CNC BASICS
Course Syllabus

Course Number: NCMT-1689  OHLAP Credit: No
OCAS Code: None
Course Length: 30 Hours
Career Cluster: Machining
Career Pathway: Production
Career Major(s): Certified Machine Operator, Certified Machine Technician

Pre-requisite(s):

Course Description: This course covers an introduction into Computerized Numerical Control Machines. Students will learn about the basic motion control hardware that makes up the different types of CNC machines. This course will cover positioning systems and the related mathematical terminology around them as well as an introduction to different programming modes of operations in absolute and incremental. G & M codes and their purposes will be discussed, as well as the components that make up a CNC Program.

Textbooks: Instructor developed curriculum – on Blackboard site

Course Objectives: A. Identify and Describe Basic CNC Motion-control Hardware
   1. Control Unit
   2. CNC Motion Control
   3. Drive Screw, Guideways, and Servo Motors.

   B. Coordinate Systems
   1. The Cartesian Coordinate System
   2. The Polar Coordinate System

   C. Positioning Systems
   1. The Absolute Positioning System
   2. The Incremental Positioning System

   D. G & M Codes
   1. Introducing Axis Motion Commands
   2. Discuss Non-Axis Motion Commands
   3. Discuss Miscellaneous Functions
   4. Modal and Non-Modal Commands

   E. Describe the Main Components of a CNC Program
   1. Conversational-Type Programming
   2. Parts of a CNC Program.

NIMS/TTC objectives
Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance. 2. Each course must be passed with seventy (70%) percent or better. 3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit: The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility: The student must maintain a grade point average of 2.0 or better.