TOPICS- Second Half, Revised

i.) Nonlinear Oscillators

a.) Ponderomotive force
b.) Parametric oscillator and resonance
c.) Anharmonic oscillators and nonlinear frequency shift
d.) Driven nonlinear oscillators, mode jumping
e.) Van der Pol oscillator and relaxation oscillation cycles

ii.) Introduction to Continuua and Fluids

a.) Canonical Formalism for Continuous Media
b.) Review: Mechanics of Strings and Membranes
c.) Basic Equations, Theorems, Viscous Effects
d.) Potential Flow, Induced Mass, Sound
e.) Surface Waves, Applications
f.) Simple Instabilities – Kelvin-Helmholtz, Rayleigh-Bernard
g.) Shocks
h.) Acoustic Radiation

iii.) Introduction to Statistical Mechanics

a.) Gas kinetics, collisions
b.) Boltzmann Equation
c.) H-Theorem
d.) Transport phenomena and transport coefficients
e.) Phase Space, Microcanonical Ensemble