



Course Outline - Blue Print Reading

Course Topic: Blue Print Reading

Recommended Contact Hours: 35 hours

Course Description:

This course introduces the fundamental drafting information necessary to retrieve, read, manipulate and understand a mechanical part print. This course requires student to be able to identify different types of prints as well as being able to analyze them.

Course Outcomes and Objectives

BP-1 Read and apply part-, group- and total drawings and demonstrate the ability to read blueprint

1. Analyze correctly the function of a print
2. Identify correctly the two methods of creating a technical drawing
3. Identify correctly the two methods used to draw an object and give an advantage of each.
4. List and label the three principal dimensions of an object
5. Tell how views are arranged in a multiview drawing
6. Identify the method used to visualize the views of an object based on third-angle projection
7. List and label the alphabet of lines
8. Identify correctly the function of three line types used in a multiview drawing: object, hidden, and center
9. Identify correctly the function of line precedence

BP-2 Demonstrate an ability to sketch

1. Analyze correctly how to Sketch Horizontal and Vertical Lines
2. Analyze correctly how to Sketch Curved Lines and Circles
3. Analyze correctly how to Sketch Irregular Shapes
4. Analyze correctly how Views are arranged in a Multiview Drawing
5. Analyze correctly the Method used to visualize the Views of an Object Based on Third-angle Projection
6. List and label the Alphabet of Lines
7. Identify correctly the Function of Three Line Types Used in a Multiview Drawing: Object, Hidden, and Center
8. Identify correctly the Function of Line Precedence





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BP-3 Read a blue print (mechanical w/basic GD&T)

1. Define correctly the two Types of Conventional Tolerances and Explain How They are Shown on a Drawing
2. Define correctly a Maximum Material Condition
3. Define correctly a Least Material Condition
4. Analyze correctly how Tolerance Notes are used
5. Define correctly the two Types of Fits
6. Define correctly the Baseline Dimensioning and Give an Advantage
7. Define correctly a Feature
8. Define correctly a Feature of Size
9. Define correctly Geometric Dimensioning and Tolerancing
10. Define and identify correctly the Five Types of Geometric Features
11. Define correctly a Datum and a Datum Feature and Explain Their Importance
12. Define correctly a Datum Reference and Give Its Symbol
13. Analyze correctly how to Place a Datum Feature Symbol on a Drawing
14. Analyze correctly the Functions of the Three Parts of a Feature Control Frame
15. Analyze correctly how to Place a Feature Control Frame on a Part Drawing
16. Give Four Reasons Why GD&T is Used

BP-4 Interpret engineering drawing measurement and dimensioning.

1. Analyze correctly how to choose the views for a multiview drawing
2. Identify correctly when to use 2-view or 1-view drawings
3. Identify correctly the functions of dimensions on a print
4. Identify correctly how to dimension a linear surface and the location of a point.
5. Identify correctly how circular features are dimensioned
6. Identify correctly how angular features are dimensioned
7. Identify correctly the six rules used to dimension multiview prints
8. Analyze correctly the function of dual dimensioning
9. Analyze correctly the method used to visualize the views of an object based on first-angle projection
10. Analyze correctly the ISO symbols used with first-angle projection

BP-5 Demonstrate how to read assembly drawings and fasteners

1. Analyze correctly the function of a drawing scale
2. Analyze correctly how to determine the appropriate drawing scale
3. Analyze correctly the function of a sectional view
4. Analyze correctly the function of a cutting plane and a cutting plane line
5. Analyze correctly the function of section lines





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6. Identify correctly the multiple machining symbols used on prints
7. Analyze correctly the function and dimensioning of four hole types
8. Analyze correctly the function of a threaded fastener and identify its three basic parts
9. Analyze correctly the function of two types of threads: external and internal
10. Analyze correctly the function of three types of threaded representations
11. Analyze correctly how to identify threaded fasteners
12. Identify correctly the four common thread forms
13. List and identify correctly the two types of assembly drawings
14. Analyze correctly how to interpret an assembly drawing

BP-6 Demonstrate use of drawing notes and symbols

1. Explain drawing notes by:
 - Defining the two types of notes found on a Print normally
 - Identifying and explaining general notes on a Print
 - Identifying and explaining local notes on a Print
2. Identify title block information by being able to do the following:
 - Explain the purpose of the title block
 - Identify each area of the title block
 - Name the areas that are typically found in a title block
 - Explain the information located in the identified areas of a title block
3. Define the basics of symbols and schematics by being able to:
 - State the definition of a schematic
 - State the definition of a symbol
 - List 4 characteristics of schematics
 - Identify a schematic from various kinds of technical drawings
 - Explain how flow is indicated on a schematic
4. Recognize symbols on a schematic by:
 - Identifying types of lines on schematics
 - Identifying the following schematics by their symbols:
 - Electrical
 - Electronic
 - Fluid Power
 - Piping
 - Giving the purpose of legends
 - Describing a set-by-step approach to troubleshooting using a schematic





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5. Identify electrical and electronic symbols by doing the following:
 - Identify the symbol for ground and explain the principle of grounding
 - Explain how to trace an electrical circuit
 - State the meaning of symbols and lines on an electronics diagram.
 - Explain how to trace an electronics circuit
6. Identify electrical and electronic schematics by:
 - Explaining the purpose of a wiring diagram
 - Defining the difference between an electrical schematic and an electrical diagram.
 - Explaining the difference in current flow between a series circuit and a parallel circuit
 - Demonstrating how to read an electrical schematic
 - Demonstrating how to read an electronics schematic
7. Recognize piping symbols by being able to:
 - Name the ways of joining pipe
 - Identify the symbols for various kinds of fittings.
 - Describe the function of a given fitting
 - Explain the function of various components in a piping system
8. Interpret piping diagrams by:
 - Explain the function of a valve in a piping system.
 - Identify the symbols for various types of valves.
 - Explain the difference between a check valve and a ball valve.
 - Demonstrate the ability to determine pipe size from a diagram.
 - Demonstrate the ability to determine direction of flow from a diagram
9. Recognize hydraulic and pneumatic symbols by:
 - Describe a fluid-power system.
 - List and give the purpose of the main parts of a hydraulic system.
 - List and give the purpose of the main parts of a pneumatic system.
 - Explain the purpose of local areas shown on a hydraulic or pneumatic diagram
10. Interpret hydraulic and pneumatic diagrams by being able to:
 - Describe a composite symbol
 - Identify & Name the various components in a hydraulic diagram.
 - Identify & Name the various components in a pneumatic diagram.
 - Explain the purpose of local areas on a hydraulic or pneumatic diagram
11. Identify welding and joining symbols by being able to:





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- Explain the process of fusion welding
- Name the main methods of fusion welding
 - Name the 5 types of joints and 3 ways of welding each joint.
 - Name the 4 basic welds and 6 basic groove types
 - Demonstrate how to read and interpret a complete welding symbol

Content Outline:

1. Blueprint
2. Alphabet of Lines
3. Scales
4. Multiviews/Orthographic Projection
5. Sketching
6. Auxiliary Views
7. Section Views
8. Title Blocks





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