

**Course Title:** Molecular  
Medicines **Course Code:**  
HCB-841 **Course**

**Objectives:**

The course is conducted to introduce students to various human diseases and the underlying molecular, genetic or biochemical basis for the pathogenesis and pathophysiology of the clinical disorders.

**Course Outcomes:**

After the completion of course, the students shall have obtained a basic understanding of molecular mechanisms in development of disease and how molecular/cellular biology may be used to characterise cellular processes.

**Course Contents:**

- Genes to Personalized Medicines
  - Genetics and Molecular Epidemiology
  - Genome Anatomy
  - Genetic Engineering
  - Human Genome Project
  - Genome Variation
  - Personalized Medicines
- Gene, Environment and Inheritance
  - Introduction
  - Mendelian Genetic Inheritance
  - Complex Genetic Inheritance
  - Epigenetic Inheritance
  - Somatic Cell Genetics
  - Other Forms of Genetic Inheritance
- Molecular Approach to Disease
  - Infectious Diseases (Overview)
  - Inherited Genetic Diseases (Overview)
  - Immune system and blood cells
  - Tumor Immunology and Cancer Immunotherapy
  - Molecular Therapeutics
  - Molecular Biology of Neurological Diseases
- Delivering Genetics and Genomics Direct-to-Consumer
  - Introduction
  - Pros and Cons
  - Ways Forward
- Bioinformatics
  - Translational Bioinformatics
  - Bioinformatics Tools in Molecular Medicine (Databases)

**Recommended / Reference Books:**

- Principles of Molecular Medicine, Editors: Marschall S. Runge MD, PhD, Cam Patterson MD. Springer.
- Molecular Medicine (Fourth Edition) Genomics to Personalized Healthcare Author:R. Trent. Academic Press, Elsevier.
- Introduction to Molecular Medicine 3rd Edition by Dennis W. Ross, D. Pounds