# ENAE 362 Aerospace Instrumentation and Experimentation

<table>
<thead>
<tr>
<th><strong>Credits &amp; Contact Hours:</strong></th>
<th>3 credits (2 hours of lecture and 2 hours of laboratory)</th>
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<tr>
<td><strong>Course Status:</strong></td>
<td>Required</td>
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<tr>
<td><strong>Schedule:</strong></td>
<td>Offered every Fall semester</td>
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<tr>
<td><strong>Course Description:</strong></td>
<td>Basic instrumentation electronics including DC electronics, AC electronics, semiconductors, electro-optics and digital electronics. Sensing devices used to carry out experiments in Aerospace Engineering includes metrology, machine tool measurements, bridge circuits, optical devices, and introduction to computer based data acquisition. Topics chosen to support measurements in aerodynamics, flight structures and flight control.</td>
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<td><strong>Pre-Requisites:</strong></td>
<td>ENAE 283, MATH 246, PHYS 260/261</td>
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<td><strong>Co-Requisites:</strong></td>
<td>ENAE 380</td>
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<td><strong>Textbooks:</strong></td>
<td>None</td>
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<td><strong>Other Required Material:</strong></td>
<td>Course notes and handouts</td>
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<td><strong>Course Oversight:</strong></td>
<td>Design/Lab committee</td>
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<td><strong>Syllabus Prepared By/Date:</strong></td>
<td>Dr. Winkelmann in August 2010</td>
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## Course Objectives/Student Learning Outcomes:

1. Work with basic electronic circuits involving analog components
2. Make basic electronic measurements using multimeters, oscilloscopes, and electronic counters
3. Design basic electronic circuits for amplifying, detecting, timing, etc.
4. Work with basic digital electronic circuits
5. Design basic electro-optical circuits
6. Install and test strain gages
7. Make basic dimensional and angular measurements

## Topics Covered:

1.) Basic DC Electronics
2.) Basic AC Electronics
3.) Semiconductor Devices
4.) Amplifiers
5.) Operational Amplifiers
6.) 555 IC
7.) Power Supplies
8.) Electro-Optical Devices
9.) Basic Digital Electronics
10.) Aero Measurements
11.) Strain Gages
12.) Computer Data Acquisition and Control
13.) Signal Processing Techniques
14.) Basic Measuring Devices and Sensors

Relationship of Course Objectives to Program Outcomes

This course addresses program outcomes: 3, 6, 7, 10