NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
MTE 5 – LINEAR EQUATIONS, INEQUALITIES AND SYSTEMS OF LINEAR EQUATIONS IN TWO VARIABLES(1 CR.)

Course Description

Includes finding the equation of a line, graphing linear equations and inequalities in two variables and solving systems of two linear equations. Emphasizes writing and graphing equations using the slope of the line and points on the line, and applications. Credit is not applicable toward graduation. Lecture 1 hour per week.

General Course Purpose

The purpose of this course is to develop competency necessary to succeed in 100-level math courses with solving applications by finding the equation of a line, graphing linear equations and inequalities in two variables and solving systems of linear equations.

Course Prerequisites/Co-requisites

Prerequisite: MTE 4 or qualifying placement score

Course Objectives

Upon completing the course, students will be able to:

5.1   Define the properties of the rectangular coordinate system.
  5.1.1   Determine the coordinates of a point plotted on the coordinate plane.
  5.1.2   Determine whether an ordered pair is a solution to an equation in two variables.
  5.1.3   Graph a linear equation by finding and plotting ordered pair solutions.
5.2   Graph a linear equation in two variables.
  5.2.1   Identify the x and y intercepts of a graph.
  5.2.2   Graph a linear equation by plotting intercepts.
  5.2.3   Graph an equation given in slope-intercept form.
  5.2.4   Graph a horizontal line given its equation.
  5.2.5   Graph a vertical line given its equation.
5.3   Graph a linear inequality in two variables.
5.4   Find the slope of a line.
  5.4.1   Find the slope of a line given two points on the line.
  5.4.2   Find the slope of a line given its equation in slope-intercept form.
  5.4.3   Find the slope of a line given its equation by converting to slope-intercept form.
  5.4.4   Find the slope of a line given its graph.
  5.4.5   Find the slope of horizontal and vertical lines.
5.5   Write an equation of a line.
  5.5.1   Write an equation of a line in slope-intercept form given the slope and the y-intercept.
  5.5.2   Use point-slope form to write an equation of a line in slope intercept form given the slope and a point on the line.
  5.5.3   Use point-slope form to write an equation of a line in slope intercept form given two points on the line.
  5.5.4   Write the equation of a vertical line.
  5.5.5   Write the equation of a horizontal line.
  5.5.6   Find the equation of a line that is parallel or perpendicular to a given line and passes through a given point.
5.6   Solve systems of linear equations.
  5.6.1   Determine if an ordered pair is a solution of system of equations in two variables.
  5.6.2   Solve systems of linear equations by graphing.
  5.6.3   Solve by elimination using substitution.

      5.6.4   Solve by elimination using addition.

      5.6.5   Identify a system of linear equations as consistent and independent, consistent and dependent, or inconsistent.

5.7   **Use function notation.**

      5.7.1   Evaluate $y = f(x)$ for specific values of x.

      5.7.2   Given the graph of $y = f(x)$, evaluate $f(x)$ for specific values of x.

      5.7.3   Given the graph of $y = f(x)$, find x for specific values of $f(x)$.

5.8   **Solve applications problems that require linear equations, inequalities and systems of linear equations in two variables.**

Major Topics to be Included

5.1 Properties of the rectangular coordinate system.

5.2 Graphing linear equations in two variables.

5.3 Graphing a linear inequality in two variables.

5.4 Finding the slope of a line.

5.5 Writing the equation of a line.

5.6 Solving systems of linear equations.

5.7 Using function notation.

5.8 Solving application problems that require linear equations, inequalities and systems of linear equations in two variables.