NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
MTH 111 – BASIC TECHNICAL MATHEMATICS (3 CR.)

Course Description

Provides a foundation in mathematics with emphasis in arithmetic, unit conversion, basic algebra, geometry and trigonometry. This course is intended for CTE programs. Lecture 3 hours. Total 3 hours per week.

General Course Purpose

This course is intended for students who are in career and technical fields/degree programs requiring technical math components including trigonometry.

Course Prerequisites/Corequisites

Prerequisites: MTE 1-3 OR Corequisite: MCR 1.

Course Objectives

Upon completing the course, the student will be able to:

- *Communication*
  - *Interpret and communicate quantitative information and mathematical and statistical concepts using language appropriate to the context and intended audience.*
- *Problem Solving*
  - *Make sense of problems, develop strategies to find solutions, and persevere in solving them*
- *Reasoning*
  - *Reason and draw conclusions or make decisions with quantitative information.*
- *Evaluation*
  - *Critique and evaluate quantitative arguments that utilize mathematical, statistical, and quantitative information.*
- *Technology*
  - *Use appropriate technology in a given context.*
- *Students will engage in all course content described below in context to the technical fields being supported.*
- *Basic Skills*
  - *Use a scientific calculator.*
  - *Round-off numbers correctly.*
  - *Identify significant digits.*
  - *Use scientific notation*
  - *Convert between units in both standard and metric*
  - *Perform operations with signed numbers*
- *Basic Algebra*
  - *Apply and interpret ratios and proportions*
  - *Compute values in direct, indirect and inverse variation*
  - *Solve single variable equations*
  - *Locate and plot points on the xy plane*
  - *Interpret the concept of slope using real world examples (including vertical and horizontal lines)*
  - *Graph lines using a table of values with and without the domain provided*
  - *Graph lines using the slope-intercept method when lines are in y=mx+b form and Ax+By=C form*
  - *Write the equation of a line in slope-intercept form that models a real world situation when given the rate of change and initial value*
  - *Make predictions using the equation of a line*
- *Geometry*

- *Classify triangles by their sides/angles.*
- *Calculate the perimeter and circumference*
- *Calculate the area of a polygon and circle*
- *Apply concepts of sector and arc length of a circle*
- *Recognize various geometric solids such as cylinder, cone, pyramid, prism and sphere.*
- *Calculate surface area and volume of various geometric solids*
- *Use the properties of inscribed and circumscribed polygons and circles to find unknown amounts*
- *Apply the concept of similar triangles*
- *Apply the Pythagorean theorem*
- *Convert between decimal degrees and DMS notation.*
- *Interpret and apply line and angle relationships.*

- *Trigonometry*
  - *Properly use terms related to an angle(s).*
  - *Define the trigonometric functions and their values*
  - *Solve right triangles and their applications*
  - *Identify the signs of the trigonometric function of angles greater than 90?*
  - *Determine trigonometric functions of any angle*

Major Topics to be Included

a) Basic Skills
b) Basic Algebra
c) Geometry
d) Trigonometry
e)