

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: TECHNICAL DRAWING II

Code No.: DRF 102-6

Program: Mechanical Engineering Technician/Technology

Semester: Two

Date: May 1992

Author: F. G. MacLean

New: _____ Revision: ^X_____

APPROVED: *L P Crozutt*
Chairperson

Date 95-06-04

CALENDAR DESCRIPTION

DRAFTING II

DRF 102-6

Course Name

Course Number

PHILOSOPHY/GOALS:

This course will be a continuation of the first semester Technical Drawing course DRF 101. It is intended to:

1. Provide the students with further knowledge and skills in the standard methods used in the drawing of mechanical parts and assemblies.
2. Emphasize the continued need for good quality drawings that are subject to only one interpretation, and provide descriptions that are complete in every way.
3. Encourage the students to think of working drawings as the only means of communication between an engineering office and a shop facility.
4. Improve the students ability to correctly interpret industrial working drawings.

METHOD OF ASSESSMENT (GRADING METHOD):

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

Reasonable advance notice of test times will be given (minimum of three days).

It is expected that all assignments will be turned in by the specified deadline, and that the principles discussed in class will be utilized. Regular attendance is therefore an important requirement.

See the attached sheet for a more complete description of the requirements for successful completion of this course, and the grading system.

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TEXTBOOK(S):

Engineering Drawing and Design, 3rd Ed., SI metric - C. Jensen, McGraw-Hill

REFERENCE BOOKS:

"Mechanical Engineering Drawing Standards" C.S.A. B78.1

"Mechanical Engineering Drawing Standards" C.S.A. B78.2

"Machinery's Handbook"

"Graphic Science"

"Metals Handbook - Properties and Selection"

American Society for Metals

A collection of Industrial Catalogs will be made available for student use.

SPECIFIC OBJECTIVES:

At the completion of the course, it is expected that the students will have demonstrated:

1. Knowledge of the drawing theory that is presented during class lessons, and study assignments.
2. The ability to apply the theory covered in the listed topics, to the actual making of a drawing.
3. The ability to turn out a neat, and easy-to-read drawing (linework and lettering are considered to be very important).
4. The ability to use an independent and common sense approach to the solution of drawing problems.

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1. Knowledge of the drawing theory that is presented during and study assignments.
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| TOPIC NUMBER | APPROXIMATE HOURS | TOPIC |
|--------------|-------------------|---|
| 1 | 10 | Review of Basic Engineering Drawing |
| 2 | 10 | <u>Screen Threads</u> (a) Drawing of a Helix (b) Thread Nomenclature (c) Standard Thread Profiles (d) Thread Representation (e) Selection of Appropriate Thread (f) Thread Specification (inch and metric) |
| 3 | 5 | <u>Threaded Fasteners</u> (a) Types of Fasteners (b) Head Styles (c) Material Property Grades (d) Threaded Assembly Drawings (e) Specification of Fasteners (f) Locknuts - Prevailing Torque and Free Spinning (g) Threaded Inserts |
| 4 | 5 | <u>Tolerancing</u> (a) Review of Definitions (b) Bilateral, Unilateral, and Limit Dimensioning (c) General Tolerance Notes (d) Tolerance Accumulation in Chain and Datum Dimensioning (e) International Tolerance Grades (f) Interchangeable, Fitted Assembly |
| 5 | 10 | <u>Fits</u> (a) Definitions (b) Calculations to determine limit dimensions for mating parts, given the allowance and tolerances (c) Standard Fits (inch system) (d) Use of Standard Fit Tables (inch) |
| 6 | 3 | <u>Surface Finish Specification</u> (a) Machining Symbols (b) Definitions (Surface Texture Characteristics) (c) Surface Texture Symbol (d) Acceptable Locations for the Symbol on Detail drawings (e) Manufacturing Process for Surface Roughness Ranges |

| | | |
|----|----|---|
| 7 | 10 | <u>Welded Assemblies</u> (a) Types of Joints (b) Weld Symbols (c) Specification of Welding Process |
| 8 | 10 | <u>Piping Drawing</u> (a) Specification of pipe size and wall thickness (b) Available standard Fittings (c) Symbols for Pipe Fittings (d) Single Line Drawings (orthographic and isometric) (e) Indication of pipe runs not in the direction of the coordinate axes |
| 9 | 2 | <u>Standard Symbols and Abbreviations</u> (a) Reference Sources (b) Appropriate Use |
| 10 | 15 | <u>Sheet Metal Developments</u> (a) Straight Line Development (b) Radial Line Development (c) Development of Transition pieces by triangulation (d) Development Drawings for the intersection of two cylinders. (e) Layout and Development of a pattern for a 4-piece turn |

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**REQUIREMENTS FOR SUCCESSFUL COMPLETION
OF THE TECHNICAL DRAWING COURSE**

DRAWING ASSIGNMENTS

The minimum acceptable average for all drawings, calculated at the end of the semester, shall be 55%. If less than 55%, a "repeat" grade will be assigned.

Late drawings will not be accepted after the marked assignments have been returned to the class.

A zero grade will be recorded for assignments that have not been turned in.

If any drawings are below an acceptable standard, and designated as "unacceptable", they may be corrected or re-drawn for a maximum credit of 55%. These must be completed and turned in by the specified time limit.

TESTS

Tests, consisting of practical drawing and/or theory, will be held from time to time during the semester.

It is expected that all students will be present for these tests.

If the average grade for the tests is not at least 55%, the student will be given the opportunity, at the end of semester, to take a supplementary test that will be based on the course of study for the complete semester.

Students failure to obtain a minimum of 55% in tests, will result in a "repeat" grade being assigned.

COMBINING OF DRAWING MARKS AND TEST MARKS FOR FINAL GRADE

When marks are combined, emphasis will be 25% tests, and 75% drawing assignments. (To be successful, students must pass both sections individually)

85%-100%--A
70%- 84%--B
55%- 69%--C
UNDER 55%-R

If a student is consistently outstanding in traits considered desirable in the workplace, and falls within the 85%-100% grade, a mark of A+ may be assigned. This will be at the discretion of the instructor.

ATTENDANCE

A minimum of 80% attendance will be enforced. When absence exceeds 20% of the projected course time, in hours, a fast "R" will be assigned as a final grade. It is suggested that each student keep record of any hours absent from class.

NOTE

It is expected that all assignments and tests will consist of original work. Any collusion shall be dealt with as described in your booklet - "Student Rights and Responsibilities."