



Lakeshore Technical College

31-420-385 Machine Tool Print Reading 1

Course Outcome Summary

Course Information

Description	...prepares the learner to read prints; make isometric sketches; interpret orthographic projection drawings, to include sections, surface finishes, and tolerancing. The course when delivered in the evening is self-paced, open-entry/exit, and designed for individualized student needs.
Total Credits	1
Total Hours	36

Pre/Corequisites

Prerequisite There is no prerequisite however a fair knowledge of math and geometry will be of value to the student.

Course Competencies

1. Interpret terminology commonly used in the machine trades.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings

Assessment Strategies

- 1.1. Skillbuilder Exercise
- 1.2. Written Assignment

Criteria

You will know you are successful when:

- 1.1. learner submits the assignment.
- 1.2. you can interpret commonly used terminology .

Learning Objectives

- 1.a. Define common abbreviations used on manufacturing drawings.
- 1.b. Define common terms used in metal manufacturing.

2. Interpret manufacturing drawings, paying close attention to common line types.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings

Assessment Strategies

- 2.1. Skillbuilder Exercise
- 2.2. Written Assignment

Criteria

Criteria - Performance will be satisfactory when:

- 2.1. learner submits the assignment.
- 2.2. you can identify common line types on manufacturing drawings.

Learning Objectives

- 2.a. Explain what each type of line represents and how it is used.
- 2.b. Identify in a drawing common line types used in manufacturing drawings.

3. Interpret manufacturing drawings, paying close attention to dimensional systems, title block information and drawing notes.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Use mathematics effectively
Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings

Assessment Strategies

- 3.1. Skillbuilder Exercise
- 3.2. Written Assignment
- 3.3. Written Test

Criteria

Criteria - Performance will be satisfactory when:

- 3.1. learner submits the assignment.
- 3.2. learner applies the information in the title block to the part print drawing.
- 3.3. learner completes written test.

Learning Objectives

- 3.a. Recognize different dimension arrangements used on working drawings.
- 3.b. Explain the different types of title block information.
- 3.c. Explain what a tolerance is and define its importance.
- 3.d. Explain how tolerances can be displayed on drawings.
- 3.e. Recognize factors that affect tolerances.

4. Apply sketching techniques to the development of both isometric and orthographic drawings.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Use mathematics effectively
Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings

Assessment Strategies

- 4.1. Skillbuilder Exercise
- 4.2. Written Assignment

Criteria

Criteria - Performance will be satisfactory when:

- 4.1. learner sketches an orthographic drawing from an isometric pictorial.
- 4.2. learner sketches an isometric pictorial from a orthographic drawing.
- 4.3. learner completes written assignment.

Learning Objectives

- 4.a. Explain the relationships among surfaces, lines and points.
- 4.b. Explain the importance of the relative positions of views on an industrial print.
- 4.c. Recognize the view angles for the front, top and side views.
- 4.d. Recognize differences between isometric perspective and oblique perspective drawings.
- 4.e. List the factors that determine which view is selected as the front view.
- 4.f. Create orthographic flat view drawings from isometric perspective drawings.
- 4.g. Create isometric perspective drawings from orthographic flat view drawings.

5. Interpret multi-view drawings for the purpose of determining missing dimensions, using standard and specific tolerances.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Use mathematics effectively
Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings
Perform basic machine tool equipment set-up and operation

Assessment Strategies

- 5.1. Skillbuilder Exercise
- 5.2. Written Assignment
- 5.3. Written Test

Criteria

Performance will meet expectations when:

- 5.1. learner will interpret multi-view drawings for specific dimensions.
- 5.2. learner submits the assignment.
- 5.3. learner completes written test.

Learning Objectives

- 5.a. Recognize and apply concepts of chain dimensioning.
- 5.b. Recognize and apply concepts of absolute dimensioning.
- 5.c. Translate feature dimensions from view to view.

6. Interpret manufacturing drawings that use foreshortened views, and determine missing angular dimensions.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Use mathematics effectively

Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings
Perform basic machine tool equipment set-up and operation

Assessment Strategies

- 6.1. Skillbuilder Exercise
- 6.2. Written Assignment

Criteria

Performance will be satisfactory when:

- 6.1. learner will interpret multi-view drawings with foreshortened views and inclined planes.
- 6.2. learner submits the assignment.

Learning Objectives

- 6.a. Determine included angle dimensions.
- 6.b. Determine angle of centerline dimensions.
- 6.c. Determine lengths of slots and grooves.

7. Interpret manufacturing drawings paying close attention to reference dimensions, keyseats, keyways, counterbores, countersinks, and surface finish characteristics.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Use mathematics effectively
Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings
Perform basic machine tool equipment set-up and operation

Assessment Strategies

- 7.1. Skillbuilder Exercise
- 7.2. Written Assignment
- 7.3. Written Test

Criteria

Performance will be satisfactory when:

- 7.1. learners will interpret surface finish information.
- 7.2. learner applies the information on a part print drawing with respect to holes, chamfers and keyways.
- 7.3. learner submits the assignment.
- 7.4. learner completes written test.

Learning Objectives

- 7.a. Determine reference dimensions.
- 7.b. Determine working dimensions of keyseats and keyways.
- 7.c. Recognize symbols that are used to describe surface finish.
- 7.d. Interpret surface finish symbols used on a drawing.
- 7.e. Describe methods of checking surface finish.

8. Interpret manufacturing drawings paying close attention to these details: bosses, pads, castings dimensions, tapers, limit dimensions, steel processing, and steel markings.

Linked Core Abilities

Apply learning
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
Use mathematics effectively

Work cooperatively

Linked Program Outcomes

Interpret industrial/engineering drawings

Perform basic machine tool equipment set-up and operation

Assessment Strategies

8.1. Skillbuilder Exercise

8.2. Written Assignment

Criteria

Performance will be satisfactory when:

8.1. learner will interpret drawings for bosses, pads, slotted holes, necks and casting requirements.

8.2. learner submits the assignment.

Learning Objectives

8.a. Determine working dimensions of bosses on castings and machined parts.

8.b. Determine working dimensions of pads on castings and machined parts.

8.c. Determine taper per foot and taper per inch of tapered parts.

8.d. Determine large and small diameters of a tapered part.

8.e. Use charts to determine steel composition characteristics.

8.f. Determine machining information from enlarged views.