



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

**PHYS-104-D01**  
**General College Physics 1**  
**Winter 2021**

## COURSE OUTLINE

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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.

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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](mailto: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

**Important info. Re the last test of the term: this will occur during final exam week even though it will be a 45 minute test which carries the same academic weight as all the previous tests**

### 1. Instructor Information

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|-------------------------|---|
| <b>(a) Instructor</b>   | Elizabeth ploughman   |
| <b>(b) Office hours</b> | <b>Email office</b> questions about home work and labs and other concerns will be <b>answered</b> at these times: mon 12pm-1:20pm, Tuesday 9:10am-10:10am, Wed 1pm-2pm, Friday 10:30am-11:10am. but <b>blackboard collaborate help appointments</b> will be set up where needed at <b>times that accommodate both the student's and the instructors schedules. To ask for my window to open please knock by sending an email with 'face to face help' in the subject line then I will respond to those emails 1<sup>st</sup> during the 'office hour'</b> . Email questions can, of course, be sent at any time and I will often respond before my official office time, but the times above are the times when you will get a response if you did not hear back sooner. If you need to see me face to face on BB that does not have to only be during the time slots shown but if you have emailed me about a time please look for an email response from me during the office hours given above. Please note that on Thursday there are no office hours- that day I will be catching up on the marking of the weekly tests and the labs |
| <b>(c) Location</b>     | Online only   |
| <b>(d) Phone</b>        | <b>Contact</b> me via email since I will <b>Alternative:</b><br>not be in my office at all  |
| <b>(e) E-mail</b>       | <a href="mailto:ploughe@camosun.bc.ca">ploughe@camosun.bc.ca</a>  |
| <b>(f) Website</b>      | D2L   |

## 2. Intended Learning Outcomes

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**- 6<sup>th</sup> 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, 6<sup>th</sup> 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 ap (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 ap 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 Tues, Thursday and Fri 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 Monday at 10:30: lecture** this will include a test prep summary and a lecture which will be recorded , followed by a mini tutorial during which students can ask any question that came up for them in the lecture, this part of the 'lesson' will not be recorded

**Tests will be every wednesday and will be emailed to you at 10:30** 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 1t test)

**NO MAKE UP TESTS WILL BE PROVIDED THIS SEMESTER**. If a student misses one of the tests for a **valid medical reason** that test will **not** appear on the student's record as a zero. This is possible and required because of the fact that you will be writing 4 times as many tests as you would if this was a regular classroom course.

**lab exercises and assignments** will be emailed to you and also posted to D2L. assignments will be **daily** and small and should emailed as an attachment or photo. Home work is to be done daily (mon-

Thursday) by the student and sent to me as a photo or scan of hand done work done on the template in the tutor pack. Lab reports are to be submitted 1 or 2 weeks after the lab is assigned (most of the experiments are 1 week but there are a couple of double labs for which you will be allowed 2 weeks) **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.

**Your hw** for the entire semester is to complete all the practice problems in the tutor pack. Every non test day (mon-thurs) you should be watching the day's lesson (whether in person or on D2L) then attempting all the related practice problems, checking from the answers and hints shown that you are using correct methods, then sending me a sample photo or scan. At the beginning of the week a 'goal for that week' will be posted as an announcement on D2L . By the end of the week samples from all sections in that announcement should have been sent to me. It does not matter which exact question you send the hw mark is for 'completions with mostly correct answers of the work in a timely manner.

**Late penalties** An occasional assignment which is turned in one or 2 days late will be accepted with no penalty but in general late work (where a whole week's worth of physics home work, for instance is submitted at once) may **not be accepted and will ,even if accepted, be penalized ,unless there is a valid serious 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)

(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)

### Academic Integrity

Academic Integrity – PHyS Course Outlines

### Academic Integrity

- Students in this course are subject to the Camosun College Academic Integrity Policy available at the link below and mirrored on the D2L website.  
<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf>
- You should read the above document thoroughly by the end of the first week of classes and be familiar with what constitutes academic misconduct. Failure to read this document or this course outline is not considered a valid excuse if you are found to have committed academic misconduct!
- You may also wish to consult the supporting documents on the Process for Documenting and Addressing Academic Misconduct as well as the Guide to Academic Misconduct and How to Address It.  
  
<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.1.pdf>  
  
<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.5.pdf>
- The Academic Integrity Policy and Supporting Documents provide examples of academic dishonesty. Some common examples include:
  - Communicating with classmates or other individuals during tests and quizzes
  - Posting homework, quiz, lab or test material to homework helper sites such as Chegg, Slader, CourseHero, etc...
  - Direct copying from any resources without approval of the instructor (including, but not limited to your classmates' work, online non-D2L resources, lab manual instructions, and an instructor's own posted solutions)
  - Having an individual (classmate, friend, professional tutor) complete work on your behalf
  - Sharing detailed information about tests, quizzes or assignments with students who have not yet taken the test or completed the assignment (In this case, all participating students will be penalized)

- Copying data taken by another student in an individual lab exercise, or sharing your own data with other students.
- Submission of any work that is not your own.

**All students found to have committed any form of academic misconduct will be assigned an appropriate consequence as outlined in the Academic Integrity Policy.**

- Please note that student academic misconduct is documented and kept on record in the Office of the Registrar. Repeated breaches of academic integrity within this course or across courses can lead to more significant consequences per the policy and its supporting documents.
- Students are encouraged to engage with the instructor to discuss any concerns around academic integrity or violations thereof. Should a student and the instructor disagree as to the outcome of a misconduct allegation, then the student may reach out to the department Chair for support.
- I encourage you to reach out to me if you have any questions about academic integrity. You are welcome to consult with other students in working through homework problems and labs, but ultimately your final submitted work must be your own.

## Grading System

- 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, Student Ancillary Fees, Academic Integrity, Grade Review & Appeals, Student Misconduct and Academic Accommodations for Students with Disabilities and Student Penalties and Fines.

### 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.
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