

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: MECHANICAL ENGINEERING DRAWING AND DESIGN I

Code No.: DRF 210-5

Program: Mechanical Engineering Technician

Semester: Three

Date: May 1986

Author: F. G. MacLean

New: _____ Revision: X

APPROVED:

F. P. Crozitto
Chairperson

_____ Date

Course Name

Course Number

PHILOSOPHY/GOALS:

To make the student aware of standard methods used to describe more complicated parts on detail and assembly drawings.

To make the student aware of the most commonly used standard parts, and how to incorporate them into assembly drawings.

To provide the opportunity for the student to improve his drafting technique and skills.

To introduce the student to an organized approach to design and give practice in making design decisions.

To encourage the student to consider the manufacturing process, and materials before finalizing a design.

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.

For a more complete explanation, see "Requirements for the Successful Completion of the Technical Drawing Course".

TEXTBOOK:

Engineering Drawing and Design Third Edition - SI Metric
C. Jensen, McGraw-Hill Ryerson Ltd.

REFERENCE TEXTS:

1. Mechanical Engineering Drawing Standards
C.S.A. B78.1 and C.S.A. B78.2
2. Tolerances and Standard Fits for Mating Parts, Metric Sizes
C.S.A. B97.3 - MA82

3. "Machinery's Handbook"
4. "Metals Handbook - Properties and Selection of Metals"
5. "Graphic Science"
6. A collection of Industrial Catalogs will be made available for student use.

TOPIC NO.	APPROX. HRS.	TOPIC
1	10	<u>REVIEW:</u> Preparation of drawings to demonstrate knowledge in: <ul style="list-style-type: none">- screw threads- threaded fasteners- dimensioning and tolerancing- fits- surface finish specification- standard symbols and abbreviations- material selection- CSA drawing standards- sectioning
2	15	<u>CAMS</u> <ul style="list-style-type: none">- applications- nomenclature- types of followers- follower motions- displacement diagrams- drawing of the CAM profile- preparation of table of angular and radial displacement dimensions- preparation of a CAM drawing
3	15	<u>GEARS</u> <ul style="list-style-type: none">- types of gears- involute curves- terminology- spur gear calculations- drawing of spur gears, bevel gears, and worm gears- preparation of a gear assembly drawing

- 4 10 FITS
- international tolerance grades and tolerance positions
- use of tables in CSA B97.3 M1982 to determine limit dimensions for mating parts.
- 5 10 STANDARD PARTS
- drawing and specification of: taper and straight pins, rivets, cotter pins, keys, retaining rings, bearings, seals.
- 6 10 SPRINGS
- spring nomenclature
- drawing of coil springs
- information included on a drawing of a spring
- preparation of a compression spring drawing
- 7 5 GEOMETRIC TOLERANCING
- true-position and basic dimensions
- maximum material condition, virtual size condition, least material condition, regardless of feature size
- use of feature control symbols on a drawing, and datum identification.
- 8 5 DESIGN PROJECT
Students will be required to design a certain mechanical device, and prepare appropriate assembly and detail drawings.
- This will be done outside of class time, except for discussion of any problems associated with the project.
- The specific assignment will be made before mid-term, and will be due three weeks before semester's end.
- Progress marks, and a final mark will be assigned for this project. They will represent 30% of the total drawing mark for the semester.

**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."