I. **CATALOG DESCRIPTION**
    A. Division: Science and Math
        Department: Mathematics
        Course ID: MATH 095
        Course Title: Intermediate Algebra
        Units: 4
        Lecture: 4 hours
        Prerequisite: MATH 090 or eligibility for MATH 095 as determined by the SBVC
                       assessment process, or BUSCAL 091.

    B. Course Description:
        A second course in algebra which builds on the skills of solving equations, manipulating polynomials, factoring, and algebraic fractions. This course includes simplifying complex fractions, finding real solutions to quadratic and rational equations, an introduction to linear inequalities, rational exponents and radicals, graphing equations of straight lines, solving linear systems of equations and application problems throughout the different topics.

        Schedule Description:
        A second course in algebra: solving equations, manipulating polynomials, factoring, algebraic fractions, simplifying complex fractions, finding real solutions to quadratic and rational equations, an introduction to linear inequalities, rational exponents and radicals, graphing equations of straight lines, and solving linear systems of equations.

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

III. **EXPECTED OUTCOMES FOR STUDENTS**
     Upon completion of the course, the student should be able to:
     A. Solve simple linear and compound linear inequalities.
     B. Apply the principles of exponents to the new concepts of radicals.
     C. Simplify complex fractions
     D. Solve equations involving rational expressions
     E. Distinguish and use the most efficient methods of solving a quadratic equation
     F. Construct graphs of linear equations
     G. Construct linear equations from graphic information
     H. Communicate the processes involved in learning the skills listed above.

IV. **CONTENT:**
    A. Linear Inequalities
        1. Review linear equations
        2. Linear inequalities
        3. Compound inequalities

    B. Rational Expressions
        1. Review operations with rational expressions
        2. Complex fractions
        3. Solving equations involving rational expressions
        4. Applications

    C. Rational Exponents and Radicals
        1. Rational exponents
        2. Radicals
        3. Operations with radicals

     D. Quadratic Equations
          1. Solutions by factoring
          2. Completing the square
          3. The quadratic formula
     E. Linear Equations in Two Variables
          1. The rectangular coordinate system
          2. Slope of a line
          3. Equations of lines
     F.   Systems of Equations
          1. Systems of linear equations in two variables
          2. The Addition method
          3. Systems of linear equations in three variables

V.   METHODS OF INSTRUCTION:
All instructors will utilize lecture and discussion. Specific reading and problem assignments will reinforce and extend classroom presentations. Students will be required to perform specific problem solving strategies. Note: Instructors may include the following instructional techniques: drill at the chalkboard, practice exams, computer-aided instruction, group work.

VI.   TYPICAL ASSIGNMENTS:
A. At the end of each section there is a set of problems. These start with problems that require the student to recognize and apply the principles covered in the section. The problems then graduate into those requiring the application of two or more principles and the student must recognize the principles to apply and the correct order in which to apply them. Typical problem sets end with application problems in which the student must translate the words in the problem into appropriate mathematical symbols and analyze which principles must be applied. The student must then formulate and apply a solution strategy.

B. Written assignments will include solutions of various problems illustrative of the appropriate mathematical concepts and processes.

VII.   EVALUATION(S):
A. There is a minimum of five regular scheduled objective exams.
     1. Typical exam problems:
        a. Find the slope of any line perpendicular to the line through (-1 , 3) and (4 , 5).
        b. Rationalize the denominator: $\dfrac{\sqrt{x} - \sqrt{5}}{\sqrt{x} + \sqrt{5}}$
B. There may be weekly or daily quizzes and/or homework assignments.
     1. Typical homework or quiz problem:
        a. Simplify: $\sqrt[3]{40a^3 b^6 c^8}$
        b. Solve $x^2 + 2x + 3 = 0$ by completing the square.
C. There is a comprehensive final exam.
     1. Typical final exam problem:
        a. Combine (assume all variables represent positive numbers):

$$2xy\sqrt{27x^4 y} + 3x^2 \sqrt{3x^2 y^3}$$

        b. Find the equation of the line in slope-intercept form given the slope –2 and a point (-8 , 1).

VIII.   **TYPICAL TEXT(S):**
  1. McKeague, <u>Intermediate Algebra</u>, 6th ed., Harcourt College Publisher, 2000
  2. Lial, Miller & Hornsby, <u>Intermediate Algebra</u>, 5th ed., Harper Collins Publisher, 1995
  3. Martin-Gay, K. Elayn, <u>Intermediate Algebra</u>, 2nd ed., Prentice Hall, 1997
  4. Tobey, John, & Jeffrey Slater, <u>Intermediate Algebra</u>, 3rd ed., Prentice Hall, 1998

IX.   **OTHER SUPPLIES REQUIRED OF STUDENTS**: None