SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON.

COURSE OUTLINE

COURSE TITLE: Applied Mechanics

COURSE CODE: MCH 100

PROGRAM: Architectural Technology

SEMESTER: I

AUTHOR: B. Sparrow

DATE: September 1991

PREVIOUSLY DATED:

APPROVED: _____ DATE: 92-08-18
                (DEAN)

APPLIED MECHANICS   MCH 100

TOTAL CREDIT HOURS   64
PREREQUISITES   NONE

I. PHILOSOPHY AND GOALS

This course will introduce the student to the fundamentals of
mechanics, and statics in particular. Practical applications of
these concepts will be examined, providing basic understanding of
force analysis of structures.

II. STUDENT PERFORMANCE OBJECTIVES

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

1. Solve problems using trigonometric functions.
2. Solve problems involving the manipulation of force
    vectors, resultant of a force, and moment of a force.
3. Solve problems involving centroid and centre of gravity
    of simple areas, built-up sections, and two dimensional
    figures.
4. Solve problems using free body diagrams and the
    equations of equilibrium.
5. Analyze trusses by using the graphical method,
    evaluation of joints and isolation of sections.

III. TOPICS TO BE COVERED

1. Mathematics of Mechanics
2. Force Systems
3. Centre of Gravity
4. Equilibrium
5. Force Analysis of Structures.

IV.   LEARNING ACTIVITIES

1.0   INTRODUCTION

REQUIRED RESOURCES

1.1   Introduction of course outline, objectives, method of evaluation and attendance requirements.

Introduction to Mechanics
Chapter 1

1.2   Define statics and dynamics.

1.3   Identify and describe properties of right triangles.

1.4   Understand and apply trigonometric functions in problem solving.

1.5   Understand and apply the Pythagorean Theorem and the Cosine Law.

1.6   Understand and apply principles of unit conversion using imperial and SI units.

2.0   FORCE SYSTEMS

Introduction to Mechanics
Chapter 2

2.1   Discuss the concept of forces.

2.2   Understand scalar and vector quantities.

2.3   Add and subtract vectors.

2.4   Calculate the resultant of a force system.

2.5   Examine the components of a force.

2.6   Understand and apply the concept of moments and couples.

2.7. Examine and calculate
beam reactions.

Introduction to Mechanics
Chapter 2

3.0 CENTRE OF GRAVITY

3.1 Define and determine the
centre of gravity of areas and
objects.

Introduction to Mechanics
Chapter 3

3.2 Define centroid and
distinguish from centre of
gravity.

3.3 Solve problems using
graphic and mathematical
methods involving centre of
gravity and centroids.

4.0 EQUILIBRIUM OF 2-D SYSTEMS

4.1 Understand and solve
problems involving collinear
force systems.

Introduction to Mechanics
Chapter 4

4.2 Understand and solve
problems involving concurrent
force systems.

4.3 Understand and solve
problems involving parallel
force systems.

5.0 FORCE ANALYSIS OF STRUCTURES

5.1 Understand the function
and applications of simple
trusses.

Introduction to Mechanics
Chapter 5

5.2 Understand the concept of
tension and compression in
truss members.

5.3 Understand the concept of
no load members.

5.4 Conduct analysis and   <u>Introduction to Mechanics</u>
solve problems involving   Chapter 5
trusses.

5.5 Understand and solve
problems involving simple
frames.

V. METHOD OF EVALUATION

Students will be assigned a final grade based on successful
completion of tests and problem assignments, weighted as follows:

Problem Set Assignments	40%
Tests (3)	<u>60%</u>
TOTAL	100%

Late assignments will penalized 10% for each day late. Due to
the nature of the subject matter, marks will be discounted for
work that is not legible and neat.

A final letter grade will be assigned as follows:

A+	90-100%
A	80-89%
B	70-79%
C	55-69%
R	Repeat

VI. REQUIRED STUDENT RESOURCES

<u>Introduction to Mechanics</u>
Levinson
Second Edition
Prentice-Hall

VII.   ADDITIONAL RESOURCES AND MATERIALS

Refer to additional texts in the library. Students may wish to consult with the instructor for additional material.

VIII.   SPECIAL NOTES

1. Students with special needs are encouraged to discuss required accommodations in confidence with the instructor.

2. The instructor reserves the right to modify the course and course outline as deemed necessary to meet the needs of the students.

3. At the conclusion of the semester, students with total grades less than 55% will be given a rewrite examination at the discretion of the instructor. The decision to allow a rewrite will be based on attendance, participation and overall performance.

4. In the event a rewrite occurs, it will be granted only once and will cover all course material. The maximum course grade attainable through a rewrite is C.

5. Attendance is mandatory for success in this course. Absence from lectures without reasonable cause will not be tolerated.