UNIVERSITI TEKNOLOGI MARA

PHC450: PHARMACEUTICAL IMMUNOLOGY

Course Name (English)	PHARMACEUTICAL IMMUNOLOGY APPROVED
Course Code	PHC450
MQF Credit	2
Course Description	This course introduces the basic concepts of immunity, the human defense mechanisms including molecules, cells and tissues of the immune system that provide protection against wide variety of pathogens. Topics deal with the immune system operating in disease situations such as allergy, autoimmunity and transplantation. The treatment of certain diseases based on knowledge of biotechnology including the development and of vaccines and immunological diagnostic tests are discussed.
Transferable Skills	Team work Oral communication and presentation Problem solving Time management
Teaching Methodologies	Lectures, Tutorial, Problem Based Learning (PBL)
CLO	CLO1 Explain the components of human immunity system and the pathological process based on the reaction of immune system. CLO2 Apply problem solving skills in the immunology diagnostic tools and the treatment of immune related diseases.
Pre-Requisite Courses	No course recommendations

Topics
1. Innate Immunity 1.1) Introduction & all stages of defense systems of innate Immunity. 1.2) Immune system cells and tissue 1.3) Inflammation
2. Antigens and Antibodies 2.1) Antigens and antibodies. 2.2) Major Histocompatibility Complex (MHC). 2.3) Molecular structures of MHC I and MHC II.
3. T cells & B cells 3.1) Recognition and distribution of antigens. 3.2) Activation of B cells and antibody production. 3.3) Cell-mediated immunity.
4. Cytokines 4.1) Types of cytokines and their receptors 4.2) Roles of cytokines in cell mediated interaction 4.3) Function of cytokines in cell-destruction processes: its function in health and disease
5. Tutorial I 5.1) Lecture Week 1-4
6. Classical and alternative pathway 6.1) Classical and alternative pathway in membrane attack complex 6.2) Anaphylatoxins 6.3) Complement component deficiency 6.4) Pathological effects of normal complement system

7. Immunity to microorganism 7.1) Bacteria, fungi, virus, protozoa, helminth 7.2) Evasion mechanisms of pathogens in immune responses
8. Midsem Test 8.1) Week 1 - Week 6
9. Tumour Immunology and Diagnostic methods 9.1) Tumours and Metastasis 9.2) Oncogenes and Cancer Induction 9.3) Tumour Antigens 9.4) Tumours and the Immune Response 9.5) Immunotherapies 9.6) 9.7) Immunologic-based diagnostic test (monoclonal antibodies, precipitation reaction, agglutination reaction, neutralisation reaction, complement-fixation reaction, fluorescent-antibody techniques, ELISA and immunoblotting) 9.8) Future diagnostic
10. Tutorial II 10.1) Lecture Week 5-8
11. Hypersensitivities 11.1) Type I : immediate/anaphylactic 11.2) Type II : cytotoxic 11.3) Type III : immune complex 11.4) Type IV : delayed-type
12. PBL I 12.1) Topic from lecture Immunity to microorganism
13. Autoimmunity 13.1) Tolerance 13.2) Mechanism of autoimmune diseases 13.3) Diseases involving single type of cell or organ. 13.4) Systemic diseases
14. PBL II 14.1) Topic from lecture Immunity to microorganism
15. Immunodeficiencies 15.1) Immunodeficiencies due to B cells (antibody), T cells, complements and phagocytes 15.2) Congenital and acquired immunodeficiencies
16. Vaccines and Transplantation immunology 16.1) Features of vaccines 16.2) Types of vaccines 16.3) Mechanism of vaccination immunology 16.4) Vaccine precautions 16.5) 16.6) Tissue sources, graft, type of graft 16.7) Mechanism of transplantation immunology 16.8) Laboratory tests, therapeutic intervention & transplant issues
17. Autocoids and Migraine & Asthma 17.1) Role of autocoids in tissue reactions in health and disease. 17.2) 17.3) Migraine and Asthma - Pathophysiology & principles of therapy related to immune system
18. Final Examination 18.1) All lectures

Assessment Breakdown	%
Continuous Assessment	40.00%
Final Assessment	60.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	This is an individual written assignment (1500 words)	20%	CLO2
Presentation	PBL Presentation	20%	CLO1

Reading List

Recommended Text

- **Gerard J. Tortora,Berdell R. Funke,Christine L. Case 2016, *Microbiology*, 12th Ed., Pearson [ISBN: 1292099143]**

Reference Book Resources

- **Jacquelyn G. Black and Laura J. Black 2015, *Microbiology: Principles and Explorations*, 9th Ed., Wiley [ISBN: 978-111874316]**
- **John B. Zabriskie 2009, *Essential Clinical Immunology*, Rockefeller University, New York [ISBN: 9780521516815]**
- **Warrington, Richard et al. 2011, *An Introduction to Immunology and Immunopathology*, Suppl 1 (2011): S1. PMC., Allergy, Asthma, and Clinical Immunology?: Official Journal of the Canadian Society of Allergy and Clinical Immunology**
- **Escors, David. 2014, *Tumour Immunogenicity, Antigen Presentation and Immunological Barriers in Cancer Immunotherapy*, New journal of science**
- **Kathleen Park Talaro, Barry Chess 2014, *Foundations in Microbiology*, McGraw Hill**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources