

# AME 327: Thermodynamics I

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## CATALOG DATA:

AME 327: Thermodynamics. Credits: 3

Basic concepts of thermodynamics. The First Law of Thermodynamics. Work, heat, properties of substances and state equations. The Second Law of Thermodynamics. Applications to engineering systems.

## TEXTBOOK:

M. J. Moran and H. N. Shapiro, *Fundamentals of Engineering Thermodynamics*, Third Edition, Wiley, 1995.

## GOALS:

A first course in engineering thermodynamics. The course uses the macroscopic approach with an emphasis on properties and thermodynamic systems. Microscopic models are introduced. The overall objective is to develop the ability to prepare energy and mass balances for various engineering systems and to develop an understanding of the increase in entropy principle.

## Prerequisites:

Differential and Integral Calculus. General Physics.

## Topics:

General concepts of thermodynamics.  
Energy, work and heat: First Law- control mass systems.  
Properties and state of pure substances-state postulate.  
Second law.  
Entropy: applications to closed systems.  
First & second law - control volume systems.  
Thermodynamic analysis of engineering systems.  
Vapor power cycles.  
Gas power cycles.  
Refrigeration and heat pump cycles.  
Tests.

## Practice and Assessment Methods:

In order to meet the goals set forth for this course, the students are required to obtain solutions for five to six homework problems each week. Student questions concerning homework problems are answered in class or during the scheduled help sessions held weekly. These solutions are graded and handed back to the students along with a copy of the correct solutions. The two examinations given during the semester are graded by the instructor. These are returned to each student with detailed correct solutions. These solutions are discussed with emphasis on the approach to be used in solving problems. A personal evaluation is discussed with each student scoring low on the examination.

## ABET category content as estimated by faculty member who prepared the course description:

Engineering Science: 3.0 credits or 100%  
Engineering Design: 0 credits

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