

**Syllabus:**  
**Precision Measurement and Blueprint  
Reading**

**Subject Code: 172302**  
**Course Number: GM9003**  
**CIP Code: 48.0501**  
**SOC Code: 51-4041**

**C-TEC of Licking County**  
**150 Price Road**  
**Newark, Ohio 43055**

**Instructor:**

Kyle Fulton/ Billy Newsom

**Instructor Contact:**

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**Class Meeting Times:**

- Monday –Thursday 5:00 p.m. - 10:00 p.m.

**Class Location:**

- Classroom 727

**Minimum Hours:**

- 75 Hours

**Course Prerequisites:**

- WorkKeys pretesting, copy of High School Diploma or GED

**Required and Recommended Texts and Resources:**

- **Textbook: Machine Trades Print Reading, Goodheart- Willcox Publisher, Sixth Edition, ISBN 978-1-63126-105-3, Authors Michael A. Barsamian & Richard A. Gizelbach**

**Course Description:**

Students in this 75 hour course will learn the basic skills required for visualizing and interpreting industrial prints, and the proper use of modern metrology tools. Students will learn to sketch mechanical objects and read industrial prints using industry adopted conventions and standards. The precision measuring part of class will teach proper use of measurement tools used in industry to develop precision and accuracy.

**Course Objectives/Outcomes**

The course objectives include:

- Preparing students for post-program success, both in the work force and in their educational pursuits.
- Preparing students to process information using higher order thinking skills and to engage in sound decision-making.
- Providing a rich learning environment utilizing research-based methods of instruction, and current resources and materials.

- Maintaining high expectations for all students regardless of educational needs and providing support necessary for achievement.
- Providing a challenging, worthwhile curriculum based on current industry/academic expectations.

### **Hand Tools Exercises**

#### **Grading:**

Evaluation of student performance is based upon pupil performance objectives relating to course competencies study. The number of competencies mastered and the degree of mastery is translated into appropriate grades consistent with the C-TEC Board of Education policy on grading guidelines, practices, and procedures.

In the process of evaluation, instructors obtain several grades for each student within the time frame of the program/course. These grades may include, but are not limited to, performance on tests, quizzes, homework, assignments, special research projects, classroom participation, lab competency mastery and/or improvement and the demonstration of positive employability traits.

**Journal Summary:** A journal summary should begin with an introductory paragraph that introduces the main topic of the article and summarizes its content. Following the introduction, a several paragraphs should be written detailing insights, implications, and how the information might be applied in your career. In addition, the summary should include your thoughts and opinions concerning the content of the article. Summaries should be approximately 1 1/2 to 2 pages in length.

#### **Grades:**

1. 5 Blueprint Quizzes-40%
2. 5 Practicals-30%
3. 1 Final-30%

#### **Grade Scale:**

90-100 pts. = A  
 80-90 = B  
 70-80 = C  
 <70 = unacceptable

### **Credentialing:**

- With the completion of BOTH Basic and Advanced Manual Machining - NIMS Credential Machining I

### **Course Policies:**

- **Disruptive Behavior** – Disruptive behavior of any type is NOT permitted

and may result in dismissal from the program. Sleeping during class, tardiness to class, excessive talking during class and disrespectful behavior are examples of disruptive behavior.

- **Plagiarism** – Submitting plagiarized work for an academic requirement is considered academic misconduct. Plagiarism is the representation of another’s work or ideas as one’s own; it includes the unacknowledged word-for-word use and/or paraphrasing of another person’s work, and/or inappropriate unacknowledged use of another person’s ideas.
- **Diversity** - It is the responsibility of the instructor and the students to foster and maintain a harmonious, non-threatening and non-discriminating environment in the classroom. Therefore, all individuals are to be respected as equal and contributing partners of our society.
- **Attendance:** Must maintain at least **90% rate of attendance**. You are required to attend all classes. However, you may miss up to 2 classes and still pass the course. Any other absences must be approved by the program supervisor.

## **Sequence:**

Week 1-Textbook Units 1, 2, 3, and 4.

### Unit 1- Drawings and Prints

- Design and Manufacturing Process
- Print Reading Applications

### Unit 2- Visualizing Shapes

- Multiview Drawings
- Views in a Glass Box
- A Multiview Application

### Unit 3- Line Usage

- Types of Lines
- Line identification on a Print

### Unit 4- Title Blocks and Notes

- Drawing Formats
- Title Block
- Revision History Block
- Revision Status of Sheets
- Parts List
- Notes

### Unit 5- Applied Math

- Whole Numbers
- Fractions

- Decimal Fractions
- Converting Common Fractions to Decimal Fractions and Rounding Off
- Converting Decimals to Common Fractions

## Week 2- Textbook Units 6, 7, 8, and 9

### Unit 6- Measurement Basics

- Systems of Measurement
- Rules
- Calipers
- Micrometers
- Telescoping Gauges
- Small Hole Gauges

### Unit 7- Dimensioning and Tolerances

- Dimensions
- Tolerances
- Limit Tolerances
- Plus and Minus Tolerances
- Specified Tolerances
- Unspecified Tolerances

### Unit 8- Contours

- Arcs
- Other Contours

### Unit 9- Holes

- Drilled Hole
- Bored Hole
- Reamed Hole
- Counterdrilled Hole
- Countersunk Hole
- Counterbored Hole
- Spotface Hole

Week 3- Textbook Units 10, 11, 12, 13, and 14

Unit 10- Angles

- Angular Dimensioning
- Bevel
- Chamfers
- Tapers

Unit 11- Threads

- Thread Terms and Definitions
- Thread representations
- Thread Forms
- Thread Series
- Thread Class
- Thread Specifications
- Tapped Holes
- ISO Metric Threads
- Pipe Threads

Unit 12- Machining Details

- Necks
- Grooves
- Slots
- Keyways and Keyseats
- Flats
- Bosses and Pads

Unit 14- Sectional Views

- Working with Sectional Views

Unit 16- Detail Drawings

- Detail Drawings

Unit 17- Assembly Drawings

- Assembly Drawings
- Reading Assembly Drawings
- Parts Lists in Assembly Drawings

Week 4- Textbook Units 15 and 18

Unit 15- Geometric Dimensioning and Tolerances

- GD&T Application
- GD&T Symbols
- GD&T Terminology
- Datums
- Material Condition Modifiers
- Form Tolerances
- Orientation Tolerances
- Location Tolerances
- Profile Tolerances
- Runout Tolerances

Unit 18- Print Reading Review

Hand Tools Exercise and Review

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Final Test- Precision Measurement:

- Review and practice using all tools
- Final hands-on test

Revised 8/8/2017