MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
ENGS 264 – Electrical Circuits laboratory

Created by: Rashid Aidun, Ph.D.
Updated by: Rashid Aidun, Ph.D.

Canino School of Engineering Technology
Department: Electrical and Engineering Science
Semester/Year: Fall 2018
A. **TITLE**: Electrical Circuits Laboratory

B. **COURSE NUMBER**: ENGS 264

C. **CREDIT HOURS**: (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. **WRITING INTENSIVE COURSE**: Yes ☑️ No ☐

E. **GER CATEGORY**: None: ☐ Yes: GER
   
   *If course satisfies more than one: GER

F. **SEMESTER(S) OFFERED**: Fall ☐ Spring ☑️ Fall & Spring ☐

G. **COURSE DESCRIPTION**: 

Two hours per week. Basic concepts and principles of direct current and DC voltage are stressed in this introductory laboratory. Students will analyze resistive, capacitive and inductive circuits through practical laboratory application. Students will also study circuits using circuit analysis software

H. **PRE-REQUISITES**: None ☐ Yes ☑️ If yes, list below:

   **CO-REQUISITES**: None ☐ Yes ☑️ If yes, list below:

   ENGS 263, Electric Circuits
I. **STUDENT LEARNING OUTCOMES**: *(see key below)*

By the end of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>Program Student Learning Outcome [PSLO]</th>
<th>GER [If Applicable]</th>
<th>ISLO &amp; SUBSETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize and select electrical components to construct electrical circuits</td>
<td>Prepare students to utilize modern computational tools for engineering programming, analysis, and design</td>
<td>5-Ind, Prof, Disc, Know Skills 4-Soc Respons ISLO</td>
<td>Subsets T Subsets Subsets</td>
</tr>
<tr>
<td>Apply the knowledge, techniques, skills, and modern tools to test and troubleshoot electrical circuits</td>
<td>Prepare students to utilize modern computational tools for engineering programming, analysis, and design</td>
<td>5-Ind, Prof, Disc, Know Skills 4-Soc Respons ISLO</td>
<td>Subsets T Subsets Subsets</td>
</tr>
<tr>
<td>Conduct standard tests and measurements; analyze, and interpret experiments; and to apply experimental results to improve processes</td>
<td>Prepare students to utilize modern computational tools for engineering programming, analysis, and design</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills 4-Soc Respons</td>
<td>CA Subsets T Subsets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KEY</th>
<th>Institutional Student Learning Outcomes [ISLO 1 – 5]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
</tr>
<tr>
<td>1</td>
<td>Communication Skills Oral [O], Written [W]</td>
</tr>
<tr>
<td>2</td>
<td>Critical Thinking Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</td>
</tr>
<tr>
<td>3</td>
<td>Foundational Skills Information Management [IM], Quantitative Lit./Reasoning [QTR]</td>
</tr>
<tr>
<td>4</td>
<td>Social Responsibility Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</td>
</tr>
<tr>
<td>5</td>
<td>Industry, Professional, Discipline Specific Knowledge and Skills</td>
</tr>
</tbody>
</table>

*Include program objectives if applicable. Please consult with Program Coordinator
J. **APPLIED LEARNING COMPONENT:**  Yes ☒ No ☐

If YES, select one or more of the following categories:

- [x] Classroom/Lab
- [ ] Internship
- [ ] Clinical Placement
- [ ] Practicum
- [ ] Service Learning
- [ ] Community Service
- [ ] Civic Engagement
- [ ] Creative Works/Senior Project
- [ ] Research
- [ ] Entrepreneurship (program, class, project)

K. **TEXTS:**

Instructions provided by instructor

L. **REFERENCES:**

M. **EQUIPMENT:** None ☐ Needed: All equipment and parts are provided in the laboratory

N. **GRADING METHOD:** A - F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab reports</td>
<td>40%</td>
</tr>
<tr>
<td>Lab practical</td>
<td>40%</td>
</tr>
<tr>
<td>Participation &amp; Team Work</td>
<td>20%</td>
</tr>
</tbody>
</table>

P. **DETAILED COURSE OUTLINE:**

None
Q. **LABORATORY OUTLINE:** None ☐ Yes ☒

- Ohm’s Law and Kirchhoff’s Laws
- Series dc Circuits
- Parallel dc Circuits
- Rheostats and Potentiometer
- Series-Parallel dc Circuits
- Wheatstone Bridge
- Superposition Theorem (dc)
- Thevenin’s Theorem
- Maximum Power Transfer
- Norton’s Theorem and Current Sources
- Operational Amplifier circuits I
- Operational Amplifier circuits II
- RL Circuits
- RC Circuits
- and R-L-C Circuits