Course Title: Thermodynamics II
Course Prefix: MCEG Course No.: 3023 Section No.: P01

Department of | Mechanical Engineering | College of | Engineering

Instructor Name: Ziaul Huque
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P.O. Box | P.O. Box 519
Mail Stop | Mail Stop 2525
Prairie View, TX 77446

Office Hours: | 10:30 – 12:00 PM Tuesdays and Thursdays
Virtual Office Hours: | 24 hours by e-mail
Course Location: | Sam R Collins Engr Tech Bldg 116
Class Meeting Days & Times: | 12:30 -1:50 PM, Tuesdays and Thursdays
Catalog Description: MCEG 3023. Thermodynamics II. (3-0) Credit 3 semester hours. Continuation of Thermodynamics I, including various power cycles, refrigeration cycles, fluid flow, combustion process, and advanced concepts of gas dynamic such as shock waves.

Prerequisites: Prerequisite: MCEG 2013 and MATH 2024.
Co-requisites: None

Recommended Text/Readings:

Access to Learning Resources:
PVAMU Library:
phone: (936) 261-1500;
web: http://www.tamu.edu/pvamu/library/
University Bookstore:
phone: (936) 261-1990;
web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d

Course Goals or Overview:
The goal of this course is to have an in depth knowledge of the applications of the First and Second Laws of Thermodynamics in the analysis of several industrial systems including: the steam power plants; advanced refrigeration systems; the auto, diesel and gas turbine cycles; multicomponent systems; combustion; and, other gas-powered devices.
## Course Outcomes/Objectives

At the end of this course, the student will

1. Be able to use the concepts of Exergy, Reversible work, Irreversibilities, First and Second Law efficiencies, power cycles and refrigeration cycles as they apply to the analysis of engineering systems and cycles.

2. Be able to apply the First Law of Thermodynamics to advanced thermodynamic cycles.

3. Demonstrate the ability to apply the mathematical relations used in calculating various thermodynamic properties from p-v-T and c\text{po} information.

4. Be able to apply the thermodynamic analysis of mixtures, and chemical reactions.

5. Be able to review current design and research work in the area of thermodynamics through library & reading assignments.

6. Be able to relate what is learned in thermodynamics to the human dimension and to social implications of the engineering profession.
Course Requirements & Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

- **Exams** – written tests designed to measure knowledge of presented course material
- **Homework Assignments** – written assignments designed to supplement and reinforce course material
- **Design Projects** – projects to design engineering systems applying knowledge learned in the course
- **Quizzes** – pop quizzes to measure students progress and regularity in class
- **Class Participation** – daily attendance and participation in class discussions

**Grading Matrix**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Value (points or percentages)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>10 assignments at 10 points each</td>
<td>100</td>
</tr>
<tr>
<td>Exam #1</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Exam #2</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Exam #3</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Design Project</td>
<td>1 design project</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

**Grade Determination:**

- **A** = 1000 – 900pts;
- **B** = 899 – 800pts;
- **C** = 799 – 700pts;
- **D** = 699 – 600pts;
- **F** = 599pts or below

**Course Policy**

**Note:** The instructor reserves the right to alter it during the semester.

**Academic Integrity**

Academic dishonesty of any sort (plagiarism, cheating, fabrication or facilitation) is prohibited under any circumstance. Any detected actions of dishonesty will cause the failure of the class directly.

**Assignments & Due Dates**

Homework will be submitted at the beginning of class on the assigned day. Late homework will be charged a 10% penalty for each day late – weekend days do count. Circumstances beyond your control (i.e. illness, computer failure, weather, etc.) will be considered as required.

**Projects**

You need to submit all the projects with one hardcopy printed out on paper and one electronic copy. The final project may be team project.

**Attendance**

Class attendance is mandatory. Late class for more than **10** minutes will count as **one** absence. If you have **3 or more than 3** absence, you will receive an “**F**” automatically.

**Examinations**

No makeup test will be given. You will be expected to complete the exam in the allotted time period. Portions of each exam may be either closed or open book. You will be notified of the exam format at least one week in advance.
<table>
<thead>
<tr>
<th>IMPORTANT DATES</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Student Assembly</td>
<td>August 31, 2016</td>
</tr>
<tr>
<td>Last day to withdraw from course(s)</td>
<td>September 07, 2016</td>
</tr>
<tr>
<td>without record</td>
<td></td>
</tr>
<tr>
<td>Late Deadline to Apply for Fall 2016</td>
<td>September 07, 2016</td>
</tr>
<tr>
<td>graduation</td>
<td></td>
</tr>
<tr>
<td>Automatic grade of “W” begins</td>
<td>September 08, 2016</td>
</tr>
<tr>
<td>Mid Semester Exam Period</td>
<td>October 13 – 15, 2016</td>
</tr>
<tr>
<td>Automatic grade of “W” ends</td>
<td>October 31, 2016</td>
</tr>
<tr>
<td>Last day to apply for Spring graduation</td>
<td>November 11, 2016</td>
</tr>
<tr>
<td>Thanks Giving Holidays</td>
<td>November 24-26, 2016</td>
</tr>
<tr>
<td>Course Review Days</td>
<td>November 28-29, 2016</td>
</tr>
<tr>
<td>Final Exam Period</td>
<td>Nov 30-Dec 06, 2016</td>
</tr>
<tr>
<td>Grades for graduating seniors due</td>
<td>Dec 06, 2016</td>
</tr>
<tr>
<td>Commencement</td>
<td>Dec 10, 2016</td>
</tr>
<tr>
<td>Grades for all other students due</td>
<td>Dec 13, 2016</td>
</tr>
</tbody>
</table>
Thermodynamics II
Tentative Course Schedule
Spring 2016

Week One: Overview of Thermodynamics
Week Two: Exergy and Irreversibility
Week Three: Exergy and Irreversibility
Week Four: Vapor Power Systems
Week Five: Vapor Power Systems
Week Six: Vapor Power Systems
Week Seven: Gas Power Systems
Week Eight: Gas Power Systems

Mid-Term Exam

Week Nine: Gas Power Systems
Week Ten: Mixtures and Psychometrics
Week Eleven: Mixtures and Psychometrics
Week Twelve: Reacting Mixtures and Combustion
Week Thirteen: Reacting Mixtures and Combustion
Week Fourteen: Refrigeration & Heat Pump
Week Fifteen: Thermodynamic Relations

Week Sixteen
Final Exam
University Rules and Procedures

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:
1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.

2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.

3. Fabrication: use of invented information or falsified research.

4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else’s words, ideas, or data as one’s own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one’s own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor’s ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:
Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student’s course grade being reduced or in assignment of a grade of “F”. Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor’s assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.
Technical Considerations for Online and Web-Assist Courses

Minimum Hardware and Software Requirements:
- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15” monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
  - Sending and receiving email
  - A working knowledge of the Internet
  - Proficiency in Microsoft Word
  - Proficiency in the Acrobat PDF Reader
  - Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette): students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

Technical Support: Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

Communication Expectations and Standards:
All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following my receipt of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

Submission of Assignments:
Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

Discussion Requirement:
Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.