



يونيفرسيتي سلطان زين العابدين
UNISZA
UNIVERSITI SULTAN ZAINAL ABIDIN

FACULTY OF MEDICINE

STUDENT GUIDE: SEMESTER 1 YEAR 1

**Course Code: BMM 10118
(BASIC MEDICAL SCIENCES)
Academic Session 2019/2020**

Module 5

Diagnosis, Therapy & Molecular Medicine

Date of Module: 5th Jan 2020– 18th Jan 2020

Prepared by:

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(Signature)

Date:

ASSOC. PROF. DR. UDAY YOUNIS HUSSEIN
Module 4 and 5 Coordinator
School of Basic Medical Sciences
Faculty of Medicine

Checked by:

.....
(Signature)

Date:

DR. NOR IZA A. RAHMAN
Head of School of Basic Medical Sciences
Faculty of Medicine

Endorsed by:

.....
(Signature)

Date:

MBBS curriculum Committee Members
Faculty of Medicine , UniSZA

FACULTY OF MEDICINE

VISION

Faculty of Medicine aspires to be an excellent institution in producing high quality health professionals, research and community services.

MISSION

Faculty of Medicine shall provide dynamic curricula guided by excellent educators in conducive environment, nurture sustainable research culture and inculcate community-focused activities.

TEACHING AND LEARNING METHODS

L : Lecture
CAL : Computer Assisted Learning
PRC : Practical
ECE : Early Clinical Exposure
PPD : Personal and Professional Development
PBL : Problem Based Learning
F : Forum/panel discussion

ASSESSMENT:

Continuous Assessment (CONASS)
End of Module Assessment (EOM)
End of Semester Examination (EOS)
Professional 1 (PRO1) Examination

LOCATION

MKK 1 : Makmal Kemahiran Klinikal 1
MKK 2 : Makmal Kemahiran Klinikal 2
DKA : Dewan Kuliah A
DKB : Dewan Kuliah B
CL1 : Makmal Mocomputer 1
CL3 : Makmal Mocomputer 3
MBiokim : Makmal Biokimia
MMikro : Makmal Mikrobiologi
MHisto : Makmal Histologi
BT1 : Bilik Tutorial 1
BT2 : Bilik Tutorial 2
BT3 : Bilik Tutorial 3
BT4 : Bilik Tutorial 4
BT5 : Bilik Tutorial 5
BT6 : Bilik Tutorial 6

Head of School of Basic Medical Sciences:

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Teaching Lecturer (School of Basic Medical Sciences)

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Pathology	UYH	Assoc. Prof. Dr. Uday Younis Hussein	5607	010-3986315	udayyounis@uniswa.edu.my
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	SDA	Assoc. Prof. Dr. Saravanan A/L A. Dharmaraj	5664	012-4089620	saravanandharmaraj@uniswa.edu.my
	SYNJ	Dr. Siti Yusrina Nadiyah Jamaludin	5606	013-9288409	yusrinanadiyah@uniswa.edu.my
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	MH	Dr. Mohd Hashym	5604	014-6057915	aungmo@uniswa.edu.my

Teaching Lecturer (School of Clinical Medicine)

Initial	Lecturer	HP	Tel	E-mail
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MODULE 5: DIAGNOSIS, THERAPY & MOLECULAR MEDICINE

Module 5 Coordinator: Dr. Uday Younis Hussein

H/P: 0103986315

CONTENT SYNOPSIS

In this module students will learn the basic knowledge on karyotype analysis immunophenotyping, immunochemistry, and bone marrow aspirate and biopsy. This module provides the principles of the mechanisms of autoimmune and hypersensitivity reactions together with introduction to interpretation of haematology, microbiology and biochemical data with prescribing and rational use of various classes of medications relevant to hematology and immunology.

OBJECTIVES/ INTENDED LEARNING OUTCOMES

At the end of this module, students should be able to:

1. Integrate knowledge learnt in previous module 4 to contemporary clinical and laboratory diagnostics with data interpretation and apply basic knowledge on the drugs related to hematology and immunology.
2. Demonstrate communication skills, teamwork, attitude and lifelong learning.

LEARNING ACTIVITIES

1. Lectures
2. Forum/panel discussion
3. Self-Study
4. Computer Assisted Learning (CAL)

ASSESSMENT METHODS

1. Continuous Assessment - Assignments, CAL
2. End the module Assessment (EOM) - MCQ, SEQ
3. End of Semester Examination (EOS) - MCQ, SEQ, PBQ, OSPE
4. Professional 1 Examination (PRO1) - MCQ, SEQ, PBQ, OSPE

COURSE CONTENT (LECTURES)

Lec No.	Discipline	Lecturer	Title	Learning Outcome
1	Pathology 1	UYH	Bone Marrow Aspirate and Biopsy	<ul style="list-style-type: none"> • List the sites of haemopoiesis during life. • Describe the normal bone marrow (BM) cells. • Describe the choice of bone marrow aspiration (BMA) or bone marrow biopsy (BMB) site. • Explain the BMA procedure. • Describe the BMA needle selection • Describe the BMA processing. • Describe the BM material preparation. • Describe the BM trephine biopsy procedure. • Describe the BMB imprint preparation. • Describe the BM cellularity assessment. • Explain the investigations of BMA and BMB. • State the complications of BMA & BMB procedures.
2	Pathology 2	UYH	Molecular Investigations	<ul style="list-style-type: none"> • Define the karyotype analysis. • Describe the principle and procedure of karyotype analysis. • State the advantages and disadvantages of chromosomal banding. • Define immuno-phenotyping. • Describe the principle of immunophenotyping. • Describe the immunophenotyping by flow cytometry. • State the cluster of differentiation (CD) marker used in acute leukaemia.
3	Pathology 3	UYH	Introduction to haematology diagnosis	<ul style="list-style-type: none"> • List haematology reference ranges and their use in the diagnosis of blood diseases. • Outline automation in hematology. • Explain the approach in leukaemias diagnosis. • Explain the approach in anaemias diagnosis.
4	Pharmacology 1	SDA	Principles of drug prescribing and rational use of medications	<ul style="list-style-type: none"> • Define the rational use of medicine. • Describe the steps of good prescribing. • Differentiate good versus bad prescriptions.
5	Pharmacology 2	RI	Therapeutic Drug Monitoring	<ul style="list-style-type: none"> • Discuss the principles of therapeutic drug monitoring (TDM). • Appreciate use of TDM to achieve optimal drug therapy. • Make simple analysis of drug levels in relationship to therapeutics.

Lec No.	Discipline	Lecturer	Title	Learning Outcome
6	Pharmacology 3	MSAA	Anti-coagulant and thrombolytic Agents	<ul style="list-style-type: none"> Classify Anti-coagulant and thrombolytic Agents. Explain the mechanism of action of Anti-coagulant and thrombolytic Agents. Describe pharmacokinetics, basic uses and side effects of Anti-coagulant and thrombolytic Agents. Briefly describe the agents used in the treatment of haemophilia.
7	Pharmacology 4	SDA	Anti-Platelet Agents	<ul style="list-style-type: none"> Classify anti-platelet agents. Explain the mechanism of action of anti-platelet agents. Describe pharmacokinetics, basic uses and side effects of anti-platelet agents.
8	Pharmacology 5	SYNJ	Anti-Cancer Agents	<ul style="list-style-type: none"> Classify anti-cancer agents. Explain the mechanism of action of anti-cancer agents. Describe pharmacokinetics, basic uses and side effects of anti-cancer agents.
9	Pharmacology 6	SDA	Agents Influencing Immune System	<ol style="list-style-type: none"> Briefly describe the pharmacology of: <ol style="list-style-type: none"> Immunosuppressants Immunomodulators Immunoglobulins
10	Immunology 1	RAR	Hypersensitivity	<ul style="list-style-type: none"> Define the term hypersensitivity. Classify the types of hypersensitivity reactions (I, II, III and IV). Explain the mechanism of each type of hypersensitivity reactions. List the clinical example of each type of hypersensitivity reactions.
11	Immunology 2	RAR	Autoimmune diseases	<ul style="list-style-type: none"> Define autoimmunity and autoimmune disease. Discuss the genetic role in autoimmunity. Describe the regulatory mechanism of autoimmunity. Explain the pathogenic effects and factors of autoimmunity. Discuss the diagnostic value of autoantibodies test.

Lec No.	Discipline	Lecturer	Title	Learning Outcome
12	Immunology 3	RAR	Tumor immunology and tumor marker	<ul style="list-style-type: none"> Describe the different types of tumour antigen. Explain the response of immune system to tumour. Understand the relationship between cancer and immunology. List the ways the tumour invades the immune system. Describe the contribution of immune cells to tumour immunity. Explain the immunodiagnosis and immunotherapy of tumour. Describe the tumour markers.
13	Immunology 4	RAR	Organ Transplantation and Rejection	<ul style="list-style-type: none"> Describe Graft Transplantation Describe Barriers of transplantation Discuss the mechanism of graft rejection. Outline the prevention of graft rejection.
14	Biochemistry 1	AAB	Polymerase chain reaction (PCR)	<ul style="list-style-type: none"> PCR definition and basic principle. DNA molecule and its replication in the laboratory PCR reactions and terminology: primer design, DNA polymerase, and thermal cycler (Melting and annealing temp.). PCR mechanism. PCR results using agarose gel electrophoresis. PCR variants: Multiplex-PCR, Quantitative PCR, Nested PCR and Digital PCR. PCR application.
15	Biochemistry 2	MH	Introduction to biochemical diagnosis	<ul style="list-style-type: none"> Explain alterations in chemical composition as an aid to diagnosis. Explain the steps in biochemical investigations. Outline automation in biochemical investigation. List routine chemistry analytes with reference ranges and their use in diagnosis. List plasma enzymes used in diagnosis.

OUTLINE OF COURSE CONTENT (CAL/PPD/ECE)

No.	Type & Discipline	Lecturer	Title	Learning Outcome
1	CAL 1	SDA RI	Traditional and Complementary Medicine	<ul style="list-style-type: none"> • Appreciate the relevance, advantages and disadvantages of traditional and complementary medicine (T&CM) • Understand the regulatory requirements involved in the practice of T&CM in Malaysia
2	ECE 1	PM Dr San Thitsa Aung (STA)	Demonstrate 4 children with Down Syndrome (2 hours) *Students will be divided into 3 groups	<ul style="list-style-type: none"> • Recognize these signs: <ol style="list-style-type: none"> a) Small nose & flat nasal bridge b) Small mouth & protruding tongue c) Slanted eyes d) Sandal gap e) Broad hands with short fingers f) Single transverse palmar crease
3	Pathology Forum 1	UYH	Diagnostic Investigations	Interactive session as large group discussion and overview all the topics and LOs covered in bone marrow and molecular investigations with case-based study.

Reference Text Books

Pathology

1. Cotran, Kumar and Collins, (2010). Robbin's Pathologic Basis of Diseases. 8th edition. W.B Saunders.
2. Rubin, E., Reisner, H.M. (2009). Essentials of Rubin's Pathology. 5th edition. Philadelphia. Lippincott Williams & Wilkins
3. Rubin, R. Strayer, D.S., Rubin, E. (2012). Rubin's Pathology: Clinicopathologic Foundations of Medicine. 6th edition. Philadelphia. Lippincott Williams & Wilkins

Microbiology

1. Jawetz, Melnick & Adelberg's, (2013). Medical Microbiology, 26th edition. McGraw-Hill Education, Lange.
2. Mandell, Douglas and Bennett's, (2015). Principles and Practise of Infectious Diseases, 8th edition. Elsevier Inc.

Immunology

1. Janeway, C., Murphy, K.P., Travers, P. and Walport, M., (2008). Janeway's immuno biology.
2. Levinson, W.E., (2018). Review of Medical Microbiology and Immunology 15E. McGraw Hill Professional.

Haematology

1. Hoffbrand A.V, Moss P.A H, Pettit J. E. (2011). Essential Haematology, 6th edition, Wiley-Blackwell.
2. Contreras M. (2008). ABC of Transfusion, 4th edition, Wiley-Blackwell.
3. Bain B.J., Bates I., Laffan M. A., Lewis S. M. (2012). Practical hematology. 12th edition, Churchill Livingstone, Elsevier.

Pharmacology

1. Katzung B, Trevor A. (2015). Basic and Clinical Pharmacology. 13th edition. McGraw-Hill Education.
2. Rang HP, Ritter JM, Flower RJ, Henderson G. (2016). Rang & Dale's Pharmacology, 8th edition. Elsevier Churchill-Livingstone.
3. Whalen, K. (2014). Lippincott Illustrated Reviews: Pharmacology. 6th edition. Wolter Kluwer Lippincott Williams Wilkins.

Biochemistry

1. Harvey RA & Ferrier D. (2014). Biochemistry: Lippincott's Illustrated Reviews. 6th edition. Lippincott Williams & Wilkins international edition.
2. Lieberman, M. & Marks, A. (2013). Marks' Basic Medical Biochemistry: A Clinical Approach. 4th edition. Lippincott Williams & Wilkins international edition.

ECE

1. Hutchinson Clinical Examination: A systematic guide to physical diagnosis, (2010), 6th edition Churchill Livingstone.
2. Talley, N.J. & Simon O'Connor, S. (2013). Clinical Examination: A Systematic Guide to Physical Diagnosis, 7th edition. Churchill Livingstone. Elsevier.
3. Macleod's Clinical Examination (2013), 13th edition, (eds. Douglas, G., Nicol, F., Robertson, C.). Churchill Livingstone.
4. Davidson's Principles & Practice of Medicine, (2014), (eds. Walker, B.L. Colledge, N.R., Ralston, S.H. Penman, I., 22nd Edition. Churchill Livingstone.

BACHELOR OF MEDICINE & BACHELOR OF SURGERY (MBBS) PROGRAMME

PHASE 1 (SEMESTER 1, YEAR 1), Academic Session 2019 / 2020

WEEK 1		MODULE 5: DIAGNOSIS, THERAPY & MOLECULAR MEDICINE						Module Coordinator: A. P. Dr. Uday Younis Hussein	
DAY/ TIME	8.30 – 9.30	9.30 – 10.30	10:30 - 11:00	11.00 – 12.00	12.00 – 1.00	1.00- 2:30	2.30 – 3.30	3.30 – 4.30	4.30 – 5.00
SUNDAY 05.01.2020	Introduction to Module (09:00-09:30) UYH	Hypersensitivity RAR	BREAK	Human leukocyte antigen system RAR	Autoimmune diseases RAR	BREAK	Self-Study		
MONDAY 06.01.2020	Organ Transplantation and rejection RAR	Tumour immunology and tumour marker RAR		Self-Study	Therapeutic Drug Monitoring RI		Self-Study		
TUESDAY 07.01.2020	Anti-platelet agents SDA	Self-Study		Bone Marrow Aspirate and Biopsy UYH	Molecular Investigations UYH		Self-Study		
WEDNESDAY 08.01.2020	Introduction to haematology diagnosis UYH	Self-Study		Computer Assisted Learning Traditional and Complementary Medicine SDA, RI			FORUM 1 (DIAGNOSTIC INVESTIGATIONS) UYH		
THURSDAY 09.01.2020	Introduction to biochemical diagnosis MH	Self-Study		ECE 1 Demonstrate 4 children with Down Syndrome STA			Self-Study		

All lectures for the Year 1 will be conducted in Dewan Kuliah B (DK B).
CAL will be conducted in computer laboratory 1 and 3.
ECE for the Year 1 will be conducted in MKK1 & 3

**BACHELOR OF MEDICINE & BACHELOR OF SURGERY (MBBS) PROGRAMME
PHASE 1 (SEMESTER 1, YEAR 1), Academic Session 2019 / 2020**

WEEK 2		MODULE 5: DIAGNOSIS, THERAPY & MOLECULAR MEDICINE						Module Coordinator: A. P. Dr. Uday Younis Hussein	
DAY/ TIME	8.30 – 9.30	9.30 – 10.30	10:30- 11:00	11.00 – 12.00	12.00 – 1.00	1.00- 2:30	2.30 – 3.30	3.30 – 4.30	4.30 – 5.00
SUNDAY 12.01.2020	Anti-coagulant & thrombolytic agents MSAA	Anti-cancer agents SYNJ	BREAK	Principles of drug prescribing and rational use of medications SDA	Self-Study	BREAK	MOCK PBQ LA		Self-study
MONDAY 13.01.2020	Polymerase chain reaction (PCR) AAB	Overview on Lab Diagnosis Of Infectious Diseases SIS		Agents influencing immune system SDA	Self-Study		MOCK OSPE AH		
TUESDAY 14.01.2020	Revision for EOM 4 and 5								
WEDNESDAY 15.01.2020									
THURSDAY 16.01.2020	<p align="center">EOM 4 and 5 Examination Time: 09:00-11:15 am</p> <p>Bilik Radiography 1 & 2 Invigilators: UYH, HAN</p>								

All lectures for the Year 1 will be conducted in Dewan Kuliah B (DK B).

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