ORIGINAL COURSE IMPLEMENTATION DATE: September 2022

REVISED COURSE IMPLEMENTATION DATE:

COURSE TO BE REVIEWED (six years after UEC approval)**:** January 2028

Course outline form version: 09/08/2021

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

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

Course Code and Number: ELTR 105	**Number of Credits:** 3 Course credit policy (105)
Course Full Title: Electrical Network Analysis: Alternating Current **Course Short Title:** Elec. Network Analysis: AC	
Faculty: Faculty of Applied and Technical Studies	**Department (or program if no department):** Electronics

Calendar Description:

Covers fundamentals of electricity and electronics related to alternating current electricity. 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's equipment such as multimeters, oscilloscopes, and function generators.

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:

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	35
Supervised labroratory hours (science lab)	15
Total hours	**50**

Scheduled Laboratory Hours

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

Course Details

Special Topics course: **No**

(If yes, the course will be offered under different letter designations representing different topics.)

Directed Study course: **No**

(See policy 207 for more information.)

Grading System: **Letter grades**

Delivery Mode: **May be offered in multiple delivery modes**

Expected frequency: **Fall only**

Maximum enrolment (for information only)**: 36**

Prior Learning Assessment and Recognition (PLAR)

PLAR is available for this course.

Transfer Credit *(See **bctransferguide.ca**.)*

Transfer credit already exists: **No**

Submit outline for (re)articulation: **No**

(If yes, fill in transfer credit form.)

Department approval	**Date of meeting:**	November 9, 2021
Faculty Council approval	**Date of meeting:**	November 18, 2021
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	January 28, 2022

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

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

1. Analyze the characteristics of and relationship between basic electrical quantities (resistance, inductance, reactance, current, voltage, charge, power).
2. Examine the behaviors and characteristics of alternating current (waveforms, periods, frequency, phase angle).
3. Analyze the effects of, and relationships between, reactance, resistance, and impedance.
4. Explain the differences and relationships between different circuit types (series, parallel, series-parallel).
5. Safely and competently operate power supply equipment (AC, function generators).
6. Safely and competently operate measurement equipment (multimeters, oscilloscopes).
7. Design, analyze, and test basic linear AC networks.
8. Explain how alternating voltage is generated.
9. Apply principles of magnetism and electromagnetism.
10. Analyze simple magnetic circuits.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Lab work:	30%	Quizzes/tests:	30%	Final exam:	40%
	%		%		%

Details:

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

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. Open Educational Resources (OER) should be included whenever possible. If more space is required, use the Supplemental Texts and Resource Materials form.)*

	Type	Author or description	Title and publication/access details	Year
1.	Textbook	Floyd, Thomas L & Buchla, David M.	Electronics Fundamentals: A Systems Approach	2014
2.				
3.				
4.				
5.				

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

Breadboard, safety glasses, needle-nose pliers, ESD wristband

Course Content and Topics

- Electromagnetism
- AC generation
- Oscilloscopes
- Resistive AC circuits
- Inductive reactance, RL circuits
- Transformer action
- Capacitive reactance, RC circuits
- RLC circuits and resonance