

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

COURSE OUTLINE

Course Title: APPLIED MECHANICS (STATICS)

Code No.: MCH 100-3

Program: ADDITION

Semester: ONE

Date: SEPTEMBER, 1988

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New: _____ Revision: X

APPROVED: *G. Maclean* Chairperson 88/09/08 Date

APPLIED MECHANICS (STATICS)

MCH 100-3

Course Name

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PHILOSOPHY/GOALS

The general objective of this course is to introduce the student to some fundamental concepts of Applied Mechanics.

It will provide practice in understanding and solving typical problems that are associated with the operation of mechanical devices. It will also provide logical explanations for observations made every day in our technically oriented society.

Every effort will be made not to dwell on the theory of these concepts, but to stress practical applications through problem solving.

GRADE REQUIREMENTS

The student grade will be established by averaging four tests. The tests will be weighed equally.

In reporting the letter grade, the following equivalents will be used.

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

If the final average grade is 40% to 54% and the student's attendance has been satisfactory, an opportunity will be given to write a final exam covering all topics. The best grade possible in this case would be a "C".

"Satisfactory attendance" will be defined as attending at least 38 of the allotted 45 hours of class time.

A minimum of three days notice will be given for all tests. It is expected that all students will be present for all tests. Evidence of special circumstances will be required before a special test will be scheduled. Tests not written will be recorded as zero marks.

COURSE OUTLINE

TOPIC NO.	TOPIC DESCRIPTION
I	INTRODUCTION <ul style="list-style-type: none">- discussion of course outline, general objectives, evaluation methods, attendance requirements- definition of "statics" and "dynamics"
II	SOLUTION OF RIGHT AND OBLIQUE TRIANGLES <ul style="list-style-type: none">- trigonometric functions- theorem of pythagoras- cosine law- sine law- conversion of units
III	FORCE SYSTEMS IN EQUALIBRIUM <ul style="list-style-type: none">- vectors- components and resultants- moments- couples- beam reactions
IV	CENTER OF GRAVITY <ul style="list-style-type: none">- determination of location of the C. of G.- determination of location of the centroid
V	EQUILIBRIUM OF TWO DIMENSIONAL SYSTEMS <ul style="list-style-type: none">- collinear, concurrent, and parallel forces acting on a body in equilibrium
VI	ANAYLSIS OF STRUCTURES <ul style="list-style-type: none">- tension and compression members- members carrying no load- analysis of trussess- analysis of frames

VII

FRICTION

- laws affecting frictional force
- coefficients of static and kinetic friction
- mechanical advantage
- problems concerning simple machines -- involving wedges, screw threads, belts, disk friction, and rolling resistance

VIII

MOMENT OF INERTIA

- calculation of moment of inertia
- parallel axis theorem
- radius of gyration
- transfer of inertia axis

IX

APPLICATION OF STATICS

- classification of beams
- types of loads
- shear and bending moment diagrams
- definition of stress, and calculation tensile, bearing, shear, and bending stresses
- liquid pressure
- force on submerged surfaces
- transmission of fluid pressure

The emphasis placed on each topic will depend on the student's chosen field of specialty.

Problems will be selected, as much as possible, to relate to the major subject area.