SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: Drafting

CODE NO.: DRF102 **SEMESTER:** Two

PROGRAM: Mechanical

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DATE: Jan. 1995 **PREVIOUS OUTLINE DATED:** May 1986

APPROVED: L P Arguette 96-06-22
DEAN DATE

COURSE NAME
DRAFTING

COURSE NO.
DRF 102

TOTAL CREDITS: Five (5)

PREREQUISITE(S): DRF101

I. PHILOSOPHY/GOALS:

Although the drawing board has largely been replaced by a computer in the workplace, manual drafting knowledge and skills remain important tools for engineering students and technical people.

DRF102 advances the student's basic drafting skills with exposure to mechanical elements, dimensional functionality, surface properties, and shape projection.

Competencies in these areas will allow a student to perform entry level assignments in an industrial placement, become proficient with advanced computer based drafting operations, and to support graphical literacy and skill requirements in other engineering studies.

II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

III. TOPICS TO BE COVERED **APPROXIMATE HOURS**

1.0 DESCRIPTIVE GEOMETRY AND APPLICATIONS 30 hrs.

1.1 Basic Descriptive Geometry
reference lines, points, lines, true length, visibility, distance between elements, edge views, true size, true angles

1.2 Auxiliary Views
primary auxiliary views, circular features in auxiliary projection, secondary auxiliary views, dimensioning drawings with auxiliary views

1.3 Sheet Metal Layout
sizes of stock, packaging, straight line development, flat surface development, cylindrical surface development, conical surface development, transition pieces, intersection of cylindrical surfaces

2.0 LIMITS AND FITS 18 hrs.

2.1 Tolerancing
sizes, dimensioning standards (Imperial and SI), tolerance accumulation

2.2 Allowances and Fits (Imperial and SI)
size allowance, types of fits, standard fits, interchangeability, basic hole/basic shaft systems

2.3 Surface Finish
texture, symbols, applications, machined surfaces, removal allowance

3.0 ASSEMBLY DRAWING PROJECT 24 hrs.

3.1 Pre-drawing Analysis
functionality of parts, fits, surface finishes, selection of standard components, assembly design

3.2 Drawing
scales, assembly drawing, detailed drawings

3.3 Dimensioning
determining limit dimensions, placement of dimensions on part details

III. TOPICS TO BE COVERED, con't:

3.4 Tables and notes
item list, revision table, title block, table of contents, notes and calculations

4.0 WELDED ASSEMBLIES 12 hrs.

4.1 Designing for Welding
welding processes, weight saving, cost savings, raw materials, efficiency

4.2 Types of Joints
fillet welds, groove welds, back welds, plug welds, slot welds, spot welds, seam welds, surfacing welds, flanged welds, stud welds

4.3 Welding Symbols
weld symbols, weld callout

5.0 PIPING DRAWING 12 hrs.

5.1 Specification of Pipe
steel, iron, copper, plastic

5.2 Standard Fittings
screwed fittings, welded fittings, flanges

5.3 Valves
gate valves, globe valves, check valves

5.3 Single Line Drawings
symbols, orthographic projection, isometric projection, dimensioning

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES:

1.0 STUDENT ACTIVITIES

i) Participate in classroom lectures and demonstrations.

ii) Review and study textbook theory and examples.

iii) Refer to handbooks and catalogues.

iv) Produce summary notes of theory and procedures.

v) Practice the use of drawing instruments.

v) Complete drawing exercises, drawings and other assignments as either in class or take home work.

vi) Attempting quizzes and assignments as administered throughout the term.

2.0 RESOURCES

i) Textbook: Engineering Drawing and Design, 4th edition, JENSON and HELSEL, McGraw Hill

ii) Drafting room, drafting tables, and student provided supplies.

iii) Supplementary hand out material provided by instructor.

iv) Regular classroom facilities.

v) Mechanical Engineering Drawing Standards, C.S.A. B78.1 and B78.2

vi) Bearing and standard component catalogues.

V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

1.0 GRADING SYSTEM

There will be a maximum of three major tests throughout the term. A minimum of one week notice will be provided for each test.

One design/drawing project will be completed. The project will have significant scope which is reflected in the overall grade determination.

In addition to the major tests there will be a variety of drawings/exercises that will be assigned and marked. These assignments will take place throughout the term. The marking of assignments may be on a random basis.

Scheduled or unscheduled mini-tests MAY be held throughout the term. These exercises will be referred to as quizzes.

Final grades will be calculated in the following manner:

Tests.....50%

Application Project.....25%

Assignments/Quizzes.....25%

Numerical marks will relate to grades according to the schedule below:

A+	---	90-100%
A	---	80-89%
B	---	70-79%
C	---	60-69%
R	---	less than 60%

2.0 ATTENDANCE

The policies regarding attendance are the responsibility of the individual instructor, and will be issued as supplementary documentation.

3.0 REWRITES

The policies regarding rewrites are the responsibility of the individual instructor, and will be issued as supplementary documentation.

V. EVALUATION METHODS, con't:

4.0 LATE ASSIGNMENTS AND MISSED TESTS

The policies regarding late assignments and missed tests are the responsibility of the individual instructor, and will be issued as supplementary documentation.

5.0 APPLICATION PROJECT

The application project is a major focus of this course. Details of the assignment and of the completion requirements will be issued as separate, supplementary documentation by the instructor.

VI. REQUIRED STUDENT RESOURCES:

i) Textbook: Engineering Drawing and Design,
JENSEN and HELSEL, 4th edition,
McGraw Hill.

ii) Note taking supplies: 3-ring binder, paper etc.

iii) Drafting supplies: Quad ruled paper, blank paper, T-square, set squares, dividers, compass, engineering scales (Imperial and SI), architects scale, protractor, irregular curve, circle template, pencils, etc.

iv) "Scientific" calculator.

VII. ADDITIONAL RESOURCE MATERIALS:

The following texts are used as reference and sources of supplementary information:

i) Engineering Drawing and Graphic Technology, FRENCH and VIERCK, 12th edition, McGraw Hill

ii) Engineering Graphics, GIESECKE and others, 5th edition, MacMillian

iii) Mechanical Engineering Drawing Standards, C.S.A. B78.1 and B78.2

iv) Machinery's Handbook, Industrial Press

In addition to the above, there are several texts and periodicals related to this study available in the college library, and in the department reference collection.

In the event that hand out materials are supplied by the instructor, students are responsible for the content knowledge.

VIII. SPECIAL NOTES:

1/ Your instructor reserves the right to modify the course and course outline as deemed necessary to meets the needs of the students, or in the case of special circumstance.

2/ Students with special needs are encouraged to discuss their required accommodations in confidence with the instructor.

3/ Disruptive conduct of any kind is not acceptable, and will not be tolerated in lecture or lab periods.

4/ General College policies, including those described in the "Students Rights and Responsibilities" document will be upheld.