1. INSTRUCTORS

Section 3: 8:30 a.m. to 9:20 a.m. MWF in ME 2061:  
Email: Lucht@purdue.edu  
Office Hours: M 9:30 to 11:00 a.m. in ME 2204  
Tu 1:30 p.m. to 3:00 p.m. in ME 2204  
F 9:30 to 11:00 a.m. in ME 2204  
Phone: 765-494-5623 (office); 765-714-6020 (cell)  

Robert P. Lucht

Section 2: 10:30 a.m. to 11:20 a.m. MWF in ME 2061  
Email: yanchen@purdue.edu  
Office Hours: MWF 11:30 a.m. to 12:30 p.m. in ME 3003  
Phone: 765-496-7562

Qingyan Chen

Section 1: 3:30 p.m. to 4:20 p.m. MWF in ME 2061  
Email: csgoldenstein@purdue.edu  
Office Hours: M 2:30 to 3:30 p.m. in ME 1072C  
Tu 2:00 to 4:00 p.m. in ME 1072C  
Phone: 765-494-5660

Christopher S. Goldenstein

Teaching Assistants

Mingming Gu  Email: gu163@purdue.edu  
Office Hours: TuTh 10:00 a.m. to 12:00 p.m., 2:00 p.m. to 4:00 p.m. in the tutorial room

Vishal Anand  Email: anand32@purdue.edu  
Office Hours: MF 10:00 a.m. to 12:00 p.m., 3:00 p.m. to 5:00 p.m. in the tutorial room

Yerbatyr Tursyn  Email: ytursyn@purdue.edu  
Office Hours: M 3:00 p.m. to 5:00 p.m. in the tutorial room  
Tu 2:00 p.m. to 6:00 p.m. in the tutorial room  
W 10:00 a.m. to 12:00 p.m., 2:00 p.m. to 6:00 p.m. in the tutorial room  
Th 2:00 p.m. to 6:00 p.m. in the tutorial room

2. OBJECTIVES:  The objectives of this course are as follows:

(a) To provide a thorough understanding of the application of classical thermodynamics to practical problems. Topics include transient energy analysis, exergy (availability) analysis, ideal gas mixtures (non-reacting and reacting), and chemical equilibrium analysis. Applications include internal combustion engines, gas turbine engines (power generation and aircraft), vapor power and refrigeration/heat pump systems, and air conditioning systems.

(b) To provide an introductory treatment of thermodynamics for an expanded range of materials including ideal gas mixtures, real fluids, and reacting systems.

(c) To provide limited design experience for systems requiring significant consideration of thermodynamics.

4. **PREREQUISITE:** ME 200 or equivalent.

5. **COMPUTER SOFTWARE:** A non-linear equation solver with built-in thermodynamic properties and graphics capabilities will be used to analyze selected problems in this course. This computer program, called Engineering Equation Solver (EES), is available on the PCs in the ME Computer Laboratories. Students may make copies of this program for personal use. Instructions for copying and executing EES are attached at the end of this document. Help with EES is available through the on-line help command within the EES software and also through a complete EES User’s Manual available at [https://engineering.purdue.edu/me300/](https://engineering.purdue.edu/me300/) and [http://www.fchart.com/](http://www.fchart.com/).

Note: You do not need to purchase the optional software that comes with the text. We will not use the Moran and Shapiro software in ME 300.

You will need an ECN UNIX account in order to access EES on the PCs in the ME Computer Laboratories. If you do not already have an ECN account, see a consultant in ME 2042 during the first week of classes to establish one. Check the course website [https://engineering.purdue.edu/ME300](https://engineering.purdue.edu/ME300) daily as it will be used by the instructors as a means of communicating with students.

6. **ASSIGNMENTS:** Reading assignments are provided in the course syllabus. As basic preparation for each lecture, students should read the assigned section of the textbook before coming to class.

- **Textbook Problems:** Representative problems will be assigned from the textbook after each lecture. The textbook problems will not be collected but you are urged to work through these problems without referring to solutions that you may have obtained from the internet or other students. These problems will be illustrative of the general material and of problems found on exams. Keeping up on these problems is an excellent way to prepare for exams and in-class quizzes.

- **Special Problems:** Special problems (SP1-SP40) are homework problems that are developed by the professors in ME 300. Special problems assigned from previous Friday, Monday, and Wednesday lectures will be collected in class as noted on the syllabus. These problems will be graded and will account for the homework grade in the course. Solutions to the assigned problems will be posted on the course website.

Students must use 8 ½ by 11 inch engineering paper when solving problems. Only one side of the paper should be used and no more than one problem should be included per page. When handing in your assignment, staple all pages in order. If EES software is used in solving a problem, an EES printout must be attached to the problem solution.

The following problem solution format should be used. Note that it is similar, but a little different, than the one described in your textbox (Section 1.9, page 21):

A. At the top of the engineering paper there are 5 boxes. Starting from the left:
i. Box 1 - leave blank  
ii. Box 2 - put your name (last, first, middle)  
iii. Box 3 - put the problem number, i.e. Prob. 5.24  
iv. Box 4 - leave blank  
v. Box 5 - put the page number of the problem/total pages for this problem, i.e. 1/3 or 3/3  

B. Below the boxes place:

i. Given: State in your own words what is given in the problem statement. Example: Initial temperature \( T_1 = 30 \, ^\circ\text{C} \)  
ii. Find: List the parameters and values that you are asked to determine. Example: a) pressure at time 2 or \( P_2 \)  
iii. Sketch: A drawing of your control volume or control mass  
iv. Assumptions: Example: Ideal gas  
v. Basic Equations and Thermodynamic Data  
vi. Solution: The problem should be worked analytically before numbers are plugged into formulas and calculations are performed. After the numerical solution is obtained, units should be checked and initial assumptions should be re-evaluated.

The graders will be instructed to give equal weight in grading to the format of the solution (organization, clarity of writing, problem sketch) and to the correct analysis and answer. Special attention will be paid to units.

It is anticipated that 7 quizzes will be given in class but it could be more or less and will be determined by your instructor. The day of the quiz may not be announced in advance, and you must take the quiz in your assigned section to receive credit. The problems in the quiz may be similar to the assigned problems.

7. TESTS: There will be three (3) one-hour evening examinations. All examination dates, times, and locations are indicated in the course syllabus. A two-hour comprehensive final examination will be given during finals week.

All examinations will be closed book and closed notes. You will be provided with an equation sheet. You will be allowed to bring in pen(s)/pencil(s), a calculator that works (with extra batteries), an eraser, and a straight edge.

Cell phone, computers, electronic watches, and all other electronics must be turned off and placed in a backpack during the entire examination. The backpack must be placed on the floor for the entire examination. Failure to do so will be considered cheating and you will receive a score of zero on the examination.

ME Exam Calculator Policy

The only calculator that is permitted to be used during all exams is the TI-30X IIS, a two-line, basic scientific calculator. This calculator was specifically selected for four reasons: (1) its simplicity of use, (2) its basic functionality (no added bells or whistles), (3) its low cost ($13), and (4) its wide availability (available at most retail stores, e.g., Wal-Mart, or online, Amazon.com, etc.). As such, there is no significant imposition on students to purchase this low-cost exam calculator. Students retain the freedom to use their calculator of choice on homework, labs, projects, and quizzes; however, students are encouraged to practice using their exam calculator to make sure they fully understand its functionality. The reason for this policy is to address growing inequity and academic dishonesty issues due to different calculators used by
students during exams. With the advent of wireless calculators and highly-sophisticated graphing calculators, a specific calculator policy was needed to ensure the integrity of the exam process and to provide all students with equal opportunity to succeed on exams. With only one exam calculator option, this also enables instructors to more easily verify that all students are utilizing the authorized calculator during an examination.

Use of unauthorized calculators during any exam will be considered violation of academic honesty. Students who violate this policy are subject to sanctions from the instructor, up to and including a failing grade on the exam or even a failing grade in the course. Furthermore, all infractions will also be reported to the Office of the Dean of Students as potential violations of the Purdue University Code of Student Conduct which may result in additional sanctions being assigned, including probation, suspension, or even expulsion from the University. Any questions about this policy should be addressed to your instructor.

8. HELP: The course instructors will hold office hours during the week. Students may receive help from any of the instructors. Office hours and room numbers are listed in this document and posted on the course web site.

9. GRADING: The course grade will be determined from the more favorable of the following two distributions:

One-hour Exams (3)................................. (total of) either 45% or 30%
Final Examination................................. either 30% or 45%
In-class Quizzes/Attendance/Participation ..... 10%
Homework .............................................. 15%
Total ...................................................... 100%

Based on participation criteria (class participation, diligence), the instructors also reserve the option of raising or lowering any borderline grade. Please note that in-class quizzes will be given without prior announcement.

10. CAMPUS EMERGENCIES: In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Such changes will be posted on the website: https://engineering.purdue.edu/ME300. You may also be informed of such changes by email.

11. ACADEMIC DISHONESTY: Any form of dishonesty on an examination (or quizzes or homework assignments), as defined by Section III.B.2 of the University Regulations, results in a grade of zero for that case of dishonesty (in case of homework assignments, the semester homework grade of 15% will be zero) and a letter will be sent to the Dean of Students recommending that you be placed on probation. After more than one instance you will receive a failing grade for ME 300 and a letter will be sent to the Dean of Students recommending that you be expelled from Purdue University.
12. CLASSROOM RULES: Common courtesy while in the classroom is a pre-requisite for learning. The following is expected of students in ME 300:

- Turn off all cell phones, pagers, beepers, etc. before entering the class room. It distracts and annoys those sitting near you when your phone, beeper, or pager goes off during lecture.
- Do not read the newspaper once lecture has started. Those behind you cannot see the board/overhead screen through the paper. It is also insulting to your instructor.
- Remove the newspapers, soda cans, candy wrappers, and anything else you bring into the room when you leave. There are trashcans for any refuse. Class time is not for socializing. Please restrict your conversations to subjects related to ME. It is distracting and annoying to those sitting near you if you’re talking about non-class issues while lecture and discussion is going on. Moreover, you will invariably miss important information. Finally, it is disrespectful of your instructor.

13. SOME ADVICE: It is implied that you will ask questions, participate in class discussions, be prepared to answer questions when called upon, and generally be alert in class. Frequent absences or lack of participation directly impact your performance on examinations. Reading your textbook and reviewing your class notes, and working the homework problems on a daily basis is the best way to ensure you learn the material and are prepared for examinations. Hard work and perhaps some struggle is generally required, especially in the early stages of the class, so try and get into the swing of things as soon as possible. Good luck!

Executing and Copying EES within the ME Building

EES (Engineering Equation Solver) is available for use on and to copy from the personal computers located in the ME building. Instructions for executing and copying the program follow.

1. Using EES within the ME building: EES operates within the Windows environment on PCs that are located within the ME building. To execute the program, do the following:

   a) Log onto to a PC.
   b) Locate the EES icon in the folder labeled “Applications”
   c) Double click on the EES application to launch the program.

This sequence should put you within the EES program. There are a number of examples in an “Examples” subdirectory (use OPEN under the FILE menu within EES to load an example from C:\EES32\USERLIB\EXAMPLES) that can help you in getting started. ME-ECN account is necessary to access the PCs in the ME building. Printing accounts are free for ME students. Print from within EES by selecting the Print option under the FILE menu.

2. Copying EES for Personal Use: Purdue has a site license for EES that allows you to copy the program and use it on any computer for your school work. However, this agreement
only pertains to use of EES while you are a Purdue student. This program version should not be used for commercial purposes. After graduation, you may wish to purchase a commercial version if you are interested in using EES for programming purposes. A Windows version of the program can be copied from the PCs in the ME building to an external media device. The program is stored in the directory C:\EES32. You can copy the EES32 folder and place it in a new directory called C:\EES32 on your computer. You may also wish to create a shortcut to it on your desktop. Alternatively, you can go to https://engineering.purdue.edu/MECL/MELS and download EES.