Course Outline Form

ODD SEMESTER 2019

Dear Student: Course outlines are intended to provide students with an overall plan for a course to enable them to function efficiently and effectively in the course.

Academic Programs
BSc Biochemistry
EMEA College
Kondotty

Course Outline : BCH5B12 Immunology (2019-2020)

Name of the Stream	Science
Name of the Programme	BSc Biochemistry
Name of the Course	BCH5B12 Immunology
Nature of the Course	Core Course
Semester	Fifth
Lecturer(s)	N K Zaheera Banu
Name of the Coordinator	
Year	2019-2020
No of Credits	3
No of Contact Hours	4 hours / week
Course Description	This course teaches the basic principles of immune system function. The cells and factors which mediate the various types of immune responses, as well as their mechanisms of action in such processes as hypersensitivity reactions, autoimmunity,immunodeficiency etc
Course Objectives	1. To create awareness on immunology related diseases 2. To create elaborated view on functioning of immunological system
Course Outcome	students will be able to compare and contrast innate and adaptive immunity,describe which cell types and organs present in the immune response,exemplify the adverse effect of immune system including Allergy, hypersensitivity and autoimmunity and elucidate the reasons for immunization and aware of different vaccination
Assessment Method	Assignments Homeworks Class Tests Unit Tests Practical Tests Term Exam Seminars Lab Experiments

Teaching Methods Used	Lectures Cooperative Learning Collaborative Learning LMS Class Discussion Classroom Activities Case Studies Industrial Trips Guest Lectures Seminars Project Presentations Surveys Tutorials Handouts Powerpint Slides
Textbook	
References	1. Immunology – Thomas J. Kindt, Richard A Goldsby, Barbara A. Osborne, and Janis Kuby W.H. Freeman and Co 27 2. Essential Immunology –Peter J Delves , Seamus J. martin, Dennis R Burton, Ivan M. Roitt, Blackwell Publishing, Massachustts, USA ISBN 1-4051-6066-7 3. Celluar and Molecular Biology Abul K Abbas, Andrew a Lichtman, Jprdam S. Pober, WB Saunders company, Philadelphia ISBN)-7216-8233-2 4. Immunology, A Text book, CV Rao Narosa Publishing house New Delhi
Internet Resources	

Internal Exam Pattern

Items	Marks/20	Marks/15
Assignment	4	3
Test Paper(s)/Viva voce	8	6
Seminar/Presentation	4	3
Class Room Participation based on Attendance	4	3
Total	**20**	**15**

External Exam Pattern

Question Type	No of Question	Marks/Question	Total Marks
Short Questions(2-3 Sentences)	15	2	Ceiling 25
Paragraph / Problem Type	8	5	Ceiling 35
Essay Type	2 out of 4	10	20
Total			**80**

Graduate Attributes	**Name of the Course:** BCH5B12 Immunology **Knowledge** **Academic and Intellectual Skills** Self Learning Collaborative Learning Cognitive Skills **Professional Skills** Critical and Analytical Skills Research Skills **Attitude and Values** Social Responsibility Ethical Commitment

Course Schedule

Overview of the Immune system. Immunity: Innate immunity (Nonspecific) - Anatomic barriers, Physical barriers, Phagocytic barrier, inflammatory responses.	Week 1
Adaptive (Specific) Immunity- Humoral and cell mediated immune responses, Recognition of antigens by B and T lymphocytes. Processing and presentation of antigens. Major Histocompatibility complex (MHC), Clonal selection of lymphocytes.	Week 2
Cellular interaction for generation of humoral and cell mediated response. Collaboration of Innate and adaptive mechanisms for an effective immune response	Week 3
Unit II (6 h) Cells of the Immune system- Hematopoiesis, lymphoid cells, stem cells, B and T lymphocytes, Null cells, Mononucelar cells, granulocytic cells.	Week 4
Organs of the Immune system: Primary and secondary lymphoid organs. Thymus, Bone marrow, Spleen.	Week 5
Antigens: Types of antigens, factors that influence immunogenicity, adjuvants, epitopes, haptens Major Histocompatibility Complex: Structure, Peptide interaction with MHC, MHC and immune responsiveness	Week 6
Antibodies (Immunoglobulins)- Structure of immunoglobulins, Classes of immunoglobulins and their functions. Antigenic determinants on Immunoglobulins.	Week 7
Monoclonal antibody and its production.Abzymes.	Week 8

Antigen-antibody interactions: Precipitation reaction, Immunodiffusion, agglutination, ELISA, RIA, Immunoprecipitation, Immunofluorescence. Western blotting.	Week 9
T- cell receptors, maturation, activation and differentiation. B- cell receptors, maturation, activation and proliferation	Week 10
Cytokines- structure and function, Classification and types of cytokines according to the function, Cytokine related diseases.	Week 11
Complement system: The function of complement, the complement components, complement activation, compliment pathways. Compliment deficiencies.	Week 12
Immunodeficiency, Immunodeficiency diseases. Phagocytic, humoral and cell mediated deficiencies.	Week 13
Hyper-sensitivity- Gell and Coombs classification- IgE mediated Type I hypersensitivity, Antibody- mediated cytotoxic (Type II) hypersensitivity	Week 14
Immune complex mediated (Type III) Hypersensitivity, TDTH(delayed type hypersensitivity T cells) mediated (Type IV) hypersensitivity. Immune dysfunction. Allergy, asthma.	Week 15
Autoimmunity, autoantibodies and their devastative role. Autoimmune diseases- Definition. Types of immune diseases like HIV, systemic lupus erythomatus, Multiple sclerosis, Rheumatoid arthritis, scleroderma, Myasthenia garavis, Insulin depended diabetic mellitus.	Week 16
Vaccines: Active and passive immunization, types of vaccines. Vaccines from whole organisms, Polysaccharide vaccines	Week 17
Toxoids as vaccines, Vaccines from recombination vectors, DNA as vaccines, Vaccines from Synthetic peptides.	Week 18

Contact Details

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