

National Institute of Physics
College of Science
University of the Philippines
Diliman, Quezon City

Physics 151/205: Statistical Physics I / Foundations of Statistical Physics

Course Description:

(151) *Review of thermodynamics, basic statistical concepts, basic methods of statistical mechanics, canonical and grand canonical ensembles, some applications of statistical mechanics, quantum statistics of ideal gases.*

(205) *Basic concepts and applications of classical statistical mechanics, quantum statistical mechanics of ideal gases.*

Prerequisites: Physics 121 / Physics 202.1

Credit: 3 u.

Course Outline: Second Semester AY 2018-19

- I. Introduction (Chapter 1)
- II. Thermodynamic concepts and processes (Chapter 2)
- III. Concepts of probability (Chapter 3)
- IV. The methodology of statistical mechanics: part 1 (Chapter 4)

Midterm Examination

- V. The methodology of statistical mechanics: part 2 (Chapter 4)
- VI. Many-particle systems (Chapter 6)

Final Examination

Main reference:

Statistical and Thermal Physics (with computer applications) – Harvey Gould and Jan Tobochnik (Princeton: 2010)
[Individual chapters available: www.compadre.org/stp]

Guidelines

Problem Sets

Problem sets are due on the assigned date at the start of class (first thirty minutes) – not later. There are no late problem sets.

The averaging of the problem set component of the grade will utilize a weight that is proportional to the number of items that it contains. Problem sets include quizzes/seat work. There are no make-up quizzes/seat work. A student with six (6) or more missed quizzes obtains a grade of five (5.0).

Begin each problem item on a separate sheet of paper. Every sheet of paper should indicate your name, problem number and page number for the problem (e.g., Juan Two . . . problem 8, page 1 of 3). Credit for neat, clear and complete solutions.

Examinations

You are allowed only blank sheets of paper and a writing implement during the MIDTERM EXAM. No books and or notes may be utilized during that exam. There is NO MAKE-UP EXAM for the MIDTERM EXAM.

You may prepare a crib sheet (any size) for the FINAL EXAM. Both sides of the crib sheet may contain whatever you feel may be useful during the exam. The crib sheet may be handwritten or printed by any means.

Grading

Each item (quiz, problem set item, and exam item) will be graded out of a maximum possible score of ten (10), with the following possible scores: 10, 8, 5, 2, 1, and 0.

The final (percentage) rating is (Problem Set + Midterm + Final)/3.

Rating	Grade	Rating	Grade
$90 \leq x \leq 100$	1.00	$60 \leq x < 65$	2.50
$85 \leq x < 90$	1.25	$55 \leq x < 60$	2.75
$80 \leq x < 85$	1.50	$50 \leq x < 55$	3.00
$75 \leq x < 80$	1.75	$45 \leq x < 50$	4.00
$70 \leq x < 75$	2.00	$x < 45$	5.00
$65 \leq x < 70$	2.25		