

PHY4523, Section 001, Statistical Physics (Spring 2019)

PHY5937, Section 002, Bridge to Statistical Physics (Spring 2019)

Instructor: Dr. Inna Ponomareva; Office: ISA 5103; E-mail: iponomar@usf.edu; telephone: 974-7286

Text: Thermal Physics, 2nd ed; Publisher: W.H. Freeman and Company; Author: Ch. Kittel and H. Kroemer

Class: TR 3:30pm-4:45pm ISA 2023

Recitations: F 1:00 pm – 1:50 pm ISA 2023

Office Hours: TR 2:00pm-3:00pm and by appointment

TA office hours ():

Current Departmental Prerequisites: Mechanics I or Quantum Mechanics I or E&M I

Students strongly encouraged to complete Mechanics, Quantum Mechanics I and E&M I before taking Statistical Physics.

Course Outline and Objectives

The course provides introduction into statistical physics and thermodynamics. It requires understanding of fundamental concepts from classical and quantum mechanics, electricity and magnetism as well as good mathematical skills. The topics of the course include entropy and temperature, Boltzmann distribution and Helmholtz free energy, thermal radiation, Planck distribution, chemical potential, Gibbs distribution, ideal gas, Fermi and Boson gases, heat and work, chemical reactions, phase transformations. The main ideas are understood and re-enforced by developing conceptual problem-solving skills. Problems will be assigned from each chapter of the text. After we complete each chapter in the text, I will ask for two-four of the assigned problems from that chapter to be handed in. These problems will be due at the beginning of the first lecture of the next chapter. In addition, there will be a quiz after each chapter that emphasizes basic concepts of the material learned. I will give exact dates for these quizzes about one week in advance. In studying for the quizzes and examinations you are encouraged to work on problems in the book in addition to those assigned. Please read the text before each lecture. Do homework before recitations. Although I will not require attendance, it is paramount that you come to every lecture and recitation in order to keep up with the work. Please come see me during office hours if you have missed a lecture to get 'up to speed' on the course work.

Course Grading Breakout	Assigned Problems	20 %
	Quizzes	20 %(best 5 out of 8 quizzes, no makeup)
	Mid-term Exam *	30 %
	Final*	30 %

Extra points will be offered for attendance**

* Makeups only in case of documented emergency. Instructor must be notified by e-mail as early as possible. Makeup will be scheduled no later than the second day student is able to return to school as per documentation.

** To qualify for extra credit for attendance students must attend 23 out of 28 classes excluding Midterm and 11 out 14 recitations. The extra credit will be in the form of grade increment. For example, if student earns B+ and qualifies for extra credit, the final grade will be A-.

Course Grading

93.00 – 100.00	A
90.00 – 92.99	A-
87.00 – 89.99	B+
83.00 – 86.99	B
80.00 – 82.99	B-
77.00 – 79.99	C+
73.00 – 76.99	C
70.00 – 72.99	C-
67.00 – 69.99	D+
63.00 – 66.99	D
60.00 – 62.99	D-

Tentative Schedule and Examination Dates

Week Beginning	Topics (Chapters in Text)
Jan 6	Introduction and Entropy and Temperature (1-2)
Jan 13	Boltzmann Distribution and Helmholtz Free Energy (3)
Jan 20	
Jan 27	Thermal Radiation and Planck Distribution (4)
Feb 3	
Feb 10	Chemical Potential and Gibbs Distribution (5)
Feb 17	
Feb 24	Mid-term on Chapters 2, 3, 4 & 5 + Ch. 5 Quiz on Tuesday, February 26th Ideal Gas (6)
Mar 3	
Mar 10	Spring break
Mar 17	Fermi and Bose Gases (7)
Mar 24	
Mar 31	Heat and Work and Chemical Reactions (8-9)
Apr 7	
Apr 14	Phase Transformations (10)
Apr 21	
Apr 28	FINAL on Chapters 6,7,8,9,10 + Ch. 10 Quiz on Thursday May 2nd 12:30 PM–2:30 PM

NOTE

Students who anticipate being absent from exams due to a major religious observance must provide notice of the date(s) and event(s) to the instructor, in writing, by the second class meeting. Notes and Tapes are not permitted for purposes of sale.

Any student with a disability is encouraged to meet with me privately during the first week of class to discuss accommodations. Each student must bring a current Memorandum of Accommodations from the Office of Student Disability Services (974-4309, SVC1133) which is prerequisite for receiving accommodations. Accommodated examinations through the Office of Student Disability Services require at least two weeks notice.