

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: Mechanics of Fluids

Code No.: **MCH125** (SUBSTITUTE FOR ELN 105)

Program: Electrical/Electronic/Computer Engineering

Semester: First

Date: January 1985

Author: G. Disano

**New:**

**Revision:**

**APPROVED:**

Chairperson

Date

CALENDAR DESCRIPTION

**Mechanics of Fluids** \_\_\_\_\_ MCH125 \_\_\_\_\_  
Course Name Course Number

PHILOSOPHY/GOALS: The objective of this course is to introduce the student to the fundamental concepts of fluid mechanics. Topics covered include: pressure, pressure measurement, buoyancy, fluid flow, the conservation of energy within a flowing fluid - Bernoulli's Energy Equation, velocity and flow measuring instruments.

The intention of this course is to introduce the student to the fundamental concepts of fluid mechanics to provide a foundation for a later course in instrumentation. Students who elect to follow the technician level program take in semester 2 a course in applied mechanics - PHY113 - in addition to this course in fluid mechanics in preparation for the instrumentation course.

METHOD OF ASSESSMENT (GRADING METHOD):

See the attached sheet: GRADE REQUIREMENTS

TEXTBOOK(S): Introduction to Fluid Mechanics  
by Russell W. Henke

## GRADE REQUIREMENTS

MCH125

### MECHANICS OF FLUIDS

(Electrical/Electronic/Computer Engineering)

Your final grade in MCH125 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

The four tests are of equal weight ( i.e. each of the four test 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 the test you have missed.

Go Disano, August 1984

COURSE OUTLINE

PHYSICS

MCH125

MECHANICS OF FLUIDS

(Electrical/Electronic/Computer Engineering)

Reference Text: Introduction to Fluid Mechanics  
by Russell W. Henke

Topic Number	Periods Lecture-Lab	Topic Description	Reference
I	3      0	<u>Introduction</u> - Fluids - Units Used in Fluid Mechanics - General Properties of Fluids - Properties of Water - Some Properties of Other Fluids	Chapter 1
II	9      0	<u>Pressure</u> - Unit Pressure - Direction of Resultant Pressure - Pascal's Laws - Atmospheric Pressure - Vacuum - Absolute and Guage Pressure - Variation of Pressure with Depth in a Fluid - Pressure "Head" - Transmission of Pressure - Vapour Pressure	Chapters 1,2
III	10     0	<u>Pressure Measurement</u> - the Mercury Barometer - the Piezometer - Manometers - the Open Manometer - the Differential Manometer	Chapter 2

Continued...

0	<u>Buoyancy</u>	Chapter 3
	- Archimedes' Principle	
0	<u>Fluid Flow</u>	Chapters 4,13,14
	- Path Lines	
	- Laminar and Turbulent Flow	
	- Velocity	
	- Volumetric Flow Rate	
	- Mass Flow Rate	
	- Weight Flow Rate	
	- Continuity	
0	<u>The Conservation of Energy</u> -	Chapters 5,6
	<u>Bernoulli's Equation</u>	
	- Energy and Head	
	- Bernoulli's Energy Theorem	
	- Bernoulli's Energy Equation	
	- Calculations Using Bernoulli's Equation	
0	<u>Velocity and Flow Measuring Instruments</u>	Chapters 7,8,9
	- the Pitot Tube	
	- the Venturi Meter	
	- the Flow Nozzle	
	- the Orifice Plate	
	- Meter Coefficients	

G. Disano, September 1983