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