SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIS, ONTARIO

COURSE OUTLINE

COURSE TITLE	APPLIED PHYSICS I
CODE NO	PHY 100-3
SEMESTER	
PROGRAM:	WATER RESOURCES/PULP & PAPER ENGINEERING TECHNOLOGY/ ENVIRONMENTAL ENGINEERING TECHNICIAN
fTHOR	MANFRED ENGEL
DATE:	DEC. 1992
PREVIOUS OUTLINE DATED	JULY 1989

APPROVED

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DATE

kYSICS I — COURSE NAME

PHyiOO-3 — COURSE NUMBER

TOTAL CREDIT HOURS: 48

PREREQUISITE(S):

I, PHILOSOPHY/GOALS:

This course will provide the student with a knowledge of the basic principles of Physics which are required to understand and apply in many aspects of the technology programs. The material is taught mainly by using practical applications, and problem solving skills are emphasized,

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1) have an understanding of forces, motion, power.
2) be able to interpret and solve questions related to above topics.
3) have the mathematical skills to manipulate formulae.

Ill, TOPICS TO BE COVERED:

	Approximate Time Frames
1) Technical Mathematics	weeks
2) Technical Measurement	week
3) Force and Vectors	weeks
4) Equilibrium, Friction and Torque	weeks
5) Uniformly Accelerated motion	week
6) Force and Acceleration	weeks
7) Work, Power, Energy and Momentum	weeks
8) Rotational Motion	week
9) Simple Machines	week

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IV. LEARNING ACTIVITIES:	**REQUIRED RESOURCES**
1) Technical Mathematics - Add, subtract, multiply and divide signed numbers	Chapter 1 Exercises 1-1 1 to 30
- Algebra Review - Exponents and Radicals - Scientific Notation - Graphs	Worksheet on formula manipulation Exercises 1-2 1-40 Exercises 1-3 1-22 Exercises 1-4 1-31 Exercises 1-5 1,2
2) Technical Measurement - The International System - U.S. Customary System - Precision and Accuracy	Chapter 2 Exercises 2-1 1-3 Worksheet on the S.I. System Worksheet on Precision and Accuracy Review sheet Ch 1 & 2 **TEST 1**
- Conversion of Units - Unit Analysis - Mass and Weight	Exercises 2-2 1-5 Worksheet On Unit Conversion Exercises 2-4 1-3 Selected problems on pg. 53,54,55
Force and Vectors - Addition by graphical methods - Resultant Force - Trigonometry and Vectors - Component method of Vector Addition	Chapter 3 Exercises 3-1 selected problems Exercises 3-2 1-40 Exercises *3-3* selected problems Review Exercises Ch. 3 **TEST 2** Selected problems pg 84,85,86
4) Equilibrium and Friction - Newton's 1st and 3rd Law - Free body diagrams	Chapter 4 Exercise sheet on Free Body Diagrams
- Equilibrium and Trigonometry - Equilibrium and Vector Components	Problems pg. 106-111 selected problems Exercise sheet on Equilibrium
- Friction	Selected problems pg. 106-111
5) Torque and Rotational Equilibrium - Moment Arm - Torque - Resultant Torque - Equilibrium and Centre of Gravity	Chapter 5 Worksheet on reduced moment arms Exercise Problems pg. 126 Problems pg. 127-132 selected problems Review sheet with problem for Chapter 4 and Chapter 5 **TEST 3**

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IV. LEARNING ACTIVITIES: (cont'd)

REQUIRED RESOURCES

6) Uniformly Accelerated Motion
- Speed and Velocity
- Uniformly accelerated Motion
- Gravity and free falling bodies

Chapter 6

Selected problems pg 151,152
(Formulas on pg 140 will be provided)

7) Force and Acceleration
- Newton's 2nd Law of Motion
- Mass and Weight

Chapter 7

Selected problems pg. 168-170

8) Energy and Momentum
- Work
- Power
- Energy
- Work and Kinetic Energy
- Potential Energy
- Conservation Energy

Chapter 8
Worksheet on Work,Power, problems

Selected problems pg. 193-198

Review sheet Ch. 7 & 8 **TEST 4**

9) Rotational Motion
- Motion on a circle
- Centripetal force
- Banking of curves
- Angular velocity and

Chapter 9

Selected problems pg. 219-221

10) Simple Machines
- Efficiency
- Mechanical **Advantage**
- **Lever, Pulley, Gears, Inclined Plane**
- **Transmission of Torque**

Chapter 10
Worksheet on Machines
Selected problems pg 242-246

Review sheet Ch. 9 & 10 **TEST 5**

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V. EVALUATION METHODS:

5 Tests - Final grade is based on the total number of points obtained in the 5 tests expressed in %.

A+ = 90-100%	B = 70-79%
A = 80- 89%	C = 50-69%

Students who have achieved less than 60% but more than 45% on all of the tests have the opportunity to write a supplemental test covering all of the course material. This is only granted where all of the tests have been written.

VI. REQUIRED STUDENT RESOURCES:

Tippens, P.E. Basic Technical Physics, 2nd Edition, McGraw-Hill.

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

Several College Physics Text Books

VIII. SPECIAL NOTES:

Students with special needs (e.g. 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 he/she deems necessary to meet the needs of students.