Spring 2012

PHYSICS 344-3
Thermal Physics

TEXTBOOK: *An Introduction to Thermal Physics*
Author: Schroeder
Publisher: Addison-Wesley

Recommended References: Gerald Carrington, *Basic Thermodynamics*.
Mark Zemansky, Heat and Thermodynamics.

COURSE DESCRIPTION:

Heat, temperature, heat transfer, kinetic theory, laws of thermodynamics, entropy, heat engines, applications of thermodynamics to special systems, phase transitions.

Prerequisite: PHYS 126 or 121, MATH 251.

Quantitative.

COURSE OUTLINE:

1. Temperature, the ideal gas, and the kinetic model
2. Thermodynamic processes in ideal gas systems
3. Heat, work, and the first law of thermodynamics
4. Entropy, engines and refrigerators, and the second law of thermodynamics
5. Phase Transitions: melting, vaporization, sublimation, and phase equilibrium.
6. Pure Substances: thermodynamic potentials, Maxwell's relations, TdS equations, and the relationship between mechanical and thermal properties.
7. Thermodynamic treatment of simple physical systems other than pure substances.
8. The 19th century development of thermodynamics.

GRADING:

Assignments: 20%
Midterm: 20%
Final: 60%

GENERAL:

Students who cannot write their exam during the course's scheduled exam time must request accommodation from their instructor in writing, clearly stating the reason for this request, before the end of the first week of classes.