CAMOSUN COLLEGE
Trades and Technology
Electronics and Computer Engineering

ECET 125
INTRODUCTION TO ELECTRONICS

WINTER 2022

COURSE OUTLINE

The calendar description is available on the web @   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.

A. Instructor Information

(a)	Instructor	Ryan Lidstone		
(b)	Office hours			
(c)	Location	TEC206		
(d)	Phone		Alternative:	
(e)	E-mail	lidstoner@camosun.bc.ca		
(f)	Website	www.camosun.ca		

B. Intended Learning Outcomes

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**

C. Required Materials

1) There is no required text for this course. All the information is available online via D2L (online.camosun.ca)

D. Course Content and Schedule

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
7.1 Open/Short Circuits, Switches   **(Week 6)**

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

E. Basis of Student Assessment (Weighting)

(a) Labs	= 30%	
(b) Term Test I	= 15%	
(c) Term Test II	= 15%	
(d) Final Exam	= 40%	
Total	= 100%	

- All labs must be completed. Marks for late Labs will be reduced at the instructor's discretion (expect a 50% penalty).
- Students must obtain a minimum of 50% on the Final Exam and on their total Lab mark to pass the course.

F. 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.)

X	Standard Grading System (GPA)

	Competency Based Grading System

G. 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

H. GRADING SYSTEMS *http://www.camosun.bc.ca/policies/policies.php*

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
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.

I. 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://www.camosun.bc.ca/policies/E-1.5.pdf for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: 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	*In progress*: 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	*Compulsory Withdrawal*: 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.