

Course Title: General & Molecular Immunology

Course Code: HCB-813

Course Objectives:

This course will cover basic concepts of immunology and the mechanism by which T and B lymphocytes acquire high level of specificity. Surface molecules will be described in detail, followed by accessory and natural killer cells and human lymphocyte antigen. Autoimmunity and tolerance will also be discussed.

Course Outcomes:

The course is designed to give an understanding of the basic principles of modern immunology and an introduction to methods used in immunological research.

Course Contents:

- The immune system
- Origins of the immune system
- Antibody structure and function and antibody diversity
- Helper T cells and their activation
- Organs of the lymphatic system
- T lymphocyte development and differentiation
- B cell lymphocyte Development and Differentiation
- Cell-cell interaction (T cells and Antigen presentation cells)
- Nonspecific Defense Cells (Natural Killer cells)
- Monocytes and Dendritic cells
- HLA system (genomic organization, molecule structure, class I/II alleles and antigen presentation).
- The complement system
- Innate immunity
- Leukocyte migration
- Pathological Immune mechanisms and tolerance

Recommended / Reference Books:

- Introduction to Immunology by J.W. Kinhall, 1983, Macmillan Pub Co.
- Immunology by Richard A. Goldsby, Thomas j. Kindt, Barbara A. Osborne, Janis Kuby, 2005. W.H Freeman and Co.
- Cellular and Molecular Immunology by Abbas, 2005. Elsevier Pub Co.
- Color Atlas of Immunology by G.R. Burmester, A. Pezzutto, 2006. Thieme Stuttgart, New York.
- Essentials of Computational Chemistry 2nd edition theories and models by Christopher J. Cramer, published by John Wiley and Sons, Ltd, The Atrium, Southern Gate, Chichester, West Sussex, England.