Spring 2011

Physics 471 - Introduction to Modern Atomic Physics
Day/Time: TuTh 09:00 AM - 10:20 AM
Location: KPTC 103
Lecturer: Cheng Chin
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Office hours: TuTh 10:20 - 11:00 AM
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Class outline: 17 Lectures, 2 discussions, and 1 lab tour

Introduction
Wk1 03/29  Tu  9:00~10:20  Atomic structure
Wk1 03/31  Th  9:00~10:20  Atom-field interaction
Wk2 04/05  Tu  9:00~10:20  Scattering Theory HW1

Ultracold Atoms
Wk2 04/07  Th  9:00~10:20  Ion trap (I)
Wk3 04/12  Tu  9:00~10:20  Ion trap (II)
Wk4 04/14  Th  9:00~10:20  Laser cooling and trapping (I) HW2
Wk4 04/19  Tu  9:00~10:20  Laser cooling and trapping (II)
Wk4 04/21  Th  9:00~10:20  Discussion I
Wk5 04/26  Tu  9:00~10:20  Bose-Einstein condensation (I)
Wk5 04/28  Th  9:00~10:20  Bose-Einstein condensation (II) HW3
Wk6 05/03  Tu  9:00~10:20  Lab tour + Discussion II

Precision Measurement
Wk7 05/05  Th  9:00~10:20  Test of fundamental symmetry (Z.T. Lu)
Wk7 05/10  Tu  9:00~10:20  Variation of fundamental constants
Wk7 05/12  Th  9:00~10:20  Atomic and optical clocks
Wk8 05/17  Tu  9:00~10:20  Applications HW4
Wk8 05/19  Th  9:00~10:20  Discussion III (Z.T. Lu)

Modern Topics
Wk9 05/24  Tu  9:00~10:20  1. Optical lattice
Wk9 05/26  Th  9:00~10:20  2. Quantum computation and simulation
Wk10 05/31  Tu  9:00~10:20  3. Degenerate Fermi gas
Wk10 06/02  Th  9:00~10:20  4. Ultracold molecules HW5

Evaluation  Problem sets and term paper

Recommended Textbooks
Atomic Physics, D. Budker, D. F. Kimball and D. P. DeMille
Bose-Einstein Condensation in Dilute Gases, C.J. Pethnick and H. Smith