

COURSE SYLLABUS



COURSE TITLE: ECET125 – Introduction to Electronics
CLASS SECTION: X01
TERM: 2023 Winter
COURSE CREDITS: 3
DELIVERY METHOD(S): in-person lectures and labs

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](#).

For COVID-19 updates please visit <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: Ryan Lidstone
EMAIL: lidstoner@camosun.ca
OFFICE: TEC206
HOURS: make an appointment or drop in

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

Introduction to basic electronics.

PREREQUISITE(S):
CO-REQUISITE(S):
EQUIVALENCIES:

COURSE LEARNING OUTCOMES / OBJECTIVES

Students will study basic circuit analysis theory, and the use of instrumentation found in an electronics lab. Students will be given an opportunity to explore various electronics circuits including digital circuits. Students will have an opportunity to explore the many diverse careers available in the networking, electronics, and computer engineering industry.

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

- *Solve basic circuit analysis problems for passive circuits*
- *Use complex numbers where appropriate to calculate circuit parameters*

- Identify a variety of basic electronics components as used in simple circuits
- Select and use appropriate test equipment to measure and verify correct operation of circuits
- Describe fundamental digital logic blocks
- Describe various careers in the electronics industry

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

All required material will be provided via D2L.

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

The following schedule and course components are subject to change as deemed appropriate by the instructor.

- | | |
|---|-------------------------|
| 1. Nature of Electricity | (Week 1) |
| 1.1 Static Electricity | |
| 1.2 Structure of the Atom | |
| 1.3 Current, Voltage, and Resistance | |
| 1.4 Conventional versus Electron Current Flow | |
| 2. Units and Notations | (Week 1) |
| 2.1 SI Units | |
| 2.2 Scientific Notations | |
| 2.3 Engineering Notations | |
| 2.4 Metric Prefixes | |
| 3. Electronics Equipment and Tools | (Week 2) |
| 3.1 DC Power Supply | |
| 3.2 Digital Multi-meter | |
| 3.3 Function Generator | |
| 3.4 Oscilloscope | |
| 3.5 Hand Tools | |
| 4. Conductors, Insulators, and Resistance | (Week 2) |
| 4.1 Overview of Conductors and Insulators | |
| 4.2 Resistance and Resistors | |
| 4.3 Resistor color codes | |
| 5. DC Circuit Fundamentals | (Week 3-4) |
| 5.1 Simple Series Circuits | |
| 5.2 Simple Parallel Circuits | |
| 5.3 Kirchhoff 's Voltage Law (KVL) | |
| 5.4 Kirchhoff 's Current Law (KCL) | |
| 5.5 Power in DC Circuits | |
| 6. Capacitor & Inductor Theory | (Week 5 & 6) |
| 6.1 Construction | |
| 6.2 Capacitance & Inductance | |
| 6.3 Charging/Discharging/Time Constant | |
| 7. Switches | (Week 6) |
| 7.1 Open/Short Circuits, Switches | |
| 8. Semiconductor Devices | (Week 6) |
| 8.1 Diodes Characteristics (Forward and Reverse Biased) | |
| 8.2 Diode Applications | |
| 8.3 Introduction to LEDs | |
| Reading Break | (Week 7) |
| 9. AC Circuit Fundamentals | (Week 8-9) |

- 9.1 Sine Waveform Signal and frequency
- 9.2 Average, Peak-to-peak, and Root-mean-square (RMS) Values
- 9.3 Diode and Rectifying Circuit
- 9.4 Complex numbers
- 9.5 Capacitive Reactance versus Inductance Reactance

10. Digital Circuit Fundamentals (Week 10-12)

- 10.1 Basic Number Systems and Codes (Decimal, Binary, Hexadecimal)
- 10.2 Logic Gates
- 10.3 Basic Boolean Algebra
- 10.4 Combinatorial Logic Circuits

11. Computer Concepts (Week 13-14)

- 11.1 Microprocessor and Microcontroller Systems
- 11.2 Sub-systems
- 11.3 I/O interfaces
- 11.4 Microcontroller Development Tools
- 11.5 Programming Environments

Lab Exercises

Week 1	Intro to Network Services & Lab Resources
Week 2	Intro to Breadboard, DMM meter, and Resistor color code
Week 3	Series Resistance Circuits
Week 4	Parallel Resistance Circuits
Week 5	Intro to Capacitors and Inductors
Week 6	Switches and Diodes DC Circuits
Week 7	Reading break - No lab
Week 8	Function Generator and AC Waveform
Week 9	Diode AC Applications
Week 10	Intro to Digital Logic Switches
Week 11	Intro to Digital Logic ICs
Week 12	Intro to Combinatorial Logic Circuits
Week 13	Intro to the Microcontroller

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
Labs	30%
Term Test I	15%
Term Test II	15%
Final Exam	40%
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

All labs, assignments, and quizzes must be completed to pass the course. Late submissions will lose 10 percentage points per day they are late. You must receive a passing grade on the final exam to pass the course. Lab attendance is mandatory.

These requirements will be applied at the instructor's discretion. Please advise well in advance if you anticipate difficulty with any of these requirements (that is, talk to your instructor if, for example, you cannot attend a lab, or you will be handing an assignment in late).

SCHOOL OR DEPARTMENTAL INFORMATION

In addition to the evaluation scheme addressed above, courses that are a prerequisite must meet the following overriding criteria to pass a course. The reason for these additional criteria is to ensure your success in subsequent courses with a balance of skills in both theory and practice.

The following criteria must be met:

- Students must obtain a minimum weighted average of 60% in theory evaluations (tests, examinations, etc.) in any course that is a pre-requisite for subsequent courses.
- Students must obtain a minimum weighted average of 60% in lab evaluations (lab performance, reports, etc.) in any course that is a pre-requisite for subsequent courses.
- Students must obtain a minimum of 50% on the final examination for a course to receive a passing grade.

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/>.

Support Service	Website
Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop

Support Service	Website
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 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 <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/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

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](#) (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 Progress

Please visit https://www.camosun.ca/sites/default/files/2021-05/e-1.1_0.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" (<https://camosun.ca/registration-records/policies-and-procedures-students/registration-policies-students>) 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://www.camosun.ca/sites/default/files/2021-05/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 250-370-3841

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 <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.

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 changes.