

COURSE SYLLABUS



COURSE TITLE: PHYS-101: Introduction to Physics

CLASS SECTION: 002 / 003

TERM: 2022 Fall

COURSE CREDITS: 4

DELIVERY METHOD(S): In class

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.

Learn more about Camosun's [Territorial Acknowledgement](#).

Please read the information on the Camosun College website for up to date information on COVID19 policy:

<https://camosun.ca/about/covid-19-updates>

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Ed nelson

EMAIL: nelson@camosun.bc.ca

PHONE: (250) 370 4435 (office); (250) 884 6266 (text messages only)

OFFICE: TECH 218

HOURS: M W F 1:00 – 2:00; Th 2:00 – 3:00; F 3:00 – 4:00

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR DESCRIPTION

This course provides a first introduction to physics. Students will examine topics involving one-dimensional kinematics, Newton's Laws, work, energy and power. Further topics include simple DC circuits, properties of waves and the Laws of Reflection and Refraction. Problem solving, analyzing graphs and lab work will be emphasized.

PREREQUISITE(S):

One of:

- C in Pre-calculus 11; C in MATH 073; C in MATH 077; C in MATH 137; C in MATH 139

It is recommended that students who have been away from math courses for more than 5 years should

consult with the Mathematics department to ensure that their math skills are at a level appropriate for this course.

CO-REQUISITE(S):

See Pre-requisites

EXCLUSION(S):

Not Applicable

COURSE LEARNING OUTCOMES / OBJECTIVES

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

1. Demonstrate skill in the use of S.I. base and derived units.
2. Draw graphs (by hand), determine slopes of linear graphs, linearize non-linear data, and write an equation to represent a linear graph.
3. Solve technical problems involving one-dimensional kinematics for a single particle with constant acceleration.
4. Solve technical problems involving the dynamics of a single particle in one dimension using Newton's Laws of Motion.
5. Perform vector analysis using scaled diagrams with applications to displacement and force.
6. Define the terms work, kinetic energy, gravitational potential energy and power.
7. Solve technical problems using the work-kinetic energy theorem and conservation of mechanical energy.
8. Solve technical problems involving simple DC electric circuits, Ohm's Law, and electric power.
9. Define and describe the following properties of waves: period, frequency, wave speed and amplitude.
10. Define the properties of light, including the electromagnetic spectrum.
11. State and apply the Law of Reflection and the Law of Refraction.
12. Assemble simple experimental apparatus using written instructions.
13. Observe, record, organize and display experimental data in tables, graphs or charts.
14. Analyze linear graphs (determine area, slope, intercept, etc.).
15. Interpret experimental results in the context of the experimental objectives.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

- (a) Physics 101 Introduction to Physics Course Pack (Camosun College)
- (b) PHYS 101 Lab Manual (Camosun College)
- (c) Scientific Calculator (example: Sharp EL 520XT)
- (d) Drawing Set (ruler, protractor, triangles)
- (e) Graph Paper (1 cm x 1 cm square with 1mm divisions)

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor. Please see detailed Timelines at the end of this document.

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
4	Midterm 1 CK#1	Sep 23/22
5	National Day for Truth and Reconciliation	Sep 30/22
6	College Closed THANKSGIVING DAY	Oct 10/22
7	Midterm 2 CK#2	Oct 24/22
10	Midterm 3 CK#3	Nov 4/22
11	College Closed REMEMBRANCE DAY	Nov 11/22
13	Midterm 4 CK#4	Nov 25/22

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Midterm Tests	30%
Lab Exercises	20%
Homework	15%
Weekly Quizzes	10%
Final Exam	25%
TOTAL	100%

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information. <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

COURSE GUIDELINES & EXPECTATIONS

SCHOOL OR DEPARTMENTAL INFORMATION

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 10 labs of which at least one will be completed as a formal report and one will involve manipulation and plotting of data using technology.

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](http://camosun.ca/services/accessible-learning/) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized

Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-3703841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.

PHYSICS 101 Section 002 TIMELINE 2022 Fall

FRIDAY Quiz = 20 minutes at end of class

FRIDAY CK = Celebration of Knowledge (test) 50 minutes

<i>Week</i>	Lecture 1 Monday	Lecture 2 Tuesday	Lecture 3 Wednesday	Laboratory Thursday	Lecture 4 Friday
1 Sept 5 – 9	LABOUR DAY College Closed	Intro	Intro + SI Units	NO LAB Algebra Review	Prefixes Derived Units <quiz>
2 Sept 12 – 16	Sci Notation Calc Setup Sig Fig	Unit Conversion Method	Graphing 1	Density of Solids	Graphing 2 (Non Linear $y = x^2$) <quiz>
3 Sept 19 – 23	Graphing 3 (non linear) <i>{QE funeral – closed}</i>	Kinematics 1	Kinematics 2	Gravitational Field	Kinematics 3 <quiz>
4 Sept 26 – 30	Kinematics 4	Kinematics 5	Kinematics 6	Period of a Simple Pendulum	National Day for Truth and Reconciliation College Closed
5 Oct 3 – 7	CK #1 Oct 3	Kinematics 7 Falling Objects	Dynamics 1	Falling Objects	Dynamics 2
6 Oct 10 – 14	Dynamics 3 Elevators	Dynamics 4 Examples	Dynamics 5 Newton III	Acceleration 1	2D Vector 1 <quiz>
7 Oct 17 – 21	THANKSGIVING College Closed	2D Vector 2	2D Vector 3	Translational Equilibrium	CK #2 Oct 21
8 Oct 24 – 28	Work Energy 1	Work Energy 2	Work Energy 3	Conservation of Energy	Work Energy 4 <quiz>
9 Oct 31 – Nov 4	Work Energy 5	Work Energy 6	Work Energy 7	Standing Waves in Air Columns	Waves 1 <quiz>
10 Nov 7 – Nov 11	Waves 2	Waves 3	Waves 4	Standing Waves on Strings	CK #3 Nov 11
11 Nov 14 – 18	Waves 5	Waves 6 Standing Waves	Light 1 <quiz>	Image Formation in Plane Mirror Image Formation in a Thin Lens	REMEMBRANCE DAY College Closed
12 Nov 21 – 25	Light 2	Light 3	Light 4	Electrical Measurements 1	Light 5 <quiz>
13 Nov 28 - Dec 2	Light 6	DC Circuits 1	DC Circuits 2	Electrical Measurements 2	CK #4 Dec 2
14 Dec 5 - 9	DC Circuits 3	DC Circuits 4	DC Circuits 5	REVIEW	DC Circuits 6

PHYSICS 101 Section 003 TIMELINE 2022 Fall

FRIDAY Quiz = 20 minutes at end of class

FRIDAY CK = Celebration of Knowledge (test) 50 minutes

<i>Week</i>	<i>Lecture 1 Monday</i>	<i>Lecture 2 Tuesday</i>	<i>Laboratory Wednesday</i>	<i>Lecture 3 Thursday</i>	<i>Lecture 4 Friday</i>
1 Sept 5 – 9	LABOUR DAY College Closed	Intro	NO LAB Algebra Review	Intro + SI Units	Prefixes Derived Units <quiz>
2 Sept 12 – 16	Sci Notation Calc Setup Sig Fig	Unit Conversion Method	Density of Solids	Graphing 1	Graphing 2 (Non Linear $y = x^2$) <quiz>
3 Sept 19 – 23	Graphing 3 (non linear) <i>{QE funeral – closed}</i>	Kinematics 1	Gravitational Field	Kinematics 2	Kinematics 3 <quiz>
4 Sept 26 – 30	Kinematics 4	Kinematics 5	Period of a Simple Pendulum	Kinematics 6	National Day for Truth and Reconciliation College Closed
5 Oct 3 – 7	CK #1 Oct 3	Kinematics 7 Falling Objects	Falling Objects	Dynamics 1	Dynamics 2
6 Oct 10 – 14	Dynamics 3 Elevators	Dynamics 4 Examples	Acceleration 1	Dynamics 5 Newton III	2D Vector 1 <quiz>
7 Oct 17 – 21	THANKSGIVING College Closed	2D Vector 2	Translational Equilibrium	2D Vector 3	CK #2 Oct 21
8 Oct 24 – 28	Work Energy 1	Work Energy 2	Conservation of Energy	Work Energy 3	Work Energy 4 <quiz>
9 Oct 31 – Nov 4	Work Energy 5	Work Energy 6	Standing Waves in Air Columns	Work Energy 7	Waves 1 <quiz>
10 Nov 7 – Nov 11	Waves 2	Waves 3	Standing Waves on Strings	Waves 4	CK #3 Nov 11
11 Nov 14 – 18	Waves 5	Waves 6 Standing Waves	Image Formation in Plane Mirror Image Formation in a Thin Lens	Light 1 <quiz>	REMEMBRANCE DAY College Closed
12 Nov 21 – 25	Light 2	Light 3	Electrical Measurements 1	Light 4	Light 5 <quiz>
13 Nov 28 - Dec 2	Light 6	DC Circuits 1	Electrical Measurements 2	DC Circuits 2	CK #4 Dec 2
14 Dec 5 - 9	DC Circuits 3	DC Circuits 4	LEC DC Circuits 5 DC Circuits 6	REVIEW	REVIEW