MEGR3111 - Thermodynamics I

Catalog Data	First and second laws of thermodynamics. Work and heat Carnot cycle. Ideal and real gases. Non-reactive mixture of gases. Availability and irreversibility.
References	M. J. Moran and H. N. Shapiro, *Fundamentals of Engineerine Thermodynamics* , 7th Edition, John Wiley and Sons, Inc. 2011
Goals	The objective of this course is to provide the students with an understanding of the first and second laws of thermodynamics and their application to engineering systems.
Prerequisite	Math 2171
Class Topics	Conservation of Energy (1st Law of Thermodynamics) Application to Closed Systems Concepts of Internal Energy and Enthalpy Ideal and Real Gases Polytropic Processes Application to Control Volume Systems Transient Control Volume Analysis Second Law of Thermodynamics Maximum Performance of Cycles Carnot Cycle Entropy and the 2nd Law of Thermodynamics Entropy Balanace in Internally Reversible Processes Entropy Balance for Closed Systems Entropy Balance for Control Volume Systems Isentropic Processes and Efficiencies Heat Transfer and Work in Internally Reversible Control Volume Systems Exergy (Availability) Analysis
Outcomes	From this course the students will gain: 1. An understanding of the First and Second Laws of Thermodynamics. (assessment by homework, quizzes, and exams) 2. The ability to apply 1st and 2nd Law Principles to the thermodynamic analysis of closed and control volume systems. (assessment by homework, quizzes, and exams) 3. Develop an understanding of ideal and real energy systems. (assessment by homework, quizzes, and exams) 4. Understand the concepts of energy availability for a closed or control volume system. (assessment by homework and exams)
Computer Usage	None
Laboratory	None
Design Content	None
Grading *	The course grade will be determined from the student's performance on: exams, homework, quizzes, and a comprehensive final exam. The weight and frequency of each item is determined by the instructor.
Follow-up Courses	This course is a pre-requisite for the following courses: MEGR 3112, MEGR 3116, and MEGR 3216.
Academic Integrity	Students are required to understand and abide by University Policy 407, The Code of Student Academic Integrity. This code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty.
Prepared by	J. M. Hill

* Grading policy may be modified by the instructor for each section of the course.