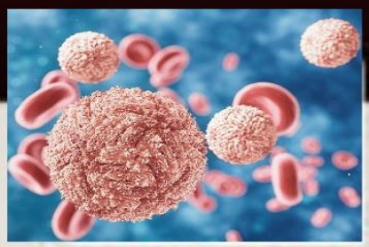
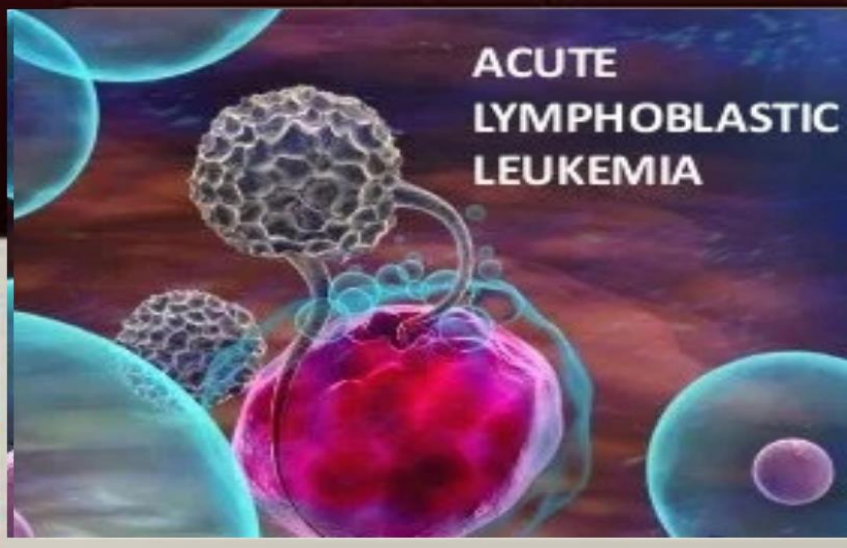
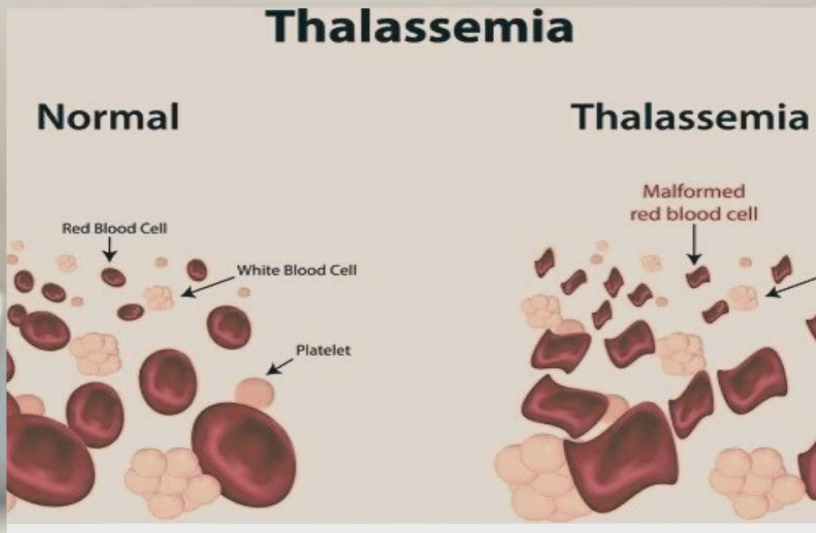
STUDY GUIDE-THIRD YEAR MBBS

- 23rd May-30th June 2022
- Duration: 6 Weeks

BLOOD MODULE 2







LIAQUAT NATIONAL HOSPITAL AND MEDICAL COLLEGE
Institute for Postgraduate Medical Studies & Health Science

STUDY GUIDE FOR BLOOD-2 MODULE

Module name: ***Blood-2*** *Year:* ***Three*** *Duration:* ***6 weeks (May - June 2022)***

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

MODULE INTEGRATED COMMITTEE

MODULE COORDINATORS:	• Professor Shaheen Sharafat (Microbiology)
CO-COORDINATORS:	• Dr Naila Raza (Haematology) • Dr. Sana Shah (DHPE)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
COMMUNITY MEDICINE Dr. Saima Zainab	***FAMILY MEDICINE*** Dr. Rabeeya Saeed
FORENSIC MEDICINE Professor Syed Mukkaram Ali	***ONCOLOGY*** Dr. Naila Zahid
MICROBIOLOGY Professor Shaheen Sharafat	
PATHOLOGY Professor Naveen Faridi	
PHARMACOLOGY Professor Tabassum Zehra	

DEPARTMENT OF HEALTH PROFESSIONS EDUCATION

- Professor Nighat Huda
- Professor Sobia Ali
- Dr. Afifa Tabassum
- Dr. Sana Shah

LNH&MC MANAGEMENT

- 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.

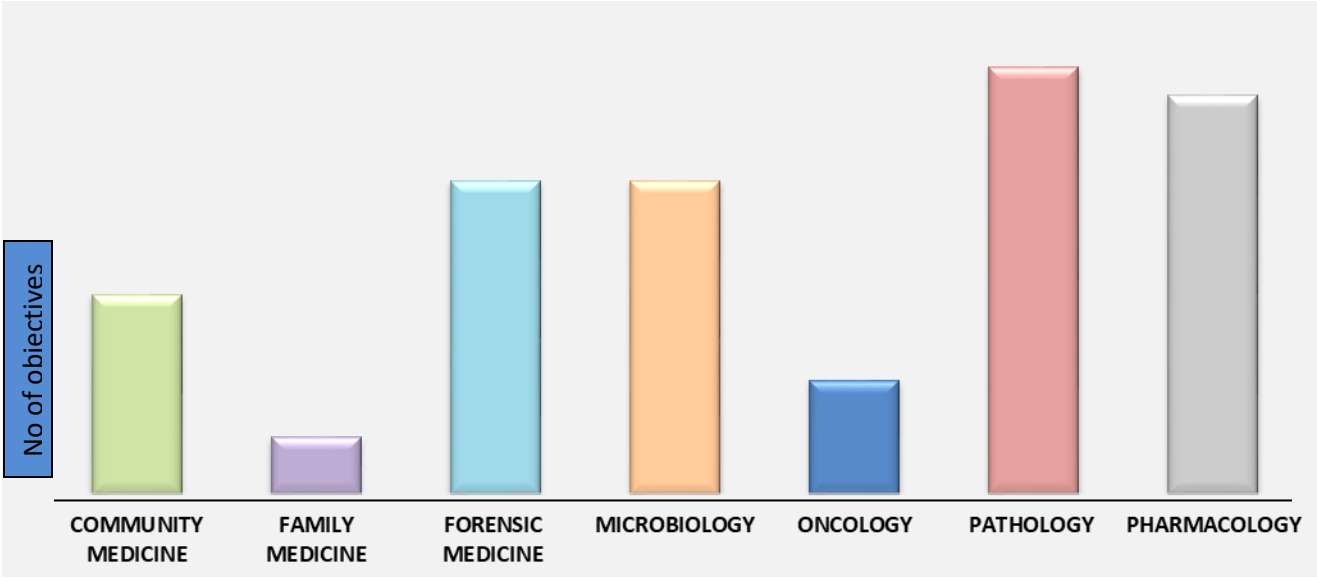
CURRICULUM FRAMEWORK

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

INTEGRATED CURRICULUM comprises of system-based modules such as Blood-II, Locomotor II, Respiratory system-II, CVS-II and GIT & Liver 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 Learning (CBL)
- Clinical Experiences
  - Clinical Rotations
- Practicals
- Skills session
- Self-Directed Learning

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 inthe learning process.

SMALL GROUP DISCUSSION: 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 LEARNING (CBL): 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 CBL will be provided by the concern department. CBL 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.

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 Learning: 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.

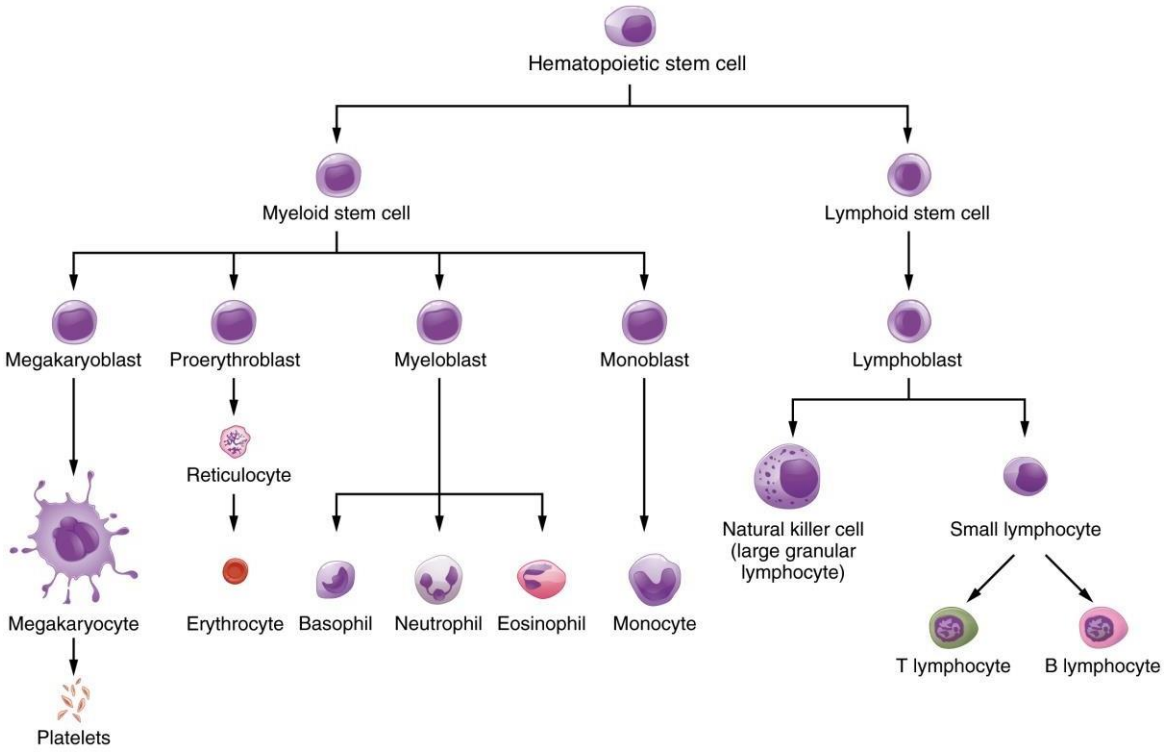
BLOOD-2 MODULE

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

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Nutritional Anemia	Small Group Discussion
• Define Anemia	
• Classify Anemia	
• List the causes of nutritional anemia	
• Explain the consequences of nutritional anemia	
• Discuss prevention and control of nutritional anemia	
2. Immunity, Vaccines and Cold Chain	
• Define Immunity	
• Explain the difference between Vaccination and Immunization	
• Describe Live and Killed Vaccines	
• Discuss the adverse reactions following immunization	
• Explain Cold Chain and its importance	
3. Expanded Programme of Immunization	Small Group Discussion/ Self-Directed Learning
• Explain the objective of EPI Programme	
• Describe immunization	
• Discuss the ongoing EPI programme in Pakistan	
4. Cancer epidemiology and prevention	Small Group Discussion
• Define cancer and its epidemiology	
• Classify cancers	
• Discuss different carcinogens	
• Explain levels of prevention of cancer	
5. Malaria and prevention	Interactive Lecture
• Explain the epidemiology of Malaria	
• Discuss the risk factors of Malaria	
• List the types of Malarial Parasite	
• Name the Vector of Malaria	
• Discuss the complications of Malaria	
• Discuss the Prevention and Control of Malaria	
• Describe National Control Programme of Pakistan	
6. Dengue fever and prevention	
• Explain the epidemiology of Dengue	
• Discuss risk factors of Dengue	
• List the Vectors of Dengue	
• Discuss the complications of Dengue fever	
• Discuss the prevention and control of Dengue	

7. Prevalence of Thalassemia & Sickle cell disease	Small Group Discussion
• 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	

FAMILY MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Common Anemias, their labs and their interpretation	Interactive Lecture
• Classify anemia according to their morphological features (microcytic, macrocytic, and normocytic)	
• Identify various types of anemia on the bases of clinical presentations	
• Interpret the labs of common anemia (iron deficiency anemia, megaloblastic anemia ,Thalassemia	
2. Counselling of Thalassemia	
• Screen high risk patient of Thalassemia	
• Counsel a patient of thalassemia minor/intermedia at the time of diagnosis.	
• Demonstrate premarital counseling of diagnosed and high risk patient of thalassemia	
• Demonstrate pre conception and early pregnancy counseling of thalassemia	
• Communicate effectively about the lifetime management and complication of thalassemia major to the parents	

FORENSIC MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Biological Stains (Blood)	Interactive Lecture/ Small Group Discussion
• 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. Laws in relation to medical man – I	
• Describe Medical ethics, its background (Hippocratic Oath) and its significance	
• Explain the principles of Bioethics	
• List the duties of doctor as advised by international code of medical ethics	
• Discuss the regulatory council {Pakistan Medical Commission (PMC)}, its composition, functions and its role in Medical and Dental education	
5. Laws in relation to medical man – II	
• List privileges & obligations of registered medical practitioner	
• Describe Professional misconduct (Infamous conduct)	
• Explain the types of Consent and its role in relation to Medical Examination and	
• List the criteria for giving valid consent	
• Describe doctrine of informed consent (Rule of full disclosure)	
• Discuss the deviations/exemptions of consent	
6. Laws in relation to medical man-III	
• Describe Professional negligence	Interactive Lecture
• List the types of negligence	
• Explain the following terms with examples:	
i. Res- Ipsa- Loquotar	
ii. Novus Actus Interveniens	
iii. Vicarious Liability	
7. Laws in relation to medical man – IV	
• Summarize 5 D'S for plaintiff's success	
• Discuss briefly the following:	
i. Compensation for Medical Negligence	
ii. Defenses for defendant doctor	
iii. Defenses for reducing damages	
• List the salient features of Transplantation of Human Organs & Tissues Act 2010	
• Explain Euthanasia, its types and ethical issues related to it	
8. Hepatic Poisons- Alcohol	
• Enumerate the sources of alcohol and various concentrations of alcohol which effect human behavior with medico legal imp	
• Explain the absorption, metabolism and excretion of alcohol	
• Describe the signs and symptoms of alcohol intoxication	
• Discuss the procedure of examination of a drunkard by a Medico legal officer	
• Describe the preservation of specimens and Lab tests for alcohol detection	
• Discuss briefly chronic alcoholism, and withdrawal syndromes, and Antabuse therapy	
• Enumerate the postmortem findings of alcoholism	
• Discuss Methyl Alcohol intoxication, its complications and postmortem findings	

9. Blood grouping	Small Group Discussion
• List the commonly used blood grouping systems	
• Discuss the medico legal importance of ABO and Rh blood groups	
10. Medico Legal report and examination of person who consumed alcohol	Small Group Discussion/ Self-Directed Learning
• Explain the procedure of examination of a drunkard person	
• Discuss the medicolegal report of a person who consumed alcohol	
11. Kerosene oil and petroleum products poisoning (Hydrocarbons)	Tutorial
• Describe the mode of action, signs, symptoms, treatment, postmortem findings and medico legal aspects of Kerosene oil and petroleum products poisoning	

MICROBIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Pathogens causing sepsis	Interactive Lecture/Small Group Discussion
• 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	
2. Gram negative rods: (Zoonotic organisms)	Interactive Lecture
• Discuss the important properties, pathogenesis, clinical findings, laboratory diagnosis and prevention of Francisella, Yersinia, Pasteurella, Bartonella, Brucella	
3. Rickettsiae	
• 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	
4. Typhoid fever and its diagnosis	Interactive Lecture/Small Group Discussion
• Discuss the causative agent in typhoid fever	
• Discuss the importance of blood culture in the diagnosis of Typhoid fever	
5. Arboviruses	
• Discuss in detail Dengue, Yellow fever, Chikungunya, and Ebola fever	
6. HIV I	Interactive Lecture
• Discuss the important properties of HIV	
• Summarize replicative cycle of HIV	
• Describe transmission, and epidemiology of HIV	
• Discuss pathogenesis related of HIV/ AIDS	
7. HIV II	
• Discuss the clinical findings of HIV/ AIDS	
• Discuss the laboratory diagnosis, immunity related to AIDS	
• Discuss the treatment and prevention of HIV and AIDS	

8. Blood and tissue protozoa I	Interactive Lecture
• 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	
9. Blood and tissue protozoa II	
• Discuss the important properties of Leishmania and toxoplasma	
• Describe the pathogenesis, clinical findings of Leishmaniasis and toxoplasma	
• Discuss laboratory diagnosis, treatment and prevention of Leishmaniasis and toxoplasma	
10. Tissue nematodes I (Wuchereria, Onchocerca, Loa Loa, Dracunculus)	
• 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	
11. Tissue nematodes II (Toxocara, Trichenella, Ancylostoma, Angiostrongylus, Anisakis)	
• 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	

ONCOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Neoplastic disorders of WBC (Acute leukemia)	Interactive Lecture
• 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	
2. Non-Hodgkin lymphoma	
• 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	
3. Hodgkin lymphoma	
• 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	

PATHOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Classification of anemia	Interactive Lecture/Small Group Discussion
• Define anemia	
• Describe the 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	
• 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	
• List the chronic illnesses associated with anemia of chronic diseases	
• Discuss briefly the mechanism involved in anemia of chronic diseases	
• Discuss briefly the basis of anemia in renal failure, hepatocellular disease & endocrine disease	
3. Anemia of diminished erythropoiesis II	
• Define aplastic anemia, pure red cell aplasia, myelophthisic anemia, polycythemia	
• List the causes of pure red cell aplasia & myelophthisic 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	
• Discuss the major causes of aplastic anemia	
• Describe the pathophysiology of aplastic anemia	
• Discuss briefly the morphology & clinical features of aplastic anemia	
• Discuss the causes of both the types of polycythemia	
4. Hemolytic anemia I	
• Describe extravascular & intravascular hemolysis	
• Discuss briefly morphology of hemolytic anemia	
• Define hereditary spherocytosis	
• Describe the pathogenesis, morphology & clinical features of hereditary spherocytosis	
• Discuss the causes & pathogenesis of G6PD deficiency	
• Discuss briefly 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	Interactive Lecture/Small Group Discussion
• 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. Overview and classification of WBC disorders (Non-neoplastic)	Interactive Lecture
• Discuss briefly 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)	
8. Myeloproliferative disorders (MPD) and Myelodysplastic Syndrome (MDS)	Case- Based Learning (CBL)
• Define MPD and MDS	
• Describe pathogenesis, morphological findings, clinical features of Chronic Myelogenous Leukemia, Polycythemia Vera, Essential Thrombocytosis, Primary Myelofibrosis, MDS	
9. Bleeding disorders I (Platelet disorders)	Interactive Lecture
• List the causes of thrombocytopenia	
• Discuss briefly the bleeding disorders caused by vessel wall abnormalities	
• Describe clinical presentation, morphological findings in Immune Throbocytopenic Purpura (ITP)	
• Differentiate between acute and chronic ITP	
• Discuss briefly Bernard-Soulier syndrome & Glanzmann thrombasthenia	
• Summarize drug-induced Thrombocytopenia	
10. Bleeding disorders II (DIC, Thrombotic Thrombocytopenic Purpura, Hemolytic Uremic Syndrome)	
• Discuss etiology, pathogenesis, & clinical presentation of Thrombotic Thrombocytopenic Purpura and Hemolytic Uremic Syndrome	
• Define DIC	
• Describe the etiology and pathogenesis of DIC	
11. Coagulation disorders	
• Explain the factor VIII- Von Willebrand (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	
12. Transfusion	
• Discuss complications of transfusion	
13. Interpretation of Complete Blood Count	Small Group Discussion
• Interpret peripheral blood smear	
• Interpret the reports of Complete Blood Count	

14. Bleeding disorders	
• Interpret bleeding disorders based on data provided	
15. Examination of bone marrow	Case- Based Learning (CBL)
• List the 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	

PHARMACOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Drugs used to treat Anemia and Hematopoietic Growth Factors	Interactive Lecture
• List the hematopoietic agents	
• Explain the basic and clinical pharmacology of drugs used to treat anemias (including Iron, Vit.B12 and Folic Acid)	
2. Coagulants & Anti-Coagulants	Interactive Lecture/ Small Group Discussion
• Classify coagulants, anti-coagulants,	
• Discuss basic and clinical pharmacology of anticoagulants, clinical uses and adverse effects	
3. Fibrinolytic & Thrombolytic drugs	
• Classify fibrinolytic & thrombolytic drugs and describe their basic and clinical pharmacology	
4. Vasoactive Peptides	
• Classify 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	Interactive Lecture
• Explain the general principles of antimicrobial therapy	
• Classify and discuss mechanism(s) of action of antimicrobials	
• Discuss antimicrobial spectra of different drug classes and drug resistance mechanisms	
• List the clinical uses and their adverse effects	
6. Cell Wall Synthesis Inhibitors-I (β-Lactam Antibiotics)	
• Classify the types of Penicillin	
• Describe the basic and clinical pharmacology of Penicillin	
7. Cell Wall Synthesis Inhibitors-II (Cephalosporins & Others)	
• Classify Cephalosporins	
• Describe the basic and clinical pharmacology of cephalosporins and other drugs	
• Classify cell wall synthesis inhibitors	
• Discuss their pharmacokinetics and dynamics, and their clinical importance	
8. Protein Synthesis Inhibitors-I & II	
• Describe the basic and clinical pharmacology of protein synthesis inhibitors	
• Classify protein synthesis inhibitors	
• Discuss their pharmacokinetics and dynamics, and clinical importance	

9. Anti-Metabolites (Sulfonamides & Trimethoprim)	
• Classify Sulfonamides and Trimethoprim	
• Explain the pharmacokinetics, pharmacodynamics, adverse effects and their clinical uses	
• Describe basic and clinical pharmacology	
• List clinical uses and adverse effects	
10. Fluoroquinolones	
• Classify Fluoroquinolones	
• Describe basic and clinical pharmacology	
• List clinical uses and adverse effects	
11. Anti-Metabolites and Fluoroquinolones	
• Classify anti-metabolites and fluoroquinolones	
• Discuss their pharmacokinetics and pharmacodynamics, clinical uses and adverse effects	
12. Anti-Viral Drugs-I	
• Classify drugs used in the treatment of various viral infections (except drugs used in viral hepatitis)	
• Discuss their mode of actions, pharmacokinetics, pharmacodynamics and adverse effects	
• Classify anti-viral drugs	
• Discuss thier pharmacokinetics and pharmacodynamics	
• Discuss clinical importance of anti-viral agents (except drugs used in viral hepatitis)	
13. Anti-Protozoal Drugs-I (Anti-Malarial Drugs)	
• Classify antiprotozoal drugs	
• Classify the drugs used to treat malaria	
• Discuss their pharmacokinetics and pharmacodynamics, resistance	
• Discuss their clinical importance of anti-malarial agents and drugs used in dengue fever	
• Describe their clinical uses and adverse effects	
14. Immunosuppressives and Immunomodulants	Small Group Discussion
• Classify immunosuppressants and immunomodulants	
• Describe the basic and clinical pharmacology of immunosuppressants and immunomodulants	
• Explain their importance and the conditions in which they are used	
15. Anti-Cancer Drugs-I & II	Case- Based Learning (CBL)
• Describe causes of cancer and discuss rationale of cancer chemotherapy	
• Classify anticancer drugs according to cell cycle specificity	
• Discuss their basic and clinical pharmacology of anti-cancer drugs	
16. Anti-Fungal Drugs	
• Classify anti-fungal drugs	
• Discuss the basic and clinical pharmacology of antifungal drugs	

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	**TEXT BOOKS** 1. Preventive and Social Medicine by K Park 2. Community Medicine by M Illyas 3. Basic *Statistics* for the Health Sciences by Jan W Kuzma
FORENSIC MEDICINE	**TEXT BOOKS** 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. **REFERENCE BOOKS** 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 **CDs:** 1. Lectures on Forensic Medicine. 2. Atlas of Forensic Medicine. **WEBSITES:** www.forensicmedicine.co.uk
MICROBIOLOGY	**TEXT BOOK** 1. Jawetz Melnick & Adelbergs Medical Microbiology 28 E 28th Edition
HEMATOLOGY/ PATHOLOGY	**TEXT BOOKS** 1. Robbins & Cotran, Pathologic Basis of Disease, 9th edition. 2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD **WEBSITES:** 1. http://www.hematology.org/Educators/High-School.aspx#a2 2. http://imagebank.hematology.org/
PHARMACOLOGY	**A. TEXT BOOKS** 1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung

ADDITIONAL LEARNING RESOURCES

Hands-on Activities/ Practical	Students will be involved in Practical sessions and hands-on activities that link with the hematology module to enhance the learning.
Labs	Utilize the lab to relate the knowledge to the specimens and models available.
Skills Lab	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/
Videos	Video familiarize the student with the procedures and protocols to assist patients.
Computer Lab/CDs/DVDs/Internet Resources:	To increase the knowledge students should utilize the available internet resources and CDs/DVDs. This will be an additional advantage to increase learning.
Self Learning	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)**

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

LNH&MC EXAMINATIO N 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	3RD YEAR	MONTH
11 WEEKS	FOUNDATION II MODULE	7th March 2022
		19th May 2022
6 WEEKS	BLOOD II MODULE	23rd May 2022
		30th June 2022
Mid Term Examination 6th July 2022