Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for MATH 51

ALGEBRA BRIDGE

Effective: Fall 2016

I. CATALOG DESCRIPTION:
MATH 51 — ALGEBRA BRIDGE — 2.00 units

This course is intended for students who completed Math 50 Core Intermediate Algebra and need the equivalent of Math 55 Intermediate Algebra. The course covers content included in Math 55 but not Math 50. Topics include: operations with rational expressions; rational equations; operations with radical expressions; complex numbers; quadratic inequalities and equations quadratic in form; systems of three linear equations; properties of logarithms and logarithmic equations; conic sections; and non-linear systems. Students may not receive credit for both Math 55 and the combination of Math 50 and Math 51.

2.00 Units Lecture

Prerequisite
MATH 50 - Core Intermediate Algebra
with a minimum grade of C

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	36.00
Total Hours:	36.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:
Before entering the course a student should be able to:

A. MATH50

IV. MEASURABLE OBJECTIVES:
Upon completion of this course, the student should be able to:

A. Simplify, add, subtract, multiply, and divide rational expressions
B. Solve rational equations
C. Simplify, add, subtract, multiply, and divide radical expressions
D. Add, subtract, multiply and divide complex numbers
E. Use completing the square to solve a quadratic equation
F. Solve higher order polynomial equations that are quadratic in form
G. Find complex solutions of quadratic equations
H. Solve quadratic inequalities
I. Solve systems of linear equations in three variables
J. Use matrix methods to solve inear systems
K. Develop and use a system of three linear equations to solve applied problems
L. Use properties of logarithms to simplify logarithmic expressions and to solve logarithmic equations
M. Sketch the graphs of conic sections and identify key components of the graphs
N. Solve non-linear systems of equations and inequalities
O. Develop and use equations to solve applied problems involving rational expressions

V. CONTENT:
A. Rational Expressions and Equations
1. Operations with rational expressions
a. Multiply and divide rational expressions
b. Add and subract rational expressions with like denominators or unlike denominators
c. simplify complex fractions
2. Rational equations
a. Solve rational equations
b. Solve applied problems by writing and solving a rational equation
1. work

2. distance, rate, time

B. Radical Expressions and Complex Numbers
   1. Operations with radical expressions
      a. Simplify radical expressions
      b. Add, subtract, multiply and divide radical expressions
      c. Rationalize the denominator
   2. Complex Numbers
      a. Use the definition of imaginary number to simplify square roots of negatives
      b. Write a complex number in *a+bi* form
      c. Add, subtract, multiply, divide, and simplify complex expressions

C. Quadratic Equations and Inequalities
   1. Equations
      a. Use completing the square to solve a quadratic equation
      b. Find complex roots of quadratic equations
      c. Solve equations that are quadratic in form
   2. Inequalities
      a. Solve quadratic inequalities

D. Systems of Three Linear Equations
   1. types of solutions
   2. Solving by substitution and elimination
   3. Matrix solutions
   4. Applications

E. Logarithms
   1. Properties of logarithms
      a. Simplify or expand logarithms
   2. Change of base formula
   3. Logarithmic equations

F. Conic Sections and Non-linear Systems of Equations
   1. Parabolas with horizontal axes of symmetry
   2. Circles
   3. Ellipses
   4. Hyperbolas
   5. Non-linear systems of equations and inequalities

VI. METHODS OF INSTRUCTION:

A. **Audio-visual Activity** -

B. **Classroom Activity** -

C. This class will be offered only in the Math X mode. In this mode students work independently by reading the text and working self-check problems, by watching videos, by experimenting with interactive animations, and by doing online homework with built-in support features such as "show me an example," "help me solve this," and videos. In addition, there are an instructor and an instructional assistant in the classroom available to provide help with questions; most sections have an assigned student tutor who provides tutorial support.

D. **Individualized Instruction** -

VII. TYPICAL ASSIGNMENTS:

A. Assigned readings or web-based tutorials: Students are assigned reading in the text or asked to watch an on-line tutorial and required to take notes on what they have read or watched. A handout of guiding questions may be used to help them focus on key concepts and/or skills. A short exercise set related to the material may be used to assess comprehension.

B. Homework:
   1. Problems are assigned for each section covered. The number of problems assigned may vary from section to section, but homework assignments should include a sufficient number and variety of problems to develop both skill and conceptual understanding. A typical assignment should take an average student 1 to 2 hours for each hour in class.
   2. All homework will be done online and each problem can be checked for correctness. Immediate feedback is available for each incorrect answer which is designed to help the student understand and solve the problem. Students may elect to work a similar exercise to gain additional practice.

C. Tutorial Worksheets: At the discretion of the instructor, students may be asked to complete worksheets designed to further their understanding of core concepts and/or assess mastery of core skills. Worksheets should target key concepts and may be used to expand on material presented in the text.

VIII. EVALUATION:

A. **Methods**

   1. Exams/Tests
   2. Quizzes
   3. Class Work
   4. Home Work
   5. Other:
      a. Tutorial worksheets
      b. Self-evaluation quizzes

B. **Frequency**

   1. Recommend a minimum of two exams plus a final exam
   2. Recommend a minimum of six quizzes
   3. Homework assigned for each section covered
   4. The number of tutorial worksheets and self-evaluation quizzes are at the discretion of the Math X program coordinator.

IX. TYPICAL TEXTS:

1. Rockswold, Gary, and Terry Krieger. *Beginning and Intermediate Algebra with Applications and Visualizations.* 4th ed., Pearson/Addison-Wesley, 2016.
2. Lehmann, Jay. *Intermediate Algebra.* 5th ed., Pearson/Addison-Wesley, 2015.
3. Tussy, Alan, and R. Gustafson. *Elementary and Intermediate Algebra.* 5th ed., Cengage, 2013.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Scientific calculator

B. Access code for online access to textbook, videos and homework.