BASIC IMMUNOLOGY

MODULE DESCRIPTION/OVERVIEW

This module covers :

The major topics in cellular and molecular immunology, including antigen recognition, antigen processing and presentation to B and T cells, the mechanism of action of major histocompatibility complex, the inflammatory response and the role of immunity in protection against pathogens. Also, the basic principles of antigen-antibody reactions in the performance of serologic tests, as well as determination of antibodies to infectious agents important in clinical medicine.

MODULE GOALS

The course includes both theory, correlating the principles of immune mechanisms in relation to pathogenesis of infectious and immune-related diseases and demonstration of skills and competency in terms of actual performance of serologic tests, reading and interpretation of results.

MODULE LEARNING OBJECTIVES

Upon successful completion of this module, students will be able to:

1- KNOWLEDGE AND UNDERSTANDING: (REMEMBERING AND UNDERSTANDING)

A1 Demonstrate a general understanding of the immune system and its interactions
A2 Understand the cellular ontogeny, components and organ involvement in the innate and adaptive immune systems.

A3 Explain the concept of barriers to infection, phagocytosis, cytokines, complement cascade
A4 Describe how measurement of different components of the innate immune system can be used to diagnose different clinical scenarios.
A5 Describe the cellular and molecular basis of the immune response

A6 Understand what antigens are and how they are presented

A7 Understand the structure and function of the major histocompatibility complex MHC
A8 Explain the structures, functions of the differing classes of immunoglobulins
A9
Outline the response of tissue to infection or injury and immune response to viruses, bacteria and protozoa.

2- INTELLECTUAL SKILLS: (APPLICATION, ANALYSIS, SYNTHESIS, EVALUATION)

B1- Relate the influence of monoclonal antibodies to current laboratory testing practices (Apply)
B2- Apply the basic principles of antigen-antibody reactions in the performance of serologic tests including; Agglutination, Enzyme-Linked Immunosorbent Assay (ELISA) for Serology of Bacterial and viral Infections
B3- Analyze laboratory findings and identify disease implications in relation to complement abnormalities
B4- Interpret the results of immunological experiments

3- PROFESSIONAL SKILLS: (PERFORMANCE SKILLS)

C1- Report laboratory findings.
C2- Perform different analytical methods and assess its efficacy for diagnostic purposes.

C3-Acquire the mastery to apply the techniques of the various immunological processes required to maintain a normal effective immune response.

C4- Grasp the principles and applications of a range of immunological practical techniques. [Ficol and magnetic beads separation of WBCs, Plastic attachment of macrophages, microscopic examination of a sample, Cell count by Hemocytometer, separation of B and T cell separation on wool]

4- GENERAL SKILLS: (ATTITUDES AND COMMUNICATION SKILLS)

D1- Develop skills of communication and interaction and self confidence
D2- Respect the ethical consideration in studying animal
D3- Appreciate time management skills.
D4- Value safe lab considerations

MODULE RESOURCES

Required Module Textbooks and Materials

- Crash course of Haematology and Immunology (First, second and third edition)
- How the Immune System Works - Sixth Edition Lauren Sompayrac, PhD

Optional Module Textbooks and Materials

- Cellular and Molecular IMMUNOLOGY Abul K Abbas

ASSIGNMENTS AND GRADING SCHEME

GRADING SYSTEM

Formative: Quiz, interaction during demonstrations given periodically during course, Portifolio .
Summative: at the end of the course duration.

• **Written theoretical multidimensional exams** with MCQ, SAQ, problem solving and True or False to assess student knowledge & understanding as well as intellectual abilities regarding the theory and practice of clinical microbiology.

• **Practical exam** to assess student intellectual abilities as well as professional and practical skills gained from the course e.g. OSPE

GRADING POLICY

Grades can be based on the following:

Practical presentations and assignments	30%
Exams	60%
Class attendance/participation	10%
Total Points	**100%**