<table>
<thead>
<tr>
<th>COURSE #: AE 405</th>
<th>COURSE TITLE: AEROSPACE ENGINEERING LABORATORY II</th>
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<tr>
<td>TERMS OFFERED: Fall/Winter</td>
<td>PREREQUISITES: Aero 305. Preceded or accompanied by Aero 315 and 325</td>
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<tr>
<td>INSTRUCTOR(S): Geister</td>
<td>SCIENCE/DESIGN CREDITS: 2/2 (required course)</td>
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**CATALOG DESCRIPTION:**
Second course of a two-semester sequence covering fundamentals of instrumentation and measurement and their application in engineering testing and experimentation. Focuses primarily on application of the fundamental principles learned in Aero 305 to more advanced test and measurement applications. Involves instructor-designed experiments and one major project conceived, designed, conducted, analyzed, and reported by student teams. Emphasizes development of skills for written communication and for working effectively in team environment.

**COURSE TOPICS:**
1. Contemporary instrumentation as applied to the study of fluid, and structural mechanics and propulsion.
2. Application of control methodologies.
3. The perception design and creation of an experiment.

**COURSE OBJECTIVES**
1. To allow students to apply fundamental instrumentation and measurement principles taught in Aero 305 to more advanced test and measurement applications.
2. To allow students to come in direct laboratory contact with otherwise abstract concepts encountered in undergraduate aerospace engineering curriculum.
3. To conceive, design, conduct, analyze, and report an original instrumentation and measurement project.
4. To develop increased teamwork skills by conducting and reporting instrumentation and measurement tasks in a team environment.
5. To develop more effective communication skills through a combination of oral technical presentations and technical writing.

**COURSE OUTCOMES**
On completion of Aero 405, students can:
1. Effectively apply advanced instrumentation and measurement concepts to execute complex testing and experimentation. (Assessed by: 1, 2, 3, 4, 5)
2. Conduct instrumentation and measurement tasks in a team environment. (Assessed by: 1, 2, 3, 4, 5)
3. Write competent technical reports that describe test and measurement procedures, outcomes, analyses, and conclusions. (Assessed by: 1, 6)
4. Develop, design, execute, analyze, and report a major instrumentation and measurement project. (Assessed by: 2, 3, 5, 6)
5. Develop a “white paper”, outlining several project ideas and considerations. (Assessed by: 2)
6. Write and present a formal team project proposal detailing specific plans, resource requirements, cost, schedule, milestones, and potential outcomes. (Assessed by: 3)
7. Present regular progress of a project. (Assessed by: 2, 3)
8. Summarize a final project. (Assessed by: 5, 6)

**ASSESSMENT TOOLS**
1. Written laboratory reports.
2. Written report.
3. Oral presentation.
4. Poster presentation.
5. Written and oral final project reports.

Appendix I - Page 11 of 32