PHY3513 Thermodynamics

Mon. 1400-1515 CP-115, Wed. 1400-1515 GC-273B
Instructor: Dr. Wang, CP-216, Tel. 73064

Office Hours: 9:00-11:00, T,R; 9:00-11:00, M,W
Textbook: An Introduction to Thermal Physics by D. V. Schroeder
Reference: Heat and Thermodynamics by Zemansky and Dittman
Exams: two quizzes, 25% each, cumulative final, 35%.
Homeworks are assigned and maybe collected 15%

Course outline: Thermal physics and thermodynamics

Week Subject

Content

Week	Subject	Content
Jan. 7	Review Math, Overview of thermodynamics	multivariable differential calculus, implicit functions (chp 0)
Jan. 14	Temperature, thermal equilibrium, equation of state, and zeroth law	ideal gas, van der Waals gas, PvT plot, simple phase diagram (chp 1)
Jan. 21	Internal energy, heat and work, 1st law of thermodynamics	quasistatic and non-quasistatic processes, material properties (chp 1)
Jan. 28	Enthalpy, thermal properties of matter	change of thermodynamic parameters, their derivatives (chp 3)
Feb. 4	2nd law of thermodynamics	quasi-static processes and efficiency (chp 4)
Feb. 11	Quiz-1, Heat engine and gas liquefaction	non-quasi-static processes (chp 4)
Feb. 18	Energy equation and TdS equations, application 1st and 2nd laws	appl. to chemical reaction and other non-quasistatic processes
Feb. 25	Macrostate and Microstate	Identical particles, classical and quantum statistics (chp 2)
Mar. 4	Entropy and physical basis of 2nd law	ideal gas and magnetism from 2nd law (chp 2, 3)
Mar. 11	SPRING BREAK	
Mar. 18	Free energy and other thermodynamic potentials	... and their applications
Mar. 25	Thermodynamic identities	Maxwell relations and applications
Apr. 1	Gibbs potential and their applications	phase transformation and fuel cells
Apr. 8	QUIZ-2, van der Waals model and applications	phase transformation model
Apr. 15	Boltzmann statistics	... and quantum statistics
Apr. 22	FINAL, Scheduled by FIU	

[*]Please check for changes in schedule on Panthersoft pages.