw conclusions or solve problems using visual or graphical representations.

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 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. Carry out numerical operations and manipulate algebraic expressions, including expressions with rational and negative exponents.
 - Objective Exams
2. Recognize functional relationships in the form of graphs, data or symbolic equations.
 - Objective Exams
3. Solve problems involving a variety of function types, including linear, quadratic, polynomial, rational and radical functions, as well as the absolute value function.
 - Objective Exams
4. Graph a variety of functions and relations and draw connections between these graphs and solutions to problems.
 - Objective Exams
5. Solve a variety of equations and inequalities, as well as systems of equations and inequalities, using algebraic and graphical methods. Types of equations include linear, quadratic, polynomial, rational and radical equations, as well as absolute value equations.
 - Objective Exams
6. Using numerical, symbolic and graphical methods, model application problems, solve them and interpret the results in the context of the problem.
 - 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	13	I	BASIC OPERATIONS AND MANIPULATIONS: A. Review of operations on polynomial, rational and radical expressions B. Operations on power expressions with negative or rational exponents, as well as absolute value expressions C. Factoring polynomial expressions D. Rewriting radical expressions as expressions with rational exponents

Lecture	18	II	<p>FUNCTIONS:</p> <ul style="list-style-type: none"> A. Definitions of function, domain and range \ B. Function notation C. Functions as rules, as sets of ordered pairs, as algebraic equations, and as graphs. Function types include polynomial, power, rational, radical, and the absolute value D. Operations on functions, including addition, subtraction, multiplication, division, exponentiation and composition E. Determining the equation for the linear function given the graph or sufficient data
Lecture	19	III	<p>GRAPHING:</p> <ul style="list-style-type: none"> A. Graphing functions of all types, especially the basic functions $f(x) = x, x^2, x^3, \frac{1}{x}, x , \sqrt{x}$ B. Graphing solutions to equations and inequalities C. Graphing quadratic functions using the completing the-square technique to identify the vertex of a parabola D. Graphing equations of circles, using the completing-the-square technique to identify the circle of the circle E. Transformations of graphs of functions, including translations, reflections and re-scalings
Lecture	21	IV	<p>EQUATIONS AND INEQUALITIES:</p> <ul style="list-style-type: none"> A. Algebraic and graphical methods for solving equations and inequalities B. Techniques for solving quadratic inequalities over the real numbers C. Techniques for solving other equations and inequalities, which contain linear, quadratic, rational and radical expressions, as well as the absolute value of linear expressions D. Finding domains of radical and rational functions by setting up and solving appropriate inequalities E. Using interval notation to express solutions of inequalities F. Operations on sets: unions and intersections G. Systems of linear equations (2 x 2 systems only)
Lecture	19	V	<p>APPLICATIONS:</p> <ul style="list-style-type: none"> A. Modeling verbally expressed problems numerically, symbolically and graphically B. Solving problems numerically, symbolically and graphically C. Pattern recognition strategies D. Perimeter and area of rectangles, triangles and circles E. Pythagorean Theorem F. Rate, distance and time problems G. Other applied problems whose solutions utilize the function types listed above, as well as the types of equations and inequalities listed above

		H. Applied problems whose solutions require the use of systems of linear equations
Total Lecture Hours	90	
Total Laboratory Hours	0	
Total Hours	90	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION:

Problem solving demonstrations (computational or noncomputational)

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:

Solve the inequality $x^2 - 2 > 2$, check your work and present the solution in interval notation. Also, graph the solution on a number line.

C. COLLEGE LEVEL CRITICAL THINKING ASSIGNMENTS:

1. Give an example of a quadratic equation in one variable that has 4 as its only solution. Explain why in a sentence or two and provide a graph to illustrate your reasoning.
2. If $H(t) = 1.59t + 90.31$ is the total number of U.S. households, in million, at t years since 1990 and if $B(t) = 4.33t - 40.63$ is the number of Broadband cable subscribers and $D(t) = 0.536t^2 - 10.32t + 52.85$ is the number of DSL subscribers, both in millions, at t years since 1990, find an equation for the percentage $P(t)$ of U.S. households who are either Broadband or DSL subscribers. Assume no one household subscribes to both services. Predict when 90% of U.S. households will have either Broadband or DSL subscriptions.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Other 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
Required reading
Problem solving activities

Estimated Independent Study Hours per Week: 10

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Tussy and R. Gustafson. INTERMEDIATE ALGEBRA. 5th ed. Brooks/Cole, 2012.

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and NonCourse Prerequisites and Corequisites)

Requisites	Category and Justification
Mathematics 40 with a minimum grade of C	Sequential
Non Course Prerequisite	Qualification by appropriate assessment.

B. Requisite Skills

Requisite Skills
<p>Manipulate algebraic expressions including expressions with fractions and radicals MATH 40 Use the properties of the real numbers to evaluate, simplify, and factor algebraic expressions, including expressions with fractions and radicals.</p> <p>Solve quadratic equations and systems of linear equations MATH 40 Solve linear equations and inequalities, systems of two linear equations with two variables, and quadratic equations. MATH 40 Set up and solve application problems using linear equations and inequalities, systems of two linear equations with two variables, and quadratic equations.</p> <p>Graph systems of linear equations MATH 40 Graph linear equations and systems of linear equations by plotting points or by using intercepts and the slope.</p> <p>Solve application problems using linear and quadratic equations MATH 40 Set up and solve application problems using linear equations and inequalities, systems of two linear equations with two variables, and quadratic equations.</p>

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification
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D. Recommended Skills

Recommended Skills

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact
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Course created by Lars Kjeseth on 04/21/2008.

BOARD APPROVAL DATE: 06/16/2008

LAST BOARD APPROVAL DATE: 04/15/2019

**Last Reviewed and/or Revised by: Eduardo Barajas
17998**

Date: 11/10/2018