

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE: Concepts Of Physics
CODE NO. : PHY115 **SEMESTER:** W12
PROGRAM: General Arts & Science
AUTHOR: Updated by Douglas McKinnon for GAS Department
DATE: Jan 2012 **PREVIOUS OUTLINE DATED:** Sept 2011
APPROVED:

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|-------------------------|---|-------------|
| | CHAIR | DATE |
| TOTAL CREDITS: | 5 | |
| PREREQUISITE(S): | N/A Although Grade 12 Technical Mathematics is strongly recommended | |
| HOURS/WEEK: | | |

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For additional information, please contact Steve Hause, Chair, Aviation Flight Technology

(705) 759-2554, Ext. 2794

I. COURSE DESCRIPTION:

This course introduces the student to a number of fundamental concepts of physics. It is designed to satisfy the needs of students who are interested in an *overview* of the *concepts* rather than a *rigorous mathematical analysis* of the topics as might be encountered in a traditional engineering level course in physics.

Topics to be covered include: units of measurement and the metric system, motion, forces, work, energy and power, simple machines, properties of solids, liquids and gases, temperature and heat, basic electricity and magnetism, sound, and the nature of light.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Measurement and the Metric System

Potential Elements of the Performance:

- a) Describe and define base units of measure
- b) Convert units of measure within the various systems of measure

2. Motion

Potential Elements of the Performance:

- a) Describe and define distance, speed, velocity, and acceleration
- b) Work with equations describing free fall and projectile motion

3. Forces, Work, Energy, Power and Simple Machines

Potential Elements of the Performance:

- a) Awareness and quantification of various types of forces
- b) Define and quantify units of Work, Energy and Power
- c) Define, describe and quantify mechanisms and forces of Simple Machines

4. Properties of Matter: Solids, Liquids and Gases

Potential Elements of the Performance:

- a) Awareness of the various physical properties of matter in liquid, solid and gaseous states
5. Temperature and Heat

Potential Elements of the Performance:

- a) Define and describe heat
 - b) Awareness of the various temperature scales
6. Basic Electricity and Magnetism

Potential Elements of the Performance:

- a) Understand and quantify the various attributes of electricity
- b) Differentiate between alternating and direct current
- c) Differentiate between series and parallel circuits
- d) Describe the characteristics of Magnetism

III. TOPICS:

1. Measurement and the Metric System
2. Motion
3. Forces, work, energy, power and simple machines
4. Properties of Matter: Solids, Liquids and Gases
5. Temperature and Heat
6. Basic Electricity and Magnetism

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:***Conceptual Physics, by- Paul G. Hewitt, 11th edition***

Pearson Addison Wesley Publishers; 2010

ISBN-13: 978-0-321-56809-0, ISBN-10: 0-321-56809-5

Note: www.physicsplace.com is the website which accompanies the text. Access comes with a new textbook, or students must purchase access in the bookstore or online.

Scientific Calculator; similar to Sharp – EL520W

NOTE: Cell/smart phones and graphic calculators are not allowed!!!

Additional resource materials are available in the college library.

V. EVALUATION PROCESS/GRADING SYSTEM:

Final grade will be awarded based on the composite score of labs, assignments, quizzes, and tests as follows:

| | |
|-----------------------------|------------|
| Tests | 40% |
| Quizzes and assignments | 20% |
| <u>Labs and assignments</u> | <u>40%</u> |
| Total | 100% |

(The percentages shown above may have to be adjusted to accurately evaluate student skills. Students will be notified of any changes made.)

The professor reserves the right to adjust the mark up or down based on attendance, participation, leadership, creativity and whether there is an improving trend.

- a) Students must complete and pass both the test and lab portion of the course in order to pass the entire course
- b) All assignments must be completed satisfactorily to pass the course
- c) Make-up tests are solely at the discretion of the Professor and will be assigned a maximum of 50%
- d) The Professor reserves the right to adjust the number of tests, practical tests, labs and quizzes based on unforeseen circumstances. Students will be provided with sufficient notice to any changes and the reasons thereof
- e) A student who is absent for 3 or more times without prior notification, a valid reason or no effort to resolve the problem will result in action taken
NOTE: If action is taken, it will range from marks being deducted, to a maximum whereby the student may be removed from the course and assigned an "f" grade

The following semester grades will be assigned to students:

| Grade | <u>Definition</u> | <i>Grade Point Equivalent</i> |
|--------------|--------------------------|-------------------------------|
| A+ | 90 – 100% | |
| A | 80 – 89% | 4.00 |
| B | 70 - 79% | 3.00 |
| C | 60 - 69% | 2.00 |
| D | 50 – 59% | 1.00 |
| F (Fail) | 49% and below | 0.00 |

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|-------------|--|
| CR (Credit) | Credit for diploma requirements has been awarded. |
| S | Satisfactory achievement in field /clinical placement or non-graded subject area. |
| U | Unsatisfactory achievement in field/clinical placement or non-graded subject area. |
| X | A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. |
| NR | Grade not reported to Registrar's office. |
| W | Student has withdrawn from the course without academic penalty. |

VI. SPECIAL NOTES:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

Once the classroom door has been closed, the learning process has begun. Late arrivers will not necessarily be granted admission to the room. This decision lies solely with the Professor.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.