

# MAC 131 Blueprint Reading: Machinist I

## COURSE DESCRIPTION:

Prerequisites: MAT 060 or DMA 010, 020, 030, and RED 070 or DRE 096, or satisfactory score on placement test  
Corequisites: None

This course introduces the basic principles of blueprint reading. Topics include line types, orthographic projections, dimensioning methods, and notes. Upon completion, students should be able to interpret basic blueprints and visualize the features of a part.

Course Hours Per Week: Class, 1. Lab, 2. Semester Hours Credit, 2.

## LEARNING OUTCOMES:

Upon completion of this course the student will be able to read basic blueprints and identify lines, symbols, and terminology on working drawings.

- a. Read basic blueprints.
- b. Identify lines.
- c. Identify abbreviations, symbols and terminology on working drawings.
- d. Interpret basic orthographic projection.
- e. Interpret basic dimensioning standards.
- f. Interpret auxiliary views encountered by individuals in the machining trades.
- g. Interpret basic geometric, dimensioning and tolerance standards.

## OUTLINE OF INSTRUCTION:

- I. Introduction
  - A. The history of blueprints
  - B. Identification of lines
  - C. Identification of symbols
  - D. Title block information
  - E. Definitions of abbreviations
- II. Types of drawings
  - A. Working drawings
  - B. One and Two view drawings
  - C. Multi detail drawings
  - D. Partial views
  - E. Assembly drawings
- III. Drawing features
  - A. Types of lines

- B. Inclined surfaces
- C. Circular features
- D. Rounds and fillets
- E. Symmetrical outlines
- F. Phantom outlines
- G. Bosses and pads
- H. Abbreviations used on drawings

#### IV. Measurements and scale

- A. Scale
- B. Linear units of measurement (standard inch and metric)
- C. Measurement of angles
- D. Measuring of dovetails

#### V. Dimensioning

- A. Dimension lines
- B. Extension lines
- C. Leaders
- D. Repetitive features and dimensions
- E. Reference dimensioning
- F. Chain dimensioning G. Base line dimensioning
- H. Not-to-scale dimensions
- I. Dimension origin symbol
- J. Rectangular coordinate dimensioning without dimension lines
- K. Rectangular coordinate dimensioning in tabular form
- L. Dimensioning of keyseats
- M. Geometric, dimensioning, and tolerances

#### VI. Sections

- A. Sectional views
- B. Types of sections
- C. Broken out and partial sections
- D. Alignment of parts and holes
- E. Sections through shafts, holes, and keys

#### VII. Machining Operations

- A. Drilling, reaming, and boring
- B. Machine slots
- C. Countersinks, counterbores and spotfaces
- D. Chamfers

- E. Undercuts
- F. Tapers
- G. Knurls
- H. Flats

VIII. Surface finishes

- A. Machining symbols
- B. Surface texture
- C. Surface texture symbol
- D. Surface texture ratings

**REQUIRED TEXTBOOK AND MATERIAL:**

Machine Trades Print Reading, author: Barsamian, ISBN: 1-56637-594-0 A basic calculator;

other materials and handouts will be provided by the instructor.