1. INSTRUCTORS:

Section 3: 8:30 a.m. to 9:20 a.m. MWF in ME 2061
Qingyan Chen
Office Hours: 9:30 a.m. to 10:30 a.m. MWF in ME 3003G
Email: yanchen@purdue.edu, Phone: 765-496-7562

Section 2: 10:30 a.m. to 11:20 a.m. MWF in ME 2061
Sameer Naik
Office Hours: 11:30 a.m. to 12:30 p.m. MWF in ME G092
Email: naiks@purdue.edu, Phone: 765-496-2183

Section 1: 2:30 p.m. to 3:20 p.m. MWF in ME 2061
Chris Goldenstein
Office Hours: TBD in ME 1072C
Email: csgoldenstein@purdue.edu, Phone: 765-494-5660

Teaching Assistants
Zhipeng Deng Email: deng132@purdue.edu
Seunghyun Jo Email: jo25@purdue.edu
Juyoung Kim Email: kim1319@purdue.edu
TA Office Hours: The schedule will be posted on https://engineering.purdue.edu/ME300/ in the first week of class.

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 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. You will need an ECN 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 an account. In those PCs, to execute
the program, do the following:

a) Locate the EES icon in the folder labeled “Applications”
b) 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. A ME-ECN account is necessary to access the PCs in the ME building. Print from within EES by selecting the Print option under the FILE menu.

Please note that EES (http://www.fchart.com/ees/) cannot be installed by individuals on their personal computers, unless they are Purdue-owned machines. EES, however, can be executed remotely across the Internet by anyone with a Purdue career account with any computer using an application called “Go-Remote” that operates within a web browser. Instructions for executing EES remotely are available at https://engineering.purdue.edu/ME300/.

Seunghyun Jo and Jupyoung Kim will conduct two training sessions for using EES from 6:00 pm to 7:30 pm on Wednesday, January 16 in Room ME2061 and 6:00 pm to 7:30 pm on Thursday, January 17 in Room ME1130, respectively. You are strongly encouraged to take one of them. Additional 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/ and http://www.fchart.com/. You do not need to purchase the optional software that comes with the text. We will not use the software from the textbook in ME 300.

Check the course website 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 schedule. 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 as well as what you may encounter on course exams. Keeping up on these problems is an excellent way to prepare for exams and in-class quizzes.

Special Problems: Special problems (SPs) are assigned for each lecture and will be collected and graded each week. Homework must be submitted electronically through Gradescope before 11:59 pm on the due date noted in the course schedule. Information on how to scan your homework and submit it to Gradescope can be found on the course website https://engineering.purdue.edu/ME300. No late homework will be accepted. However, three lowest special problem scores will be dropped out in calculating the homework grade. Solutions to the assigned problems will be posted on the course website.

Students must use the 8 ½ by 11 inch engineering paper format when solving problems. No more than one problem should be included per page. Scan all the pages in the correct order and upload your solution according to the instructions on “Submitting homework on Gradescope”.
If EES software is used in solving a problem, an EES printout must be attached to the problem solution. Upload the PDF file to the website specified by your instructor.

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):

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, e.g. SP-5
   iv. Box 4 - put your instructor name/class time, e.g. Chen@8:30 a.m.
   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, e.g. Initial temperature \( T_1 = 30 \, ^\circ C \)
   ii. **Find**: List the parameters and values that you are asked to determine, e.g. pressure at state 2 or \( P_2 \)
   iii. **Sketch**: A drawing of control volume or control mass with flows of mass and/or energy
   iv. **Assumptions**: e.g. Ideal gas
   v. **Basic Equations and Thermodynamic Data**
   vi. **Solution**: The problem should be worked analytically before numbers are substituted 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 consider the format of the solution (organization, clarity of writing, problem sketch, etc.), correct analysis, and answer. Special attention will be paid to units.

It is anticipated that several quizzes will be given in class; the number is to 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 homework problems.

7. **EXAMINATIONS**: There will be two (2) one-hour evening examinations. All examination dates, times, and locations are indicated in the course schedule. There will be no make-up exams. Students with excusable absences due to illness, official conflict, or serious emergency will be assigned a grade for the missed exam equal to the other exam. 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, 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 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 a 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.

EXAMINATION GRADING: On examinations, points will be deducted if you do not follow the problem solution format as outlined in Items 6A and 6B. For example, points will be deducted if you do not show what the system looks like and list what your basic equation(s) is (are). In addition, you will lose points if you do not clearly indicate your assumptions and if you do not provide sufficient detail during your analysis so that the grader can understand what you have done and why you have done it. Finally, you must carry units through during your analysis and must avoid sign errors in all quantities, as well as correctly identify the direction of relevant work and energy transfer terms. Please note that partial credit will be given only if you work your way completely through the problem. In other words, writing basic equations and assumptions, without going through the steps to the final answer, may not receive any partial credit.

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. Teaching assistants will hold office hours in the tutorial room (See TA schedule for room number) as posted on the course website (https://engineering.purdue.edu/ME300/).

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

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<tr>
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<th>One-hour Exams (2)</th>
<th>Final Examination</th>
<th>Class Performance (attendance, quizzes)</th>
<th>Homework</th>
<th>Total</th>
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<tbody>
<tr>
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<td>50%</td>
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Course grading will not be more stringent than a straight-scale (90-100 for an A+, A, A-, 80-90
for a B+, B, B-, etc.). Grade break scores may vary from straight-scale. Your lowest quiz score and three lowest special problem scores will be dropped from consideration.

The instructors expect and require that you attend all classes. The grade for Class Performance is equally divided between attendance and quizzes. Based on participation criteria (discussion participation, diligence), the instructors also reserve the option of raising or lowering any border-line grade. Please note that in-class quizzes will be given without prior announcement. Cheating on the quizzes or attendance will result in you receiving a grade of zero for the entire class performance portion of the semester grade.

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 course website https://engineering.purdue.edu/ME300. You may also be informed of such changes by email from your instructor.

11. ACADEMIC DISHONESTY: Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern. 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 will be zero. 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 prerequisite 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. It is distracting and annoying to those sitting near you while lecture and discussion is going on. Moreover, you will invariably miss important information. Finally, it is disrespectful of your instructor.

13. ADDITIONAL INFORMATION: The course website provides additional information, such as Purdue’s Honor Pledge, resources for mental health, Purdue’s nondiscrimination policy, emergency procedures, etc. The additional information is a part of the course policies. Please read it.
14. 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. We expect that you are reading your textbook, reviewing your class notes, and working the homework problems on a daily basis. This is the best way to ensure you learn the material and are prepared for quizzes and 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!