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 100	**Number of Credits:** 4 Course credit policy (105)

Course Full Title: Electrical Network Analysis

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 fundamentals of electricity and electronics. Concepts and principles related to the understanding of passive and active components, devices, and circuits are covered. Students will learn to build, analyze, and troubleshoot circuits using typical technician equipment work bench equipment such as multimeters, oscilloscopes, and function generators.

Prerequisites (or NONE):	Admission to the Electronics Technician certificate.
Corequisites (if applicable, or NONE):	NONE
Pre/corequisites (if applicable, or NONE):	NONE

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	**40**
Tutorials/workshops	
Supervised laboratory hours	20
Experiential (field experience, practicum, internship, etc.)	
Supervised online activities	
Other contact hours:	
Total hours	**60**

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:

Fall 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:

- Explain, analyze, and interpret the characteristics of basic electrical quantities (resistance, inductance, reactance, current, voltage, charge, power).
- Explain, analyze, and interpret the relationship between basic electrical quantities (resistance, inductance, reactance, current, voltage, charge, power.
- Examine the behaviors and characteristics of alternating current (waveforms, periods, frequency, phase angle).
- Analyze the effects of, and relationships between, reactance, resistance, and impedance.
- Explain the differences and relationships between different circuit types (series, parallel, series-parallel).
- Safely and competently operate power supply equipment (DC/AC, function generators).
- Safely and competently operate measurement equipment (multimeters, oscilloscopes).
- Employ common network theorems and analysis techniques for circuit analysis (superposition, maximum power transfer, Kirchhoff's Laws, Thevenin's theorem, Norton's theorem, mesh current analysis, nodal analysis).
- Design, analyze, and test basic linear networks.
- Explain how alternating voltage is generated.
- Apply principles of magnetism and electromagnetism.
- Analyze simple magnetic circuits.

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.	Russell L. Meade	Foundations of Electronics	☒	Delmar Learning	2017
2.			☐		
3.			☐		
4.			☐		
5.			☐		

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

Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	5%	Field experience:		Portfolio:	%
Midterm exam:	25%	Project:		Practicum:	%	Other:	%
Quizzes/tests:	5%	Lab work:	25%	Shop work:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

- Basic concepts of electricity
- Electrical quantities, electrical components
- Ohm's Law, Kirchhoff's Laws, series circuits, parallel circuits, series-parallel circuits.
- Network theorems, networks analysis techniques (Thevenin's Theorem, Norton's Theorem, mesh analysis, maximum power theorem, nodal analysis)
- Electromagnetism
- Measuring instruments, oscilloscopes.
- Basic AC theory
- Inductance, inductive reactance, RL circuits, transformers.
- Capacitance, capacitive reactance, RC circuits
- RLC circuits, resonance.