

Course Title: Thermodynamics II

Course Prefix: **MCEG**

Course No.: **3023**

Section No.: **01**

Department of | **Mechanical Engineering**

College of | **Engineering**

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Office Hours: | **T, 12:00 – 2:00 pm and R 12:30-2:00 pm**

Virtual Office Hours: | **NONE**

Course Location: | **New Electrical Engineering Building Room 137**

Class Meeting Days & Times: | **T, 10:00 - 11:50 am and R: 10:00 am – 12:20 pm**

Catalog Description: | 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: | **MATH 2024 and MCEG 2013**

Co-requisites: | **NONE**

Required Text: | **Thermodynamics, 7th edition, Yunus Cengel and Michael A. Boles, 2011, McGraw Hill: ISBN 978-0-07-352932-5**

Recommended Text/Readings: | Fundamentals of Engineering Thermodynamics, 7th edition
M. J. Moran, H. N. Shapiro, D. D. Boettner and M.B. Bailey
ISBN-10: 0470495901
ISBN-13: 978- 0470495902

Access to Learning Resources: | PVAMU Library:
phone: (936) 261-1500;
web: <http://www.pvamu.edu/library/>
University Bookstore:
phone: (936) 261-1991;
web: <https://www.bkstr.com/Home/10001-10734-1?demoKey=d>

Course Goals or Overview:

To introduce the concepts of exergy, reversible work, irreversibilities, second-law efficiency, power and refrigeration cycles, gas mixtures, reacting systems as they apply to the analysis of engineering systems and cycles.

Course Outcomes/Objectives

At the end of this course, the student will be able to

- 1 | solve the energy and exergy balance problems
- 2 | identify, formulate, solve intermediate and advanced thermodynamic engineering problems
- 3 | design a thermodynamic system (closed system or control volume), or process to meet desired needs

Course Requirements & Evaluation Methods

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

Homework– written assignments designed to supplement and reinforce course material

Quizzes – Several quizzes and the use of classroom performance system will be used to engage students in class throughout the semester

Tests – written tests designed to measure knowledge of presented course material

Class Participation – daily attendance and participation in class discussions

Grading Matrix *(points will vary according to instructor's grading system)*

Instrument	Total (%)
Homework Assignments (Many for Practice only)	4
Quizzes*	15
Test 1	28
Test 2	25
Test 3	28
Total:	100

* 5% bonus score will be considered for the students who earn more than 75% of the points of quizzes.

Grade	A = 90 - 100
Determination	B = 80 - 89
	C = 70 - 79
	D = 60 - 69
	F = 0 – 59

Course Procedures

Submission of Assignments:

(if there are any special instructions relating to assignment submissions, they should be discussed here)

Formatting Documents:

Microsoft Word is the standard word processing tool used at PVAMU. If you're using other word processors, be sure to use the "save as" tool and save the document in either the Microsoft Word, Rich-Text, or plain text format.

Exam Policy

Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook). *(if there are any other special instructions relating to exams, they should be discussed here)*

Professional Organizations and Journals

(if applicable to your course or program, they should be listed here)

References

(if applicable to your course or program, references should be listed here)

Week	10 WEEK CALENDAR
#1	Course Overview Chapter 8 - Exergy: Work Potential of Energy - Reversible Work and Irreversibility
#2	Chapter 8 - Second-Law Efficiency - Exergy Change of a System - Exergy Transfer - Exergy Destruction - Exergy Balance: Closed Systems - Exergy Balance: Control Volumes
#3	Chapter 9 - Basic Considerations / Carnot Cycle / Air Standard Assumptions - Otto Cycle - Diesel Cycle - Stirling and Ericsson Cycles - Brayton Cycle - Brayton Cycle - Second-Law Analysis of Gas Power Cycles
#4	Chapter 10 - Rankine Cycle - Efficiency Enhancement of Rankine Cycles - Test 1
#5	Chapter 10 - Regenerative Rankine Cycle - Second-Law Analysis of Vapor Power Cycles - Combined Cycle
#6	Chapter 11 - Vapor-Compression Refrigeration Cycle - Second-Law Analysis of Vapor-Compression Refrigeration Cycle - Heat Pump Systems
#7	Chapter 13 - Composition of a Gas Mixture - Properties of Gas Mixtures - Test 2
#8	Chapter 14 - Dry and Atmospheric Air - Properties of Moist Air - Air Conditioning Processes
#9	Chapter 15 - First-Law Analysis of Reacting Systems - Second-Law Analysis of Reacting Systems
#10	Test 3

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.