BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

MATH 124 - Intermediate Algebra **5 Unit(s)**

Prerequisite(s): MATH 108 or Math Level IV
Recommended Prep: Reading Level IV

Transfer Status: NT
85 hours Lecture

This course builds on the concepts and skills learned in Elementary Algebra. The topics include exponents and polynomials, rational and radical expressions and equations, linear and quadratic equations and inequalities, functions, complex numbers, logarithms, and applications.

II. **OBJECTIVES**

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

A. Acquire proficiency solving linear, quadratic, rational, and radical equations, and linear inequalities.
B. Acquire proficiency performing the addition, subtraction, multiplication, and division on real and complex numbers, polynomials, rational expressions, and radical expressions.
C. Graph linear, quadratic, and exponential equations in two variables, linear inequalities in one variable, and the conics.
D. Acquire proficiency factoring quadratic and higher order polynomials.
E. Solve systems of equations in two and three variables.
F. Solve a variety of applications by translating sentences into equations.
G. Simplify expressions involving integer and rational exponents using properties of exponents.
H. Evaluate, determine the domain and range, graph, and find the inverse of a variety of functions including, but not limited to, exponential and logarithmic functions.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Review of the basics	4.00
2. Equations and Inequalities in One Variable	7.00
3. Equations and Inequalities in Two Variables	9.00
4. Systems of Linear Equations	6.00
5. Exponents and Polynomials	11.00
6. Rational Expressions and Functions	12.00
7. Rational Exponents and Roots	11.00
8. Quadratic Functions	10.00
9. Exponential and Logarithmic Functions	11.00
10. Conic Sections	4.00
Total Hours	85.00

IV. **METHODS OF INSTRUCTION**

A. Lecture
B. Collaborative Group Work
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Discussion
E. Board Work

V. **METHODS OF EVALUATION**

A. Exams/Tests
B. Quizzes
C. Class Assignments and Class Response
D. Daily Homework Assignments, where the student will demonstrate problem-solving skills

VI. **EXAMPLES OF ASSIGNMENTS**

A. Reading Assignments
   1. Read the section in the textbook on Finding Equation of a Line and be able to identify the different given information about the line to be used in the slope-point equation for obtaining the final form of the equation of the line.
   2. Read the section in the textbook on Analysis of the Descriminant as part of the Quadratic formula and be able to use the result to identify the types of solutions of a Quadratic Equation.

B. Writing Assignments
   1. If $f(x)=3/x$ and $g(x)=3x-4$, explain how to find $(f \circ g)(x)$ and what are the domains of the initial two functions and the resulting one. Assume you are explaining this to a classmate having trouble and write a detailed explanation using a general approach to composite functions as well as giving one specific example of evaluation of the resulting function.
   2. Graph the functions $y=|x|$, $y=|x|+2$, and $y=|x+2|$, find x-and y- intercepts for each graph. Assume you are explaining this to a group of students hearing this for the first time and write a detailed explanation discussing the difference between the given graphs and how you can use the basic graph build the new one knowing the results of your work.

C. Out-of-Class Assignments
   1. Review the section on Equations with Radicals and solve the problems assigned by the instructor, showing all steps.
   2. Review the section on Division of Polynomials and solve the problems assigned by the instructor, showing all steps.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. McKeague, C.P. Intermediate Algebra. 8th Edition. Cengage Learning, 2008.
B. Lehmann, J. Intermediate Algebra. 4th Edition. Pearson, 2011.

Materials Other Than Textbooks:

A. Scientific calculator with logarithmic functions

Created/Revised by: Laurie Kincheloe
Date: 09/10/2012