## AA321 COURSE DETAILS

<table>
<thead>
<tr>
<th>TITLE:</th>
<th>Aerospace Laboratory I</th>
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</thead>
<tbody>
<tr>
<td>CREDITS:</td>
<td>3</td>
</tr>
<tr>
<td>FORMAT &amp; SCHEDULE:</td>
<td>Lecture, 1 hour / week; Lab, 2 hours / week</td>
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<tr>
<td>FACULTY CONTACT:</td>
<td>James Hermanson</td>
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### COURSE DESCRIPTION (Catalog Short Form, 50 words Max):

The design and conduct of experimental inquiry in the field of aeronautics and astronautics. Laboratory experiments on supersonic flow, structures, vibrations, material properties, and other topics. Theory, calibration, and use of instruments, measurement techniques, analysis of data, report writing.

### COURSE OVERVIEW & LEARNING OBJECTIVES:

Course Objectives:

1. Students will be able to perform wind tunnel tests and reduce wind tunnel data.
2. Students will be able to test materials, apply strain gauges, and measure stresses.
3. Students will understand how to take data on dynamic systems in vibration.
4. Students will be able to perform supersonic wind tunnel tests and reduce the resulting tunnel data.
5. Students will know how to write good lab reports.

### COURSE REQUIREMENTS

**PREREQUISITES:**  
1) A A 311  
2) A A 320  

**REQUIRED TEXTBOOK:** None
## Topics

- Sphere drag
- Materials testing
- 2D wing
- Stress analysis with strain gages
- 3D wing
- Stress concentration
- Ludwig Tube/Supersonic Flow
- Beam bending and vibration
- Propeller performance