Intermediate Physics Laboratory
PHYS 2129
Spring 2024

Lecture:      Tuesday/Thursday 1.00 – 1.50 pm
Place: Physics Room 202

Laboratory:   Tuesday 2.00 – 4.50 pm
               Thursday 2.00 – 3.50 pm
Place: Physics Room 219

Instructor:   Jason Summers
Email:        jsummers@mst.edu
Office:       212 Physics

Laboratory Manual: Principals of Electronic Instrumentation (copy).

References:  *Principles of Electronic Instrumentation* by A. James Diefenderfer and Brian E. Holton.
             *Basic Electronics: An Introduction to Electronics for Science Students* by Curtis A. Meyer,
             *The Art of Electronics* by Horowitz and Hill

Laboratory Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Experiment/Assignment</th>
<th>Date</th>
<th>Experiment</th>
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<tbody>
<tr>
<td>Jan 16</td>
<td>Lab 1</td>
<td>Mar 14</td>
<td>Spring Recess</td>
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<tr>
<td>18</td>
<td>Assignment 2</td>
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<td>Assignment 11</td>
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<td>23</td>
<td>Lab 2</td>
<td>21</td>
<td>Lab 11</td>
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<td>25</td>
<td>Lab 3</td>
<td>26</td>
<td>Spring Break</td>
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<td>Jan 30</td>
<td>Lab 4</td>
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<td>Spring Break</td>
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<td>Feb 1</td>
<td>Lab 5</td>
<td>Apr 2</td>
<td>Lab 12</td>
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<td>6</td>
<td>Assignment 6-1</td>
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<td>Lab 13</td>
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<td>8</td>
<td>Assignment 6-2</td>
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<td>Lab 15</td>
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<td>13</td>
<td>Lab 6</td>
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<td>Magnetic Circuits</td>
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<td>15</td>
<td>Assignment 7</td>
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<td>Transformers</td>
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<td>Assignment 8</td>
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<td>Lab 8</td>
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<td>Lab 9</td>
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<td>Kicad/PCBs</td>
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<td>Mar 5</td>
<td>Midterm Test</td>
<td>To be determined</td>
<td>Final Project</td>
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<td>12</td>
<td>Lab 10</td>
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Experiment Report: Experiment reports must be turned by the date specified in Canvas. Each experiment will be graded at 100 point scale.

Assignments: Special assignments have been created to help prepare for the upcoming laboratory. These include circuit simulations and homework problems. Each will be worth 100 points.

Late Submissions: For each day the lab report or assignment is late, there will be a 5% deduction. The maximum deduction will be 50% after 10 days.

Grading Scale: >89.5 % = A  
>79.5 % = B  
>69.5 % = C  
>59.5 % = D

Grade weight: Laboratory reports, Assignments, and Projects: 60 %  
Midterm test: 20 %  
Final Project: 20 %

*Midterm test will be based on the materials covered in lectures, laboratory experiments and assignments.
Lab Experiments and Assignments:

1. Ohm’s Law
2. Kirchoff’s Law
3. DC Circuits
4. AC Test Instruments
5. Transient RC Circuits
6. AC Circuits
7. LCR Circuits
8. Diodes I: Rectification and Filtering
9. Diodes II: Zeners
10. DC Power Supplies
11. Transistors
12. Op-Amps I
13. Op-Amps II
14. Oscillators

Possible Projects:

1. LabView Interface
2. Digital Counting Circuits
3. Measurement by Using Sensor
4. Data Collecting
5. Counter and detector
6. Controlling Circuits