

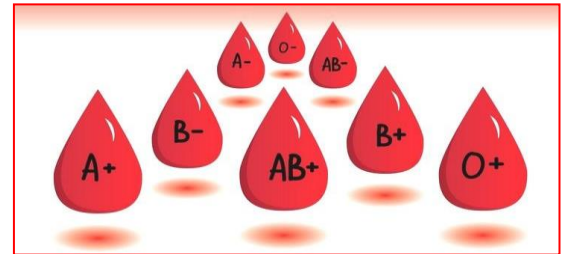
Blood Transfusion

STUDY GUIDE

THIRD YEAR MBBS

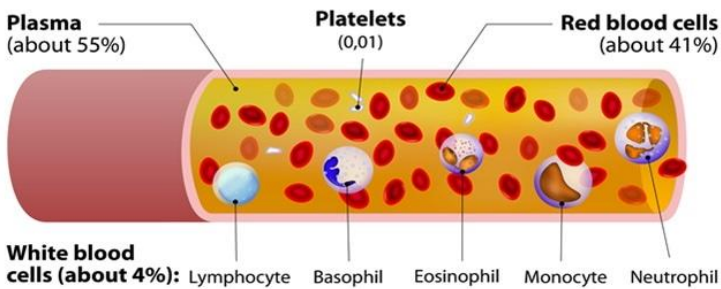
16TH APRIL- 12TH MAY 2021

DURATION: 4 WEEKS



BLOOD II MODULE

The elements of blood



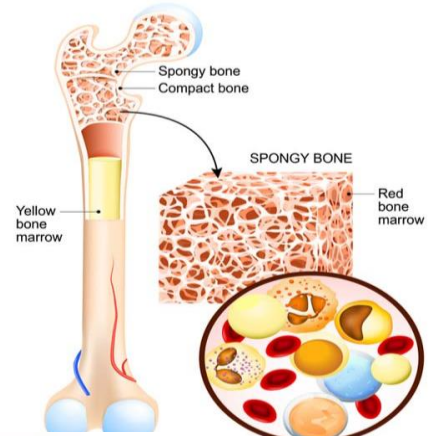
Hodgkin's Lymphoma



Normal lymphocyte



Bone Marrow



Bone Marrow Cells



STUDY GUIDE FOR BLOOD-2 MODULE

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Module name: **Blood-2**Year: **Three**Duration: **4 weeks (April - May 2021)**

Timetable hours: Lectures, Case-Based Integrated Learning (CBIL), Clinical Rotations, learning experience in LNH outreach centers, Laboratory, Practical, Demonstrations, Skills, Self-Study

MODULE INTEGRATED COMMITTEE

MODULE COORDINATORS:	<ul style="list-style-type: none"> Professor S.M. Irfan (Hematology)
CO-COORDINATORS:	<ul style="list-style-type: none"> Professor Shaheen Sharafat (Microbiology) Dr. Muhammad Suleman Sadiq Hashmi (DHPE)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES		
COMMUNITY MEDICINE		
<ul style="list-style-type: none"> Dr. Saima Zainab 		
FORENSIC MEDICINE		
<ul style="list-style-type: none"> Professor Murad Zafar 		
MICROBIOLOGY		
<ul style="list-style-type: none"> Professor Shaheen Sharafat 		
HEMATOLOGY/ PATHOLOGY		
<ul style="list-style-type: none"> Professor S.M. Irfan Professor Naveen Faridi 		
PHARMACOLOGY		
<ul style="list-style-type: none"> Professor Nazir Ahmad Solangi 		
DEPARTMENT OF HEALTH PROFESSIONS EDUCATION		
<ul style="list-style-type: none"> Professor Nighat Huda Dr. M. Suleman Sadiq 	<ul style="list-style-type: none"> Professor Sobia Ali 	<ul style="list-style-type: none"> Dr. Afifa Tabassum
LNH&MC MANAGEMENT		
<ul style="list-style-type: none"> Professor KU Makki, Principal LNH&MC Dr. Shaheena Akbani, Director A.A & R.T LNH&MC 		
STUDY GUIDE COMPILED BY: Department of Health Professions Education		

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program module has been organized
- Help students organize and manage their studies throughout the module
- Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

- Communicates information on organization and management of the module.
This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources such as books, computer assisted learning programs, web-links and journals for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous and Term examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.
- Focuses on information pertaining to examination policy, rules and regulations.

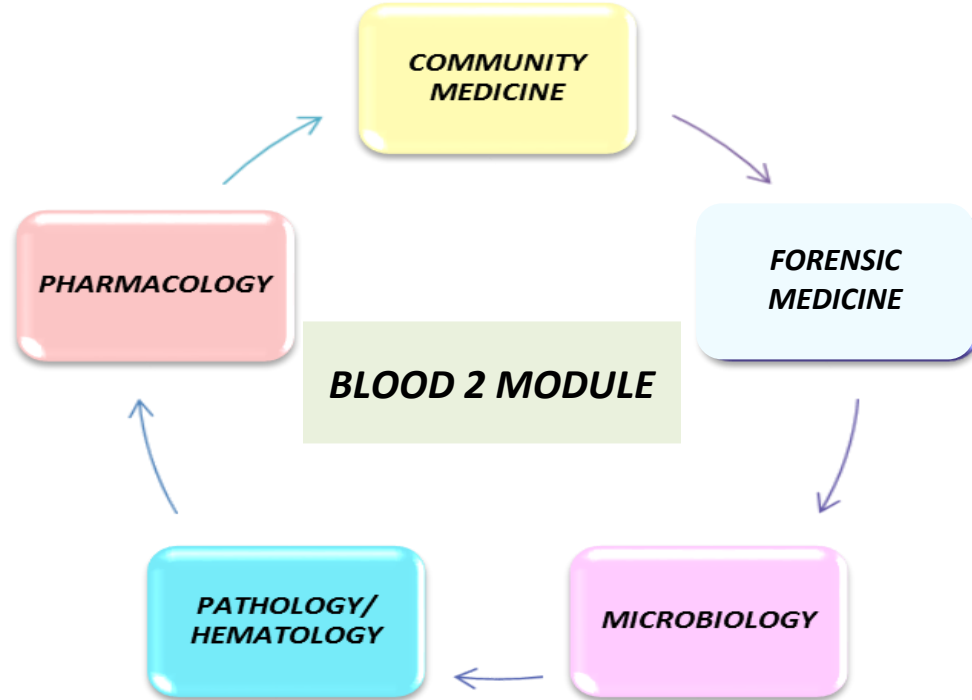
CURRICULUM FRAMEWORK

Students will experience *integrated curriculum* similar to previous modules.

INTEGRATED CURRICULUM comprises of system-based modules such as Infectious Diseases, Blood-II, Respiratory system-II and CVS-II which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples.

LEARNING EXPERIENCES: Case based Integrated discussions, skills acquisition in skills lab. Computer-based assignments, learning experiences in clinics, wards, and outreach centers

INTEGRATING DISCIPLINES OF BLOOD MODULE-II



LEARNING METHODOLOGIES

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- Small Group Discussion
- Case- Based Integrated Learning (CBIL)
- Clinical Experiences
 - Clinical Rotations
 - Experience in LNH outreach centers
- Practicals
- Skills session
- Self-Directed Study

INTERACTIVE LECTURE: In large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients' interviews, exercises, etc. Students are actively involved in the learning process.

SMALL GROUP SESSION: This format helps students to clarify concepts acquire skills or attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

CASE- BASED INTEGRATED LEARNING (CBIL): A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained previously in clinical and basic health sciences during the module and construct new knowledge. The CBIL will be provided by the concern department. CBIL will be provided by the concern department.

CLINICAL LEARNING EXPERIENCES: In small groups, students observe patients with signs and symptoms in hospital wards, clinics and outreach centers. This helps students to relate knowledge of basic and clinical sciences of the module and prepare for future practice.

- **CLINICAL ROTATIONS:** In small groups, students rotate in different wards like Medicine, Pediatrics, Surgery, Obs & Gyne, ENT, Eye, Family Medicine clinics, outreach centers & Community Medicine experiences. Here students observe patients, take histories and perform supervised clinical examinations in outpatient and inpatient settings. They also get an opportunity to observe medical personnel working as a team. These rotations help students relate basic medical and clinical knowledge in diverse clinical areas.
- **EXPERIENCES IN LNH OUTREACH CENTERS:** Learning at outreach centers of LNH have been organized and incorporated as part of training of third year medical students. The objective of these visits is to provide clinical training experiences for students in primary care settings.

PRACTICAL: Basic science practicals related to pharmacology, microbiology, forensic medicine, and community medicine have been schedule for student learning.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

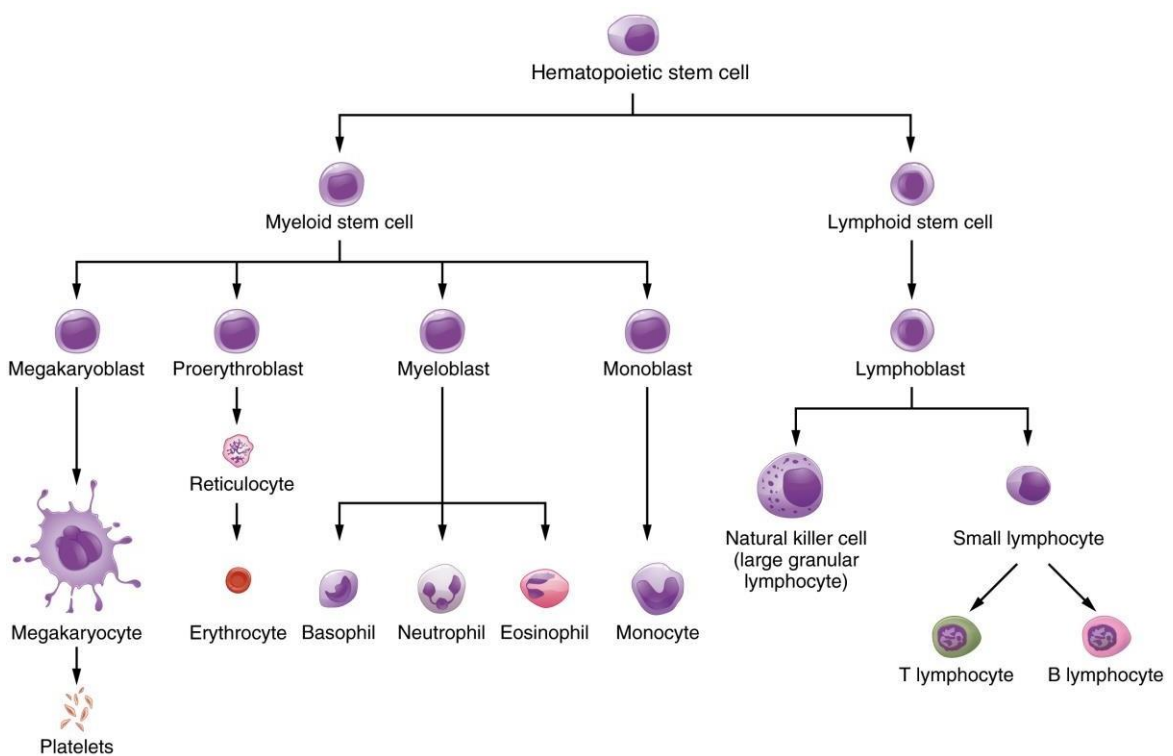
SELF DIRECTED STUDY: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

BLOOD-2 MODULE**INTRODUCTION**

For MBBS third year students, the Blood-2 module concentrates on knowledge and skills required for diagnosis, and outlining the management plan of common hereditary, immunological, and neoplastic disorders of blood and its components. The module covers as well the principles and techniques of laboratory investigations essential for the diagnosis, and monitoring of the treatment of hematological disorders.

In view of prevalence in Pakistan, adequate coverage is given to different types of anemia, thalassemia, and other related disorders. Moreover, the objectives include blood transfusion and blood donation practices to promote safe transfusion, and appropriate use of blood components.

The Blood-2 module learning objectives take into consideration previously acquired pertinent knowledge in Blood module of MBBS first year. The module integrates with related disciplines such as Community Medicine, Forensic Medicine, Microbiology, Hematology/ Pathology, Pharmacology. It is expected that different learning experiences would help students build new knowledge, and enhance students' understanding and motivation to seek further knowledge.



COURSE TOPICS, OBJECTIVES AND TEACHING STRATEGIES

At the end of the module the students will be able to:

COMMUNITY MEDICINE

OBJECTIVES	TEACHING STRATEGY
1. Nutritional Anemia	Lecture
• Define Anemia	
• Classify Anemia	
• List the causes of nutritional anemia	
• List the signs and symptoms of nutritional anemia	
• Predict the consequences of nutritional anemia	
• Discuss prevention and control of nutritional anemia	
2. Immunity types, Vaccines and Cold Chain	Small Group Discussion
• Define Immunity	
• Explain the difference between Vaccination and Immunization	
• Describe Live and Killed Vaccines	
• Discuss the adverse reactions following immunization	
3. Expanded Programme of Immunization	Lecture
• Explain the objective of EPI Programme	
• Describe immunization	
• Discuss the ongoing EPI programme in Pakistan	
4. Cancer epidemiology and prevention	
• Define Cancer	
• Classify cancers	
• Discuss the epidemiological evidence of cancer	
• Discuss different carcinogens	
• Describe Primary, Secondary and Tertiary prevention of cancer	
5. Malaria and prevention	
• List the types of Malarial Parasites	
• Name the Vectors of Malaria	
• Describe the etiological factors and epidemiology of Malaria	
• Discuss the Prevention and Control of Malaria	
6. Dengue Fever and prevention	Lecture
• Name the vectors of Dengue	
• Describe the etiological factors and epidemiology of Dengue	
• Discuss the epidemiology of Dengue Fever with special reference to Pakistan	
7. Research Methodology	Lecture
• Discuss bias & confounding	Lecture & Small Group Discussion
• Explain hypothesis testing, types of error (Alpha & Beta)	
• Explain confidence of Interval for means & proportion	Lecture & Small Group Discussion
• Explain sample size estimation	Lecture

FORENSIC MEDICINE

OBJECTIVES	TEACHING STRATEGY
1. Biological Stains (Blood)	Lecture
• List the tests used to identify blood in a stain	
• Identify the tests used for determination of origin (species), age, source (Arterial or venous), blood groups and sexing of blood stain	
• Differentiate between ante-mortem and postmortem blood stains	
• Explain the role of blood stain pattern analysis in forensic medicine	
• Describe the tests for blood stains (Physical, Microscopic, Chemical, Biological, Spectroscopic)	
2. Biological Stains (Seminal Stains)	
• Describe the composition of semen	
• List the criteria for normal sperm count as per WHO	
• Discuss the medico legal importance of seminal stains	
• Enumerate the various methods of collection of seminal material and determination of motility of sperms	
• Describe the physical, chemical, microscopic, electrophoretic, and immunological tests for the examination of seminal stains.	
• Explain the role of seminal stains in determination of blood groups	
3. Analytic Techniques	
• Explain the methods, principles and uses of the following analytic techniques:	
I. Thin Layer Chromatography	
II. Gas Chromatography	
III. High Pressure Liquid Chromatography	
IV. Spectrophotometry	
V. Stass Otto process	
4. Ethical and legal aspects of transfusion medicine	
• Describe medico legal aspects of transfusion medicine errors	
• Forensic examination of blood transition death	
5. Body Fluids Examinations Tests	Small Group Discussion
• Discuss the protocol for examination of blood and blood stains on the basis of physical characters, microscopic and spectroscopic findings	
• Discuss the protocol for examination of seminal stain on the basis on physical characters, chemical tests and microscopic findings	
6. Blood grouping	Tutorial
• List the commonly used blood grouping systems	
• Discuss the medico legal importance of ABO and Rh blood groups	

MICROBIOLOGY

OBJECTIVES	TEACHING STRATEGY		
1. Arboviruses	Lecture		
<ul style="list-style-type: none"> Discuss in detail Dengue, Yellow fever, Chikungunya, and Ebola fever Discuss in detail Viral Hemorrhagic Fever & Its causative organism 			
2. Rickettsiae	Lecture		
<ul style="list-style-type: none"> Describe the important properties of Rickettsiae Discuss diseases caused by Rickettsiae Describe the transmission and pathogenesis of Rickettsiae List the clinical findings of Rickettsial infections Discuss laboratory diagnosis, treatment and prevention of Rickettsiae 			
3. Blood and tissue protozoa I		Lecture/ Small Group Discussion	
<ul style="list-style-type: none"> Discuss the basic terminologies related to parasitology Discuss the important properties of plasmodium, its pathogenesis and epidemiology Describe the clinical findings and laboratory diagnosis of Malaria Describe the treatment and prevention of malaria 			
4. Blood and tissue protozoa II			Lecture/ Small Group Discussion
<ul style="list-style-type: none"> Discuss the important properties of Leishmania Describe the pathogenesis, clinical findings of Leishmaniasis Discuss laboratory diagnosis, treatment and prevention of Leishmaniasis 			
5. HIV (I&II)	Lecture		
<ul style="list-style-type: none"> Discuss the important properties of HIV Summarize the replication cycle of HIV Describe transmission, and epidemiology of HIV Discuss pathogenesis, clinical findings, laboratory diagnosis and immunity related to HIV Describe the treatment and prevention of HIV 			
6. Tissue nematodes I (Wuchereria , Onchocerca, Loa Loa, Dracunculus)		Lecture/ Small Group Discussion	
<ul style="list-style-type: none"> Discuss the important properties of tissue nematodes; Wuchereria , Onchocerca, Loa Loa, and Dracunculus Describe the pathogenesis, clinical findings of these nematodes Discuss the laboratory diagnosis, treatment and prevention of diseases caused by tissue nematodes 			
7. Tissue nematodes II (Toxocara, Trichenella, Ancylostoma, Angiostrongylus, Anisakis)			Lecture/ Small Group Discussion
<ul style="list-style-type: none"> Discuss the important properties of tissue nematodes; Toxocara, Trichenella, Ancylostoma, Angiostrongylus, and Anisakis Describe the pathogenesis, clinical findings of these nematodes Discuss laboratory diagnosis, treatment and prevention of diseases caused by these nematodes 			
8. Staphylococcus (Pathogens causing sepsis)	Lecture		
<ul style="list-style-type: none"> List the organisms causing sepsis & the clinical findings of staphylococcal infections Describe the important properties and species of staphylococcus Discuss diseases caused by staphylococcus Describe the transmission and pathogenesis of staphylococcus Discuss laboratory diagnosis , treatment and prevention of staphylococcus infections 			
9. Gram negative rods (Zoonotic organisms)		Lecture	
<ul style="list-style-type: none"> Discuss the important properties , pathogenesis, clinical findings, laboratory diagnosis and prevention of Francisella, Yersinia, Pasteurella, Bartonella 			

PATHOLOGY

OBJECTIVES	TEACHING STRATEGY
1. Classification of anemia	Lecture
• Define anemia	
• Describe morphologic characteristics and reference range of red cell indices	
• Classify anemia according to underlying mechanism and morphology	
• Discuss the effects of acute and chronic blood loss	
2. Anemia of diminished erythropoiesis I (Megaloblastic anemia)	
• List the types of anemia associated with red cell underproduction	
• Discuss the causes of megaloblastic anemia	
• Describe the peripheral blood findings/morphology in megaloblastic anemia	
• Define pernicious anemia	
• Discuss metabolism and its biochemical functions of vitamin B12	
• Describe the pathogenesis, morphology and clinical features of pernicious anemia	
• List the causes of folate deficiency	
• Discuss the metabolic processes related to folic acid	
3. Anemia of diminished erythropoiesis II	
• Define aplastic anemia, pure red cell aplasia, myelophthitic anemia, polycythemia	
• List the chronic illnesses associated with anemia of chronic diseases	
• List the causes of pure red cell aplasia & myelophthitic anemia	
• Describe the normal iron metabolism	
• Discuss the etiology of iron deficiency anemia	
• Describe the pathogenesis & clinical features of iron deficiency anemia	
• Discuss the morphological findings in bone marrow and peripheral blood smear	
• Briefly discuss the mechanism involved in anemia of chronic diseases	
• Discuss the major causes of aplastic anemia	
• Describe the pathophysiology of aplastic anemia	
• Briefly discuss the morphology & clinical features of aplastic anemia	
• Briefly discuss the basis of anemia in renal failure, hepatocellular disease & endocrine disease	
• Discuss the causes of both the types of polycythemia	
4. Hemolytic anemia I	
• Describe extravascular & intravascular hemolysis	
• Briefly discuss morphology of hemolytic anemia	
• Define hereditary spherocytosis	
• Describe the pathogenesis, morphology & clinical features of hereditary spherocytosis	
• Discuss the causes & pathogenesis of G6PD deficiency	
• Briefly discuss the ABO incompatibility and Rh- immunization	
5. Hemolytic anemia II	
• Define sickle cell disease, immunohemolytic anemia and paroxysmal nocturnal hemoglobinuria (PNH)	
• Describe the pathogenesis, morphology & clinical features of sickle cell disease	
• Discuss the pathogenesis, manifestations & diagnosis of PNH	
• Classify immunohemolytic anemia	
• Discuss direct & indirect Coombs antiglobulin test	
• Discuss the causes of hemolytic anemia resulting from trauma to red cells	

6. Thalassemia syndrome	
<ul style="list-style-type: none"> Define thalassemia syndrome Classify thalassemia Discuss the pathogenesis, the clinical syndromes, diagnosis & types of beta thalassemia Discuss the morphology of beta thalassemia major/minor Discuss the pathogenesis & types of alpha thalassemia 	
7. Prevalence of Thalassemia & Sickle cell disease	
<ul style="list-style-type: none"> Describe Thalassemia Classify different types of Thalassemia Describe Sickle cell disease List the different types of Sickle cell diseases Discuss the prevalence of Thalassemia and Sickle cell diseases in Pakistan 	
8. Overview and classification of WBC disorders (Non-neoplastic)	
<ul style="list-style-type: none"> Briefly discuss pathogenesis, causes, morphology and clinical features in neutropenia and leukocytosis. List the causes of neutrophilia, eosinophilia, basophilia, monocytosis, lymphocytosis. Summarize lymphadenitis (acute and chronic nonspecific lymphadenitis patterns) 	
9. Neoplastic disorders (Acute leukemia)	
<ul style="list-style-type: none"> Discuss etiologic and pathogenetic factors of white cell neoplasms. Define acute leukemia, acute lymphoblastic leukemia, and acute myeloblastic leukemia. Describe the pathogenesis, morphology, clinical presentation, and prognosis of acute lymphoblastic and acute myeloblastic leukemia 	
10. Non-Hodgkin lymphoma	
<ul style="list-style-type: none"> List the WHO classification of Non-Hodgkin Lymphomas Discuss pathogenesis, morphology, clinical features of Small lymphocytic lymphoma (chronic lymphocytic leukemia), Follicular Lymphoma, Diffuse Large B-Cell Lymphoma, Burkitt Lymphoma, Mantle Cell Lymphoma, Hairy Cell Leukemia 	
11. Hodgkin's lymphoma	
<ul style="list-style-type: none"> Discuss pathogenesis, morphology, and clinical presentation of Hodgkin Lymphoma (HL) List subtypes of HL. Differentiate between Hodgkin Lymphoma (HL) and Non-Hodgkin Lymphomas (NHL) Enumerate the clinical staging of Hodgkin and Non-Hodgkin Lymphomas (Ann Arbor Classification) Discuss the pathogenesis, morphology, and clinical presentation of Hodgkin Lymphoma 	
12. Myeloproliferative disorders (MPD) and Myelodysplastic Syndrome (MDS)	
<ul style="list-style-type: none"> Define MPD and MDS. Describe pathogenesis, morphological findings, clinical features of Chronic Myelogenous Leukemia, Polycythemia Vera, Essential Thrombocytosis, Primary Myelofibrosis, MDS 	
13. Bleeding disorders I	
<ul style="list-style-type: none"> List the causes of thrombocytopenia Briefly discuss the bleeding disorders caused by vessel wall abnormalities Describe clinical presentation, morphological findings in Immune Thrombocytopenic Purpura (ITP) Differentiate between acute and chronic ITP Briefly discuss Bernard-Soulier syndrome & Glanzmann thrombasthenia Summarize drug-induced Thrombocytopenia 	Lecture
14. Bleeding disorders II	
<ul style="list-style-type: none"> Discuss etiology, pathogenesis, & clinical presentation of Thrombotic Thrombocytopenic Purpura and Hemolytic Uremic Syndrome Define DIC Describe the etiology and pathogenesis of DIC 	

15. Coagulation disorders	Lecture
<ul style="list-style-type: none"> Explain the factor VIII-vWF Complex Discuss the types and clinical presentation of Von Willebrand Disease Describe the genetic defects, clinical features, and lab findings in Hemophilia A & B 	
16. Transfusion	
<ul style="list-style-type: none"> Discuss the complications of blood transfusion 	Tutorial
17. Interpretation of Complete Blood Count	
18. Bleeding disorders	
<ul style="list-style-type: none"> Interpret bleeding disorders based on data provided 	Small Group Discussion
19. Examination of bone marrow	
<ul style="list-style-type: none"> List types of bone marrow Discuss sites for bone marrow procedures List the indications for bone marrow examination Discuss M:E ratio Diagnose common hematological conditions based on main morphological characteristics 	
20. Reticulocyte count	
<ul style="list-style-type: none"> Determine the percentage of reticulocytes in the given sample of anticoagulated blood 	

PHARMACOLOGY

OBJECTIVES	TEACHING STRATEGY
1. Drugs used to treat anemia & Hematopoietic growth factors	Lecture
<ul style="list-style-type: none"> Enumerate hematopoietics Explain kinetics & dynamics of the drugs used for the treatment of anemia (including Iron, Vit.. B12 / Folic Acid) 	
2. Coagulants & Anti-coagulants	Small Group Discussion
<ul style="list-style-type: none"> Discuss classification with basic & clinical pharmacology of anticoagulants 	
3. Fibrinolytic & Thrombolytic drugs	
<ul style="list-style-type: none"> Classify fibrinolytic & thrombolytic drugs Describe their basic and clinical pharmacology 	Lecture
4. Vasoactive peptides	
<ul style="list-style-type: none"> Classify the vasoactive peptides Discuss the clinical importance and properties of different vasoactive peptides Describe the basic and clinical pharmacology of vasoactive peptides 	
5. Introduction to anti-microbial therapy	
<ul style="list-style-type: none"> Explain the general principles of antimicrobial therapy and their classes and mechanism(s) of action Discuss the antimicrobial spectra of different drug classes, incidence of drug resistance and its mechanisms, and clinical uses 	
6. Cell wall synthesis Inhibitors I (β-lactam antibiotics)	Lecture
<ul style="list-style-type: none"> Classify Cell Wall synthesis Inhibitors and Penicillins Describe the basic and clinical pharmacology of Penicillins Explain pharmacokinetics and dynamics of Penicillins 	

7. Cell wall synthesis inhibitors-II (Cephalosporins & Others)	
• Describe basic and clinical pharmacology of Cephalosporins and other drugs	
• Explain kinetics and dynamics of Cephalosporins and other drugs	
8. Protein synthesis Inhibitors-I &II	
• Describe the basic and clinical pharmacology of Protein synthesis inhibitors	
• Explain classification, Pharmacokinetics and dynamics of these drugs	
9. Anti-metabolites (Sulfonamides & Trimethoprim)	
• Classify Sulfonamides and Trimethoprim	
• Explain their pharmacokinetics, dynamics, and their clinical uses	
10. Fluoroquinolones	
• Classify the Fluoroquinolones	
• Explain their pharmacokinetics, dynamics and clinical uses	
11. Anti-viral drugs I	CBL
• Classify various drugs used in the treatment of various viral infections (Except Hepatic Viral) with their pharmacokinetics and dynamics	
12. Antiprotozoal Drugs-I (Anti-malarial drugs)	
• Discuss different classes of Anti-protozoal drugs, their pharmacokinetics and dynamics	
• Classify Anti-malarial drugs	
• Explain their pharmacokinetic and dynamics	
13. Immunomodulants and Suppressants Drugs I & II	Small Group Discussion
• Classify Immunosuppressants & Immunomodulants	
• Explain their kinetics and dynamics	
• Describe their basic and clinical pharmacology	
• Explain their importance and the conditions in which they are needed	
14. Anticancer Drugs I & II	Lecture
• Enumerate causes of cancer	
• Discuss rationale of cancer chemotherapy	
• Classify different anticancer drugs according to the functions and cell cycle specificity	
• Discuss their basic and clinical pharmacology	

Apart from attending daily scheduled sessions, students too should engage in self-study to ensure that all the objectives are covered



LEARNING RESOURCES

SUBJECT	RESOURCES
COMMUNITY MEDICINE	<p><u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Preventive and Social Medicine by K Park 2. Community Medicine by M Illyas 3. <i>Basic Statistics</i> for the Health Sciences by Jan W Kuzma
FORENSIC MEDICINE	<p><u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Nasib R. Awan. Principles and practice of Forensic Medicine 1st ed. 2002. 2. Parikh, C.K. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology. 7th ed.2005. <p><u>REFERENCE BOOKS</u></p> <ol style="list-style-type: none"> 3. Knight B. Simpson's Forensic Medicine. 11th ed.1993. 4. Knight and Pekka. Principles of forensic medicine. 3rd ed. 2004 5. Krishan VIJ. Text book of forensic medicine and toxicology (principles and practice). 4th ed. 2007 6. Dikshit P.C. Text book of forensic medicine and toxicology. 1st ed. 2010 7. Polson. Polson's Essential of Forensic Medicine. 4th edition. 2010. 8. Rao. Atlas of Forensic Medicine (latest edition). 9. Rao. Practical Forensic Medicine 3rd ed ,2007. 10. Knight: Jimpson's Forensic Medicine 10th 1991,11th ed.1993 11. Taylor's Principles and Practice of Medical Jurisprudence. 15th ed.1999 <p><u>CDs:</u></p> <ol style="list-style-type: none"> 1. Lectures on Forensic Medicine. 2. Atlas of Forensic Medicine. <p><u>WEBSITES:</u></p> <p>www.forensicmedicine.co.uk</p>
MICROBIOLOGY	<p><u>TEXT BOOK</u></p> <ol style="list-style-type: none"> 1. Jawetz Melnick & Adelbergs Medical Microbiology 28 E 28th Edition
HEMATOLOGY/ PATHOLOGY	<p><u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 9th edition. 2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD <p><u>WEBSITES:</u></p> <ol style="list-style-type: none"> 1. http://www.hematology.org/Educators/High-School.aspx#a2 2. http://imagebank.hematology.org/
PHARMACOLOGY	<p>A. <u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung

ADDITIONAL LEARNING RESOURCES

<u>Hands-on Activities/ Practical</u>	Students will be involved in Practical sessions and hands-on activities that link with the hematology module to enhance the learning.
<u>Labs</u>	Utilize the lab to relate the knowledge to the specimens and models available.
<u>Skills Lab</u>	A skills lab provides the simulators to learn the basic skills and procedures. This helps build the confidence to approach the patients. https://opentextbc.ca/clinicalskills/chapter/6-8-iv-push-medications-and-saline-lock-flush/
<u>Videos</u>	Video familiarize the student with the procedures and protocols to assist patients.
<u>Computer Lab/CDs/DVDs/Internet Resources:</u>	To increase the knowledge students should utilize the available internet resources and CDs/DVDs. This will be an additional advantage to increase learning.
<u>Self Learning</u>	Self Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.

ASSESSMENT METHODS:

- **Best Choice Questions(BCQs)** also known as MCQs (Multiple Choice Questions)
- **Objective Structured Practical/Clinical Examination (OSPE or OSCE)**

BCQs:

- A BCQ has a statement or clinical scenario of four options (likely answers).
- **Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.**
- Students mark their responses on specified computer-based sheet designed for LNHMC.

OSCE:

- All students rotate through the same series of stations in the same allocated time.
- At each station, a brief written statement includes the task. Student completes the given task at one given station in a specified time.
- Stations are observed, unobserved, interactive or rest stations.
- In unobserved stations, flowcharts, models, slide identification, lab reports, case scenarios may be used to cover knowledge component of the content.
- Observed station: Performance of skills /procedures is observed by assessor
- Interactive: Examiner/s ask questions related to the task within the time allocated.
- In Rest station, students in the given time not given any specific task but wait to move to the following station.

Internal Evaluation

- Students will be assessed comprehensively through multiple methods.
- 20% marks of internal evaluation will be added to JSMU final exam. That 20% may include class tests, assignment, practicals and the internal exam which will all have specific marks allocation.

Formative Assessment

Individual department may hold quiz or short answer questions to help students assess their own learning.

The marks obtained are not included in the internal evaluation

For JSMU Examination Policy, please consult JSMU website!

More than 75% attendance is needed to sit for the internal and final examinations
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LNH&MC EXAMINATION RULES & REGULATIONS

- Student must report to examination hall/venue, 30 minutes before the exam.
- **Exam will begin sharp at the given time.**
- No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
- Students must sit according to their roll numbers mentioned on the seats.
- **Cell phones are strictly not allowed in examination hall.**
- If any student is found with cell phone in any mode (silent, switched off or on) he/she will be not be allowed to continue their exam.
- No students will be allowed to sit in exam without University Admit Card, LNMC College ID Card and Lab Coat
- Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
- Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

SCHEDULE:

WEEKS	3 RD YEAR	MONTH
WEEK 1-10	FOUNDATION II MODULE	8 th February 2021
		15 th April 2021
WEEK 1-4	BLOOD II MODULE	16 th April 2021
		12 th May 2021
MID TERM EXAMINATION*		
WEEK 1-4	LOCOMOTOR II MODULE	23 rd May 2021
		19 th June 2021
WEEK 1-4	RESPIRATORY II MODULE	21 st June 2021
		17 th July 2021
WEEK 1-4	CVS II MODULE	19 th July 2021
		14 th August 2021
WEEK 1-6	GIT II MODULE	16 th August 2021
		25 th September 2021
PRE PROF. EXAMINATION*		

*Final dates will be announced later