THERMO-FLUID ENGINEERING

Instructor: Dr. John Reisel  
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Office Hours: MW 11:00-12:00 and by appointment  
(In addition, please feel free to stop in and ask questions outside of office hours.)

Prerequisites: MechEng 320 and MechEng 321

Textbook: Reisel; *Principles of Engineering Thermodynamics* (1st ed.)

Objectives: (1) Students will learn to apply the laws of Thermodynamics to the analysis and design of Thermodynamic cycles.  
(2) Students will learn the basics of psychrometrics and combustion analysis  
(3) Student will learn how Thermodynamics, Fluid Mechanics and Heat Transfer are integrated together in the design of complex systems.  
(4) Students will plan and execute group design projects to prepare them for professional practice.

Grading: In this class, there will be 2 mid-term exams, one final exam, a team design project, quizzes on homework material, and a short calculation/essay assignment. The components of the grade are weighted as follows  

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Mid-term Exams (24% each)</td>
<td>48%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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<tr>
<td>Design project</td>
<td>15%</td>
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<tr>
<td>Quizzes on homework</td>
<td>5%</td>
</tr>
<tr>
<td>Calculation/essay assignment</td>
<td>2%</td>
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Final letter grades will be assigned on a scale no more strict than:

- A: 93-100  
- A-: 90-93  
- B+: 87-90  
- B: 83-87  
- B-: 80-83  
- C+: 77-80  
- C: 73-77  
- C-: 70-72  
- D+: 67-70  
- D: 63-67  
- D-: 60-63  
- F: 0-60
Make-up exams will be given only under proven extreme situations. Such situations include a serious illness or a death in the immediate family. Make-up exams will not be given when the student could have easily been present for the exam. It should be noted that the student is expected to study for the entire semester, and so the inability to study the day before the exam is not a valid excuse for missing an exam.

Make-up quizzes on the homework will not be available. Late design projects will not be accepted.

**Academic Misconduct:** Cheating on an exam, project, or homework quiz is unacceptable. Engineers must be held to high ethical standards, and if you must resort to cheating to become an engineer, you have already failed ethically in addition to lacking competence technically. Therefore, any detected cheating or academic misconduct (as described in UW System regulations) will result in a 0 for that grade. If necessary, further measures as outlined in the UW System policies will be pursued. This can result in expulsion from the university.

**Homework:** Suggested homework will be assigned throughout the semester. A short quiz on the homework material will be given at the start of class on the date indicated on the suggested homework problem sheet. These quizzes will be open book/notes, and will last approximately 10 minutes.

After the quiz on the suggested homework has been completed, solutions to the homework will be posted on the course's D2L website.

**Design Projects:** There will be a team design project during the semester. More details of the projects will be provided at a later date.

**Expected Time Commitment:**
This class meets twice weekly for 75 minutes, for a total of 35 hours of required lecture time. You should expect to take at least 20 hours over the course of the semester reading the textbook and other required texts. You should expect to spend 58 hours on homework over the course of the semester. Studying for the tests should require approximately 8 hours. You should plan to spend 20 hours working on the projects. You should reserve at least 7 hours to study for and take the final exam. All told, this class is likely to take 148 hours of your time.

**Alternative Reading:**

*Thermodynamics, An Engineering Approach*, Cengel and Boles  
*Fundamentals of Engineering Thermodynamics*, Moran, Shapiro, Boettner, Bailey