Course Description

MAT0029 | Developmental Mathematics for Statistics | 3.00 credits

This course will introduce the student to ratios, proportions, scaling, modeling with equations and inequalities, tables, graphs, linear functions, and non-linear functions, in preparation for Statistics. The student will learn the language of mathematics and mathematical symbols, procedural fluency, strategic competence, adaptive reasoning, quantitative investigative techniques, and questioning and solution-building skills. Prerequisite: Non-demonstration of readiness through placement testing or alternate methods**.**

Course Competencies:

Competency 1: The student will demonstrate knowledge of real numbers by:
1. Performing operations with addition, subtraction, multiplication, and division with signed numbers
2. Applying the order of operations rule
3. Comparing numbers using <, >, ≥, ≤, ≠, or =
4. Determining the absolute values of numbers
5. Using Scientific Notation and Laws of Exponents
6. Simplifying Rational Numbers
7. Converting decimal to percent and percent to decimal
8. Simplifying radicals

Competency 2: The student will demonstrate knowledge of equations by:
1. Solving linear equations in one variable
2. Solving literal equations for a given variable with applications
3. Solving applications involving linear equations in one variable (including number problems, geometry problems, and proportion problems)

Competency 3: The student will demonstrate knowledge of linear inequalities by:
1. Solving linear inequalities in one variable
2. Graphing solutions of linear inequalities on a number line
3. Solving applied problems using linear inequalities

Competency 4: The student will demonstrate knowledge of algebraic expressions by:
1. Evaluating expressions, given specific values of the variable, using a calculator
2. Simplifying expressions by applying the order of operations
3. Solving application problems involving geometry, including perimeter and area, with algebraic expressions

Competency 5: The student will demonstrate knowledge of linear equations in two variables by:
1. Graphing linear equations in two variables
2. Determining the slope of a line (from slope formula, graph, and equations)
3. Determining the x-and y-intercepts of a line given the graph of the line and its equation
4. Calculating the slope and interpreting the slope as a rate of change
5. Using the slope and y-intercept to model data

Competency 6: The student will demonstrate knowledge of linear inequalities in two variables by:
1. Identifying points that do and do not satisfy the inequality
2. Graphing linear inequalities in two variables

Competency 7: The student will demonstrate knowledge of quadratic equations by:
1. Identifying quadratic equations
2. Solving quadratic equations using the square root principle

Competency 8: The student will demonstrate knowledge of functions by:

1. Identifying functions using the definition and vertical line test
2. Using function notation to evaluate functions at a specified value
3. Analyzing the graph of a function

Competency 9: The student will demonstrate knowledge of statistics by:
1. Computing and interpreting the measure of central tendency: mean, median, mode, and midrange
2. Computing and interpreting the measure of dispersions: range, variance, and standard deviation

<u>Learning Outcomes:</u>
- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Create strategies that can be used to fulfill personal, civic, and social responsibilities