Course Title	Course Code	Number of Study Hours			Year	Level	Prerequisites
		Theoretical	Laboratory	Credit			
Quantum Mechanics 1	352PHYS	3	-	3	3th	6th	252PHYS

(1) Brief Course Description

This course covers fundamental concepts of quantum mechanics: wave properties, uncertainty principles, Schrödinger equation, and operator and matrix methods. Basic applications of the following are discussed: one-dimensional potentials (harmonic oscillator), three-dimensional central potentials (hydrogen atom), and angular momentum and spin.

(2) Course Objectives

This course is designed to provide students with:

- The failure of classical physics to explain many phenomena.
- The postulates of Quantum Mechanics.
- Mathematics of quantum mechanics.
- Time dependent and time independent Schrödinger's equation.
- Angular momentum in quantum mechanics.
- Spherically symmetric potentials

(3) Course Contents

- The postulates of Quantum Mechanics.
- Mathematics of quantum mechanics: Operators and expectation values, commentators and operator algebra, Bra-Ket notations.
- Time dependent and time independent Schrödinger's equation: examples of one- dimensional motion.
- Angular momentum in quantum mechanics. Spherical harmonics, addition of angular momentum, the Wigner-Eckart Theorem.
- Spherically symmetric potentials.
- Hydrogen atom

(4) Assessment Criteria

- Periodic Exams: 30%
- Oral, Student Activity and Essay: 20%
- Final Exam: 50%

(5) Course Teaching Strategies

- Lectures, Reports and Essay Assignments, Homework, and Web-based Assignments.

(6) Text Book

- Introduction to Quantum Mechanics; David J. Griffiths, Pearson Prentice Hall, 1995.

(7) Reference Books

- Introductory Quantum Mechanics; R. Liboff, 4th Edition, Addison-Wesley, 2002.
- Quantum Mechanics; Sara M. Mc Murry, Addison-Wesley, 1994.