# Lassen Community College Course Outline

## MATH-60 Intermediate Algebra                                          4.0 Units

## I.      Catalog Description

This course is a continuation of Beginning Algebra and is designed to develop the algebra skills necessary for college level math courses.  The topics include: linear, quadratic, inverse, exponential, and logarithmic functions; real and complex solutions of quadratic equations; systems of equations and inequalities, sequences and the Binomial Theorem. This course satisfies the Mathematics competency requirement and Area D2 (Language and Rationality) requirement for the A.A./A.S. degree.  This course has been approved for hybrid, web-enhanced, online and correspondence delivery.

**Prerequisite(s):** None

Does not transfer to UC/CSU
General Education Area: D2
51 Hours Lecture, 51 Hours Lab, 102 Expected Outside Class Hours, 204 Total Student Learning Hours
Scheduled: Fall, Spring

## II.     Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 170100

## III.    Course Objectives

### A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:
Integrate mathematical computational skills and elementary algebra concepts with intermediate algebra skills to:

1. Simplify and evaluate quadratic, rational, exponential, logarithmic and radical expressions by applying the order of operation rules, the rules of exponents, and the appropriate properties and rules of algebra.
2. Simplify, solve, graph and verify solutions of linear equations and inequalities, quadratic, rational, exponential and logarithmic equations in one and two variables use the appropriate mathematical computational skills and properties of algebra.

### B. Course Objectives

Upon completion of this course the student will be able to:

1. Use functional notation to calculate the value of a function.
2. Apply the concepts of transformations to graph basic functions.
3. Solve linear inequalities, absolute value equations and inequalities.
4. Find the equations of lines.
5. Solve systems of linear equations.
6. Graph and solve systems of linear inequalities.
7. Perform operations on radicals and simplify radical expressions.

8. Solve radical equations, including complex number solutions.
9. Solve quadratic equations and inequalities.
10. Solve rational equations and inequalities.
11. Compute inverses and combinations of functions.
12. Use exponential and logarithmic properties to solve equations and application problems.
13. Calculate terms of arithmetic and geometric sequences.
14. Use the Binomial Theorem to expand a binomial.

## IV.   Course Content
A. Graphs and Functions:  Graphs of equations, slope, function notation, graphs of functions, transformations
B. Linear Functions and Inequalities:  Applications of linear equations, linear inequalities in one variable, absolute value equations and inequalities, equations of lines
C. Systems of Linear Equations:  Systems of linear equations in two and three variables, matrices, determinants, graphs and systems of linear inequalities in two variables.
D. Radicals and Complex Numbers:  Simplifying, combining, multiplying, and dividing radical expressions; solving radical equations, complex numbers
E. Quadratic Functions, Equations, and Inequalities:  Solve quadratic equations (square root, completing the square, and quadratic formula), applications, quadratic functions, and quadratic inequalities
F. Rational Functions:  Solvinig rational equations, graphing rational functions, and rational inequalities in one variable
G. Functions and Relations:  Combinations of functions, inverses, variation
H. Exponential and Logarithmic Functions:  Graphs, properties of logarithms, exponential and logarithmic equations, applications
I. Sequences and the Binomial Theorem:  Arithmetic sequences, geometric sequences, and the Binomial Theorem

## V.   Assignments
### A.  Appropriate Readings
Students will be required to read and study the assigned chapters in textbook.
### B.  Writing Assignments
Students will be expected to do the following:
1. Prepare for class and review material and concepts presented in class.
2. Complete homework assignments requiring applications of representative symbolic systems, graphing, word problems.
3. Understand and apply the theories and techniques taught in class.
### C.  Expected Outside Assignments
Students are expected to spend a minimum of 2 hours outside of class in practice and preparation for each hour of class.  Assignments may include:  reading the text, application of formulas and theorems, practice problems from the text, and assignments in the Math Lab.
### D.  Specific Assignments that Demonstrate Critical Thinking
Students will be required to interpret mathematical principles and techniques to solve broader and more difficult problems than those presented in lecture. Students will solve a variety of problems, including those that demand the application of principles in a number of different contexts.

## VI. Methods of Evaluation

**Traditional Delivery Evaluation**
A student's grade will be based on multiple measures of student performance, including in-class work, out of class work, quizzes, exams and a comprehensive final.

**Web-enhanced course**
Additional information and resources may be made available to students online, and students may be required to do research and complete and/or submit assignments online. Quizzes may be administered online, but exams and summative assessments must be administered face-to-face.

**Hybrid Evaluation**
All quizzes and exams will be administered during the in-person class time. Students will be expected to complete online assignments and activities equivalent to in-class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous (chat/forum) will be evaluated for participation and to maintain effective communication between instructor and students.

**Online Delivery Evaluation**
A variety of methods will be used, such as: asynchronous and synchronous discussions (chat/forum), online quizzes and exams, postings to online website, and email communications.

**Correspondence Delivery Evaluation**
Same as face-to-face with the exception of the desired use of proctored exams and exclusion of participation in classroom activities. Students will be expected to complete assignments and activities equivalent to in-class assignments and activities. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

## VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☒ **Traditional Classroom Delivery**     ☒ Hybrid Delivery

☒ Online Delivery     ☒ Correspondence Delivery

**Traditional Classroom Delivery**
Classroom instruction consisting of, but not limited to,lecture, questions and answers, demonstrations and a discussion.

**Online Delivery**
Online written lectures. Participation in forum-based discussions. Online exercises/assignments contained on website. Discussion papers, email communications, postings to forums, and web-links will comprise the method of instruction.

**Hybrid Delivery**

A combination of traditional classroom and online instruction will be utilized. Each semester a minimum of 17 hours will be taught face-to-face by the instructor and the remaining hours will be instructed online through the technology platform adopted by the District. Traditional class instruction may consist of lecture, discussion, practice exercises/assignments, demonstrations, multimedia aids, and computer assisted instruction. Online delivery may consist of participation in forum-based discussions and posts, web links, recorded lecture posts, online lectures, email communications, practice exercises/assignments, demonstrations, multimedia aids, and computer assisted instruction with added extra resources and other media sources as appropriate.

**Correspondence Delivery**
Assigned readings, instructor-generated typed handouts, typed lecture materials, exercises and assignments equal to face-to-face instructional delivery. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

## VIII. Representative Texts and Supplies

**Traditional Classroom, and Correspondence Delivery**
Required: Intermediate Algebra, 13th edition or later
The Traditional classroom and Correspondence delivery sections require of Math 60 text *Intermediate Algebra*, *13th* edition, 2020, by Lial, et. Al., Pearson Publishing. The text is available in cloth bound (ISBN 9780134895987), loose leaf (ISBN 9780134896403), or etext (ISBN 9780136881070) versions.

Optionally: If MyLab Math will be used in your class in addition to the text book, the MyLab Math access may be purchased separately (ISBN 9780136847656) or with the textbook: cloth bound textbook & MyLab Math access code (ISBN 9780135307687), etext & MyLab Math access code (ISBN 9780135963418) - 18 week access, or etext & MyLab Math access code (ISBN 9780136639626) - 24 month access.

**Hybrid and Online Delivery**
Required: Intermediate Algebra, latest edition (currently13th edition)
Hybrid and Online delivery sections currently require the Math 60 text *Intermediate Algebra*, *13th* edition, 2020, by Lial, et. Al., Pearson Publishing. The text is available in cloth bound (ISBN 9780134895987), loose leaf (ISBN 9780134896403), or etext (ISBN 9780136881070) versions.

Optionally: If MyLab Math will be used in your class in addition to the textbook, the MyLab Math access may be purchased separately (ISBN 9780136847656) or with the textbook: cloth bound textbook & MyLab Math access code (ISBN 9780135307687), etext & MyLab Math access code (ISBN 9780135963418) - 18 week access, or etext & MyLab Math access code (ISBN 9780136639626) - 24 month access. The MyLab Math access code includes the etext when purchased.

## IX. Discipline/s Assignment
Mathematics

## X. Course Status
Current Status: Active
Original Approval Date: 5/8/1990
Revised By: Robert Schofield
Curriculum/Academic Standards Committee Revision Date: 01/18/2022