



## UNIVERSITI TEKNOLOGI MARA

### BMS545: IMMUNOLOGY

<b>Course Name (English)</b>	IMMUNOLOGY <b>APPROVED</b>
<b>Course Code</b>	BMS545
<b>MQF Credit</b>	3
<b>Course Description</b>	This course provides the basic concepts on how the body's immune system functions. The principles of innate and adaptive immune response including the various components involved and the cellular and molecular mechanisms of antigen recognition and host response to antigens in both innate and adaptive immunity. are discussed at length. The principle and importance of immunization are also included in this course. Emphasis is also given to the principles and application of immunological techniques in disease diagnosis and quantification of antigens and antibodies.
<b>Transferable Skills</b>	Making blood film and staining them Performing ELISA to detect antigen or antibody Performing haemagglutination to determine ABO blood group
<b>Teaching Methodologies</b>	Lectures, Lab Work, Discussion
<b>CLO</b>	CLO1 Explain the different terminologies used in immunology, the functions of the various components of the immune system CLO2 Distinguish between innate and adaptive immunity; humoral and cell mediated immunity and their mechanisms of action. CLO3 Determine suitable immunological technique(s) to be used in disease diagnosis and quantification of antigens and antibodies CLO4 Conduct laboratory experiments in immunology.
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. 1.0 Introduction to the Immune system</b> 1.1) Overview of the immune system 1.2) Characteristics and importance of the innate and adaptive 1.3) immunity	
<b>2. 2.0 Cells and Organs of the immune system</b> 2.1) Haematopoeisis 2.2) Cells of the immune system 2.3) Organs of the immune system	
<b>3. 3.0 Antigens, immunogens and haptens</b> 3.1) Characteristics 3.2) Factors influencing antigenicity/immunogenicity 3.3) Recognition of antigens by the innate immune system	
<b>4. 4.0 Antibodies</b> 4.1) Basic structure of antibodies 4.2) Antibody classes and biological activities 4.3) Antigenic determinants on immunoglobulins	

**5. 5.0 Immunological Techniques**

- 5.1) Precipitation-based immunoassays
- 5.2) Agglutination-based immunoassays
- 5.3) Complement fixation assay
- 5.4) ELISA
- 5.5) Immunofluorescence
- 5.6) Radioimmunoassay
- 5.7) Western blot

**6. 6.0 Cytokines**

- 6.1) Properties of cytokines
- 6.2) Classes of cytokines
- 6.3) Biological functions of cytokines

**7. 7.0 Innate Immunity**

- 7.1) Prevention of entry into the body
- 7.2) Recognition of antigens by the innate immunity
- 7.3) The innate response to infections/invasion by antigens

**8. 8.0 Adaptive Immunity**

- 8.1) Recognition of antigens by B and T-cell receptors
- 8.2) Humoral immunity/Antibody-mediated immunity
- 8.3) Cell-mediated immunity

**9. 9.0 Immunization**

- 9.1) Principles of immunization
- 9.2) Types of vaccines

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Presentation of understanding or application of a topic in immunology in a poster form	5%	CLO3
	Test	Assessment of topics 1 to 7	30%	CLO2
	Written Report	One report covering all the immunoassays experiments	15%	CLO4

Reading List	Recommended Text	<ul style="list-style-type: none"> <li>Jenni Punt, Sharon Stranford, Patricia Jones, Judith A Owen 2018, <i>Kuby Immunology</i>, 7th Ed., WH Freeman [ISBN: 1319114709]</li> <li>Richard Coico, Geoffrey Sunshine 2015, <i>Immunology</i>, 6th Ed., John Wiley &amp; Sons [ISBN: 111839691X]</li> </ul>
	Reference Book Resources	<ul style="list-style-type: none"> <li>David K. Male, Jonathan Brostoff, Ivan M. Roitt 2013, <i>Immunology, With STUDENT CONSULT Online Access</i>, 8, Elsevier Health Sciences [ISBN: 9780323080583]</li> <li>Kenneth Murphy 2016, <i>Janeway's Immunobiology</i>, 9th Ed., Garland Science [ISBN: 978081534551]</li> <li>Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt 2017, <i>Essential Immunology</i>, John Wiley &amp; Sons [ISBN: 1118415779]</li> </ul>
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	