

COURSE SYLLABUS



COURSE TITLE: PHYS-157-Physics for Electronics

CLASS SECTION: PHYS-157-X01

TERM: 2025W

COURSE CREDITS: 3

DELIVERY METHOD(S): Face-to-face

Camosun College respectfully acknowledges that our campuses are situated on the territories of the Ləkʷəŋən (Songhees and Kosapsum) and WSÁNEĆ peoples. We honour their knowledge and welcome to all students who seek education here.

INSTRUCTOR DETAILS

NAME: Muyang (Mike) Zhong

EMAIL: ZhongM@Camosun.ca

OFFICE: TEC 220

HOURS: 1:30-2:20pm Tuesdays; 2:30-3:20pm Wednesdays;

11:30-12:20pm Thursdays; 10:30-11:20am Fridays.

Available on Zoom (email for appointment): <https://camosun-ca.zoom.us/j/3793180673?pwd=ZzhSd0FIUHRPSE5SSmkwamU4VTIRQT09>

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 an introductory survey to topics of particular interest to electronics and computer engineering students. Students will first review vectors, kinematics, Newton's Laws, work, energy and power. Students will then study torque and rotational motion, waves, light, thermal physics, static electricity and magnetism.

PREREQUISITE(S):

One of:

C in Physics 11

C in Camosun Alternative

And one of:

C+ in Pre-calculus 12

C+ in MATH 097

C in MATH 107

C in MATH 115

CO-REQUISITE(S):

EQUIVALENCIES:

COURSE LEARNING OUTCOMES / OBJECTIVES

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

Solve technical problems involving distance, displacement, speed, velocity and acceleration in one and two dimensions.

Solve problems involving the application of Newton's Laws to two or more bodies moving in one and two dimensions.

Solve technical problems involving torque and rotational motion.

Solve technical problems involving work, energy, and power.

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.

Define and describe Simple Harmonic Motion.

Solve technical problems involving light reflection, refraction, critical angle and total internal reflection applications.

Use fundamental thermal physics, including thermometry conversions, to perform calculations involving calorimetry and specific heat.

Use the principles of static electricity to solve problems involving the Coulomb force, electric fields, and electric fields in capacitors.

Describe and solve problems involving insulators, conductors and semiconductors.

Describe the effects of magnetic fields, and perform calculations involving Faradays Law and Induction.

Assemble simple experimental apparatus using written instructions.

Observe record, organize and display data in tables, graphs or charts.

Analyze linear graphs (determine area, slope, intercept, etc.).

Interpret meaning of experimental results in the context of the experimental objectives.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

(a) Texts

Physics by Giancoli, 5th Edition or later (**optional** and available in the library)

Please **do NOT buy** PHYS 157 lab manual

(b) Other

Ruler, protractor, scientific calculator and graph paper. Access to a computer, tablet, cellphone or other device with internet access.

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.

| WEEK or DATE RANGE | ACTIVITY or TOPIC | OTHER NOTES |
|--------------------|--|---------------|
| 1 | Kinematics & Dynamics Review | |
| 2 | Kinematics & Dynamics Review | |
| 3 | Rotational Motion | |
| 4 | Work Energy Power | |
| 5 | Thermal physics | |
| 6 | Waves & Simple Harmonic Motion | |
| 7 | Reading break | Reading break |
| 8 | Electrostatics | |
| 9 | Electrostatics & Semiconductor Physics | |
| 10 | Magnetism | |
| 11 | Optics | |
| 12 | Nuclear Physics | |
| 13 | Review | |
| 14 | Review | |
| 15 | Final exam | Final exam |

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](https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams). <https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams>

EVALUATION OF LEARNING

| DESCRIPTION | WEIGHTING |
|---|------------|
| Quiz | 15% |
| Tests (including Final) | 60% |
| Labs | 20% |
| Other | 5% |
| 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 policy for more information. http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf | TOTAL 100% |

COURSE GUIDELINES & EXPECTATIONS

Regular attendance is highly encouraged for you to learn the materials effectively. Course notes and solutions to the examples on the slides are NOT provided on D2L, so if you miss a lecture, it's your sole responsibility to catch up. Make some friends in the class to borrow notes from in case of any absence.

Homework exercises with full solutions are provided for you to prepare for the quizzes/tests.

Quizzes are assigned after every chapter (almost weekly), based on the content/ homework for that chapter. They are due Sunday at 11:59 p.m. Solutions are provided after marking. If you are late (even just 1 min late), you receive zero marks. The extension may be granted by the instructor, if you send an email with adequate explanations to the instructor before the deadline. If you do not provide an adequate explanation for the late submission, you will receive a grade of zero. If the extension is granted, quizzes will receive a penalty of 10% off per day.

"Other" category is about attendance to the guest lecture, completion of course evaluation survey and detailed explanation of formula sheet. Details will be given on D2L about specific tasks.

There are in total of 3 tests. The first two tests are scheduled during a lab period, and the last test, i.e. the final exam will be scheduled during the final exam week. More information will be available later.

SCHOOL OR DEPARTMENTAL INFORMATION

PHYSICS DEPARTMENT GUIDELINES REGARDING TESTING AND GRADING:

- Students must write and submit 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. **Should any exceptional circumstances and/or emergency happen, contact your**

instructor *prior* to the tests. If you contact the instructor during or after the test, you will receive a grade of zero. Holidays or scheduled flights are not considered to be emergencies.

PHYSICS DEPARTMENT GUIDELINES REGARDING LABS:

Laboratory activities involve practical applications of your knowledge and manual skills development. Development of these skills is a requirement to meet the Course Learning Outcomes.

- 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 reports are due at the beginning of the next lab period. I don't accept any late submissions.
- 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.

Missed Labs Guidelines:

- Laboratory activities are in-person activities; attendance and participation are required. Reports will not be accepted from students who did not attend the lab period.
- If you are **30 minutes late**, you are considered "absent" and will receive zero marks for the lab.
- Students who will miss a laboratory session have an obligation to seek out concessions directly from their instructor in a timely manner, BEFORE the lab period occurs. In the event of unforeseen circumstances, lab instructors must be notified within 24 hours of the missed lab period, or concessions will not be available.

Please note that if you are suffering from a serious medical illness that prevents you from participating in this course, Camosun College has a Compassionate Medical Withdrawal Policy

<https://camosun.ca/services/forms#medical>

GENERAL IN-PERSON ASSESSMENT RULES FOR STUDENTS – PHYSICS AND ASTRONOMY DEPARTMENT:

The rules are used for on-campus quizzes, tests, and exams in the Physics and Astronomy department. A Faculty member will actively supervise throughout the examination. The instructor may move around the room or sit at the front or back of the room.

By entering the exam room, students agree to abide by the following rules:

- Turn off all electronic communication devices (including, but not limited to: cellphones, smartwatches, laptops, tablets) before entering and place them on a designated table at the front of the exam room.
- All bags, must be on the sides, back, or front of the room – the instructor will identify the appropriate place.
- Students are not permitted to wear brimmed hats or hoodies during in-person assessments.
- Students may bring pens, pencils, calculator, highlighters, erasers, ruler, protractor, and a drink in a closed container. If permitted in the room, students may have a snack in its original packaging or a clear container.
- Calculators must be scientific, non-textual calculators, with no notes of any kind in the case.
- Items brought into the room may be inspected by the faculty member.
- If you arrive late for the examination, no additional time will be provided. Students arriving more than 30 minutes late may not be allowed to enter the room.
- For biological breaks, permission to leave the exam room must be obtained. Only one student at a time may leave the room, and biological breaks must be as brief as possible.

- Access to any online materials during exams is prohibited.
- Any work submitted on an examination must be entirely your own.
- Students found communicating with one another in any way or under any pretext; having unauthorized books, papers, electronic computing devices, data storage, or communication devices in view, even if their use is not proved; or found cheating in any way may receive a zero grade. All incidents will be recorded and managed according to the College's Academic Integrity Policy.

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.

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 camosun.ca/services.

| Support Service | Website |
|-------------------------------------|---|
| Academic Advising | camosun.ca/services/academic-supports/academic-advising |
| Accessible Learning | camosun.ca/services/academic-supports/accessible-learning |
| Counselling | camosun.ca/services/health-and-wellness/counselling-centre |
| Career Services | camosun.ca/services/co-operative-education-and-career-services |
| Financial Aid and Awards | camosun.ca/registration-records/financial-aid-awards |
| Help Centres (Math/English/Science) | camosun.ca/services/academic-supports/help-centres |
| Indigenous Student Support | camosun.ca/programs-courses/iecc/indigenous-student-services |
| International Student Support | camosun.ca/international |
| Learning Skills | camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills |
| Library | camosun.ca/services/library |
| Office of Student Support | camosun.ca/services/office-student-support |
| Ombudsperson | camosun.ca/services/ombudsperson |
| Registration | camosun.ca/registration-records/registration |

| Support Service | Website |
|--------------------|---|
| Technology Support | camosun.ca/services/its |
| Writing Centre | camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills |

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 Integrity

Students are expected to comply with all College policy regarding academic integrity; which is about honest and ethical behaviour in your education journey. The following guide is designed to help you understand your responsibilities: <https://camosun.libguides.com/academicintegrity/welcome>
Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.13.pdf> for Camosun’s Academic Integrity policy and details for addressing and resolving matters of academic misconduct.

Academic Accommodations for Students with Disabilities

Camosun College is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging appropriate academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a documented disability and think you may need accommodations, you are strongly encouraged to contact the Centre for Accessible Learning (CAL) and register as early as possible. Please visit the CAL website for more information about the process of registering with CAL, including important deadlines: <https://camosun.ca/cal>

Academic Progress

Please visit <https://camosun.ca/sites/default/files/2023-02/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 <https://camosun.ca/sites/default/files/2021-05/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <https://camosun.ca/registration-records/tuition-fees#deadlines>.

Grading Policy

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

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 (see [Medical/Compassionate Withdrawals policy](#)). Please visit <https://camosun.ca/services/forms#medical> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence

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 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 Policy: <https://camosun.ca/sites/default/files/2021-05/e-2.9.pdf> and camosun.ca/services/sexual-violence-support-and-education.

To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-370-3841

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 <https://camosun.ca/sites/default/files/2021-05/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Looking for other policies?

The full suite of College policies and directives can be found here: <https://camosun.ca/about/camosun-college-policies-and-directives>

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 change