

BPR 111 BLUEPRINT READING

COURSE DESCRIPTION:

Prerequisites: None

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.

COURSE OBJECTIVES:

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

- a. Interpret basic orthographic projection.
- b. Interpret basic dimensioning standards.
- c. Interpret auxiliary views encountered by individuals in the machinist trades.
- d. Interpret basic geometric tolerancing standards.

OUTLINE OF INSTRUCTION:

- I. Introduction
 - A. Basic for interpreting drawings
 - B. Third angle projection
 - C. ISO projection symbol
 - D. Title block
 - E. Drawing standards
 - F. Drawing revisions
 - G. The drafting office
 - H. Drawing reproduction
- II. Types of drawings
 - A. Working drawings
 - B. One- and two-view drawings
 - C. Multi detail drawings
 - D. Partial views
 - E. Assembly drawings
 - (1) Subassembly drawings
 - (2) Identifying parts of an assembly drawing
 - F. Bill of material (items list)

- III. Drawing features
 - A. Lettering on drawings
 - B. Sketching
 - C. Types of lines
 - (1) Visible lines
 - (2) Hidden lines
 - (3) Center lines
 - (4) Break lines
 - D. Inclined surfaces
 - E. Circular features
 - F. Identifying similarly sized features
 - G. Rounds and fillets
 - H. Intersections of unfinished surfaces
 - (1) Rounded intersections
 - (2) Filleted intersections
 - I. Symmetrical outlines
 - J. Structural steel shapes
 - K. Phantom outlines
 - L. Bosses and pads
 - M. Abbreviations used on drawings

- IV. Measurements and scale
 - A. Drawing to scale
 - (1) Inch and foot scales
 - (2) Si (metric) scales
 - B. Linear units of measurement
 - (1) Inch units of measurement
 - (2) Si (metric) units of measurement
 - C. Measurement of angles
 - D. Measuring dovetails

- V. Dimensioning
 - A. Placement of dimensions
 - B. Dimension lines
 - C. Extension lines
 - D. leaders
 - E. Choice of dimensions
 - F. Basic rules for dimensioning
 - G. Dimensioning of cylindrical holes
 - H. Dimensioning cylindrical holes
 - I. Repetitive features and dimensions
 - J. Reference dimensioning
 - K. Chain dimensioning
 - L. Base line dimensioning
 - M. Not-to-scale dimensions
 - N. Dimension origin symbol
 - O. Rectangular coordinate dimensioning without dimension lines
 - P. Rectangular coordinate dimensioning in tabular form
 - Q. Dimensioning of keyseats

- VI. Sections
 - A. Sectional views
 - (1) The cutting plane lines
 - (2) Section lining
 - B. Types of sections
 - (1) Full sections
 - (2) Half sections
 - (3) Revolved sections
 - (4) Removed sections
 - C. Broken out and partial sections
 - (1) Webs in section
 - (2) Ribs in section
 - (3) Spokes in section
 - D. Alignment of parts and holes
 - (1) Foreshortened projection
 - (2) Holes revolved to show true center distance
 - E. Section through shafts, pins and keys
- VII. Machining operations
 - A. Drilling, reaming and boring
 - B. Machine slots
 - C. Countersinks, counterbores and spotfaces
 - D. Chamfers
 - E. Undercuts
 - F. Tapers
 - (1) Circular tapers
 - (2) Flat tapers
 - G. Knurls
 - H. Flats
- VIII. Surface finishes
 - A. Machining symbols
 - (1) Indicating machining allowance
 - (2) Removal of material prohibited
 - B. Surface texture
 - C. Surface texture symbol
 - D. Surface texture ratings
 - E. Control requirements
- IX. Tolerances and allowances
 - A. Definitions
 - B. Tolerancing methods
 - 1) Limit dimensioning
 - 2) Plus and minus tolerancing
 - 3) Inch tolerances

- X. Threads
 - A. Threaded fasteners
 - B. Threaded assemblies
 - C. Inch threads
 - D. Right and left handed threads
 - E. Metric threads

- XI. Components
 - A. Pin fasteners
 - (1) Machine pins
 - (2) Radial locking pins
 - B. Keys
 - C. Setscrews
 - D. Swivels and universal joints

REQUIRED TEXTBOOKS AND MATERIALS:

Barsamian and Gizelbach. Machine Trades Print Reading. Goodheart-Wilcox Publishers.

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.