ME 456: Mechanical Systems Laboratory II (1 credit)

Instructor: Dr. Sherman Goplen, Dolve 116, office phone 231-8301
E-mail: sgoplen@ndsuext.nodak.edu, office hours will be posted.

Textbook: N/A

Course Objectives

Thermal-fluid principles will be illustrated and applied through student conducted experiments performed on complex systems. Instrumentation, data recording, data analysis, and report writing skills are developed in the context of laboratory experiments and as a team project. At the conclusion of this course, the students should be able to work together as a team to:

- Identify the relevant parameters that characterize the operation of thermal-fluid systems, and assess experimentally the influence of these parameters on the power and efficiency performances of the systems;
- Use appropriate techniques and equipment to measure parameters such as temperature, pressure, humidity, fluid velocity, torque, and electric power;
- Write technical reports on their experiments. Reports should include a statement of objectives, background, description of setup and experimental procedures, presentation and discussion of results.

Topics

1. Air fans: evaluation of performance in terms of power and efficiency.
2. Air compressors: operation and performances of a two-stage reciprocating air compressor
3. Internal combustion engines: load and power characteristics

The final grade is based on the grades for the four reports submitted by each team and the team presentations. Each report and the presentations are counted as 20% of your grade. Information regarding the report grading procedure is in the report writing guidelines. **Any student failing to complete his part of any report will receive an F for the course.**

Final course grades will assigned according to the following scale.

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90% or greater</td>
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<td>B</td>
<td>80% to less than 90%</td>
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<td>C</td>
<td>70% to less than 80%</td>
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<td>D</td>
<td>60% to less than 70%</td>
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<tr>
<td>F</td>
<td>less than 60%</td>
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All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct (http://www.ndsu.nodak.edu/policy.335.htm)

STUDENTS WITH SPECIAL NEEDS

Students who have any disability that might affect their performance in this class are encouraged to speak with the instructor early in the semester.