Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

OPT 1113 - Coordinate Measurement

Division: Science, Mathematics and Engineering

Department: Operations Technology

Credit Hour Total: 3.0 **Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

Prerequisite(s): OPT 1100

Date Revised: October 2013

Course Description:

Course will prepare students to use and program coordinate measurement machines, apply Geometric Dimensioning and Tolerancing (GD&T) principles, use advanced operating techniques for a servo driven coordinate measuring device. Two classroom, two lab hours per week.

General Education Outcomes:

- Oral Communication
- Written Communication
- Critical Thinking/Problem Solving
- Values/Citizenship/Community
- Computer Literacy
- Information Literacy

Course Outcomes:

Computerized Measuring Machines
escribe and demonstrate the basic theories of metrology and machining to the use of computerized measuring machines.

Assessment Method: Locally developed exams
Performance Criteria: At least 70% of students achieve a score of 70% or better on questions related to these topics

Assessment Method: Performance appraisals
Performance Criteria: 70% of students score a "4" or better on 5-point rubric

Rectangular & Polar Coordinates
Construct a part in 3-dimensional space and define rectangular and polar coordinates.

Assessment Method: Locally developed exams
Performance Criteria: At least 70% of students achieve a score of 70% or better on questions related to these topics

Assessment Method: Performance appraisals
Performance Criteria: 70% of students score a "4" or better on 5-point rubric

Direct Computer Controlled Measurement Program
Create a direct computer controlled measurement program for a computer controlled coordinate measuring machine that will measure the dimensional characteristics of a sample part.

Assessment Method: Simulations
Performance Criteria: 70% of students score a "4" or better on measurement program rubric

Outline:

Basic Metrology
Advanced Metrology
Geometric Demensioning and Tolerancing (GD&T)
Uses of Coordinate Measuring Machines (CMMs)
Theory of CMMs
Rectangular & Polar Coordinates
Safe Operations of CMMs
AccuracyPrecision
Reliability
Repeatability
Gage R&R
Programming CMMs
Troubleshooting CMMs