COURSE OUTLINE

ELEC 129 – ELECTRIC CIRCUITS (II) LAB

Prepared By: Stephen E. Frempong
A. **TITLE**: ELECTRIC CIRCUITS (II) LABORATORY

B. **COURSE NUMBER**: ELEC 129

C. **CREDIT HOURS**: 1

D. **WRITING INTENSIVE COURSE**: YES

E. **WEEKS PER SEMESTER**: 15

F. **SEMESTER OFFERED**: SPRING/FALL

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

H. **CATALOG DESCRIPTION**: A continuation of Electric Circuits (I) 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.

I. **PRE-REQUISITES/CO-COURSES**: Electric Circuits (I) ELEC 101 and ELEC 109, or permission of instructor.

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

Institutional Student Learning Objectives (SLO)

(1) Communication  (2) Critical Thinking  (3) Professional Competence

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<tr>
<th>Course Objectives / ABET (SLO)</th>
<th>Institutional SLO</th>
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<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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<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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<td>An ability to identify, analyze, and solve broadly-defined engineering technology problems.</td>
<td>3. Professional Competence 2. Critical Thinking</td>
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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
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 is based on Midterm, Lab Projects, and Final Exam.

O. **MEASUREMENT CRITERIA/METHODS:** Group or individual Project, and Test.

P. **DETAILED TOPICAL OUTLINE:**

   AC Experiments:
   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
   15. Pulse Waveforms