

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON



COURSE OUTLINE

TITLE: MECHANICAL ENGINEERING DRAWING & DESIGN I

NO.: DRF 212 SEMESTER: III

AM: MECHANICAL TECHNICIAN (DRAFTING)

R: R.A. BONNETT

: SEPT 1992 PREVIOUS OUTLINE DATED: SEPT 1988

APPROVED:

R.A. Bonnett
CHAIRPERSON

12-09-CE
DATE

D. King *Sep 2/92*

Mechanical Engineering Drawing & Design I
COURSE NAME

DRF-212
CODE NO.

TOTAL CREDIT HOURS: 3

PREREQUISITES: DRF 101 and DRF 102

I. PHILOSOPHY/GOALS

This course provides the student with an opportunity to study the terminology, design and drawing of various standard mechanical components including threaded fasteners, standard fasteners, gears, bearings and cams. As well, the student will learn how to determine standard limits, fits and tolerances.

II. STUDENT PERFORMANCE OBJECTIVES

Upon successful completion of this course, the student will be able to:

1. Be aware of standard methods used to describe more complicated detail parts and assemblies.
2. Be aware of the most commonly used standard parts and components, and how to incorporate them into assembly drawings.
3. Improve drafting techniques and skills.
4. Consider material cost, properties, and availability before specifying on a detail drawing.

III. TOPICS TO BE COVERED

1. Review
 - orthographic projection
 - basic dimensioning
 - tolerances and limits
2. Fits and Allowances
 - basic hole system
 - basic shaft system

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3. Surface Finish Specification

- surface texture symbol
- applications

4. Threaded Fasteners

- screw threads
- thread representation (detailed and schematic)
- common threaded fasteners

5. Standard Parts and Fasteners

- keys, splines, pins, retaining rings
- springs, clips, rivets

6. Gears

- types of gears
- involute curves
- terminology
- spur gear calculations
- drawing of spur gears, worm gears, bevel gears

7. Bearings and Seals

- bearing types
- bearing representation
- types of seals

8. Cams

- applications
- nomenclature
- types of followers
- follower motion
- displacement diagrams
- velocity diagrams

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9. 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

10. Material Selection

11. Assembly Drawing (self study)

IV. METHOD(S) OF EVALUATION

Final Mark

Final marks will be computed in the following way:

Assignments and Quizzes	20%
Tests	80%

Final Grade

Final grades will be assigned on the basis of the following table:

A+ =	90% - 100%
A =	80% - 89%
B =	70% - 79%
C =	55% - 69%
R =	0% - 54%

Students having less than a "C" grade at term end, MAY have opportunity to rewrite a test, one time only. If the revised final mark is over a "C" average, a "C" grade will be issued. However, if the revised average remains less than a "C", an "R" grade will result, and the student will be obliged to repeat the course.

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In order to qualify for test rewrite opportunity, a student must have submitted 100% of the assignments and have a class attendance record of at least 80% throughout the term.

Note that there will be no allowance for assignment and quiz rewrites.

Tests

Tests will be scheduled throughout the term, with a minimum of one week's notice will be provided to allow preparation for the test.

Students who will be absent for a scheduled test must contact the instructor in ADVANCE. Students absent with a valid reason will be allowed to write a similar test at the instructor's convenience. Students absent without prior notification, or a valid reason will be assigned a ZERO grade for the missed test.

Assignments

Assignments will be required to be submitted throughout the term, and subject to random marking. Assignments may be scheduled for class time, or issued as homework exercises, and are to be submitted PRIOR to the start of the class on the due day.

Late and unsubmitted assignments will be considered uncompleted and be given a ZERO grade, unless PREVIOUS arrangements were made with the instructor.

Quizzes

Unscheduled quizzes may be held throughout the term, as class time exercises. A missed quiz will receive a ZERO grade.

V. REQUIRED STUDENT RESOURCES

Engineering Drawing and Design, C. Jensen and J.D. Helsel

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VI. ADDITIONAL STUDENT RESOURCES (available from your professor)

1. C.S.A. B78.1-M83--"Technical Drawings - General Principles"
2. C.S.A. B78.2-M86--"Dimensioning and Tolerancing of Technical Drawings"
3. C.S.A. B97.3-M1982--"Tolerances and Standard Fits for Mating Parts, Metric Sizes"
4. C.S.A. B97.3-1970--"Standard Fits for Mating Parts, Inch Sizes"
5. "Machinery's Handbook"
6. A collection of Industrial Catalogs will be made available for student use.

VII. SPECIAL NOTES

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

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