



کراچی یونیورسٹی

*University of Karachi*

**Department of Physics**

*First Semester 2006*

## **PHY 601: Advanced Quantum Mechanics\***

*Class Schedule:* Thursday, Saturday 0930h – 1115h (R1)

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### **Course Objectives**

To give the students sound background in the techniques and the methods of quantum mechanics

### **Course Outline**

Review of fundamental concepts, back-body radiation, Planck hypothesis, the quantum paradigm, wave-particle duality, the Eikonel approximation, mathematical structure of quantum mechanics, Ehrenfest theorem, Heisenberg and Schrodinger pictures, angular momentum in quantum mechanics, relativistic quantum mechanics, the Klein-Gordon equation, the Dirac equation, plane-wave solutions, concept of negative energy states and positron, identical particles

### **Recommended Reading**

- a) J. D. Bjorken & S. D. Drell, *Relativistic Quantum Mechanics*, McGraw-Hill, New York, 1964
- b) C. Cohen-Tannoudji, B. Diu & F. Laloë, *Quantum Mechanics*, Vol. I & II, Hermann, Paris & John Wiley, New York (1977)
- c) A. Messiah, *Quantum Mechanics*, Vol. I & II, North Holland, Amsterdam & John Wiley, New York (1958)
- d) G. B. Rybicki & A. P. Lightman, *Radiative Process in Astrophysics*, John Wiley, New York, 1979
- e) L. I. Schiff, *Quantum Mechanics*, McGraw-Hill Kogakusha, Tokyo (1968)

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\* To access web page of this course click on “Pedagogical Section”. In the Pedagogical Section look for “Courses of Current Semester: First Semester 2006”