



CAMOSUN COLLEGE
School of Arts & Science
Department of Physics & Astronomy

PHYS-104-D01
General College Physics 1
Fall 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.

Dear Students, the first information that you will need to submit is an attendance note, whether you are in the class or on the waitlist. Since there is a substantial waitlist for this course, please e-mail a note to me at ploughe@camosun.bc.ca to confirm your attendance by 5 pm on Tuesday July 7. This is important as this attendance note will hold your space in the course. To ensure that waitlisted students will have a chance to take the course, I will begin the deregistration process for students who have not submitted the attendance note by Wednesday July 8.

Also note that my class list email is from Camlink so you will receive all essential communication via your camlink email we will NOT be using the D2L email function in this class

1. Instructor Information

(a) Instructor	Elizabeth ploughman
(b) Office hours	Email office questions about home work will be answered at these times: (mon- 9:30 -10:20, Tues, wed and fri- 2:30-3:20, Thursday 9:45-10:20) but blackboard collaborate help appointments will be set up where needed at times that accommodate both the student's and the instructors schedules
(c) Location	Online only
(d) Phone	Contact me via email since I will not be in my office at all Alternative:
(e) E-mail	ploughe@camosun.bc.ca
(f) Website	D2L

2. Intended Learning Outcomes

(If any changes are made to this part, then the Approved Course Description must also be changed and sent through the approval process.)

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

1. Perform addition, subtraction and scalar multiplication of vectors in two-dimensions using graphical and trigonometric techniques.
2. Solve technical problems involving kinematics and dynamics of particles in one- and two-dimensions.
 - a. Define and differentiate between kinematic variables (position, displacement, velocity, speed acceleration)
 - b. Solve technical kinematics problems involving constant acceleration in one-dimension (horizontal and inclined surfaces, and free fall) and two-dimensions (projectile motion).
 - c. Describe Newton's Laws and use Free-Body diagrams to represent forces acting on an object.

- d. Apply Newton's Laws to solve dynamics problems involving gravitational forces, friction and interacting pairs of objects.
3. Apply conservation principles to solve technical problems involving energy and momentum
 - a. Solve problems involving the work done by constant forces in one- and two-dimensions using the work-kinetic energy theorem.
 - b. Use the conservation of energy principle to solve problems involving gravitational potential energy and dissipative forces.
 - c. Calculate power output and efficiency for simple mechanical systems
 - d. Apply the concepts of momentum and impulse to solve problems involving collisions in one- and two-dimensions.
4. Apply kinematics and dynamics concepts to the study of circular, rotational and orbital motion
 - a. Use the concept of centripetal acceleration to solve dynamics problems involving objects in uniform circular motion.
 - b. Describe Newton's Law of Universal Gravitation and use this principle to solve problems involving orbital motion.
 - c. Evaluate the torque produced by a force and use the first and second condition for equilibrium to solve problems involving rigid objects in static equilibrium.
5. Solve technical problems involving elastic properties of solids and fluid statics and dynamics.
 - a. Define density, pressure (including gauge pressure), stress, strain and elastic modulus.
 - b. Characterize and evaluate the variation in pressure with depth in a fluid in hydrostatic equilibrium including applications of Pascal's Principle.
 - c. Apply Archimedes' principle to evaluate the buoyant force on objects partially or completely immersed in fluids
 - d. Solve technical problems involving surface tension and capillary action.
 - e. Use the equation of continuity and Bernoulli's equation to qualitatively describe aspects and applications of fluids in motion.
6. Explore energy transfer by thermal mechanisms through investigations into heat exchange, thermal expansion and calorimetry.
 - a. Identify common temperature scales and appropriate conversion factors between scales.
 - b. Solve technical problems involving the thermal expansion of solids and fluids.
 - c. Define and distinguish between the terms temperature, heat, thermal energy, specific heat capacity and latent heat.
 - d. Solve technical calorimetry problems including problems involving phase changes of matter.
 - e. Describe heat transfer by radiation, thermal conduction and convection.
7. Analyze, interpret, and report on experimental results in the context of experimental objectives.
 - a. Observe, records, organize and display data in tables, and record sources of error and determine the uncertainty in results
 - b. Plot and analyze linear graphs (determine area, slope, intercept, including uncertainties)
 - c. Convey findings in scientific reports written in an acceptable, traditional discipline-specific format.

3. Required Materials

(a) **Texts the physics 104 workbook and workbook supplement** are essential, together they are not only a summary of the theory but contain the majority of the homework that will be assigned (with numerous hints)

Physics by Giancoli- 6th edition is optional. The students is advised that it will be helpful to have an appropriate level paper copy of a text as a reference, even though homework will not be assigned directly from this text. An old edition will be just as useful for this as the current, 6th edition, and in fact any algebra based Canadian physics text published in the last 10-15 years will be useful as a reference. Online searches are just as likely to result in approaches to problem solving that you are not responsible for learning as they are to be helpful when it comes to basic physics as the students is required to learn certain methods as well as to understand the concepts

Other

for homework and tests: calculator, paper for test solution (you will be required to write test solutions by hand then scan or photograph them for submission), graph paper

home lab supplies please collect these items together and put them in a box for lab use.: paper clips, elastic bands, protractor, 10 nuts and washers, if possible 10 loonies, one 250mL drink in its container one 500mL straight sided water bottle , string, ruler, a tape measure if possible, regular size marbles, sticky tape like scotch tape or masking tape,

It is possible some further item may be needed as the term proceeds if that turns out to be the case you will be notified by email

If your phone supports a scanning app (such as 'cam scan') you should get this app on your phone because photos of hw sometimes don't appear clear enough to read and mark (in which case you will be asked to resubmit the assignment) If your phone or device won't support a scan app that is allowed but photos are more likely to take more of your time in the submission process

4. Course Content and Schedule

Asynchronous blackboard collaborate lecture links will be sent out to you on Mon, Tues, and wed every week in the afternoon (after the recording links are sent to me from 'blackboard support') You should watch and take notes as in a live class. The lectures will follow the workbook and fill in the missing theory so that you can, if you wish, add pages of your notes to the workbook in the appropriate places

Live blackboard collaborate on Thursday at 1:30: review of the week lecture this will include a test prep summary and a common question answer lecture which will be recorded, followed by a tutorial which will not be recorded

Tests will be every Friday and will be emailed to you at 12:30 note that you should **not** be on blackboard collaborate or on D2L for your test but be ready to receive it **by email** then work out all your solutions by hand on paper (this is partly for mathematical ease but also largely to reduce the temptation of using technology for sharing solutions with others) Tests will be due at the time given with each test. All tests will have equal weight even if some may be expected to require the full hour and others only a half hour. Every test will be primarily based on the week's work but include one question from earlier material (except for the 1st test)

lab exercises and assignments will be emailed to you and also posted to D2L. assignments will be **daily** and small and should be posted to the D2L assignment box (or emailed as an attachment if you can't access D2L that day). Home work is to be done daily by the student and submitted daily. Lab reports are to be submitted 1 week after the lab is assigned

at home experiment note you must write your own report but if a family member is agreeable to act as a 'lab partner' for doing the actual experiment this is allowed as you would normally work with a lab partner in the classroom lab situation. You will find most of the experiments that have been found for you to do at home with simple equipment are quite enjoyable if done with a friend. This can lead to increased noticing of important concepts and so is encouraged.

Late penalties An occasional assignment which is turned in one or 2 days late will be accepted but in general late work (where a whole week's worth of physics home work, for instance is submitted at once) will **not be accepted unless there is a legitimate, documented reason**. This is partly because of the difficulty of marking on screen but largely because of the near impossibility of knowing whether the person submitting the hw. actually did it themselves when the class is remote

5. Basis of Student Assessment (Weighting)

(Should be directly linked to learning outcomes.)

(a) **Assignments 25%** (these will each be 1/1 if complete solutions submitted with the correct answers) if the student can not get the same answer as the workbook gives for **one** question but the rest are correct they should submit the homework but email for help, if most of the hw. is not working out correctly then the student should email for help **before** submitting the hw.

b) **Tests 45%** (these will be weekly tests, each including 1 cumulative problem and a number of problems from the week in which the test is issued)

© **Labs 30%** will be actual experiment backed up by some sort of theoretical exercise

PHYSICS DEPARTMENT GUIDELINES REGARDING TESTING AND GRADING:

- Work must be submitted on time unless there is an emergency. 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.
- 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.
- Lab completion is mandatory. 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 unable to complete a lab 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)

6. Grading System

(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)

(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)

Standard Grading System (GPA)

Competency Based Grading System

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

See material required given above

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	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

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:</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 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.
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.