



CAMOSUN COLLEGE
School
Department

ELEX 163
Industrial and Home Automation
Fall 2020

COURSE OUTLINE

The calendar description is available on the web @ Online.camosun.bc.ca

☐ *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

1. Instructor Information

(a) Instructor	Ian Cameron	
(b) Office hours	TBA	
(c) Location	TEC 211	
(d) Phone	250 370 4432	Alternative: _____
(e) E-mail	cameron@camosun.bc.ca	
(f) Website		

2. Intended Learning Outcomes

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

- *describe the concepts of industrial control systems;*
- *use interfacing software to configure programmable logic controllers.*
- *discuss the trends in automation;*
- *discuss terms and concepts relating to IoT;*
- *describe the concepts of home automation and control;*
- *use interfacing software to configure and provision an automated environment;*
- *discuss security issues with automation systems.*

3. Required Materials

(a) Texts - None

- (b) Other - Access to ELEX 163 Camosun D2L online course materials as required Access to Cisco Netacad site

4. Course Content and Schedule

Week 1 - Introduction

Reading and Assignment

Seminar – Automation Overview.

Assignment 1 – Introduction

Lab – Instructor Demo

Week 2 – Introduction to PLCs

Seminar – PLC Overview

Assignment 2 - Introduction to PLCs

Lab – Introduction to PLCs / Tutorial

Week 3 – PLC Programming I

Seminar – PLC Programming Concepts

Assignment 3 - PLC Programming I

Lab – Simple PLC Programming

Week 4 – PLC Programming II

Seminar – Advanced PLC Programming Concepts

Assignment 4 - PLC Programming II

Lab – Advanced PLC Programming I

Week 5 – PLC Programming III

Seminar – Advanced PLC Programming Concepts

Assignment 5 - PLC Programming III

Lab – Advanced PLC Programming II

Week 6 – Introduction to IoT – Chapter 1

Seminar – IoT Overview

Assignment 6 – IoT Devices

Lab – 1.2.2.1 Packet Tracer – Adding IoT Devices to a Smart Home

Lab – 1.2.2.3 Packet Tracer – Connect and Monitor IoT Devices

Week 7 – IoT Programming and Data – Chapter 2 and 3

Seminar – Flowcharts / Software Development / Python

Assignment 7 – PoE and UPB

Lab – 2.1.3.6 Cisco Lab – Setting Up a Virtualized Server Environment

Lab – 2.1.3.7 Cisco Lab – Basic Python Programming

Week 8 – IoT Automation and Security – Chapter 4 and 5

Seminar – Automation / Security / Smart Homes
Software

Assignment 8 – Micro and

Lab – 2.1.3.8 Cisco Lab – Create a Simple Game with Python IDLE

Week 9 – IoT Summary – Chapter 6

Seminar – Continued Learning / Summary

Assignment 9 – Sensors

Lab – 4.1.1.6 Packet Tracer – Explore a Smart Home

Lab – 5.1.2.6 Packet Tracer – Configure Wireless Security

Week 10 – Home Automation Overview

Seminar – Home Automation Components – Cabling

Assignment 10 – Structured Cabling

Lab – Tablet / Controller Configuration

Week 11 – Home Automation Components

Seminar – Home Automation Components – Plugs and Bulbs

Assignment 11 – Lighting Systems

Lab – Smart Plug / Smart Bulb Configuration

8 – Smart Plugs

8 – Smart Bulbs

Week 12 – Home Automation Components

Seminar – Home Automation Components – Cameras

Assignment 12 – Security Systems Lab

– Security Devices

5 – Door Locks with Sensor

5 – Security Cameras

Week 13 – Home Automation Components

Seminar – Home Automation Components – Lock Systems

Assignment 13 – Security Devices Lab

– Security Devices

5 – Door Locks with Sensor

5 – Security Cameras

Week 14 – Whole Home Automation / Future IoT

Seminar – Home Automation Whole System Overview

Assignment 14 – Home Control Systems

Lab – Home Automation System Configuration

5. Basis of Student Assessment (Weighting)

Evaluation for this course will be a combined total of quizzes, assignments, and lab marks. There is no final exam in this course. Attendance and completion of all material is mandatory to pass the course. Late submissions will be not graded.

Marking Criteria:

Quizzes -----	20%
Completion of Lab Activities -----	40%
D2L Assignments -----	40%

Quizzes will be based on current week’s material from both seminar and lab content.

D2L Assignments will be small research based exercises that will be submitted to D2L by **Sunday 11:59 PM** of the corresponding week. There will be one D2L Assignment each week to submit.

Completion of Lab Activities will be based on finishing weekly lab exercises and submission of lab reports to the D2L Dropbox by **Sunday 11:59 PM** of the corresponding week – no late labs will be graded.

Be prepared to complete your lab work and assignments during the scheduled contact time.

Please note the following:

1. A grade of 50% or better is required in all assessment items above to be able to pass the course.
2. No late materials will be accepted past midnight of the last day of the course.
3. No opportunity will be available to write missed quizzes.
4. Attendance and completion of all lab material is mandatory to pass the course.

6. Grading System

(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)

(Mark with “X” in box below to show appropriate approved grading system – see last page of this template.)

Standard Grading System (GPA)

Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

None

8. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexualviolence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
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COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete</i> : A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress</i> : A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal</i> : A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.