

## Master Syllabus

### OPT 1100 - Tooling & Machining Metrology

**Division:** Science, Mathematics and Engineering

**Department:** Operations Technology

**Credit Hour Total:** 2.0

**Lecture Hrs:** 1.0 **Lab Hrs:** 3.0

**Date Revised:** November 2016

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#### Course Description:

Various measurement techniques involving shop measuring instruments; correct use and care of basic inspection instruments; interpretation of blueprints as well as machined products related to engineering needs. Introduction to Coordinate Measuring Machines (CMM). One classroom, three lab hours per week.

#### General Education Outcomes:

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

#### Course Outcomes:

##### **Metrological Terms and Procedures**

Define, explain and demonstrate knowledge of terms and procedures as they are used in metrology.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

Correctly define 80% of metrological term

##### **Engineering Prints and Parts Requirements**

Read and interpret engineering prints and parts requirements.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

Correctly interpret engineering prints 80% of the time

##### **Conventional Measuring Tools**

Demonstrate use of conventional measuring tools such as rules, dial calipers, micrometers, height & depth gauges, gauge blocks, electronic measurement equipment.

**Assessment Method:** Simulations

**Performance Criteria:**

Demonstrate correct and accurate use of conventional measuring tools 90% of the time.

#### Outline:

Rules, scales, decimals and fractions  
Dimensioning, print reading and interpretation  
Calipers: bow, dial, vernier and digital  
Micrometers - English, Metric, vernier and I/O depth  
Height gauges, surface plate, direct and comparative  
Gauge Blocks - calibration, comparison  
Optical comparator  
Hardness and finishes evaluation  
Basic introduction to Coordinate Measurement machines (CMM)