

B.Sc. Biotechnology: Semester-IV	
BST401: IMMUNOLOGY	
<b>Teaching Scheme</b> Lectures: 3 hrs/Week Tutorials: 1hrs/Week  Credits: 4	<b>Examination Scheme</b> Class Test -12Marks  Teachers Assessment - 6Marks Attendance - 12 Marks End Semester Exam - 70 marks

**Prerequisite:** - BST 103 Cell biology, BST102 Introduction to biotechnology, BST 202 Biochemistry, BST203 Microbiology

**Course Objectives:**

1. To give Overview of immune system - Innate Immunity and Adaptive Immunity
2. To give complete knowledge of Immunity Barriers, phagocytosis, inflammation, Specificity, Diversity, Immunologic memory
3. Cells and organs of the immune system: Hematopoiesis - B lymphocytes, T Lymphocytes, NK Cells and Macrophages
4. To describe Lymphoid Organs: Primary (thymus, bone marrow) and secondary lymphoid organs (Lymph nodes, spleen)
5. To explain Antigen recognition by T cells and B cells
6. To explain Structure, functions and characteristics of different classes of antibodies
7. To explain the elementary idea about types of hypersensitivity reactions


**Course Outcomes:**


After completing the course, students will be able to:

CO1: Students will understand the basic concept of innate and acquired immunity
CO2: Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
CO3: Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems
CO4: Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large
CO5: The main goal of the course is to provide basic understanding of immunology and immune responses in response to various infectious and non infectious diseases
CO6: Students will gain knowledge about immunoglobulin structures and diversity of antibodies, morphology and functions of various immune cells such as dendritic cells, macrophages, neutrophils and their association with MHC molecules will be studied
CO7: This study will make the students to understand the basic mechanisms of hypersensitivity responses and their associations with different diseases

  
Head

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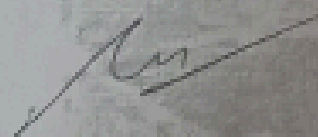
  
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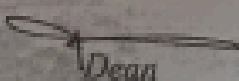
**Detailed Syllabus:**

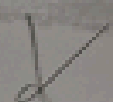
<p><b>UNIT-1 Historical perspectives of Immune System</b> Historical perspectives of Immune System, Overview of immune system - Innate Immunity and Adaptive Immunity, Immunity Barriers, phagocytosis, inflammation, Specificity, Diversity, Immunologic memory, Self/nonself recognition. Antigenicity and Immunogenicity, Immune dysfunction and Its Consequences</p>
<p><b>UNIT-2 Cells and organs of the immune system</b> Cells and organs of the immune system: Hematopoiesis - B lymphocytes, T Lymphocytes, NK Cells and Macrophages. Lymphoid Organs: Primary (thymus, bone marrow) and secondary lymphoid organs (Lymph nodes, spleen). Antigens and epitopes: immunogenicity and antigenicity. Haptens and adjuvants. Antigen recognition by T cells and B cells, Properties of B-cell epitopes and T-cell epitopes, Blood group antigens</p>
<p><b>UNIT-3 Major histocompatibility systems</b> Structure, functions and characteristics of different classes of antibodies, Antigenic Determinants on Immunoglobulins, Basic idea of monoclonal antibody, Antigen antibody interaction - Precipitation Reactions, Agglutination Reactions. Major histocompatibility systems: MHC I and II molecule, Hypersensitivity, elementary idea about types of hypersensitivity reactions.</p>

**Text and Reference Books**

1. Immunology (V Edition),- Richard A.Goldsby, Thomas. J. Kindt, A. Osborne, Janis Kuby, 2003. W.H. Freeman and company
2. Immunology, Ivan Roitt, 2001. Harcourt publishers, ltd.
3. Immunology - An Introduction, Tizard.

  
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