



COURSE OUTLINE

Course Title: Drafting
Code No.: DRF 115
Program: Heavy Equipment Diesel
Semester: Winter
Date: January 1994
Author: G. Parsons

New: **Revision:**

Approved: *D. M. Connors* **Date:** 94 01 04



**Sault College of Applied Arts
and Technology**
Sault Ste. Marie, Ontario

I. PHILOSOPHY/GOALS: This course will establish the basic fundamentals of Drafting, Freehand Sketching and Blueprint reading, providing the student with the knowledge to understand, construct and read basic drawings and blueprints.

II. STUDENT PERFORMANCE OBJECTIVES:

The student will be able to:

- 1) - letter neatly, using vertical or inclined single stroke Gothic style
 - use a "freehand lettering guide"
 - draw, and complete an appropriate title block
- 2) - recognize and draw the standard line types (visible line, hidden line, centre line, dimension line, extension line, section line, cutting plane line, break line, phantom line)
 - select an appropriate lead hardness guide for lines and lettering
- 3) - select the best "front view" of an object
 - draw the necessary orthographic views that would completely describe simple shapes, using 3rd angle projection
 - recognize orthographic views using 1st angle projection, and the I.S.O. symbol
 - interpret shapes described by orthographic projection
- 4) - identify and interpret full, half, offset, aligned, and revolved sections
 - draw the above sectional views of simple shapes
 - use appropriate section lines for the specified material
- 5) - interpret information conveyed by use of auxiliary views
- 6) - describe the size of a simple object following the basic rules of dimensioning
- 7) - select an appropriate scale
 - draw at full and reduced scale
 - properly specify the scale on a sketch
- 8) - sketch simple shapes using isometric drawing using isometric lines, non-isometric lines, and circles in horizontal and vertical planes
- 9) - interpret the simplified method of thread representation
- 10) - interpret unified and I.S.O. metric thread specification that could be used on a drawing
- 11) - interpret shop terms and commonly used abbreviations

II STUDENT PERFORMANCE OBJECTIVES:CONTINUED

- 12) - interpret terms commonly associated with tolerancing, as given on a drawing
- 13) - answer questions pertaining to industrial type drawings of mechanical parts and assemblies
- 14) - demonstrate an understanding of sections and exploded views shown in various equipment parts books
 - be able to select information for ordering of parts from a parts book

III. TOPICS TO BE COVERED:

1.0 Freehand Sketching

- 1.1 Techniques
 - straight lines
 - proportion
 - arcs and circles
 - ellipses
 - approximation of angles
 - division of a line into a given number of parts
 - standard lines
- 1.2 Practice in sketching of familiar shapes

2.0 Orthographic Projection

- 2.1 Selection of appropriate views
- 2.2 Sketching of objects with square and inclined surfaces
- 2.3 Sketching of objects having arcs and circles

3.0 Pictorial Sketching

- 3.1 Sketching of objects with isometric lines, non-isometric lines, arcs and circles.
- 3.2 Isometric views of assemblies
- 3.3 Oblique sketches

4.0 Lettering

- 4.1 Practice in vertical Gothic lettering

5.0 Dimensioning

- 5.1 Rules
- 5.2 Practices

6.0 Screw Threads

- 6.1 Types of representation
- 6.2 Drawings call-up of inch and metric threads

7.0 Tolerances

- 7.1 Limits
- 7.2 Bilateral and unilateral tolerancing
- 7.3 Minimum and maximum clearance between mating parts

III. TOPICS TO BE COVERED:CONTINUED

- 8.0 Sections
 - 8.1 Cutting plane
 - 8.2 Section lining
 - 8.3 Types of sections
 - 8.4 Assembly sections
- 9.0 Hydraulics
 - 9.1 Schematics
 - 9.2 Cutaway diagrams
 - 9.3 Pictorial diagrams
 - 9.4 Standard colour codes
- 10.0 Electrical
 - 10.1 Schematic symbols
 - 10.2 Pictorials
 - 10.3 Cutaways
- 11.0 Shop Terms and Standard Abbreviations
- 12.0 Weld Symbols
- 13.0 Interpreting Technical Drawings
- 14.0 Parts and Service Manual Utilization

IV LEARNING ACTIVITIES

- 1.0 Freehand Sketching
 - 1.1 Be able to perform basic sketching techniques by drawing straight lines, arcs and circles, ellipses, approximate angles, standard lines, proper line division, and sketch objects to proper proportion.
- 2.0 Orthographic Projection
 - 2.1 Demonstrate a working knowledge of selecting the appropriate views for an Orthographic Projection drawing.
 - 2.2 Demonstrate sketching techniques of objects with square and inclined surfaces.
 - 2.3 Demonstrate sketching techniques of objects having arcs and circles.
- 3.0 Pictorial Sketching
 - 3.1 Demonstrate the sketching techniques of objects with isometric lines, non-isometric lines, and, arcs and circles.
 - 3.2 Perform pictorial sketching of assemblies using Isometric Views
 - 3.3 Perform pictorial sketches using the Oblique method.

IV LEARNING ACTIVITIES:CONTINUED

4.0 Lettering

4.1 Demonstate the ability to letter in the vertical Gothic style.

5.0 Dimensioning

5.1 Demonstrate a working knowledge of the practice and rules of dimensioning a drawing.

6.0 Screw Threads

6.1 Demonstrate a working knowledge of the types of screw threads used and there proper application on drawings.

7.0 Tolerances

7.1 Demonstrate a working knowledge of tolerance limits, clearances and proper application on drawings.

8.0 Sections

8.1 Demonstrate a working knowledge of and be able to draw a proper section using cutting planes.

8.2 Demonstrate the proper application of section lining.

8.3 Identify and describe the types of sections.

8.4 Identify and describe the types of assembly sections.

9.0 Hydraulics

9.1 Identify, describe, and draw schematic hydraulic drawings.

9.2 Identify, describe, and draw cutaway hydraulic drawings.

9.3 Identify, describe, and draw pictorial hydraulic drawings.

9.4 Identify the standard colour codes as used on hydraulic drawings.

9.5 Identify, describe, and draw the various hydraulic symbols.

10.0 Electrical

10.1 Identify, describe, and draw the various electrical symbols.

10.2 Identify, describe, and draw schematic electrical drawings.

10.3 Identify, describe, and draw pictorial electrical drawings.

10.4 Identify, describe, and draw cutaway electrical drawings.

11.0 Shop Terms and Standard Abbreviations

11.1 Recognize and identify the various shop terms and abbreviations.

12.0 Weld Symbols

12.1 Identify the various weld symbols as used on drawings.

13.0 Interpreting Technical Drawings

13.1 Recognize, identify, and explain the various technical drawings.

IV LEARNING ACTIVITIES:CONTIUED

14.0 Parts and Service Manual Utilization

- 14.1 Explain and establish the procedure used for determining a parts order using a parts book.
- 14.2 Explain and establish the procedure used for determining the proper use of a Service Manual when carrying out repairs.

V. EVALUATION METHODS:

- Random tests and quizzes.
- Regular Testing.
- Attendance(See attachment).
- Assignments(See attachment).
- Classroom Conduct.
- Classroom Participation.

VI. REQUIRED STUDENT RESOURCES:

- Various handouts (supplied by college)
- Drafting supplies and paper.(See attachment).

VII. Additional resource material available in the college library and the Heavy Equipment Department library.

VIII. SPECIAL NOTES:

Students with special needs (eg. physical limitations, visual impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

GUIDELINE FOR DRAFTING DRF 115

1. ATTENDANCE

A terminal objective of the HED Program is the demonstration of satisfactory attendance and punctuality performance that the Heavy Equipment Industry, itself, relies on, for efficiency and productivity.

- ✱ Absences will affect your learning and your final grade.
- 1.1 Students are required to be present for the full duration of each class.
- 1.2 If you are absent from class at the time of attendance, you will be marked absent from the entire class.
- 1.3 If you are marked absent, and no reasonable excuse is given your absence will be termed unexcused. There should not be a reason to not let us know, nor related subject teachers why you're absent.
- 1.4 Students will lose 1% from their drafting mark grade for each hour of unexcused absence. Poor attendance can mean a repeat of this drafting course.
- 1.5 At 8 hours of accumulated unexcused absence you will be asked to a scheduled meeting with your teacher and may be asked to sign a contract enabling you to continue the drafting course.
- 1.6 If you are absent from class, the lesson material is your responsibility.

2. BEHAVIOUR/ATTITUDE

- 2.1 Students are required to:
 - a) Properly care for and maintain all shop and classroom equipment.
 - b) Properly clean the shop/classroom facility and equipment at the end of each class.
- 2.2 Student are expected to conduct themselves in a manner that does not interfere with or obstruct the overall learning environment.

GUIDELINE FOR DRAFTING DRF 115

- 2.3 The following activities are not allowed in the classroom:
- a) Horseplay
 - b) Making unnecessary noise
 - c) Swearing
 - d) Abusive behaviour
 - d) Smoking and eating

3. ASSIGNMENTS AND THEORY TEST

- 3.1 Students are required to hand in assignment or write theory tests on the day and at the time specified.
- 3.2 Assignments will be graded as follows:
- a) One day after the original due date - 65% Maximum (C-)
 - b) Two or more days after the original due date a zero grade will be assigned.

NOTE: The only exception of guideline 3.1 shall be those arising from personal emergencies (i.e. car accident, family death, serious illness, employment reason) and the student supplies a written statement to that effect.



STUDENT ASSESSMENT PROCEDURE

FOR

HEAVY EQUIPMENT DIESEL

DRAFTING

Drafting assessment is based on regularly scheduled tests and assignments. Attendance and homework checks are recorded and used as an aid for counselling.

The following grades will be assigned for assignment and tests.

- A+ (>91%) - Consistently Outstanding
- A (88%)
- A- (85%) - Outstanding Achievement

- B+ (83%) - Consistently Above Average Achievement
- B (80%)
- B- (75%)

- C+ (73%)
- C (69%) - Satisfactory or Acceptable Achievement
- C- (65%)

- R (<65%) Repeat - Objectives of course not achieved and course must be repeated
65% or over must be attained on all tests and assignments to pass.

All tests and drawings averaged together with consultation to your ATTENDANCE RECORD for your final grade.



STUDENT ASSESSMENT PROCEDURE

FOR

HEAVY EQUIPMENT DIESEL

DRAFTING

Drafting assessment is based on regularly scheduled tests and assignments. Attendance and homework checks are recorded and used as an aid for counselling.

The following grades will be assigned, for final results.

- A+ (>90%) (Numerical Equivalent 4.0) - Consistently Outstanding
- A (85-90%) (Numerical Equivalent 3.75) - Outstanding Achievement
- B (75-84%) (Numerical Equivalent 3.00) - Consistently Above Average Achievement
- C (65-74%) (Numerical Equivalent 2.00) - Satisfactory or Acceptable Achievement
- R (<65%) (Numerical Equivalent 0.00) - Repeat - Objectives of course not achieved and course must be repeated

CR - Credit exemption

X - A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements.

Your Semester Grade will be comprised of:

- Tests average
- Assignment average
- Class participation
- Attendance

A 65% Average of the total semester exam and assignments, with consultation to your attendance record, must be achieved to receive a passing grade in the drafting course.

A student can not rewrite a test to improve his mark.

SAULT COLLEGE CAMPUS SHOP

KIT # 10 - HEAVY EQUIPMENT DIESEL
 STOCK NUMBER 102153 \$31.30

Contact Instructor: George Parsons

ITEM NUMBER	STOCK#	DESCRIPTION
101064		White Eraser
104-2	(101653)	Coloured Pencils-Red
104-3	(101654)	Coloured Pencils-Blue
104-5	(101655)	Coloured Pencils-Green
104-14	(101656)	Coloured Pencils-Yellow
104-9		Coloured Pencils-Black
104-7		Coloured Pencils-Brown
964-10-60	(101309)	Set Square 30/60 Degree
964-08-45	(101308)	Set Square 45 Degree
562-02-12	(101603)	Ruler Clear Plastic
100-2H	(101041)	Qty. 2 - Pencil 2H
977-142	(101100)	Freehand Letter Guide
56852-15		Protractor
55140WPB		6 Inch Compass

1/4" Grid Graph Paper approx. \$1.00

Pkg. of 50 Plain Paper approx. \$1.30

