STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

COURSE NUMBER: ELEC 129
COURSE TITLE: ELECTRIC CIRCUITS LAB

CIP Code: 15.0303

Created by: Dr. Stephen Frempong
Updated Spring 2026

School: SCHOOL OF ENGINEERING TECHNOLOGY
Department: ELECTRICAL ENGINEERING TECHNOLOGY & ENGINEERING SCIENCE DEPARTMENT
Implementation Semester/Year: Spring 2026

A. COURSE TITLE: Electric Circuits Laboratory

B. COURSE NUMBER: ELEC 129

C. CREDIT HOURS (# Hours of Lecture, Laboratory, Recitation, Clinical):

# Credit Hours per Week	1
# Lecture Hours per Week	
# Lab Hours per Week	2
Other per Week	0

D. GRADING METHOD:

A – F	☑
Pass/Fail	☐
Other:	

E. WRITING INTENSIVE COURSE:

Yes	☐
No	☑

F. GER CATEGORY:

Does the course satisfy a GER category? If so, please select all that apply.
(https://www.canton.edu/provost/assessment/ger/)

[1-2] Communication	☐
[3] Diversity: Equity, Inclusion & Social Justice	☐
[4] Mathematics & Quantitative Reasoning	☐
[5] Natural Science & Scientific Reasoning	☐
[6] Humanities	☐
[7] Social Sciences	☐
[8] Arts	☐
[9] US History & Civic Engagement	☐
[10] World History & Global Awareness	☐
[11] World Languages	☐

CORE COMPETENCIES (Required starting in Fall 2026**):**

[12] Critical Thinking and Reasoning	☑
[13] Information Literacy	☐
[14] Civic Discourse	☐

G. APPLIED LEARNING COMPONENT (High-Impact Practices):

Yes	☑
No	☐

If Yes, select [X] one or more of the following Curricular Attribute categories:
HIPs definitions found here: https://www.suny.edu/applied-learning/resources/

Capstone	
Creative Works	☐
For-Credit Internship	☐
Practicum	
Practicum [Clinical Placement]	☐
Practicum [Non-Clinical Placement]	☑
Research & Field Study	
Field Research	☐
Research	☐
Undergraduate Research	☐
Service or Community	
Service Learning	☐
Community Service	☐
Civic Engagement	☐
Study Abroad	
International and Domestic Travel/Exchange	☐
COIL	☐

H. SEMESTER(S) OFFERED:

Fall	☐
Spring	☑
Fall and Spring	☐

I. **COURSE DESCRIPTION:** A continuation of Electric Circuits Laboratory, stressing the understanding of AC analysis that involves resistive, capacitive, and inductive circuits. Also, impedance, resonance, filters and transformers are covered. Students will perform ac circuit experiments using laboratory test equipment. Two hours laboratory per week.

J. **PRE-REQUISITES:** Electric Circuits (I) ELEC 101 and ELEC 109 or permission of instructor.

CO-REQUISITES: None

K. LEARNING OUTCOMES:

SLO Statement / ABET - SO	PLO	ISLO	Subset	GER
1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline.	1. Become familiar with the construction, components, and fundamental operation of an oscilloscope.	2. Critical Thinking 5. Industry, Professional, Discipline Specific Knowledge and Skills		None
4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.	2. Develop skills with the oscilloscope as a voltage-measuring instrument and compare the measured and nameplate values of a resistor, inductor, and capacitor.	2. Critical Thinking 5. Industry, Professional, Discipline Specific Knowledge and Skills		None
	3. Verify that the resistance of a resistor is independent of frequency for frequencies in the audio range and confirm that the reactance of a capacitor decreases nonlinearly with increase if frequency.			
	4. Verify the voltage divider rule through actual measurements and calculate the input impedance of a parallel network using measured values.			

KEY	
SLO	**Student Learning Outcomes**
PLO	**Program Learning Outcome**
ISLO	**Institutional Student Learning Outcomes [ISLO 1 – 5]**
ISLO #	**ISLO and Subsets**
1	Communication Skills: • Oral [O] • Written [W]
2	Critical Thinking: • Critical Analysis [CA] • Inquiry & Analysis [IA] • Problem Solving [PS]
3	Foundational Skills: • Information Management [IM] • Quantitative Lit, /Reasoning [QTR]
4	Social Responsibility • Ethical Reasoning [ER] • Global Learning [GL] • Intercultural Knowledge [IK] • Teamwork [T]
5	Industry, Professional, Discipline Specific Knowledge and Skills
GER	**General Education Requirements**: Refer to Listing, Section F

L. TEXTS: Laboratory Manual to Accompany Introductory Circuit Analysis 13/e, By – Boylestad and Kousourou ISBN: 0132196158 Publisher: Prentice Hall

M. SUGGESTED INSTRUCTIONAL MATERIALS: References – Electric Circuits Fundamentals by – Floyd ISBN: 0130163945

N. EQUIPMENT: Students need to purchase Laboratory Components (kit) from the bookstore. All other equipment needed will be made available in the lab.

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Quiz	☐
Exams	☑
Assignment	☐
Other: Group or Individual Projects	☑

P. Detailed Course Outline:

N/A

Q. LABORATORY OUTLINE:

1. The Oscilloscope
2. R-L-C Components
3. Frequency Response of R, L, and C Components
4. Frequency Response of the Series R-L Network
5. Frequency Response of the Series R-C Network
6. The Oscilloscope and Phase Measurements
7. Series Sinusoidal Circuits
8. Parallel Sinusoidal Circuits
9. Series-Parallel Sinusoidal Circuits
10. Thevenin's Theorem and Maximum Power Transfer
11. Series Resonant Circuits
12. Parallel Resonant Circuits
13. Passive Filters
14. The Transformer