SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: DRAFTING

Code No.: DRF 106-3

Program: Machine Shop

Semester: First

Date: August 1987

Author: G. MacLean

New: _____ Revision: X

APPROVED: L.P. Arazietti Chairperson — 87/08/15 Date

DRAFTING	DRF 106-3
Course Name	Course Number

PHILOSOPHY/GOALS:

To develop an understanding of the use of drawings as a means of communication.

To appreciate the need for, and to be able to produce, clear legible drawings.

To develop the skill of accurate interpretation of given information.

METHOD OF ASSESSMENT (GRADING METHOD):

The final grade will be established by combining the marks obtained in drawing assignments with test marks. This will be an ongoing process throughout the semester.

TEXTBOOK(S):

CAS Drawing Standards - B78.1M83 and B78.2

Problems in Engineering Drawing, Vol. 1, LUZADDER, Prentice-Hall

REFERENCE TEXTS:

Machinery's Handbook - Industrial Press

NOTE: Industrial catalogs will be made available for student use.

Fundamentals of Engineering Drawing, Luzadder

COURSE OUTLINE

1. USE OF DRAFTING INSTRUMENTS AND MATERIALS

- care of drafting board
- mounting of paper on board
- types of available drawing media
- use of t-square and triangles
- pencil hardness grade system
- use of lettering guide
- set-up and use of bow compass
- use of architects and metric scales

2. LETTERING

- form of vertical single stroke gothic lettering
- lettering practice and drawing of guide lines

3. GEOMETRIC CONSTRUCTIONS

- arcs tangent to straight lines and other arcs
- hexagon
- octagon
- ogee curve
- use of irregular curves

4. ORTHOGRAPHIC PROJECTION

- all principle views and their standard locations
- selection of front view and other necessary views
- object, hidden, centre, line types
- drawing of orthographic views
- use of I.S.O. symbol for 3rd angle projection
- description of difference between 3rd and 1st angle projection

5. FREEHAND SKETCHING

- technique for sketching straight lines, circles and arcs
- keeping object in proportion

6. DIMENSIONING

- basic rules
- extension and dimension lines
- drawing of arrowheads
- choice of dimensions and their locations
- dimensioning of arcs and circles

7. DRAWING REPRODUCTION

- care and use of the whiteprint machine
- discussion of line quality

8. **MACHINING SYMBOLS**

- basic symbols
- surface roughness indication
- lay indication
- roughness width cutoff

9. **SCREW THREADS (INCH AND METRIC)**

- representation
- specification

10. **TITLE BLOCKS**

- list of information commonly provided in a title block
- use of standard title block

11. **SECTIONS**

- drawing of full, half, offset, revolver, removed and aligned sections
- conventions used in drawing of sections

12. **AUXILLIARY VIEWS**

- primary auxilliarys

13. **PICTORIAL DRAWING**

- introduction

14. **DRAWING INTERPRETATION**

- interpretation of various existing technical drawings

15. **DRAWING PRACTICE**

- preparation of detail drawings

SPECIFIC OBJECTIVES

Unit I

1. Identify the objectives of a drawing office.
2. Demonstrate ability to use and take care of drafting equipment.
3. Identify the usage of various types of leads, (pencils).
4. Identify the need for the use of guidelines for lettering work.
5. Demonstrate ability to letter clearly and legibly.

Unit II

6. Identify the various types of lines used in line conventions.
7. Demonstrate ability to produce lines identified in (6).

Unit III

8. Identify the need for scaled dimensions.
9. Demonstrate ability to use a scale rule.
10. Demonstrate ability to use a scale rule to produce lines of a given length.
11. Demonstrate ability to produce a scale by construction.

Unit IV

12. Demonstrate ability to use T-squares and set squares independently.
13. Identify the use of set squares to obtain various angles by using them in combined form.
14. Demonstrate ability to produce a variety of angles using T-square and set squares in various combinations.

Unit V

15. Identify the use of geometric construction.
16. Identify the need for accuracy with respect to geometric constructions.
17. Demonstrate ability to produce various geometric shaped by construction.
18. Demonstrate ability to solve a variety of problems by using geometric constructions.

Unit VI

19. Develop an understanding for the use of multi-view drawings.
20. Identify the need for third angle orthographic projection.
21. Demonstrate ability to place views in correct positions for third angle projection.
22. Demonstrate ability to produce a drawing in third angle projection.
23. Identify the number of views required in a third angle orthographic projection in order to adequately describe a component.

Unit VI (con't)

24. Demonstrate ability to produce an orthographic drawing of a component, select the correct views and produce a working drawing using the minimum number of views required in order that the component may be manufactured correctly. (neglecting dimensions)

Unit VII

25. Identify the need for good quality freehand sketching.
26. Demonstrate ability to produce acceptable freehand single view sketches.
27. Demonstrate ability to produce acceptable multi-view freehand sketches.

Unit VIII

28. Develop an appreciation for correct method of dimensioning drawing.
29. Demonstrate ability to interpret (28) and produce a dimensioned drawing of a simple component.
30. Demonstrate ability to dimension a more complex drawing involving circular features, placement and balance.
31. Identify and use alternatives methods of dimensioning a drawing.

Unit IX

32. Identify the need for isometric drawings.
33. Demonstrate knowledge of isometric axes.
34. Demonstrate ability to produce isometric lines.
35. Demonstrate ability to produce non-isometric lines.
36. Demonstrate ability to produce isometric drawings of various components from orthographic projections.

Unit X

37. Identify the need for sectional views.
38. Identify cutting planes.
39. Identify methods of cross hatching.
40. Identify various types of sections.
41. Demonstrate ability to draw various types of sectional views.
42. Demonstrate ability to select the correct sectional view to be drawn.

Unit XI

43. Identify the use of auxillary views.
44. Demonstrate ability to produce single auxillary views.
45. Demonstrate ability to select correctly, drawings requiring auxillary views in order to ease shop floor problems.

Unit XII

46. Demonstrate use of local and general notes on drawings.
47. Demonstrate ability to interpret various drawing conventions with respect to commercial practices.

Unit XIII

48. Demonstrate degree of understanding of limits and fits from knowledge gained in major area.
49. Identify the need for correct application of limits and tolerances to l drawings.
50. Identify an accumulation of tolerances and its effect.
51. Demonstrate ability to apply limits and tolerances to drawings correctly.

Unit XIV

52. Demonstrate degree of understanding of screw thread terminology from knowledge gained in major area.
53. Identify various methods of thread representation on a drawing.
54. Demonstrate ability to produce a drawing involving the use of various methods of screw thread representation.
55. Demonstrate ability to correctly dimension a screw thread on a drawing.
56. Demonstrate ability to read correctly drawings of a more complex nature.