COMMON COURSE OUTLINE: Course discipline/number/title: PMT 1705: CNC Coordinates and Offsets

A. CATALOG DESCRIPTION
1. Credits: 1 (1 credit lecture/0 credits lab)
2. Hours/Week: 1 hour lecture/0 hours lab
3. Prerequisites (Course discipline/number): PMT 1095, PMT 1105, PMT 1115, PMT1255, PMT 1300
4. Co-requisites (Course discipline/number): None
5. MnTC Goals (if any): NA

This course explains the arrangement and orientation of the basic axes on a common CNC lathe and CNC mill. This course identifies the various offsets used on both the lathe and the mill to properly reference each cutting tool in relationship to the workpiece. Emphasis will also be placed on safe application and handling of the equipment.

B. DATE LAST REVISED (Month, year): March, 2013

C. OUTLINE OF MAJOR CONTENT AREAS:
1. CNC Coordinates
2. The Axes and Origin, Positive and Negative Directions
3. Standard Axes Locations and Rotational Axes
4. Coordinate Standards for Machines, Coordinates in Blueprints
5. Incremental and Absolute Coordinates
6. Coordinates for the Vertical and Horizontal Milling Machine and Turning Center
7. Machine Zero and Program Zero for milling and turning
8. The Purpose of Offsets
9. Offsets features for the Machining and Turning Center
10. Workshift Offsets
11. Using a Reference Tool
12. Geometry Offsets, Wear Offsets
13. Tool Length Offsets and Methods
14. Cutter Radius Compensation and Contouring
15. Recognizing Tool Wear

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Demonstrate the use of the coordinate system and how it relates to using CNC lathes and mills.
2. Identify use offsets to correctly create a program on the CNC lathe and mill.
3. Calculate offsets for use in CNC operations using a CNC lathe or mill.
4. Demonstrate safe use of the CNC lathe and mill.
5. Set up the equipment safely.

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
1. Lessons
2. Assessments
3. tests

G. RCTC CORE OUTCOME(S) ADDRESSED:
☐ Communication ☑ Civic Responsibility
☐ Critical Thinking ✗ Personal/Professional Accountability
☐ Global Awareness/Diversity ☐ Aesthetic Response

H. SPECIAL INFORMATION (if any): None