

PHYSICS 341
INTRODUCTION TO MODERN PHYSICS
PLAN II
FALL 2009

Week of	Topics	
August 27	Basis of Physics	Range of Interest Use of Mathematics Measurement Dimensions
September 3	Principles of Optics	Rays Least Time Fresnel Theory Phasors
September 10	Fields	Action at a distance Field Theory Waves Interference
September 17	Principles of Mechanics & Symmetry	$F=ma$ Galilean Invariance Actions Least Actions Dimensional Invariance Space Time Symmetries
September 24	More classical mechanics & Quantum Revolution	Invariance Noether's Theorem Black Body Radiation Photo-electric effect
October 1	Quantum Mechanics	Double Slit Experiment Test 1
October 8	Bell's Theorem & Superposition	Two level system Superposition Bell's Theorem Path integration
October 15	Quantum Mechanics II	Harmonic Oscillators Wave Functions Uncertainty Principle

Week of	Topics	
October 22	Quantum Field Theory	Many body states Bosons Quasi-classical states Quantum and classical string
October 29	Quantum Field Theory II	Fermions Spin Statistics Theorem CPT Theorem
November 5	Special Relativity	Equivalent Observers Speed of Light Simultaneity Space Time Diagrams
November 12	Examples in Special Relativity	Events, World Lines, and Intervals Paradoxes Uniform Acceleration
November 19	Relativistic Dynamics	Test II Relativistic action Energy and momentum Equivalence Principle
November 26	General Relativity	Space-time curvature Schwartzchild Solution Black holes Copernician universe
December 3	Cosmology	Expanding hot universe Missing Matter Cosmological constant Inflation
Final	Saturday, December 12, 7:00-10:00 pm	