淡江大學物理學系碩士班課程綱要

S0064 Classical Mechanics (3/0)

Survey of the Elementary Principles; Variational Principles and Lagrange's Equations; The Central Force Problem; The Rigid Body Motion; Small Oscillations; Special Relativity in Classical Mechanics; The Hamilton Equations of Motion; Canonical Transformations; Hamilton-Jacobi Theory; Canonical Perturbation Theory; Introduction to the Lagrangian and Hamiltonian Formulations for Continuous Systems and Fields.

S0126 Solid State Physics (I) (0/3)

Crystal Structure: X-Ray Diffraction; Phonons; Free Electrons; Energy Band; Fermi Surface; Semiconductor.

S0267 Statistical Mechanics (I) (0/3)

Classical Statistical Mechanics: Microcanonical Ensemble; Canonical and Grand Canonical Ensemble; Quantum Statistical Mechanics; Fermi Systems; Bose Systems.

S0310 Quantum Mechanics (I) (II)(3/0) (0/3)

Schrodinger Equation;Bound States; Hydrogen Atoms; Wave Packets and Uncertainty Relations; WKB Approximation; Principle of Quantum mechanis; Perturbation Theory; Variational method; Spin and Angular Momentum.

S0335 Electrodynamics (3/0)

Introduction to Electrostatics; Boundary-Value Problems in Electrostatics : I; Boundary-Value Problems in Electrostatics : II, Multipoles, Electrostatics of Macroscopic Media, Dielectrics Magnetostatics; Time-Varying Fields, Maxwell Equations, Conservation Laws; Plane Electromagnetic Waves and Wave Propagation; Wave Guides and Resonant Cavities; Simple Radiation System

S0648 Mathematical Physics (I) (3/0)

Methods in Evaluating Integrals; Some Complex Variable Methods; Infinite Series; Special Functions; Ordinary Differential Equations; Vector and Matrices; Groups and Group Representation

S0693 Superconductor Physics (3/0)

Historical Overview, Introduction to Electrodynamics of Superconductors, The BCS Theory, Ginzburg-Landau Theory, Magnetic properties of Classic Type II Superconductors, Josephson Effect, Spectroscopic properties, High Temperature Superconductors and Related Topics.

S0728 X-Ray Physics (3/0)

X-rays and their properties, electron-impact x-rays sources, synchrotron radiation sources, interactions of x-rays with matter, absorption spectra, emissions spectra, scattering.

S0802 Electroceramics(0/3)

Electroceramics possess marvelous conductivity, semiconductivity, superconductivity, dielectric, ferroelectric, piezoelectric, pyroelectric properties. The sensors, actuators and other functionsl devices fabricated from these materials are widely utilized in computer, communication and information systems. This course will demonstrate the mechanism of these physical properties for electro-ceramics, synthese and device application of these electro-ceramics.

T0102 Seminar (2/2)

T8000 MS Thesis (0/4)