MEGR3111 - Thermodynamics I

**Catalog Data**

**References**

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