

Principles of Chemistry (CHEM 101)

Credit Hour: 3

Teaching Mode: In Person

Schedule: Monday to Friday (10:00 AM – 11:50 AM)

Instructor: Basit Yameen, Habib-ur-Rehman

#### Course Description:

Basic aim of this course is to develop an understanding and appreciation of students about the chemistry of different materials using concepts of quantum mechanics, thermodynamics, chemical and organic chemistry. More specifically this course will cover the topics/concepts related to: Role of Planck's, Bohr, Heisenberg, DE Broglie, Schrodinger and other in the development of Atomic Structure and Quantum Mechanics to understand basic composition of atoms, interactions/arrangement of atoms to form molecules and their geometry; Role of orbital overlap to realize bonding and different structures, in general; band-gaps in metals, semiconductors and insulators; band-gap engineering and applications of band gap-engineering in semiconductors for LED, Solar Cells and fuel cell; Role of thermodynamics in determining different physical and chemical changes; application of chemical equilibrium to few industrially relevant processes.

Overview of the basic concepts of organic chemistry and applications of these concepts to organic polymers, their synthesis and applications; nano-medicine, role nano-medicine is playing in therapeutic and targeted drug delivery.