PHYSICS 730
STATISTICAL PHYSICS I
FALL 2019 / Monday, August 26 – Friday, December 20
Last Day of Instruction: Thursday, December 12
Watanabe Hall 417A / TTH, 1:30 PM - 2:45 PM

Instructor
Dr. Chester Vause
Professor, Department of Physics & Astronomy
Watanabe Hall 434, 808-956-2989, cvause@hawaii.edu
Office Hours: After class or by appointment.

Prerequisites (UHM Catalog)
Physics 670

Textbook
"Statistical Physics" (3rd English ed., Part 1) Landau and Lifshitz Course of Theoretical Physics, Volume 5, E. M. Lifshitz and L.P. Pitaevskii (Pergamon Press, Oxford, 1980)

Student Learning Outcomes
Among the student learning outcomes of this course are to:
(a) Understand the fundamental principles of equilibrium Statistical Mechanics as a microscopic theory, and how this theory provides the foundation of macroscopic Thermodynamics ("Laws of Thermodynamics").
(b) Develop and use various statistical equilibrium distributions, micro-canonical, canonical, and grand canonical, formulated by Gibbs.
(c) Derive the connection between statistical correlations (fluctuations) and thermodynamic response functions, and thermodynamic extremum principles of various thermodynamic potentials.
(d) Apply the theory to various macroscopic phenomena, from microscopic models of many-particle microscopic systems of macroscopic extent.
(e) Applications include the Fermi, Bose, photon, and phonon ideal quantum gases, the classical ideal Boltzmann gas, paramagnetism, and elementary interacting systems (such as the non-ideal gas, van der Waals theory), thermodynamic theory of phase transitions.

Exams
Exams are either take-home (details decided upon assignment) or in-class closed-book (two student-generated note pages per new material, 2 pages for Mid-Term Exam, 4 pages for Final Exam). In ether case, scientific calculator, only. No internet devices or electronic storage media.

Exam dates are:

Mid-Term Exam	Thursday	October 24, 2019
Final Exam	Thursday	December 19, 2019, 12:00PM-2:00PM

Each Exam (including the Final Exam) is based on material covered since the previous Exam. Each Exam is worth 1/2 of the final grade total score:

TOTAL SCORE(%)=(MID-TERMEX(%)+FNLEX(%))/2

Grade Scale
Letter grade is determined from the total score according to the following scale:

A- (86%-90%)	A (91%-95%)	A+ (96%-100%)
B- (61%-70%)	B (71%-80%)	B+ (81%-85%)
C- (31%-40%)	C (41%-50%)	C+ (51%-60%)
	F (0%-20%)	D (21%-30%)

NO INCOMPLETE GRADE GIVEN

NOTICE

Be prepared to take the tests in-class as assigned. This is not negotiable. If you have time conflicts, decide if this course is your first priority. I do not "work around" student's personal plans (travel and otherwise) and schedules.

This course is a lecture format. If you come to class, plan to stay. Excessive coming and going will not be tolerated. If you are late, enter quietly through the back door. Do not disturb the class.

No electronic recording and no electronic storage of any kind of lectures and lecture board writing.

No internet devices (electronic smart phones, pads/tablets, computers, etc.). Turn off your wireless telephones, etc., and PUT THESE AWAY. Do not attend to these during class (no texting, etc.) as such behavior is distracting to the instructor and your classmates.