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

MASTER SYLLABUS

ELEC 109 – ELECTRIC CIRCUITS (1) LBORATORY

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SCHOOL OF ENGINEERING TECHNOLOGY
ELECTRICAL ENGINEERING TECHNOLOGY &
ENGINEERING SCIENCE DEPARTMENT
FALL 2018

A. <u>TITLE</u> : ELECTRIC CIRCUITS (1) LABORATORY

B. <u>COURSE NUMBER</u>: ELEC 109

C. <u>CREDIT HOURS</u>: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

 # Credit Hours: 1 !
 # Lecture Hours: per week !
 # Lab Hours: 2 **per week** !
Other: per week

Course Length: 15 **Weeks**

D. <u>WRITING INTENSIVE COURSE</u>: There is some level of writing for laboratory report in this course. However, it is not considered writing intensive course.

E. <u>GER CATEGORY</u>: NONE

F. <u>SEMESTER(S) OFFERED</u>: FALL/SPRING

G. <u>COURSE DESCRIPTION</u>: An introductory laboratory course stressing the understanding of basic concepts and principles of direct current/voltage by analyzing resistive, capacitive and inductive circuits through practical laboratory application. Students will also study circuits using circuit analysis software.

H. <u>PRE-REQUISITES</u>: NONE

<u>CO-REQUISITE:</u> Electric Circuits I (ELEC101) and Pre-Calculus (Math 123)

I. ! **<u>STUDENT LEARNING OUTCOMES:</u>**

Institutional Student Learning Outcome (ISLO's)
(1) Communication Skills (2) Critical Thinking (3) Foundational Skills (4) Social Responsibility (5) Industry, Professional, Discipline-Specific Knowledge and Skills.

Accreditation Board for Engineering and Technology ABET- Student Outcomes (a-k)

Course Objectives	ABET-Student Outcomes (a-k)	ISLO's
(a) Correctly measure the currents and voltage of series-	(b) An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined	5. Industry, Professional,

parallel dc network, verify Kirchhoff's current law, build and test the application of the current divider rule	engineering technology activities.	Discipline-Specific Knowledge and Skills.
(b) Validate conclusions regarding the behavior of capacitors in a steady-state dc network, plot the exponential curve for the voltage across a charging capacitor, and verify the basic equations for determining the total capacitance for capacitors in series and parallel.	(c) An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes. (b) an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies	2. Critical Thinking 5. Industry, Professional, Discipline-Specific Knowledge and Skills.

J. ! **APPLIED LEARNING COMPONENT: LABORATORY**

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

L. ! **REFERENCES: Electric Circuits Fundamentals**
By – Floyd ISBN: 0130163945
Publisher: Prentice Hall

M. EQUIPMENT: Students need to purchase laboratory components (kit) from the bookstore. All other equipment needed will be made available in the lab.

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS: Lab Projects and Lab Test.

Laboratory report may include the following:

- **Names of all team members**

- **Name of the course/instructor/date**
- **Name of project or circuit**
- **introduction**
- **List of components used**
- **List of test equipment used**
- **Include all calculations**
- **Schematic or Block diagram**
- **Problems you had and how it was overcome**
- **Any external information/resources used**
- **The basic operation of the circuit**
- **Conclusion**

P. <u>DETAILED COURSE OUTLINE:</u> NONE

Q. <u>LABORATORY OUTLINE</u>:

1. **Resistors and the Color Code**
2. **Ohm's Law**
3. **Series Resistance**
4. **Series dc Circuits**
5. **Parallel Resistance**
6. **Parallel dc Circuits**
7. **Rheostats and Potentiometer**
8. **Series-Parallel dc Circuits**
9. **Superposition Theorem (dc)**
10. **Thevenin's Theorem and Maximum Power Transfer**
11. **Norton's Theorem and Current Sources**
12. **Methods of Analysis**
13. **Capacitors**
14. **R-L and R-L-C Circuits with a dc Source Voltage**