

DETAILED COURSE DESCRIPTION

Course Number PHYS 321

Course Title Thermal Physics

Target audience The course is designed for junior level physics majors; however other engineering and science majors with the correct preparation are welcome. NB: this course is mandatory for all physics majors. Therefore, its audience includes both students who intend to pursue graduate studies, and students who will want to find a job after the BS degree. Topics of choice must take this fact into consideration.

Prerequisites PHYS 136 or 138 or 231 or 311.

Catalog description Concepts of temperature and heat. Laws of thermodynamics. Elementary statistical mechanics. Applications to physical and chemical problems.

Expected previous knowledge

Concepts Temperature, pressure, work, energy, basic electricity and magnetism.

Skills Familiarity with calculus concepts (differential and integral calculus).

Course Objectives

To familiarize students with the concepts of thermodynamics and statistical mechanics, and the development of formalism and techniques for the solution of various physical and chemical problems.

Sample Text

“An Introduction to Thermal Physics”, Daniel V. Schroeder, Addison-Wesley.

Minimum Material Covered

Energy, work, reversible and irreversible processes, entropy, the laws of thermodynamics.

Thermodynamic potentials and applications.

Engines and refrigerators.

Phase transitions and mixtures.

Boltzmann and quantum statistics; introduction to Statistical Mechanics.