**MATH 64 - INTERMEDIATE ALGEBRA**

* **Course Description:**
  + This algebra course covers radicals, exponents, concepts of relations and functions, exponential and logarithmic functions, linear and quadratic functions, and the solutions of equations from these topics. Polynomial expressions and rational expressions involving simplifying, evaluating, and using factoring techniques to simplify.
* **Topics Covered:** 
  + Solve absolute value equations and inequalities
    - Equations with no solution, some solutions, and all solutions
    - Inequalities with no solution, some solutions, and all solutions
    - Interval notation including unions and intersections.
  + Exponents and radicals
    - Rational exponents
    - Binary operations with radicals
    - Rationalizing denominators
    - Solving radical equations
    - Complex numbers.
  + Quadratic equations and functions
    - Factoring to extract roots
    - Completing the square
    - Quadratic formula
    - Complex numbers as solutions
    - Varied applied problems
    - Graphing quadratic equations.
  + Relations and functions
    - Domain and range
    - Inverse functions
    - Composite functions.
  + Logarithmic and exponential functions
    - Definitions
    - Graphs
    - Properties
    - Exponential and logarithmic equations
    - Applications.
  + Introduction to conic sections
    - Equation of a circle centered at any point
    - Completing the square to find the equation of a circle
    - Solving systems of non-linear equations.
* **What to expect:**
  + Total weekly contact hours: 4 hours
  + Total weekly outside of class hours: 8 hours
  + Methods of instruction
    - Instructional methodologies will be consistent with, but not limited by, the following types or examples:
      * Lecture by instructor, including demonstrations of solutions of beginning algebra problems.
      * Cooperative learning through small group discussion and practice in solving beginning algebra problems.
      * Homework assignments, including reading the intermediate algebra textbook, solving, and writing out solutions to exercises and problems from the textbook.
      * Inquiry based classroom, including activities, instructors facilitate classroom discussions and solving problems.
  + Methods of evaluation
    - Students will receive a letter grade in Math 64.
    - Evaluation methodologies will be consistent with, but not limited by, the following types or examples:
      * Quizzes and examinations that measure the student's ability to solve intermediate algebra problems and exercises using appropriate theories, principles, and techniques.
      * Homework problems (online or on paper), including grading correctness and completeness of solutions of computational or non-computational intermediate algebra problems and exercises.
  + Possible reading assignment:
    - Reading assignments will be consistent with, but not limited by, the following types and examples:
      * Read and solve problems from the course text.
      * Read from handouts, and or the Internet.
  + Possible writing assignment:
    - Writing assignments will be consistent with, but not limited by, the following types and examples:
      * Write solutions to exercises and problems from the textbook.
      * Write the solutions to exercises in the handouts.
  + Outside-of-class Assignments:
    - Outside-of-class assignments will be consistent with, but not limited by, the following types and examples:
      * Complete reading and writing assignments.
      * Solve assigned problems
      * Review homework and instructor-provided feedback for quizzes and exams.
* **Who should enroll?**
  + This algebra course is recommended for any student who majors in STEM or Business.
* **Concepts/skills needed prior to enrolling:**
  + Graphing basic linear equations using coordinates and points.
  + Arithmetic knowledge, understanding of place values, operations on whole numbers, exponents, order of operations, addition and multiplication properties, operations on integers, fractions, and decimals. Some geometric knowledge including finding perimeters and areas.
  + Solving basic equations in one variable:
    - Linear
    - Proportions
    - Percentages
    - Simplifying/evaluating expressions
    - Factoring polynomials