Electrical Engineering 2101: Circuits Analysis Laboratory  
Prior Number - Electrical Engineering 152

Credit and Contact Hours
1 credit hour laboratory (One 90-minute sessions per week). This laboratory is taken simultaneously with Electrical Engineering 2100 (151).

Instructor
Graduate Teaching Assistants coordinated by a faculty member  
Varies: D. DuBroff, Ph.D. or B. Shrestha, Ph.D. (faculty coordinator)

Text(s)
Circuit Analysis Laboratory Manual  
Available at: http://ece.mst.edu/currentcourses/classnotesinfo/

Course Information
Course Description  
Safety, basic measurements and meters, oscilloscopes, resistor networks, measurement of capacitors and inductors, RLC circuit response.

Prerequisites
Preceded or accompanied by Electrical Engineering 2100 (151). A student drops Electrical Engineering 2100 (151) must also drop Electrical Engineering 2101 (152).

Required or Elective
Required for electrical or computer engineering majors

Course Goals
General Outcomes
1. A safety quiz must be passed with a 90% grade or better to remain in the laboratory and to perform experiments.  
2. Understand basic safety practices as applied to electrical and electronic equipment.  
3. Understand proper forms of communicating technical data through laboratory notebooks, technical memoranda, and formal lab reports.  
4. Understand basic measurement instrumentation, specifically meters and oscilloscopes, as well as test equipment such as signal generators.  
5. Learn the basic applications of circuit analysis programs.  
6. Demonstrate, verify, and reinforce the understanding of voltage and current relationships associated with resistance, inductance, and capacitance.
### Relationship of Course to Program Outcomes

<table>
<thead>
<tr>
<th>ECE Outcome</th>
<th>Course Outcomes 1</th>
<th>Course Outcomes 2</th>
<th>Course Outcomes 3</th>
<th>Course Outcomes 4</th>
<th>Course Outcomes 5</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>S</td>
<td>M</td>
<td>S</td>
<td>M</td>
<td>S</td>
<td>Teams of 2 or 3 students,</td>
</tr>
<tr>
<td>b</td>
<td></td>
<td>M</td>
<td>M</td>
<td></td>
<td></td>
<td>Troubleshooting and communication skills are practiced</td>
</tr>
<tr>
<td>c</td>
<td></td>
<td>S</td>
<td>W</td>
<td></td>
<td></td>
<td>Use of academic versions of commercial style circuit simulation software</td>
</tr>
<tr>
<td>d</td>
<td>M</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>Discussion of expectations for written experimental documentation and appropriate citations for work performed by others whether published or not.</td>
</tr>
<tr>
<td>e</td>
<td>M</td>
<td>M</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g</td>
<td></td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>W</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>k</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

S – strong connection; M – medium connection; W – weak connection

### Topics Covered
1. Safety, Laboratory Notebooks, and Reports (1 week)
2. Meters (1 week)
3. Resistive Networks and Bridge Circuits (2 weeks)
4. Circuit Simulation Using PSpice (2 weeks)
5. Basic Oscilloscope Operation (1 week)
6. Capacitors and Inductors (3 weeks)
7. RMS and Average Values (1 week)
8. Exams (2 weeks)