

Minnesota State University Moorhead

PHYS 380: Thermodynamics

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites:

PHYS 330 - Intermediate Mechanics

Corequisites: None

MnTC Goals: None

Elements of classical thermodynamics, kinetic theory and statistical mechanics.

B. COURSE EFFECTIVE DATES: 02/09/2021 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. First and second laws of thermodynamics
2. Heat engines and refrigerators
3. Partition function and the Boltzmann distribution
4. Blackbody radiation
5. Chemical potential and various applications
6. Fermi and Bose statistics
7. Kinetic theory of gases

D. LEARNING OUTCOMES (General)

1. Demonstrate an ability to apply the first and second laws of thermodynamics to solving problems.
2. Determine the thermodynamic behavior of the system from knowledge of the energy levels.
3. Develop the skills of a physicist: checking units, limiting cases, developing conceptual and mathematical skills.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted