COMMON COURSE OUTLINE:  Course discipline/number/title:  PMT 1115: Measuring, Inspection and Tool Setup

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):  None
4.  Co-requisites (Course discipline/number):  PMT 1105, PMT 1115, PMT 1255, PMT1300
5.  MnTC Goals (if any):  NA

This course introduces the basic measuring devices used in the shop to ensure part quality, inspection of parts and tool setup. Emphasis will also be placed on using measuring devices and the safe handling of the equipment.

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

C.  OUTLINE OF MAJOR CONTENT AREAS:
1.  The importance of Measurements
2.  Gaging vs. Inspection
3.  Accuracy and Precision
4.  Sensitivity
5.  Identifying Measurement Tools: the Machinist’s Rule, Calipers, Micrometer, Vernier Scale
6.  Reading Measurement Tools
7.  Using Gage Blocks, Plug Gages, Ring, Thread, and Snap Gages
8.  Identifying Inspection Tools: Optical Comparators, Coordinate Measuring Machines
9.  Instrument Calibration
10.  The importance of Measuring Length and the Factors Affecting Measurement
11.  What is Variation?
13.  Error in Measurement and Cost of Measurement
14.  The Purpose of Offsets
15.  Machine and Program Zero for Tuning
16.  Offsets and Features for the Turning Center
17.  Using a Reference Tool
18.  Machine and Program Zero for Milling
19.  Offsets and features for the Machining Center
20.  Offset Types: Workshift, Geometry, Wear, Workshift, Tool Length
21.  Cutter Radius Compensation
22.  Offset Features for Milling
23.  Recognizing Tool Wear

D.  LEARNING OUTCOMES (GENERAL):  The student will be able to:
1.  Demonstrate how basic measurement devices are used.
2.  Measure and inspect parting using basic measurement tools.
3.  Understand the connection between part quality and inspection.
4.  Apply save procedure for proper tool setup to achieve quality parts.

E.  LEARNING OUTCOMES (MNTC):  NA

F.  METHODS FOR EVALUATION OF STUDENT LEARNING:
1.  Skill evaluation
2.  Project evaluation
3.  Tests
4.  Pre and Post tests
G. **RCTC CORE OUTCOME(S) ADDRESSED:**

- [ ] Communication
- [ ] Critical Thinking
- [ ] Global Awareness/Diversity
- [ ] Civic Responsibility
- [x] Personal/Professional Accountability
- [ ] Aesthetic Response

H. **SPECIAL INFORMATION (if any):** None