

# Lassen Community College Course Outline

## MATH 168 College Algebra Lab

0.0 Units

### I. Catalog Description

This course is to assist students in their successful completion of College Algebra. Students will study the general theory of equations, polynomial and rational inequalities, conic sections, exponents and logarithms; sequences, series, matrices and their applications. This course uses the text required in MATH 8 and additional materials supplied by the instructor.

**Prerequisite:**

**Co-requisite:** MATH 8 Advanced Algebra

Does not transfer to UC/CSU

51 Hours Lab

Scheduled: Spring

### II. Coding Information

Repeatability: Not repeatable, take 1 time

Grading Option: Pass/No Pass

Credit Type: Non-Credit - Not Degree

Applicable TOP Code: 170100

### III. Course Objectives

#### A. Course Student Learning Outcomes

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

Use algebraic properties and rules to solve problems involving logarithmic functions, exponential functions and conic sections.

#### B. Course Objectives

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

1. Find domain, range, inverses, and compositions of functions.
2. Know a catalogue of functions and use the concepts of symmetry, transformations, scaling, and reflections to graph functions.
3. Find equations of linear and quadratic functions.
4. Apply the Remainder Theorem, Factor Theorem, and the Fundamental Theorem of Algebra to solve higher-degree equations.
5. Locate asymptotes of a function; including vertical, horizontal, and oblique asymptotes.
6. Graph polynomial, rational, exponential, and logarithmic functions.
7. Use exponential and logarithmic properties to solve equations and application problems.
8. Derive the equations of conic sections.
9. Categorize and graph conic sections from their equations.
10. Solve systems of linear equations by matrix reduction (Gaussian method).
11. Calculate terms of arithmetic and geometric sequences and sums of arithmetic and geometric series.
12. Use the Binomial Theorem to expand a binomial.

## **IV. Course Content**

- A. Functions: Transformations, domain, range, odd, even, distance formula, graphs, composite, inverse, and variation.
- B. Linear and Quadratic Functions: Linear and Quadratic functions, and inequalities; intersection points of two graphs.
- C. Polynomial and Rational Functions: Graphs, synthetic division, theory of equations, Remainder and Factor Theorems, Fundamental Theorem of Algebra, solutions to higher-degree equations and inequalities.
- D. Exponential and Logarithmic Functions: Graphs, properties of logarithms, exponential and logarithmic equations.
- E. Conic Sections: Circles, parabolas, ellipses, and hyperbolas.
- F. Systems of linear equations and matrix reduction (Gaussian method).
- G. Sequences and series: Arithmetic sequences and series, geometric sequences and series, factorial notation, and the Binomial Theorem.

## **V. Assignments**

### **A. Appropriate Readings**

Students will be required to read and study the assigned MATH 8 textbook chapters. Supplemental readings may be assigned.

### **B. Writing Assignments**

1. Complete class and homework assignments, including applications of representative symbol systems and application problems.
2. Understand and apply the theories and techniques taught in Math 8.
3. Additional coursework may be assigned

### **C. Expected Outside Assignments**

Additional coursework may be assigned.

### **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 class. Students will solve a variety of problems, including those that demand the application of principles in a number of different contexts. Multiple measures of student performance including in-class assignments and out-of-class work.

## **VI. Methods of Evaluation**

### **Traditional Delivery Evaluation**

Traditional measures of student performance, including: in-class work, out of class work, and daily practice problems.

### **Correspondence Delivery Evaluation**

Same as face to face with the exception the exclusion of participation in classroom activities. Students will be expected to complete assignments and activities equivalent to in-class assignments and activities. To fulfill correspondence students' collaborative activity requirements, there will be additional worksheets/assignments (for students to complete individually), which mirror the collaborative activities. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

### **Online Delivery Evaluation**

Same as face to face with the use of discussion forums as participation in class activities. Students are expected to complete exercises, written responses and quizzes consistent

with expectations for face-to-face class.

### **Hybrid Delivery 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.

### **Web-enhanced Delivery Evaluation**

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.

## **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**  Correspondence Delivery

Hybrid Delivery

Online Delivery

### **Traditional Classroom Course Delivery**

Methods of instruction may include, but are not limited to:

Lecture, laboratory, demonstrations, discussion, and computer assisted instruction.

### **Correspondence Course Delivery**

Assigned readings, instructor-generated handouts, 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.

### **Online Course Delivery**

Assigned readings, instructor-generated typed handouts, typed lecture materials, web links to videos or resources, and assignments equivalent to face to face instructional delivery. Student-student and teacher-student interaction and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

### **Hybrid Course Delivery**

A combination of traditional classroom and online instruction will be utilized. Each semester a 34 hours will be taught face-to face by the instructor and 17 hours will be instructed online through the technology platform adopted by the District. Traditional class instruction will consist of exercises/assignments, lectures, visual aids, and practice exercises. Online delivery will consist of exercises/assignments, lecture posts, discussions, adding extra resources and other media sources as appropriate.

## **VIII. Representative Texts and Supplies**

Lial, Hornsby, Schneider, Daniels; *College Algebra*, 12<sup>th</sup> edition, 2017, Pearson Education. This textbook may be purchased in a cloth/paper bound version, ISBN: 978-0-134-217-451

or in a loose-leaf version, ISBN: 978-0-134-282-879, or as an eText version, ISBN 978-0-134-313-795 all without MyLab Math

When a Math 8 section requires the use of MyLab Math, the eText and MyLab may be purchased separately or as a bundle, ISBN 978-0-135-959-695 (18 week eText and MyLab access) or ISBN 978-0-134-282-886 (24 month eText and MyLab access).

Supplies: Scientific Calculator, Instructor provided handouts.

**IX. Discipline/s Assignment**

Mathematics

**X. Course Status**

Current Status: Active

Original Approval Date: 03/05/2019

Board Approval: 03/12/2019

Chancellor's Office Approval: 03/15/2019

Revised By: Robert Schofield

Curriculum/Academic Standards Committee Revision Date: 04/05/2022