

COURSE SYLLABUS



COURSE TITLE: ECET-233
CLASS SECTION: X01
TERM: Fall 2024
COURSE CREDITS: 3
DELIVERY METHOD(S): in-person

Camosun College campuses are located on the traditional territories of the Ləkʷəŋən and W SÁNEĆ 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: Dave McMillan EMAIL: mcmilland@camosun.ca OFFICE: TEC-267 HOURS: By appointment

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

Students will gain an in-depth knowledge of fundamental serial protocols used in industry. They will learn about serial link characteristics and communications protocols, and be able to discuss data network technologies including LANs, WANs, and WLAN systems. Students will explore the operation and characteristics of copper and fiber-based data communications media and study interfacing and terminations of both copper and fiber-based data communications media. Students will have the skills to correctly install various network devices and be able to troubleshoot network related problems.

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

COURSE LEARNING OUTCOMES / OBJECTIVES

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

- Describe the elements of a serial communications link, and analyze communications protocols in order to choose appropriate serial communication systems.
- Describe LAN and WLAN networks and relate networking models to LAN operation;
- Configure and troubleshoot networked devices used in an industrial system; • Describe the operation and characteristics of copper, wireless, and fiber optic communication links in industrial systems
- Describe the different categories of automation networks used in industry.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

(a) Text: Course notes provided.

(b) Access to ECET 233 Camosun D2L online course materials as required

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	Introduction 1.1 Data Communications Overview 1.2 Network Types	Lab Period As Lecture
2	Network Protocols and Communications 2.1 Network Protocols and Standards 2.2 Network Models 2.3 Data Transfer in the Network	OSI Model Assignment
3	Network Access I 3.1 Physical Layer Protocols 3.1.1 Signaling 3.1.2 Encoding 3.2 Network Media 3.2.1 Copper 3.2.2 Optical Fiber 3.2.3 Wireless 3.3 Media Interfacing 3.3.1 Specifications of UTP 3.3.2 Specifications of Optical Fiber 3.3.3 Specifications of Wireless	Introduction and Industrial Systems Tour
4	Network Access II 4.1 Data Link Layer Protocols 4.2 Media Access Control 4.3 Data Link Frame	Network Signal Capture

5	Ethernet 5.1 Ethernet Protocol 5.2 Ethernet Frame Types 5.3 LAN Switching	Wireshark Data Capture
WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
6	Network Layer 6.1 Network Layer Protocols 6.2 Routing and Routing Protocols 6.3 Network Routers	Network Device Overview
7	IP Addressing 7.1 IPv4 Network Addresses 7.2 IPv6 Network Addresses 7.3 IP Tools	IP Tools
8	Serial Data Communications 8.1 Overview 8.2 RS 232 / RS 422 8.3 RS 485	Term Test (during lab period)
9	Industrial Control Systems 9.1 Overview 9.2 Control Systems Operations	Serial Communications
10	Building Applications 10.1 Overview 10.2 Components of a Building Control System 10.3 Building ICS Protocols	PLC Interfacing
11	Vehicle Applications 11.1 Overview 11.2 CAN Bus Overview 11.3 CAN Bus Architecture 11.4 LIN Bus 11.5 Future Developments	PLC Communications
12	Marine Applications 12.1 Overview 12.2 NMEA 0183 / 2000 12.3 interfacing	Device Interfacing
13	Security 13.1 Overview 13.2 Security Strategies 13.3 Industrial Internet of Things (IIoT)	Troubleshooting
14	Trends 14.1 Overview	Review

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 noticed is

required. Deadlines can be reviewed on the [CAL exams page](#).

<http://camosun.ca/services/accessiblelearning/exams.html>

EVALUATION OF LEARNING

Attendance to all labs is mandatory. The average lab grade and the theory grade must be over 60%; the final exam must be over 50% to pass the course. The final course grade will be determined by the following components:

DESCRIPTION	WEIGHTING
Assignments/Quizzes	25%
Labs	20%
Term Test	20%
Final Exam	35%
	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](#) policy for more information.

<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

Professionalism: “the skill, good judgment, and polite behavior that is expected from a person who is trained to do a job well” (Merriam Webster online). Students will be evaluated on the above as well as their ability to work well in a team.

COURSE GUIDELINES & EXPECTATIONS

- Attendance to all labs is mandatory.
- 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 in order to receive a passing grade.
- Failure to meet any one of these criteria will result in a student receiving a failing grade (F) for the course.
- All labs (laboratory work, reports, etc.) must be submitted prior to a student writing a final examination.

- Late assignments will have marks deducted; if handed in after assignments are returned to the class, then no mark will be awarded.

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
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/e1.13.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/e2.2.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/registrationrecords/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: 250370-3046 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/camosuncollege-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.