



**School of Arts & Science
Department of Physics & Astronomy**

**PHYS-105-002
General College Physics 2
Winter-2020**

COURSE OUTLINE

The course description is available on the web @
<http://camosun.ca/learn/calendar/current/web/phys.html>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1. Instructor Information

Instructor: Nancy McLean
Office Hours: Tues., Wed.: 2:30-3:20 pm, Thurs., Fri.: 10:30-11:20 am or by appointment
Location: F346B
Phone: 250-370-3515
Email: mcleann@camosun.bc.ca
Website Info: D2L

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 principle 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 behavior 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 105 Laboratory Manual
 Graph paper (must be either 10 lines/inch or millimeter graph paper)

4. Course Content and Schedule

Class Times:	Mon, Tues., Wed., Thurs.	4:30 -5:20 pm	F316
Lab Time:	Friday	12:30 -2:20 pm	F322

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:

3 Tests	30%
Homework	5%
Lab Work (1 drop lab allowed)	25%
Final Exam (3 hours)	40%

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

PHYSICS DEPARTMENT GUIDELINES REGARDING TESTING AND GRADING:

- *The final exam will cover the entire course and will be 3 hours long. As stated in the current college calendar, "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.*
- *Students must write quizzes, tests, midterm tests, etc., on the date and time assigned by the instructor. Missed 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.*
- *Any outstanding homework or labs must be submitted prior to the last day of classes, and will be graded according to the late policy outlined by the instructor.*
- *Refer to your instructor's information page for any additional policies regarding testing and grade calculation.*

PHYSICS DEPARTMENT GUIDELINES REGARDING LABS:

- *Students must obtain an overall grade of 50% or higher in the laboratory component of the course order to obtain credit for the course.*
- *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.*
- *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%.*
- *At the discretion of the instructor, a student who is repeating this Physics course with a laboratory grade of 70% or higher may apply for lab exemption.*
- *Students will complete a minimum of 9 laboratory experiments including 3 formal reports (with full uncertainty calculations) and at least at least one lab using technology to perform data analysis.*

6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

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.

8. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. **GRADING SYSTEMS** <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. **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		1
0-49	F	Minimum level has not been achieved.	0

2. **Competency Based Grading System (Non GPA)**

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	<i>The student has met the goals, criteria, or competencies established for this course, practicum or field placement.</i>
DST	<i>The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.</i>
NC	<i>The student has not met the goals, criteria or competencies established for this course, practicum or field placement.</i>

B. **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 at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete: 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.</i>
IP	<i>In progress: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.</i>
CW	<i>Compulsory Withdrawal: 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.</i>

OUTLINE:

1. **Wave motion**

- 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**

- 2.1 Characteristics of sound.
- 2.2 Vibrating strings and air columns
- 2.3 Interference; Beats

3. **Light and geometric optics**

- 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; dispersion
- 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)

4. **Electric Fields and Electric Potential Difference**

- 4.1 Basic idea of electric charge and its relation to matter
- 4.2 Law of electrostatic force
- 4.3 Electric fields and E-field lines
- 4.4 Electric potential; Potential difference and E-field

5. **Electricity**

- 5.1 Electric current; the electric battery
- 5.2 Ohm's Law
- 5.3 Resistance; Resistivity
- 5.4 Power
- 5.5 Emf and simple DC circuits
- 5.6 Series and Parallel circuits

6. **Magnetic fields**

- 6.1 Properties of magnets
- 6.2 The magnetic field
- 6.3 Magnetic forces on moving charges; current-carrying wires
- 6.4 Applications: Velocity selector, Mass spectrometer