**Northwestern Connecticut Community College**

**Pre-Manufacturing Certificate program**

###  SYLLABUS – Module #4

**MODULE TITLE**: Measurement

**TOTAL CLASS HOURS:** 24

**DESCRIPTION:** Measurement provides the student with an introduction to the construction and usage of inspection tools as well as a comprehensive set of hands-on exercises when these tools will be utilized to discover the dimensional characteristics of a variety of sample parts.

**OBJECTIVES:**

1. An understanding of the history, principles and system of measurement.
2. Survey the variety of measuring tools
3. An understanding of the construction, use and proper care of the basic measuring tools.
4. An ability to apply the basic measuring tools to a variety of sample parts and produce an inspection report
5. An ability to understand and use direct measuring tools and comparison measuring tools
6. Perform basic mathematical calculations required to perform accurate readings
7. Discuss the purpose of a process plan and inspection plan
8. Identify and discuss the features of X-bar and R-charts

**MAJOR ASSIGNMENT: PRECISION / SEMI-PRECISION INSPECTION:**

* Student will perform a precision and semi-precision inspection of various parts and record on inspection report.
* Due on last class
* Assessment – written and application assessment, multiple choice, True/False, and Matching

**REQUIRED TEXT:** Precision Machining Technology, *Peter J. Hoffman, Eric S. Hopewell, Brian Janes, Kent M. Sharp Jr.*

**OUTLINE:** Introduction

 How does measurement fit with manufacturing?

Semi-Precision measuring instruments.

* Rules
* Calipers
* Protractors
* Combination Set
* Fixed Gages

 Review - Precision measuring instruments

* Dial Vernier Caliper
* Micrometers
* Outside
* Inside
* Specialty
* Calibration of Micrometers

 Review – Precision measuring instruments

* Fixed Gages
* Pin / Plug Gages
* Go / No-go Gages
* Ring Gages
* Snap Gages
* Thread Ring Gages
* Gage Blocks
* Solid square
* Surface Plate

 **Northwestern Connecticut Community College, 2014**

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