

COURSE SYLLABUS



COURSE TITLE: ECET 235
CLASS SECTION: X01A X01B
TERM: Winter 2024
COURSE CREDITS: 3.0
DELIVERY METHOD(S): Face to Face

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: Todd Rayson
EMAIL: raysont@camosun.ca
OFFICE: TEC 214, 250 370 - 4573
HOURS: By Appointment

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 barriers that impede success.

CALENDAR DESCRIPTION

PREREQUISITE(S): C in ECET 234
CO-REQUISITE(S): N/A
EXCLUSION(S): N/A

Description

Building on skills and knowledge gained in ECET 234, students will program, interface, and troubleshoot real-world processes using a PLC. Students will examine powerful PLC functions, including PID controller, sequencer and analog signals. Rockwell Automation software will be used to communicate directly with the PLC. Students are introduced to concepts of human machine and hardware protocols

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

- ✓ Write a complex program that interfaces between inputs and outputs while complying to local safety codes
- ✓ Document the operation of PLC controls including: description of operations, ladder diagrams, I/O list, external wiring, and illustrations of the process
- ✓ Determine the effects of the PLC control system on other systems
- ✓ Install, design and troubleshoot complex PLC control systems using instructions and hardware diagnostic techniques
- ✓ Program HMI interface for a PLC
- ✓ Select the appropriate communication buses to Control PLC I/O that are appropriate for the task

Course Hours

Duration: 14 weeks
 Lecture: 3hrs/wk
 Lab: 2.5hrs/wk

Out of Class Work:

- *Expect to put in at least 2 hours of work for every 1 hour of lecture*
- (a) D2L Documents
- (b) Web Resources

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
1-2	Compact Logix Hardware Introduction	
3	RS Linx	
4	Studio 5000: Emulate, Logix Designer, Panel View Plus	
5-8	Function Block Programming, Flow Charts	
8-12	Structured Text Programming	
12-13	HMI Programming	
14	Final Project	

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

Course Topics:

Studio 5000 Logix Designer

- Introduction
 - Software User Interface
- FactoryTalk
- Modules:
 - I/O
 - Graphics Terminal/HMI
 - Communications
 - Motor Controllers
- Logix Emulate/ Simulation Interface

Hardware

- CompactLogix Family
 - 5069-L310ERM
- PanelView 7 Graphic Terminal
- Router/Switch
- Contactors
- AC Drive
- Servo Drive
- Sensors

Design Procedure and Methodology

- Description
- I/O Table
- I/O Testing
- Block Diagrams
- Flow Charts
- Comments
- Test Plan
 - System Tests

HMI

- Graphics
- I/O
- Monitoring/Status
- Data
- Alarms

Communication

- Remote PC programming
- Ethernet IP

Sensors

- Sensor Types
- Interfaces

Data Logging

- Local
- Remote PC

Fault Conditions and Troubleshooting

- Recovery

The final course grade will be determined by the following components:

DESCRIPTION	WEIGHTING %
Assignment	10
Midterm Assessment (if time permits)	10
Labs	40
Final Project/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-) policy for more information.
<http://camosun.ca/about/policies/education-academic/e-1-programming-and->

Note: During the course you are responsible for putting all equipment away and keeping your area and the lab tidy. If there is broken or malfunctioning equipment, you are responsible for reporting it.

COURSE GUIDELINES & EXPECTATIONS

- Attendance to all labs is **mandatory**
 - Failure to attend labs will result in an F grade (0%) for that lab
- 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 project** 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
- Mark penalties of 50% and 5% per day will be applied to all **late labs** and assignments
 - All course material must be handed in or you will receive an incomplete ('I') in the course
 - All course material must be handed in by the end of the last class
- A 20% penalty will be applied to the current lab mark for **late lab attendance**
 - Being late for the lab disrupts the entire lab group
 - Many important lab related topics are discussed at the beginning of the lab
- Pre-Lab work is very important. At a **minimum** you need to read the lab thoughtfully. Other pre-Lab calculations and work may be required. Failure to complete your pre-lab is a loss of 20% for the current lab.
- **Please communicate with your instructor if you know you will be late or absent prior to the start of the class or lab or test**

SCHOOL OR DEPARTMENTAL INFORMATION

See the Trades and Tech, Electronics web page

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/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.