Physics 336  MODERN PHYSICS  Spring 2010

Instructor  John. W. Zwart; office - S224, ext. 6288
           home phone - 722-4581 (no calls after 10 p.m. please)
           office hours: Mon 2-3 pm, W & F 10-11 am

Texts  Beiser  Concepts of Modern Physics 6th ed
       Rae  Quantum Mechanics 5th ed

Course Description

Continuation of Physics 335. A study of atomic and molecular structure, solid state physics, quantum mechanics, nuclear, and particle physics. Prerequisites: Physics 335, Math 201, 204.

Course Objectives

To develop an intuitive and calculational familiarity with the concepts of modern physics with an emphasis on quantum mechanics.

To explore worldview shifts associated with the paradigm shift from classical to modern physics.

Grading System

Problem Sets  30%
Course Participation  20%
Tests and Final Exam  50%

Exams will be of the take home variety and will be due on Feb 18, April 1, and the last day of the final exam schedule.

Schedule

Overview of solid state physics Ch 10 Beiser 1.5 wk
Overview of nuclear physics Ch 11-12 Beiser 1.5 wk
Overview of particle physics Ch 13 Beiser 1 wk
Basic postulates of quantum mechanics Ch 4 Rae 1.5 wk
Angular momentum Ch 5, 6 Rae 1.5 wk
Approximation methods Ch 7 Rae 1 wk
Time dependence Ch 8 Rae 1 wk
Scattering Ch 9 Rae 1 wk
Many particle systems Ch 10 Rae 1 wk
Relativity and quantum mechanics Ch 11 Rae 1 wk
Quantum weirdness Ch 12, 13 Rae 1 wk

The times above are very approximate. The instructor reserves the right to modify as needed to best serve student needs and interests.