ORIGINAL COURSE IMPLEMENTATION DATE: September 2020

REVISED COURSE IMPLEMENTATION DATE:

COURSE TO BE REVIEWED (six years after UEC approval)**:** January 2026

Course outline form version: 05/18/2018

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: ELTR 150	**Number of Credits:** 3 Course credit policy (105)

Course Full Title: Solid State Electronic Devices

Course Short Title:

(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)

Faculty: Faculty of Applied and Technical Studies	**Department (or program if no department):** Electronics

Calendar Description:

Learn about semiconductor devices and their applications. The course explains how electronic circuits work and how to analyze, design, modify, and combine them to perform complex functions. Students will analyze and design common operational amplifier (op-amp) circuits and examine the op-amps non-ideal characteristics in terms of circuit performance.

Prerequisites (or NONE):	None.
Corequisites (if applicable, or NONE):	None.
Pre/corequisites (if applicable, or NONE):	ELTR 100.

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number:

Cross-listed with:

Dual-listed with:

Equivalent course(s):

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar hours	30
Tutorials/workshops	
Supervised laboratory hours	15
Experiential (field experience, practicum, internship, etc.)	
Supervised online activities	
Other contact hours:	
Total hours	**45**

Labs to be scheduled independent of lecture hours: ☐ No ☒ Yes

Special Topics *(Double-click on boxes to select.)*

This course is offered with different topics:

☒ No ☐ Yes *(If yes, topic will be recorded when offered.)*

Independent Study

If offered as an Independent Study course, this course may be repeated for further credit: *(If yes, topic will be recorded.)*

☒ No ☐ Yes, repeat(s) ☐ Yes, no limit

Transfer Credit

Transfer credit already exists: *(See **bctransferguide.ca**.)*

☒ No ☐ Yes

Submit outline for (re)articulation:

☒ No ☐ Yes *(If yes, fill in transfer credit form.)*

Grading System

☒ Letter Grades ☐ Credit/No Credit

Maximum enrolment (for information only): 36

Expected Frequency of Course Offerings:

Winter only *(Every semester, Fall only, annually, etc.)*

Department / Program Head or Director:	**Date approved:**	November 2019
Faculty Council approval	**Date approved:**	November 14, 2019
Dean/Associate VP: John English	**Date approved:**	November 14, 2019
Campus-Wide Consultation (CWC)	**Date of posting:**	January 17, 2020
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	January 31, 2020

Learning Outcomes

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

- Describe and analyze the electrical characteristics of diodes, BJT, JFET and MOSFET.
- Analyze the different Transistor biasing techniques and calculate bias voltages and currents in a simple circuit with one transistor.
- Analyze BJT/ MOSFET both as amplifier and switch.
- Describe and measure important specifications of op-amps.
- Analyze the frequency response of amplifiers using common test equipment.
- Analyze positive and negative feedback with operational amplifiers and other circuits.
- Design and test Regulated power supply circuit.
- Explain the design and application of active filters.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.)*

Lecture and lab work.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials *(If more space is required, download Supplemental Texts and Resource Materials form.)*

	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	Thomas L. Floyd	Electronic Devices (Electron flow version)	☒	Pearson Education	2015
2.			☐		
3.			☐		
4.			☐		
5.			☐		

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	10%	Field experience:		Portfolio:	%
Midterm exam:	20%	Project:		Practicum:	%	Other:	%
Quizzes/tests:	%	Lab work:	30%	Shop work:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

- Semiconductors
- Diodes, diode applications, special action diodes, diode biasing.
- Bipolar Junction Transistors (BJTs), transistor biasing.
- BJT amplifiers, BJT power mplifiers, multistage amplifiers, differential amplifier.
- Field Effect Transistors (FETs), FET amplifiers, amplifier frequency response.
- Thyristors, silicon-controlled rectifiers, diacs, triacs, unijunction transistors.
- Operational amplifiers, op-amp circuits.
- Active filters, oscillators, voltage regulators.