Experimental Projects I

AEROENG 4510

Course Description:
Conceive, plan and design an experiment with a group of students. Emphasis on planning and experiment preparation.

Course Goals / Objectives:
Develop as a team the strategy and tactics for the design of an experiment and for data analysis procedures to achieve experimental objectives, including detailed description of the necessary technical tasks
Formulate an experimental program and success criteria to obtain information for a particular problem
Implement as a team a detailed design for an experiment and for data analysis procedures necessary to achieve the objectives defined above
Effectively communicate orally and in writing the results of the project design process, and subsequently the key aspects of the overall project (from concept to end goal)
GE Reflection-Engag Citizens & Intercultr Comp: Students consider public health, safety, and welfare as well as global, cultural, social, environmental, and economic factors in applying engineering design to produce solutions meeting specified needs
GE Reflection - Personal and Professional Development: Students individually assess and pursue personal professional growth in concert with project requirements and personal career goals
GE Reflection - Cultivate Engineering Mindset: Students develop an engineering mindset that demonstrates constant curiosity, makes connections between disparate bodies of information, and seeks opportunities to create value
Course Topics:

Introduction

Ethics and Experimental Research Projects

Hypothesis, Objective, Success Criteria

How Writers and Speakers Plan Communication Strategy

Experimental Design

Literature Searches

Test Matrices

Experimental Measurement: Methods and Methodology

Error Analysis

Data Analysis

Data Reduction

Creating Effective Graphics

Graphics that Present Data

Grades Breakdown:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Notebooks checks</td>
<td>10%</td>
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<tr>
<td>Oral presentations</td>
<td>20%</td>
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<tr>
<td>Written progress reports</td>
<td>30%</td>
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<tr>
<td>Final report</td>
<td>30%</td>
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<tr>
<td>Adviser evaluation</td>
<td>10%</td>
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</tbody>
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Designation:
Required

Instruction Modes:
In Person (75-100% campus; 0-24% online)
Hybrid Class (25-74% campus; 25-74% online)
Distance-Enhanced (1-24% campus; 75-99% online)

Representative Textbooks and Other Course Materials:

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Year</th>
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No Textbooks and Other Course Materials Entered.