

**SAULT COLLEGE OF APPLIED ARTS 4 TECHNOLOGY**

SAULT **STE.** MARIE, ONTARIO

**COURSE OUTLINE**

***COURSE TITLE:* APPLIED MECHANICS**

***CODE NO.:* MCH 230**

***PROGRAM:* MECHANICAL ENGINEERING TECHNICIAN - MACHINING**

***SEMESTER:* THREE**

***DATE:* AUGUST 1986**

***AUTHOR:* G. DISANO**

NEW: X      REVISION:

Applied Mechanics

Course *Name*

MCH 230

Course *Number*

*PHILOSOPHY/GOALS:* The objective of this course is to introduce the student to a number of fundamental concepts of applied mechanics which should prove useful to the machine shop technician student. Every effort should be made by the instructor not to dwell on the theory of these concepts, but rather to stress their practical applications through problem solving.

*METHOD OF ASSESSMENT (GRADING METHOD):*

See attached sheet titled GRADE REQUIREMENTS

*TEXTBOOK(S):* Introduction to Mechanics, 2nd edition  
by Irving J. Levinson

*OBJECTIVES:*

## GRADE REQUIREMENTS

MCH230

### **APPLIED MECHANICS**

#### **(Mechanical Engineering Technician - Machining)**

Your final grade in MCH230 will be determined on the basis of four tests to be administered during the semester. Each test will examine your knowledge of a number of topics and will be administered within a week of completing those topics. The topics covered in each of the four tests are as follows:

Test #1	_____	Topic Number I
		Topic Number II
Test #2	_____	Topic Number III
		Topic Number IV
Test #3	_____	Topic Number V
		Topic Number VI
Test #4	_____	Topic Number VII
		Topic Number VIII

The four tests are of equal weight (i.e. each of the four tests is worth 25% of your final grade). As a result your final grade will simply be an average of your four test results. In order to obtain your letter grade the following percentage-letter grade equivalents will be used:

A	76% - 100%
B	66% - 75%
C	55% - 65%
X or R	0% - 54%

If your final average is below 55% whether you receive an X (Incomplete) or an R (Repeat) grade is entirely up to the instructor's discretion. The decision will be based upon your final average (i.e. 32% would result in an R grade while 50% might result in an X grade), your attendance during the semester, your attitude while in the classroom, your perceived level of effort during the semester, etc..

In any case, should you find yourself with an X grade at the end of the semester, in order to upgrade your mark to a passing grade you will be required to write a make-up examination covering the entire course content. Should you receive a passing grade on the make-up examination (55% or higher) your X grade will be upgraded to a C grade. The best you can do after receiving an X grade is a C

Prior to administering any test, you will be notified a full week in advance. Should you for any reason not be able to be in attendance on a day for which a test has been scheduled it is your responsibility to notify the instructor prior to the test! If your reasons are acceptable a date will be set during which you may write a substitute test for the one you have missed.

G. Disano, August 1986

COURSE OUTLINE

MCH230

**APPLIED MECHANICS**

**(Mechanical Engineering Technician - Machining)**

Reference Text: Introduction to Mechanics/ Second Edition  
by Irving J. Levinson

Topic Number	Periods Lecture-Lab	Topic Description	Reference Chapters
		<u>Technical Measurement</u>	
		- three systems of units	
		- base quantities and base units	
		- S.I. prefixes and their abbreviations	
		- derived quantities and derived units	
		- the divisions of mechanics:	
		statics and dynamics	
		- the mathematics of mechanics:	
		review of trigonometry	
		- the conversion of units	
II		<u>Forces and Force Systems</u>	
		scalar and vector quantities	
		force, a vector quantity	
		magnitude, direction and line of action	
		the addition of vectors	
		the subtraction of vectors	
		the resultant of two or more forces	
		moment of a force	
		couples	
III		<u>Centre of Gravity</u>	
		determination of the centre of gravity	
		centre of gravity of grouped particles	
		centres of gravity of plane figures	
		centres of gravity of simple and	
		composite solids	
		centroids	
IV		Friction	
		- the force of friction	
		- the coefficients of friction	
		- the laws of friction	

continued ....

V	<u>Uniformly Accelerated Motion</u>	9
	<ul style="list-style-type: none"> <li>- types of motion</li> <li>- distance and displacement</li> <li>- speed and velocity</li> <li>- acceleration</li> <li>- uniformly accelerated motion</li> <li>- gravity and freely falling bodies</li> <li>- Newton's First Law of Motion</li> <li>- Newton's Second Law of Motion</li> <li>- Newton's Third Law of Motion</li> <li>- the relationship between mass and weight</li> <li>- normal acceleration</li> </ul>	
VI	<u>Work, Energy and Power</u>	12
	<ul style="list-style-type: none"> <li>- the concept of work</li> <li>- energy</li> <li>- kinetic energy</li> <li>- potential energy</li> <li>- Law of Conservation of Energy</li> <li>- power</li> </ul>	
VII	<u>Rotational Motion</u>	Notes
	<ul style="list-style-type: none"> <li>- circular motion</li> <li>- centripetal acceleration</li> <li>- centripetal force</li> <li>- angular displacement</li> <li>- angular velocity</li> <li>- angular acceleration</li> <li>- rotational work &amp; power</li> </ul>	
VIII	<u>Simple Machines</u>	Notes
	<ul style="list-style-type: none"> <li>- simple machines</li> <li>- mechanical advantage</li> <li>- velocity ratio</li> <li>- efficiency</li> <li>- Law of a Machine</li> <li>- the lever</li> <li>- the inclined plane</li> <li>- the wheel &amp; axle</li> <li>- the screw</li> <li>- pulley systems</li> <li>- gear trains</li> <li>- worm &amp; wheel</li> </ul>	