A. **TITLE**: ELECTRIC CIRCUITS (1) LABORATORY

B. **COURSE NUMBER**: ELEC 109

C. **CREDIT HOURS**: 1

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

E. **COURSE LENGTH**: 15

F. **SEMESTER(S) OFFERED**: FALL/SPRING

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY**: 2- Hours/Week

H. **CATALOGUE DESCRIPTION**: 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.

I. **PRE-REQUISITES/CO-COURSES**: (Corequisite: Electric Circuits I (ELEC101) and Pre-Calculus (Math 123)

J. **GOALS (STUDENT LEARNING OUTCOMES)**

   **Institutional Student Learning Objectives (SLO)**
   (1) Communication  (2) Critical Thinking  (3) Professional Competence

<table>
<thead>
<tr>
<th>Course Objectives / ABET (SLO)</th>
<th>Institutional SLO</th>
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<tbody>
<tr>
<td>An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities.</td>
<td>3. Professional Competence</td>
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<tr>
<td>An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.</td>
<td>3. Professional Competence 2. Critical Thinking</td>
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<tr>
<td>An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;</td>
<td>3. Professional Competence 2. Communication</td>
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</table>

K. **TEXTS**: Laboratory Manual to Accompany Introductory Circuit Analysis
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: Grade based on average of the following: Midterm
Exam, Lab Projects / Reports and Final Exam.

O. 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
- Schematic or Block diagram
- Problems you had and how it was overcome
- Any external information/resources used
- The basic operation of the circuit
- Conclusion

Q. LABORATORY OUTLINE:

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
15. Wheatstone Bridge
16. Project