



CAMOSUN COLLEGE
Trades and Technology
Electronics and Computer Engineering

ELEX 163
Industrial and Home Automation
Fall 2018

COURSE OUTLINE

The calendar description is available on the web @

Online.camosun.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.

Instructor Information

(a) Instructor	Ian Cameron	
(b) Office hours	TBA	
(c) Location	TEC 211	
(d) Phone	250 370 4439	Alternative: _____
(e) E-mail	cameron@camosun.bc.ca	

The focus of this course is on Industrial and Home Automation. The students are introduced to methods for remotely controlling and monitoring mechanical systems in both industrial and home applications. Areas discussed include industrial controls (PLCs), heating and air conditioning (HVAC), lighting, security systems including cameras, motion detection, sensors, and other household elements. An overview of both the hardware and software will be explored as the students get some hands-on practice setting up and configuring various automated systems.

The student will be responsible for keeping up with the required reading and lab exercises.

Notes and lab activities will be provided through D2L and related web sites.

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;
- identify the components of structured wiring design;
- describe the concepts of home automation and control;
- use interfacing software to configure and provision an automated environment;
- discuss security issues with automation systems.

Course Content

Week 1 - Introduction

Seminar – Automation Overview.

Lab – Tour of Camosun Facilities

Week 2 – Introduction to PLCs

Seminar – PLC Overview

Lab – Introduction to PLCs / Tutorial

Week 3 – PLC Programming I

Seminar – PLC Programming Concepts

Lab – Simple PLC Programming

Week 4 – PLC Programming II

Seminar – Advanced PLC Programming Concepts

Lab – Advanced PLC Programming I

Week 5 – PLC Programming III

Seminar – Advanced PLC Programming Concepts

Lab – Advanced PLC Programming II

Week 6 – Home Automation Overview

Seminar – Home Automation Overview

Lab – Configure Tablet

Week 7 – Home Automation Components

Seminar – Home Automation Components – Cabling

Lab – Controller Configuration

Week 8 – Home Automation Components

Seminar – Home Automation Components – Wiring and PoE

Lab – Wiring Configuration

Week 9 – Home Automation Components

Seminar – Home Automation Components – Lighting

Lab – Lighting Configuration

5 – Outlets 5 – Lamp Module / Sensor

Reading and Assignment

Assignment 1 – Introduction

Assignment 2 - Introduction to PLCs

Assignment 3 - PLC Programming I

Assignment 4 - PLC Programming II

Assignment 5 - PLC Programming III

Assignment 6 - Home Automation

Assignment 7 – Structured Cabling

Assignment 8 – PoE and UPB

Assignment 9 – Lighting Systems

Week 10 – Home Automation Components

Seminar – Home Automation Components – Switches / Sensors Assignment 10 – Switch / Sensors

Lab – Lighting Configuration

5 – Outlets 5 – Lamp Module / Sensor

Week 11 – Home Automation Components

Seminar – Home Automation Components – Cameras

Assignment 11 – Security Cameras

Lab – Security Devices

5 – Door Locks with Sensor 5 – Security Cameras

Week 12 – Home Automation Components

Seminar – Home Automation Components – Lock Systems

Assignment 12 – Lock Systems

Lab – Security Devices

5 – Door Locks with Sensor 5 – Security Cameras

Week 13 – Home Automation Components

Seminar – Home Automation Whole System Overview

Assignment 13 – Home Control Systems

Lab – Home Automation System Configuration

Week 14 – Home Automation Security / Future IOT

Seminar – Securing Home Automation Systems

Assignment 14 – Automation Security

Lab – Home Automation System Configuration

– Device Reset – Tablet, controller, device reset

Evaluation

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.

Required Materials

- (a) Access to ELEX 163 Camosun D2L online course materials as required

Grading System

Standard Grading System (GPA)

Competency Based Grading System

Recommended Materials or Services to Assist Students to Succeed Throughout the Course

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Student Services or the College web site at <http://www.camosun.bc.ca>

STUDENT CONDUCT POLICY

There is a Student Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.
<http://www.camosun.bc.ca/policies/policies.html>

GRADING SYSTEMS <http://www.camosun.bc.ca/policies/policies.php>

The following grading system is 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