SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: PHYSICS

Code No.: PHY 105

Program: CIVIL/ARCHITECTURAL TECHNICIAN

Semester: ONE

Date: AUGUST 1986

Author: G. DISANO

New: Revision: X

APPROVED

Chairperson ^ Date

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CALENDAR DESCRIPTION

PHYSICS	PHY 105
Course Name	Course Number

PHILOSOPHY/GOALS: The objective of this course is to introduce the student to a number of fundamental concepts of physics which should prove useful to the civil or architectural technician student.

METHOD OF ASSESSMENT {GRADING METHOD):

See attached sheet titled GRADE REQUIREMENTS

TEXTBOOK! S): Basic Technical Physics
by Paul E. Tippens

GRADE REQUIREMENTS

PHY105

PHYSICS

(Civil and Architectural Technician)

Your final grade in PHY105 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
Test #4	Topic Number VI
	Topic Number VII

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:

	76% - 100%
B	66% - 75%
	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 testl 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

PHY105

PHYSICS

(Civil and Architectural Technician)

Reference Text: Basic Technical Physics
by Paul E. Tippens

Topic Number	Periods Lecture-Lab	Topic Description	Reference Chapters
I		Units of Measurement - three systems of units - base quantities and base units - S.I. prefixes and their abbreviations - derived quantities and derived units - conversion of units of measure - the distinction between mass and weight - standard gravitational acceleration - unit analysis	2
II		Elastic Properties of Matter - composition of matter - force - elasticity - Hooke * s Law - stress and strain: Young's Modulus - Shear Modulus - Limit of Elasticity - other physical properties of metals - stiffness and strength of beams	3 & 11
III		Temperature and Thermal Expansion - temperature and thermal energy - heat as a form of energy - the Fahrenheit and Celsius temperature scales - the measurement of temperature - the absolute temperature scales - linear expansion of solids - area expansion of solids - volume expansion of solids and liquids - solid expansion temperature measuring devices - liquid expansion temperature measuring devices - thermocouple as a temperature measuring device - the mercury switch	13

continued

IV Quantity of Heat and Heat Transfer 14

- definition of the kilocalorie
- definition of the Btu
- specific heat capacity
- the three states of matter
- the melting point
- latent heat of fusion
- evapouration and boiling
- latent heat of vapourization
- sublimation
- heat of combustion
- heat-transfer processes: conduction
  convection
  radiation
- Newton's Law of Cooling

V The Gas Laws and Thermodynamics 15

- Boyle's Law
- Charles' Law
- Gay-Lussac*s Law
- the General Gas Law
- heat and work
- the First Law of Thermodynamics
- the Second Law of Thermodynamics
- refrigeration

VI Wave Motion 20

- mechanical waves
- transverse waves
- longitudinal waves
- wavelength, frequency and velocity
- reflection of waves
- refraction of waves

VII Sound Waves 20

- sound
- the speed of sound
- frequencies and wavelengths of audible sounds
- architectural acoustics
- forced vibration and resonance
- supersonic velocities and shock waves

G. Disano, August 1986