



**School of Arts & Science
PHYSICS DEPARTMENT**

**PHYS 105-002
General College Physics 2
Winter, 2016**

COURSE OUTLINE

**The Approved Course Description is available on the web @
<http://camosun.ca/learn/calendar/current/web/phys.html>**

*Ω Please note: this outline will be electronically stored for five (5) years only.
It is strongly recommended students keep this outline for your records.*

1. Instructor Information

Instructor: Elizabeth ploughman
Office Hours: Tues, Thu (3:30-4:00), 4:30-5:00 Wed., Fri (1:30-2:20) or by appointment
Location: F314B
Phone: 250-370-3517
Email: ploughe@camosun.bc.ca
Website Info: Please ph and leave a call back number if you need a reply after term begins

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Define and describe the following properties of waves: period, frequency, wave speed, and amplitude. State the principal of superposition and understand the properties of waves undergoing constructive and destructive interference.
2. State the conditions for standing waves and identify nodes and anti-nodes. Solve problems of vibrating strings and air columns, including fundamental nodes and harmonics.
3. Solve technical problems involving the behaviour of light at an interface between media (laws of reflection, refraction, dispersion).
4. Solve technical problems involving geometric optics (lenses, mirrors, simple optic devices).
5. Solve technical problems involving the electrostatic force, the electric field and potential.
6. Solve technical problems associated with simple DC circuits and networks of batteries and resistors in series and parallel circuits, Ohm's Law and electric power.
7. Solve technical problems involving magnetic fields due to current-carrying wires, magnetic forces between wires and on charged particles, and the practical application of magnetism.
8. Assemble simple experimental apparatus using written instructions.
9. Observe, record, organize and display data in tables, graphs or charts.
10. Analyze linear graphs (determine area, slope, intercept, etc.).
11. Observe and record sources of error and estimate the range of uncertainty in results.
12. Interpret meaning of experimental results in the context of the experimental objectives.
13. Write scientific reports in an acceptable, traditional format.

3. Required Materials

- (a) Texts Physics, Principles with Applications, 7th edition, Douglas C. Giancoli
- (b) Other Physics 104/105 Laboratory Manual, optional workbook
Graph paper (must be either 10 lines/inch or millimeter graph paper)

4. Course Content and Schedule

Geometric optics, electric circuits, electric fields , waves magnets see the handout given in class and below for more detail

5. Basis of Student Assessment (Weighting)

The student must be successful in both the theory and laboratory assignments to pass the course. The approximate percentages used for the final grading are:

Tests	35%
In class exercises and lab Work	15%
Final Exam (3 hours)	50%

Refer to your instructor's information for any additional comments regarding grading.

PHYSICS DEPARTMENT POLICIES REGARDING TESTING:

1. The final exam will cover the entire course and will be 3 hours long. As stated in the current college calendar on page 39, "students are expected to write tests and final exams at the scheduled time and place." Exceptions will only be considered due to emergency circumstances as outlined in the calendar. Holidays or scheduled flights are not considered to be emergencies.
2. Students must write quizzes, tests, midterm tests, etc., on the date and time assigned by the instructor. Missed tests/exams normally receive a zero grade. Instructors are not required to provide make-up tests. At their discretion, instructors may waive a test in exceptional circumstances such as medical issues or a documented illness.
3. Refer to your instructor's information page for any additional policies regarding testing and grade calculation.

PHYSICS DEPARTMENT POLICIES REGARDING LABS & ASSIGNMENTS:

1. All assigned laboratory exercises and reports must be completed and handed in prior to the date of the final exam with an overall grade of 60% in order to obtain credit for the course.
2. Attendance is mandatory & you may be required to "sign in" at the beginning of each lab period. A lab may be waived or made up at a later time only in the case of documented illness or other extenuating circumstances. If you will be absent from a lab period due to illness it is your responsibility to notify your instructor.
3. Unless otherwise stated by your instructor late penalties are as follows: For overdue labs (or assignments), a late penalty of 1 mark per day (10%) will be assessed for the first five days following the due date. After this date a complete report is still required and earns a maximum mark of 50%. Late assignments will not be accepted after solutions have been posted to website – normally 2 or 3 working days after due date.
4. At the discretion of the instructor, a student who is repeating this Physics course may apply for lab exemption.

6. Grading System

Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at camosun.ca for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. (For these courses a final grade will be assigned to either the 3 rd course attempt or at the point of course completion.)
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

7. Recommended Materials or Services to Assist Students to Succeed

STUDY TIME

It is recommended that between 5 and 10 hours per week (or more for students with a weak background) be spent studying for this course outside of class time.

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services or the College web site at camosun.ca.

STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services and on the College web site in the Policy Section. www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html

OUTLINE:

1. **Wave motion (Ch. 11.1, 11.7, 11.8, 11.11 - 11.13)**

- 1.1 Descriptive Simple harmonic motion
 - 1.2 Properties of waves; wave speed
 - 1.3 Reflection and interference
 - 1.4 Standing waves in a string
2. **Sound (Ch. 12.1, 12.4, 12.6, 12.7)**
- 2.1 Characteristics of sound; the human ear
 - 2.2 Vibrating strings and air columns
 - 2.3 Interference; Beats
 - 2.4 *OPTIONAL: The Doppler effect (12.7)*
3. **Light and geometric optics (Ch. 23) and (Ch. 25.1 – 25.6)**
- 3.1 Speed of light. Electromagnetic spectrum
 - 3.2 Law of Reflection; Image formation in plane mirrors
 - 3.3 Image formation in plane and spherical mirrors
 - 3.4 Law of Refraction
 - 3.5 Total internal reflection and applications
 - 3.6 Image formation in thin lenses. Lenses in combination
 - 3.7 **Selected** optical instruments (magnifier, microscopes, telescopes, the eye) (25.1 – 25.6)
4. **Electric Fields (Ch. 16.1 – 16.8) and (Ch. 17.1, 17.2)**
- 4.1 Basic idea of electric charge and its relation to matter
 - 4.2 Law of electrostatic force
 - 4.3 Electric fields and field line (Qualitative)
 - 4.4 Electric potential; Potential difference and E-field (17.1, 17.2)
5. **Electricity (Ch. 18.1 – 18.6) and (Ch. 19.1, 19.2, 19.4)**
- 5.1 Electric current; the electric battery
 - 5.2 Ohm's Law; Resistance
 - 5.3 Resistance; Resistivity *OPTIONAL: Temperature dependence.*
 - 5.4 Power
 - 5.5 Emf and simple DC circuits (19.1, 19.2, 19.4)
6. **Magnetic fields (Ch. 20.1 – 20.4, 20.10, 20.11)**
- 6.1 Properties of magnets
 - 6.2 The magnetic field
 - 6.3 Magnetic forces on moving charges; current-carrying wires
 - 6.4 Applications; Hall effect, Electric motors, Mass spectrometer
7. **OPTIONAL TOPIC:** Picked by instructor at the beginning of term. About 1 weeks worth of material. It is the decision of the instructor if students are responsible for material on the final exam.
Examples: Descriptive Relativity, Geophysics, Astrophysics