LAHORE
MEDICAL & DENTAL
COLLEGE

STUDY GUIDE

BLOCK 1

(FOUNDATION-1 MODULE, HEMATOPOIETIC & LYMPHATIC MODULE)

FOR

FIRST YEAR MBBS

2025

TABLE OF CONTENTS

I. LIST OF ABBREVIATIONS

A	Anatomy
Ag	Aging
B	Biochemistry
BhS	Behavioral sciences
CM	Community Medicine
C-FRC	Clinical-Foundation Rotation Clerkship
F	Foundation
HL	Hematopoietic & Lymphatic
M	Medicine
P	Physiology
Pa	Pathology
Pe	Pediatrics
PERLs	Professionalism, Ethics, Research, Leadership
Ph	Pharmacology
Psy	Psychiatry
QI	Quran and Islamiyat
R	Radiology
S	Surgery

II. CURRICULUM FRAME WORK FOR YEAR 1

YEAR	MODULES	
YEAR 1	• Foundation-1 • Hematopoietic & Lymphatic	**Block 1**
	• Musculoskeletal & Locomotion-1	**Block 2**
	• Cardiovascular-1 • Respiratory-1	**Block 3**
	• PERLs-1 • Expository-1 • Quran-1 • Islamiyat, Civics & Pakistan Studies	**Spiral**
	• Clinical Skills Foundation C-FRC-1 (Clinical-foundation, Rotation, Clerkships)	

III. INTRODUCTION TO THE STUDY GUIDE

As UHS has introduced modular integrated MBBS curriculum 2k23 from the academic session 2022-2023, and version 3.0 is released in 2k25, the study guide for Block-1 is developed in order to introduce the First year MBBS students to various modules and blocks in year 1. The learning objectives of all the subjects included in block-1 are added to help learners focus on key areas. Time tables for both the modules in block-1 are added and total contact hours for each subject are given in a tabulated manner. The books and other reading resources are mentioned to facilitate the students. Assessment tools, policy and schedule is also included. Moreover, table of specifications (TOS) for block-1 examination is added to facilitate the learners.

IV. INTRODUCTION TO THE BLOCK-1

Course name:

- Block-1

Year:

- Year-1

Level of students:

- First year MBBS

Duration of Block-1:

- Foundation module-1: 8 weeks

- H & L module: 3 weeks

V. BLOCK-1 COMMITTEES

A. Foundation Module committee:

Module coordinator

- Biochemistry (Prof. Rubina Bashir)

Module co-coordinator

- Prof. Sobia Imtiaz

Representatives

- Anatomy (Prof. Iffat Badar)
- Physiology (Dr. Sadia Nazir)
- Biochemistry (Prof. Sobia Imtiaz)
- Pharmacology (Prof. Ajaz Fatima, Dr. Amna Zubair)
- Pathology (Prof. Shazia, Dr. Maimoona)
- Medicine (Prof. Wasim Amer, Prof. Sarah Shoaib)
- Surgery (Prof Hasnat, Dr. Sidra Shoaib)
- Behavioral Science (Prof. Maqbool Ahmad khan, Miss Ramla)
- Community Medicine (Prof. Seema Daud, Dr. Humayun Mirza)
- Gynaecology & obstetrics (Prof. Nabeela Shami)
- Pediatrics (Prof. Rizwan, Dr. Madeeha)
- Deptt of Medical Education (Dr. Nighat Nadeem)

B. Hematopoietic & Lymphatic Module committee:

Module coordinator

- Biochemistry (Prof. Rubina Bashir)

Module co-coordinator

- Prof. Sobia Imtiaz

Representatives

- Anatomy (Prof. Iffat Badar)
- Physiology (Dr. Sadia Nazir)
- Biochemistry (Prof. Sobia Imtiaz)
- Pharmacology (Prof. Ajaz Fatima, Dr. Amna Zubair)
- Pathology (Prof. Shazia, Dr. Maimoona)
- Medicine (Prof. Wasim Amer, Prof. Sarah Shoaib)
- Surgery (Prof. Hasnat, Dr. Sidra Shoaib)
- Community Medicine (Prof. Seema Daud, Dr. Humayun Mirza)
- Gynaecology & obstetrics (Prof. Nabeela Shami)
- Pediatrics (Prof. Rizwan, Dr. Madeeha)
- Deptt of Medical Education (Dr. Nighat Nadeem)

TOR & Duties of Module Committees:

- Module committee was headed by module coordinator
- Module coordinator was nominated from the subject with the maximum content in the respective module
- Module coordinator developed module team for collaboration and consultation with all the relevant subjects
- Module committee assisted in implementation of the curricular guidelines provided by UHS
- Module committee coordinated with the assessment cell in medical education department.
- Module coordinator helped in developing the study guide in collaboration with medical education deptt

VI. TIME TABLES

FOUNDATION MODULE-1: 8 weeks w.e.f 10th March 2025

Days & time	*8:00 am-10:00 am	10:00 - 10:45 am	10:45 am-11:30 am	11:30 am-12:00 pm	12:00 am-12:45 pm	12:45 pm-1:30 pm	1:30 pm-2:15 pm	2:15 pm-3:00 pm
Monday	Histo Practical A+B Physio Practical C+D Biochem Practical E+F Physio/Bio Tutorial G+H C-FRC I+J	Biochemistry lecture	Anatomy lecture	BREAK	Physiology lecture	Anatomy lecture	** Comm. Med/Aging	Pathology lecture
Tuesday	Histo Practical C+D Physio Practical E +F Biochem Practical G+H Physio/Bio Tutorial I+J C-FRC A+B	Biochemistry lecture	Anatomy lecture		Physiology lecture	Anatomy lecture	Pathology lecture	Biochemistry lecture
Wednesday	Histo Practical E+F Physio Practical G+H Biochem Practical I+J Physio/Bio Tutorial A+B C-FRC C+D	Biochemistry lecture	Physiology lecture		Anatomy lecture	Anatomy lecture	Physiology lecture	PERL/ ISL & Pak. St*** lecture
Thursday	Histo Practical G+H Physio Practical I+J Biochem Practical A+B Physio/Bio Tutorial C+D C-FRC E+F	Anatomy lecture	Physiology lecture		Biochemistry lecture	Anatomy lecture	Behav. Sci lecture	**** Comm. Med/SDL
Friday	*8:00 am-9:40 am	9:40 - 10:30 am	10:30 am-11:15 am	11:15 am- 12:0 am		12:00 am-12:15 am	12:15 am- 1:00 pm	
	Histo Practical I+J Physio Practical A+B Biochem Practical C+D Physio/Bio Tutorial E+F C-FRC G+H	Physiology lecture	Biochemistry lecture	*****Isl & Pak.st./Pharma		Break	Anatomy Lecture	

*** SDL 40 minutes practical time**
**** Last Monday of module: aging**
***** First 4 weeks PERL and last 4 weeks Isl/Pak. St.**
******Community med /SDL on alternate weeks (to be managed by Anatomy, Physiology, Biochemistry and PERL)**
******* Isl & Pak.st./ Pharmacology on alternate weeks**

H & L MODULE: Proposed (3 weeks)

Days & time	8:00 am-9:40 am	9:40 am-10:30 am	10:30 am-11:20 am	11:20 am-11:40 am	11:40 am-12:30 pm	12:30 pm-1:20 pm	1:20 pm-2:10 pm	2:10 pm-3:00 pm
Monday	Histo Practical/CSF[1] A+B Physio Practical C+D Biochem Practical E+F Physio Tutorial G+H Biochem Tutorial I+J	Physiology lecture	Biochemistry lecture	BREAK	Physiology lecture	Biochemistry/ Aging lecture	Preventive medicine[2]	Pathology/ CSF/ Behav Sci[3] lecture
Tuesday	Histo Practical/CSF[1] C+D Physio Practical E+F Biochem Practical G+H Physio Tutorial I+J Biochem Tutorial A+B	Physiology lecture	Biochemistry lecture		Physiology lecture	Biochemistry lecture	Pathology lecture	Pharmacology lecture
Wednesday	Histo Practical/CSF[1] E+F Physio Practical G+H Biochem Practical I+J Physio Tutorial A+B Biochem Tutorial C+D	Physiology lecture	Biochemistry lecture		Physiology lecture	Biochemistry lecture	PERL lecture	Pathology lecture
Thursday	Histo Practical/CSF[1] G+H Physio Practical I+J Biochem Practical A+B Physio Tutorial C+D Biochem Tutorial E+F	Physiology lecture	Biochemistry lecture		Physiology lecture	Biochemistry lecture	Anatomy lecture	Preventive medicine[2]
Friday	Histo Practical/CSF[1] I+J Physio Practical A+B Biochem Practical C+D Physio Tutorial E+F Biochem Tutorial G+H	9:40 am 10:25 am	10:25 am-11:10 am	11:10 am- 11:30 am		11:30 am-12:15 am	12:15 am- 1:00 pm	
		Physiology lecture	Biochemistry lecture	BREAK		Pathology/PERL[4] lecture	**** Islamiyat (Holy Quran) & Pak. studies	

- **SDL 40 minutes practical time**
- **SDL on every Friday from 1:00 pm to 3:00 pm**
- **CSF will be held in skills lab in practical time**

1 Histology practical/ CSF on alternate weeks
2 Preventive medicine will be managed by community medicine and Behav sciences
3 First two weeks Pathology, third week CSF, Fourth week Behav sciences
4 First three weeks Pathology, last week PERL

VII. DISTRIBUTION AND DURATION OF TEACHING ACTIVITIES AMONGST DIFFERENT DISCIPLINES

FOUNDATION-1 MODULE:

- Anatomy (70 hours)
- Physiology (52 hours)
- Biochemistry (45 hours)
- Pharmacology (4 hours)
- Pathology (14 hours)
- Medicine & Surgery (C-FRC: 16 hours)
- PERL (7.5 hours)
- Community medicine (8 hours)
- Holy Quran (06 hours)
- Aging (1 hour)
- Impact (8 hours)

S. No	Subject	Lecture	Practical	Grand Total
1	Anatomy	48 hours	22 hours	70 hours
2	Physiology	40 hours	12 hours	52 hours
3	Biochemistry	36 hours	09 hours	45 hours
4	Pharmacology	04 hours	--------	04 hours
5	Pathology	12 hours	02 hours	14 hours
6	C-FRC	16 hours	--------	16 hours
7	PERL	7.5 hours	--------	7.5 hours
8	Community medicine	08 hours	--------	08 hours
9	Holy Quran	06 hours	--------	06 hours
10	Aging	1 hour	--------	1 hour
11	Impact	8 hours	--------	8 hours

H&L MODULE:

- Anatomy (5 hours)
- Physiology (26 hours)
- Biochemistry (25 hours)
- Pharmacology (2 hours)
- Pathology (05 hours)
- Medicine & Surgery (C-FRC: 04 hours)
- PERL (3 hours)

- Disease Prevention & impact (05 hours)
- Holy Quran /Islamiyat & Pak studies (3 hours)
- Aging (01 hour)

S. No	Subject	Lecture	Practical	Grand Total
1	Anatomy	3 hours	2 hours	05 hours
2	Physiology	20 hours	6 hours	26 hours
3	Biochemistry	19 hours	6 hours	25 hours
4	Pharmacology	02 hours	--------	02 hours
5	Pathology	05 hours	--------	05 hours
6	Medicine & Surgery (C-FRC)	04 hours	--------	04 hours
7	PERL	03 hours	--------	03 hours
8	Disease Prevention & impact	05 hours	--------	05 hours
9	Holy Quran/Isl & Pak studies	03 hours	--------	03 hours
10	Aging	01 hour	--------	01 hour

VIII. LEARNING OUTCOMES AND THEMES OF BLOCK-1

FOUNDATION-1 MODULE

Learning outcomes

1. Describe the microscopic features of nerve cells, muscle cells, general features of epithelia of the body.
2. Appraise the functional characteristics of various components of cell membrane and organelles of cell.
3. Differentiate between the dynamics of various transport mechanisms along the cell membrane.
4. Compare the functional differences between RBCs, WBCs and blood groups.
5. Explain the significance of homeostatic mechanisms in keeping body's internal environment nearly constant.
6. Appraise the formation and functions of autonomic nervous system.
7. Correlate the structural design of each organ to its function.
8. Acquire information about the different fascial planes in the different regions of the body & their surgical importance.
9. Use descriptive anatomical terms of position to describe the different body structures in relation to each other.
10. Describe the movements of body using proper anatomical terms of movement.
11. Describe and demonstrate the various bony landmarks.
12. Describe the types of joints and correlate them to the mechanisms of movement.
13. Classify the bones, joints and muscles based on the structure, function, and phylogenetic origin.

14. Describe the structures associated with muscles and explain their functional correlations.
15. Classify and describe the cardiovascular system and correlate it functionally.
16. Amplify the anatomical basis for radiological, cross-sectional anatomy.
17. Correlate clinicopathologically the apoptosis in health & diseases.

Themes

1. Cell structure
2. Cell transport and signaling
3. Cell chemistry
4. Homeostasis and blood
5. Autonomic nervous system
6. Body movement
7. Muscles
8. Growth and development

HEMATOPOIETIC AND LYMPHATIC MODULE

Learning outcomes

1. Explain the function of all the organs / structures involved in this system and the mechanisms controlling them (Spleen, lymph nodes, thymus, bone marrow, RBCs, WBCs, and platelets).
2. Explain the etiology and pathogenesis of common blood & lymphatic diseases, particularly those of importance in Pakistan.
3. Explain the rationale for the use of common therapeutic agents for the diseases related to blood and immunity.
4. Describe the role of immunity in the body.
5. Discuss the working & uses of laboratory instruments in diagnostic lab visit.
6. Relate red cell indices with health and disease.
7. Recognize ABO/Rh blood grouping system.
8. Describe the role of reticuloendothelial system in the body.
9. Describe the events of hemostasis.
10. Extrapolate the biochemical aspects of plasma proteins.
11. Discuss the pharmacological treatment of iron deficiency anemia.
12. Discuss blood composition and functions.
13. Discuss the role of liver in hemolytic anemia.
14. Practice history taking of a patient presented with blood disorders.

Themes

1. Red blood cells
2. Platelets
3. White blood cells

Clinical relevance

1. Aplastic anemia

2. Hemolytic anemia
3. Blood loss anemia
4. Nutritional anemia
5. Polycythemia
6. Hemoglobinopathies
7. Jaundice
8. Acute and chronic lymphocytic and myelogenous leukemia
9. Allergy (Type I, Type II & Type III)

IX. LEARNING OBJECTIVES (UHS SYLLABUS) OF BLOCK-1

FOUNDATION ORIENTATION

DAY-01

F-Or-001: Understanding the Medical Profession and the Physician's Role

- Analyze the societal expectations, impact and role of physicians.
- Meet with doctors in various leadership roles to gain insights into the multifaceted responsibilities in the medical field.
- Define and explain the concept of a "Seven-Star Doctor."

F-Or-002: Exploring the Academic Environment

- Comprehend the values and mission of the institution.
- Familiarize themselves with the college campus, its facilities (educational psychologist, career counseling, and research department etc.), faculty, and administrative framework.
- Comprehend the medical facilities available to the student.

F-Or-003: Acquainting with the MBBS Program

- Examine and differentiate various teaching methodologies, assessing their applicability and effectiveness.
- Develop and maintain professional portfolios and logbooks to reflect on their educational progression.
- Understand the assessment strategies of the program, considering their types and influence on learning.
- Practice the PBL (Problem Based Learning) mock to understand its process, including problem identification, teamwork, research, and presentation skills.

DAY-02

F-Or-004: Delving into the Healthcare System and Delivery

- Describe and understand the structure of Pakistan's Healthcare System (primary, secondary, and tertiary), recognizing the roles of different sectors and key health policies.

- Identify and comprehend cultural and ethical aspects unique to the Pakistani Healthcare context.
- Describe the principles of family practice within the Healthcare System.

F-Or-005: Integrating Information Technology in Learning

- Use the IT and library facilities such as eBooks', Year planners, access to scientific journals etc.
- Effectively use the university's learning management system and other online educational tools.
- Demonstrate proficiency in essential academic software tools such as Microsoft office such as (word, spreadsheets, and presentation software).
- Recognize and adhere to ethical practices in the use of digital resources, focusing on digital literacy and academic integrity

DAY-03

F-Or-006: Understanding the Curriculum Structure

- Articulate the structure and requirements of their MBBS program, including core and elective subjects.
- Understand the significance of interdisciplinary studies and the interconnection of various courses.
- Identify opportunities for experiential learning, research, and career advancement within the curriculum.

F-Or-007: Self-Directed Learning

- Apply various metacognition strategies for learning.
- Apply digital tools effectively to organize and synthesize information for their academic projects.
- Create a personal action plan integrating stress management techniques and personal development strategies to enhance their academic and personal life.

FOUNDATION-1 MODULE

NORMAL STRUCTURE

GROSS ANATOMY

General Anatomy

F-A-001: Introduction to general anatomy

- Briefly describe the applied branches of anatomy.
- Describe the "Anatomical Position"
- Describe the anatomical planes of body
- Describe the terms of relationship, commonly used in Anatomy.
- Describe the anatomical terms used specifically for limbs.
- Describe the terms related to movements.

F-A-002: Bones (Osteology)

- Describe, identify, and exemplify the general morphological features of bones.
- Describe the developmental classification of bones.
- Describe the regional classification of bones.
- Describe the morphological classification of bones.
- Describe and exemplify sesamoid, pneumatic, wormian and heterotopic bones.
- Describe general features of adult typical long bone.
- Describe the types of epiphysis.
- Discuss the general concept of ossification (primary & secondary centers & rule of ossification)
- Describe the relationship of growing end of bones with the direction of nutrient foramen.
- Describe the blood supply of various types of bones.
- Describe the salient features of common types of fractures & basic concept of healing of fracture.

F-A-003: Cartilage (Chondrology)

- Describe the general features of cartilage and its importance in gross anatomy.
- Describe the subtypes and gross features of hyaline cartilage, elastic cartilage & fibrocartilage. Differentiate between the three types of cartilages.

F-A-004: Joints (Arthrology)

- Describe and exemplify the structural classification of joints (synovial, cartilaginous & fibrous) along with their sub-classification.
- Describe the components & characteristic features of a synovial joint.
- Describe the blood supply & innervation of synovial joints, cartilaginous and fibrous joints.
- List the factors stabilizing the synovial joint.
- Define common joint injuries and diseases.

F-A-005: Integumentary System

- Describe the structure and function of skin on the basis of its two layers; Epidermis and Dermis.
- Describe the structure of hair as an appendage of skin.
- Describe the structure of nail as an appendage of skin.
- Describe the structure of sweat and sebaceous glands.
- Describe the structure and function of superficial fascia
- Describe the structure, function, and modifications of deep fascia.
- Describe important clinical correlates of skin. (Skin infections, sebaceous cyst, skin burns and skin grafting)

F-A-006: Muscle tissue (Myology)

- Classify and describe muscle tissue based on structure, function and development.
- Describe somatic and visceral muscles.

- Describe and differentiate between the red and white variety of skeletal muscles.
- Classify and describe the skeletal muscles based on architecture.
- Classify skeletal muscle based on action.
- Describe the parts of a skeletal muscle.
- Describe and differentiate between the basic organization of innervation to skeletal, smooth, and cardiac muscle.
- Describe the structure of synovial bursae.
- Comprehend the meaning of hypertrophy, hemiplegia, quadriplegia, paraplegia, hemiparesis

F-A-007: Vascular system (Angiology)

- Classify the types of blood circulation.
- Classify and exemplify various types of blood vessel.
- Describe and exemplify various types of anastomoses.
- Explain the importance of end arteries.
- Describe the general organization of lymphatic circulation.
- Define the terms: lymphoid tissue, tissue fluid, lymphatic capillaries, lymph and lymphatic vessels.
- Define the terms; lymphangitis, lymphadenitis

F-A-008: Nervous tissue (Neurology)

- Define neuron.
- Describe the anatomical structure of a neuron.
- Classify neurons based on morphology with examples.
- Classify neurons based on function.
- Describe the components of the central nervous system.
- Describe the components of the peripheral nervous system
- Name the supporting cells (neuroglia) of the central nervous system
- Describe the structure and functions of the neuroglia of the central nervous system
- Enumerate the supporting cells (neuroglia) of the peripheral nervous system
- Describe the structure and functions of the neuroglia of the peripheral nervous system
- Enlist the cranial nerves I to XII
- Describe the types of nerve fibers carried by and distribution of the cranial nerves
- Describe the formation, types of modalities carried by, and distribution of the spinal nerves
- Explain dermatome(s)
- Explain myotome(s)
- Describe the formation of plexuses
- Differentiate between somatic and visceral nervous system
- Define Receptors
- Describe the functions of receptors

- Classify sensory receptors based on modality (with location)
- Define effectors
- Describe the functions of effectors
- Describe ANS and differentiate between sympathetic and parasympathetic nervous system

F-A-009: Imaging in Anatomy (Integrate with Radiology)

- Identify displacement of fracture segments of the bone
- Identify dislocation of joints

EMBRYOLOGY & POST-NATAL DEVELOPMENT

Embryology

F-A-010: Cell division & chromosomal abnormalities

- Define chromosome theory of inheritance.
- Enlist different stages of mitosis and meiosis
- Compare and contrast mitosis and meiosis
- Enlist the numerical chromosomal anomalies
- Describe the anatomical basis for numerical chromosomal abnormalities
- Describe the clinical presentation of numerical chromosomal abnormalities & justify them embryologically
- Describe the clinical presentation of structural chromosomal abnormalities & justify them embryologically
- Describe the embryological basis for mosaicism
- Describe the embryological basis for teratoma
- Describe concept of gene mutation
- Enlist common diagnostic techniques for identifying genetic abnormalities

F-A-011: Gametogenesis Spermatogenesis

- Describe the process of spermatogenesis & spermiogenesis
- Describe the embryological basis for abnormal gametes

F-A-012: Gametogenesis, Oogenesis (Integrate with Gynaecology)

- Describe the prenatal and postnatal maturation of oocyte

F-A-013: Gametogenesis,Oogenesis

- Describe the significance of arrested development of oocyte

F-A-014: Gametogenesis

- Compare and contrast oogenesis and spermatogenesis

F-A-015: Female Reproductive cycle (Integrate with Gynecology)

- Describe the hormonal control of female reproductive cycles
- Enumerate and describe the steps of the ovarian cycle
- Describe the process of ovulation
- Describe the formation, function and fate of corpus luteum
- Define Mittelschmerz pain
- Define menstrual cycle

- Describe the phases of menstrual cycle

F-A-016: Transportation of Gametes

- Describe the transportation of oocyte

F-A-017: Fertilization

- Describe capacitation & acrosomal reaction
- Define fertilization
- Describe the phases of fertilization
- Draw and label a diagram illustrating the phases of fertilization
- Enumerate & describe the results of fertilization

F-A-018: Contraception (Integrate with Physiology)

- Define contraception
- Explain the mechanisms of following contraceptive techniques:
  - Barrier methods
  - Hormonal methods
  - Intrauterine device (IUD)
  - Emergency contraceptive pills (ECPs)
  - Male and female sterilization

F-A-019: Infertility & assisted reproductive techniques (Integrate with Gynaecology)

- Describe the anatomical and physiological basis of male and female infertility
- Define assisted reproductive techniques
- Describe the mechanisms of in vitro fertilization (IVF) and embryo transfer
- Explain the correlation of multiple births with assisted reproductive techniques

F-A-020: Cleavage, blastocyst formation

- Describe the process of cleavage of embryo and blastocyst formation
- Describe the origin and uses of embryonic stem cells and the techniques of obtaining these cells from the embryo (reproductive cloning & therapeutic cloning)
- Explain the embryological basis of spontaneous abortion
- Compare and contrast the villi (Integrate with Gynaecology)
- Describe the process of compaction
- Describe the formation of morula (division into inner and outer cell mass)

F-A-021: Implantation week 2 of Development

- Describe the uterus at the time of implantation (decidual reaction)
- Illustrate the concept of implantation
- Describe the abnormal implantation/ extrauterine implantations
- Define the molar pregnancy
- Describe the formation of amniotic cavity, embryonic disc, & umbilical vesicle
- Describe the formation of chorionic sac.

F-A-022: Utero-placental circulation

- Describe the establishment of utero-placental circulation

F-A-023: Gastrulation (Integrate with Gynaecology)

- Describe the formation and fate of primitive streak
- Draw a concept map highlighting the sequence of events responsible for transformation of bilaminar germ disc into trilaminar germ disc
- Describe the embryology behind sacrococcygeal teratoma and justify its clinical picture
- Describe the molecular factors responsible for gastrulation

FA-024: Formation of notochord

- Describe the invagination and movement of prenotochordal cells
- Describe the notochordal plate formation
- Describe the neurenteric canal formation
- Describe the fate of the notochord
- Describe the establishment of body axis
- Draw and label the fate map establishment
- Describe the fate map establishment
- Describe the molecular basis for notochord formation
- Describe the role of notochord as an inducer
- Describe the embryological basis for situs inversus, sirenomelia, holoprosencephaly
- Describe the development of trophoblast & chorionic villi during 3rd week of development

F-A-025: Derivatives of ectoderm

- Describe the formation of neural tube from neural plate.
- Justify embryologically the clinical picture seen in various neural tube defects
- Describe the process of migration of neural crest cells
- Enlist the derivatives of neural tube and describe the fate of each
- Enlist the derivatives of neural crest cells
- Enlist the ectodermal derivatives
- Describe the molecular and genetic factors for the process of neurulation
- Describe important neural tube defects

F-A-026: Mesodermal derivatives (Integrate with Pediatrics)

- Describe the differentiation of mesoderm into it's constituting components
- Describe the somite formation and its fate
- Describe the estimation of age by somites
- Describe the formation of intra-embryonic coelom

F-A-027: Early development of CVS (Integrate with Cardiology)

- Describe the processes of vasculogenesis and angiogenesis
- Explain the features of primordial cardiovascular system
- Describe the anatomical justification for capillary hemangiomas

F-A-028: Folding of embryo (Integrate with Gynaecology)

- Describe the cephalo-caudal folding
- Describe the lateral folding

F-A-029: Germ layer derivatives

- Enlist the derivatives of germ layers
- Enlist and describe the derivatives of intermediate and lateral plate mesoderm
- Enlist and describe the derivatives of endoderm
- Enlist and describe the derivatives of ectoderm (integrate with Gynaecology/Pediatrics)

F-A-030: Control of the embryonic development

- Describe the regulation of embryonic development by HomeoBox genes

F-A-031: Folding of Embryo: Embryonic period

- Enlist the characteristic features of the embryo during 2nd month
- Describe the criteria for estimating the developmental staging in human embryos
- Explain the estimation of gestational and embryonic age

F-A-032: Fetal period

- Explain the measurement and characteristics of fetus/key events during embryonic period
- Describe the overview of the external appearance of fetus during fetal period
- Enlist developmental horizons during fetal life event
- Describe viability of fetuses and low birth weight babies
- Explain the factors influencing fetal growth
- Describe the clinical problems encountered by babies born with IUGR

F-A-033 Fetal status (Integrate with Gynaecology)

- Tabulate the criteria for estimating fertilization age during the fetal period
- Describe the procedures for assessing fetal status
- Describe the clinical picture of IUGR and factors resulting in IUGR
- Define pre-eclampsia

F-A-034: Placenta (Integrate with Gynaecology)

- List the fetal membranes
- Describe the macroscopic & microscopic features of decidua
- Enlist the various parts of decidua
- Functionally correlate the parts of the decidua with its structure
- Describe the changes in the trophoblast leading to the development of placenta
- Describe the structure (macroscopic and microscopic) of placenta
- Enlist and correlate the Functions of placenta with its structure
- Describe the microscopic anatomy of placental membrane
- Describe the placental circulation (fetal & maternal)
- Embryologically justify the hemolytic disease of the neonate (Erythroblastosis Fetalis)
- Describe the functions of placenta

F-A-035: Fetal membranes (Integrate with Gynaecology)

- Describe the formation & fate of Umbilical cord

- Describe the cord abnormalities
- Justify embryologically the clinical features observed in absence of umbilical artery
- Describe the formation and circulation of amniotic fluid
- Describe the procedure of diagnostic amniocentesis
- Explain the significance of amniotic fluid
- Describe the factors responsible for polyhydramnios and oligohydramnios
- Describe the consequences of oligohydramnios and polyhydramnios
- Define amniotic bands
- Explain the formation and fate of umbilical vesicle (yolk sac)
- Define physiological umbilical hernia

F-A-036: Multiple pregnancies

- Describe the development of dizygotic twins
- Describe the development of monozygotic twins
- Describe the fetal membranes in twin pregnancy
- Describe fetus Papyraceous
- Explain the zygosity of the twins
- Describe the characteristics of various types of conjoined monozygotic twins

F-A-037: Prenatal diagnosis and fetal therapy

- Describe preterm birth
- Describe parturition & 3 stages of labor
- Describe the various methods of prenatal diagnosis
- Describe the fetal therapy
- Describe maternal serum screening
- Correlate levels of alpha fetoprotein and fetal anomalies
- Describe stem cell transplantation and gene therapy

F-A-038: Molecular regulations and signaling pathways

- Define morphogens, protein kinases, notch delta pathway, transcription factors, epigenetics

F-A-039: Teratogenicity

- Define teratology and causes of birth defects
- Define genomic imprinting
- Define human disorders associated with genetic mutations
- Describe birth defects caused by genetic factors: numerical and structural anomalies
- Define and enlist the teratogens
- Describe the role of following in causing teratogenicity in humans:
    - Drugs
    - Environmental agents
    - Chemicals and heavy metals
    - Infectious agents

    - Radiation
    - Hormones
    - Maternal diseases
- Describe the basis for male-mediated teratogens
- Describe prevention of birth defects

Microscopic Anatomy (Histology and Pathology)

F-A-040: Introduction to microscopy and basic staining techniques

- Describe different types of microscopies
- Describe staining methods and their significance

F-A-041: Cell membrane

- Describe the electron microscopic structure and fluid mosaic model of plasma membrane
- Draw the fluid mosaic model of plasma membrane
- Describe the structure of glycocalyx coat and lipid raft and correlate it with function
- Describe different types of membrane proteins and their functions
- Explain different modes of transport across the cell membrane (Integrate with Pathology)

F-A-042: Cell organelles (integrate with Pathology)

- List the membranous and non- membranous cellular organelles
- Describe the structure of the following cellular organelles and correlate with their function:
    - Ribosomes
    - Endoplasmic reticulum (rough and smooth)
    - Golgi apparatus
    - Lysosomes
    - Proteasomes
    - Mitochondria
    - Peroxisomes
- Describe the structural components of cytoskeleton, and correlate them with their functions
- Explain the histological basis of immotile cilia syndrome
- Describe the histological features of cytoplasmic inclusions
- Describe the structure of nuclear envelope and nuclear pores (Integrate with Physiology)

F-A-043: Cell nucleus

- Describe the structure of chromatin
- Describe the structure of chromosome
- Describe the structure of nucleolus
- Describe the structure and types of DNA and RNA

- Describe the histological basis for apoptosis and necrosis
- Describe structure of different type of cell junctions (integrate with Pathology)
- Describe the cell cycle & cell division (integrate with Pathology)
- Define important clinicopathological terms: Atresia, Hypertrophy, Atrophy, Hyperplasia, Metaplasia, Anaplasia, Neoplasia, Inflammation, Metastasis

F-A-044: Epithelium

- Describe the histological structure and function of basement membrane (light and electron)
- Draw and label a diagram illustrating the electron microscopic picture of basement membrane
- Describe the basal surface modifications of epithelia
- Describe the electron microscopic structure and functions of intercellular junctions (lateral surface modifications) and give their locations
- Describe the biochemical composition of the basolateral modifications
- Describe the electron microscopic structure & function of the following apical cell surface specializations: (integrate with Biochemistry)
    - Microvilli
    - Stereo cilia
    - Cilia
- Classify and exemplify the epithelia with their histological structure, locations and functions (integrate with Pathology)
- Describe the structure of exocrine glands
- Explain the mechanism of transport across the epithelia
- Describe the classification of exocrine glands on the basis of:
    - Shape of secretory portions and ducts
    - Mode of secretion
    - Type of secretion

F-A-045: Connective tissue

- Describe the composition and list the constituents of connective tissue
- Classify the connective tissue with examples
- Describe the composition of ground substance of connective tissue
- Describe the composition, distribution, and function of glycosaminoglycans in connective tissue
- Describe connective tissue fiber, cells.
- Define fibrosis
- Describe the structure, distribution, and functions of the cells of macrophage-mononuclear phagocytic system (Integrate with Biochemistry/Physiology)
- Describe the role of macrophages in innate immunity & formation of foreign body Giant cell (Integrate with Biochemistry/Physiology)
- Describe the structure and function of mast cells. (Integrate with

Biochemistry/Physiology)

- Role of mast cells in immediate hypersensitivity reactions (Integrate with Biochemistry/Physiology)
- Describe structure of plasma cells and their role in antibody formation (Integrate with Biochemistry/Physiology)
- Describe the types of adipose tissue (white & brown), their histogenesis, locations and function
- Describe lipid storage and mobilization in and from adipocytes and compare the brown and white adipose tissue (Integrate with Pathology)

PRACTICAL

Anatomy

F-A-046: Osteology Imaging and cross- sectional anatomy, arthrology

- Demonstrate the anatomical terms of position and movement, in particular on limbs.
- Demonstrate various anatomical movements of body
- Identify various elevations and anatomical landmarks on bones.
- Identify and interpret normal radiographs of various body regions
- Identify and interpret joint dislocations and displaced fracture bone segments radiographically.

Embryology

F-A-047: Embryology

- Calculate fertilization age, gestational age, embryonic/fetal age and expected date of delivery.
- On models, charts, aborted embryos and fetal specimens, identify the:
  events of embryonic period, i.e., cleavage, morula and blastula formation, yolk sac, amniotic cavity, connecting stalk
- Gastrulation (notochord & primitive streak, three germ layers and their parts/derivatives), angiogenesis, neurulation, somites and embryonic age determination based on it, chorionic villi (primary, secondary & tertiary), developmental defects (sacrococcygeal teratoma, neural tube defects)
- Placenta and positional and implantational variations, umbilical cord and its contents
- Fetal features during fetal period.
- Determine age of fetus based on these features.
- Describe the USG (Ultrasonography) report for the:
  Fetal features, fetal age estimation, placental attachment with its variations and fetal membranes & multiple pregnancies.

Histology/Microscopic Anatomy

F-A-048: Staining techniques

- Describe different types of staining techniques and their significance with special

emphasis on H&E (Hematoxylin and Eosin) staining

F-A-049: Microscope

- Enlist important features of different parts of light microscope

F-A-050 Cell shape

- Identify and draw and label different cell shapes under the microscope

F-A-051: Epithelium

- Identify under light microscope and draw and label the following types of epithelia:
  - Simple squamous
  - Simple cuboidal
  - Simple columnar (ciliated & non-ciliated)
  - Pseudostratified columnar (ciliated & non- ciliated)
  - Stratified squamous (keratinized & non keratinized)
  - Stratified cuboidal
  - Stratified columnar
  - Transitional

F-A-052: Epithelium

- Identify under light microscope and draw and label serous and mucous secreting glands under light microscope

F-A-053: Connective tissue

- Identify under light microscope and draw and label the various types of connective tissue

MEDICAL PHYSIOLOGY

PHYSIOLOGY

F-P-001: Cell Biology

- Define Homeostasis
- Explain control system of body by giving examples
- Differentiate between extracellular and intracellular fluids
- Explain the positive and negative feedback mechanisms with examples
- Explain the significance of feed forward/ adaptive control/delayed negative feedback mechanisms
- Explain the structure of cell membrane
- Enlist the types of cell membrane proteins
- Enumerate the functions of membrane proteins
- Define and enumerate the functions of cell glycocalyx
- Enlist membranous and non-membranous organelles
- Enlist the self-replicative organelles
- Differentiate between the functions of smooth and rough endoplasmic reticulum
- Explain the functions of Golgi apparatus
- Enlist the enzymes of lysosomes

- Explain the functions of lysosomes
- Enlist the enzymes of peroxisomes
- Explain the functions of peroxisomes
- Enumerate the components and functions of cytoskeleton
- Define and enlist types of endocytosis
- Explain the mechanism of pinocytosis
- Classify different transport mechanisms
- Compare the composition of Na^+, K^+ and Cl^- in extracellular and intracellular fluid
- Define and enlist different types of diffusion
- Explain the process of facilitated diffusion with the aid of diagram
- Define and classify different types of active transport
- Describe primary and secondary active transport with examples
- Explain voltage and ligand gated channels with examples
- Name Na, K channel blockers.
- Discuss functions and significance of Na^+/K^+ ATPase pump.

F-P-002: Blood

- Enumerate the functions of blood
- Explain the composition of blood
- Enumerate the plasma proteins
- Discuss functions of plasma proteins
- Describe the pathophysiology of edema

F-P-003: Red Blood Cells

- Discuss the characteristics of red blood cells
- Explain different types of bone marrows
- Enumerate the different sites of erythropoiesis at different ages
- Explain the stages of erythropoiesis
- Enumerate factors that regulate erythropoiesis
- Discuss the site and role of erythropoietin in red blood cell production
- Explain the significance of vitamin B_{12} and folic acid in maturation of red blood cell

F-P-004: Hemoglobin

- Enumerate the types of normal hemoglobin in different ages of life
- Explain the role of Iron in hemoglobin formation.
- Define blood indices, give their normal values & enumerate the conditions in which these values are disturbed
- Enlist the abnormal types of hemoglobin

F-P-005: White Blood Cells

- Enumerate the types of white blood cells
- Describe the characteristics and functions of neutrophils
- Explain the process of defense against invading agent by neutrophils

- Define leukocytosis and leukopenia
- Explain the effects of leukemia on body
- Explain the process of defense against invading agent by macrophages
- Discuss different lines of defense during inflammation
- Explain the functions of neutrophils and macrophages in spread of inflammation (walling off effect)
- Define the reticuloendothelial system
- Enlist the different components of reticuloendothelial system
- Explain the characteristics and functions of basophils
- Explain the characteristics and functions of eosinophils and enlist conditions in which these cells are raised

F-P-006: Blood Types

- Enumerate different blood group types
- Explain the basis of ABO and Rh blood system
- Explain the Landsteiner law

F-P-007: Autonomic nervous system (integrate with Anatomy part of ANS)

- Discuss components of autonomic nervous system
- Explain the physiological anatomy of sympathetic and parasympathetic nervous system
- Describe the types of adrenergic and cholinergic receptors and their functions
- Explain the effects of sympathetic and parasympathetic on various organs/ system of body

PRACTICAL

F-P-008: Consent

- Explain laboratory/clinical procedure to the subject.
- Obtain verbal consent from subject before starting a procedure.
- Reassure the subject after the procedure.

F-P-009: RBCs

- Determine erythrocyte sedimentation rate and packed cell volume

F-P-010: Blood Group

- Determination of blood group

F-P-011: WBCs

- Interpret Total Leucocyte Count, Differential Leucocyte Count (normal & abnormal) in a CBC report generated by automated cell counter**.**
- Identify various types of WBCs in a prepared DLC (Differential leukocyte count)

MEDICAL BIOCHEMISTRY

Cell Biology

F-B-001: Structure of cell

- Explain the concept of organization of cells to tissue, tissues to organ, organs to

system.

- Differentiate between the eukaryotic and prokaryotic cells.

F-B-002: Cell Membrane

- Describe the composition and structure of cell on biochemical basis and justify it as fluid mosaic model.
- Describe the structure and function of cell membrane with particular reference to the role of:
  - Lipids
  - Carbohydrates
  - Proteins
- Explain why the cell membrane is called fluid mosaic model

F-B-003: Signal transduction

- Discuss the various ways of cell-to-cell communication and to the environment
- Describe cell to cell communications
- Cell signaling pathways (only G protein signaling i.e, Gs, Gi & Gq)
- Describe cell to cell adhesion

F-B-004: Subcellular organelles

- Explain the biochemical markers and importance of subcellular organelles and their inherited disorders especially:
  - I- cell disease
  - Refsum's disease
  - Parkinsonism
  - Progeria

F-B-005: Chemistry of purine and pyrimidines

- Describe the chemistry of purines and pyrimidines and their linkage in nucleic acid synthesis and their metabolism

F-B-006: DNA

- Discuss the organization of DNA with special reference to Watson and crick model, composition, structure, rule of pairing
- Describe the structural forms of DNA

F-B-007: RNA

- Discuss the structure of different types of RNAs with special reference to composition, linkage, functions of RNA, micro-RNA
- Illustrate the structure and functions of various types of RNAs
- Describe the functions of various small RNAs present in cell

F-B-008: Nucleotides

- Explain the structure and nomenclature of nucleotides, biomedical importance of natural and synthetic analogues

F-B-009: Chromosome

- Explain the higher organization of DNA.
- Difference between DNA, chromatid and chromosome

F-B-010: Enzymes

- Describe enzymes with reference to:
  - Active sites
  - Specificity
  - Catalytic efficiency
  - Cofactor
  - Coenzyme
  - Holoenzyme
  - Apoenzyme
  - Prosthetic group
  - Zymogens
  - Location
- Classify enzymes according to the reaction they catalyze and their nomenclature
- Explain the mechanism of enzyme action from reactants to products (catalysis)
- Discuss the effect of various factors on enzymatic activity:
  - Substrate concentration
  - Temperature
  - PH
  - Enzyme concentration
- Explain the regulation of enzymatic activity (Michaelis Menten and Line Weaver Burk's equation).
- Discuss inhibitors of enzymatic activity (with special reference to Km/V max)
  - Competitive
  - Non competitive
  - Uncompetitive
- Explain the application of enzyme in clinical diagnosis and therapeutic use

F-B-011: Amino acids

- Classify amino acids based on polarity, nutritional importance and glucogenic/ketogenic properties
- Explain the structure, physical, chemical properties of amino acids and their biomedical importance

F-B-012 Proteins

- Classify proteins on the basis of functions, solubility and physicochemical properties
  - Explain its biomedical importance
  - Distinguish between class A and B proteins
- Explain the structural levels of proteins
  - Differentiate between alpha helix and beta pleated protein structures
  - Identify bonding at different levels of proteins
- Describe the role of chaperones in protein folding
  - Interpret disorders related to protein misfolding on basis of given data

- Describe the biochemical basis of Alzheimer's disease/ prion disease

F-B-013: Plasma proteins

- Classify and explain the bio-chemical role of each class of plasma proteins

F-B-014: Immunoglobulins

- Explain the structure and biochemical role of immunoglobulins
  - Describe the production, structure and functions of B cells, plasma cells, and antibodies (IgA, IgD, IgE, IgG, and IgM)
  - Discuss the functions of the cytokines (Interleukins (ILs), Tumor Necrosis Factor (TNFs), IFs, Platelet derived growth factor (PDGF), and Platelet activating factor (PAF))
  - Interpret multiple myeloma on basis of given data

PRACTICAL

F-B-015: Lab hazards

- Demonstrate the steps taken to prevent or rectify the Laboratory Hazards

F-B-016: Cell

- Identify the structure of cells under microscope

F-B-017: Cell organelles

- Identify the methods of isolation of cell organelles

F-B-018: Equipment

- Identify the different parts of equipment i.e., centrifuge, microlab, electrophoresis, Hot oven, water bath

F-B-019: Chromatography, Solutions

- Detection of amino acids by paper chromatography
- Prepare different types of solution Molar, Molal, Normal and %

PATHOLOGY

General Pathology

F-Pa-001: Cell Injury

- Discuss the significance of pathology
- Discuss the causes of cell injury
- Identify the types of cell injury
- Describe the mechanism of cell injury
- Identify the types of cell death
- Define necrosis and apoptosis
- Describe different types of necrosis
- Compare apoptosis with necrosis
- Identify different types and mechanism of cellular adaptations to stress
- Discuss the mechanism and types of intracellular accumulations and pathological calcifications

General Microbiology

F-Pa-002: Introduction to Microorganisms

- Enumerate the microbes causing infectious diseases
- Differentiate cell walls of gram positive and gram- negative bacteria
- Compare the structure of bacterial cell and virus
- Discuss the growth curve of bacteria
- Enlist steps of viral replication
- Enlist stages of bacterial pathogenesis
- Discuss the determinants of bacterial pathogenesis

General Microbiology

F-Pa-003: Sterilization and Disinfection

- Define sterilization and disinfection
- Describe the principles of sterilization and disinfection
- Describe clinical uses of common disinfectants and their mode of sterilization
- Discuss physical and chemical agents for sterilization

PRACTICAL

F-Pa-004: Cell injury

- Identify the necrosis and calcification along with their types
- Identify the cellular adaptations and pigmentations with their salient pathological features

PHARMACOLOGY AND THERAPEUTICS

General Pharmacology

F-Ph-001: Absorption, Distribution, Metabolism and Excretion of drugs

- Definitions of Pharmacology, drug, pro-drug, placebo
- Active principles
- Sources of drugs
- Brief outline of absorption, distribution, metabolism and excretion

F-Ph-002: Basic terminologies of Pharmacology

- Definitions of receptor, agonist, partial agonist, inverse agonist, antagonist and types of receptors and second messengers
- Diagrammatic concept of signaling mechanisms

F-Ph-003: Autonomic System

- Pharmacological aspects of autonomic receptors (types of autonomic receptors, important sites and actions)

COMMUNITY MEDICINE & PUBLIC HEALTH

F-CM-001: Concept of health

- Describe the changing concepts and new philosophy of health

- Explain responsibility for health

F-CM-002: Positive health Dimensions, health Determinants

- Explain dimensions and determinants of health and their role in achieving positive health
- Discuss concept of health and wellbeing
- Describe the physical quality of Life Index and Human Development Index

F-CM-003: Health indicators

- Describe the importance of health indicators
- Classify health indicators
- Calculate morbidity and mortality
- Describe disability indicators
- Compare indicators among countries

F-CM-004: Disease causation

- Conceptualize disease causation and natural history of disease
- Explain Germ theory & multifactorial causation
- Describe epidemiological triad
- Discuss web of disease causation
- Describe gradient of infection

F-CM-005: Disease Prevention

- Describe principles of prevention and control on prevalent diseases
- Explain difference between elimination and eradication
- Describe disease surveillance, types and cycle
- Explain primary, secondary, & tertiary prevention
- Describe five levels of interventions

IMPACT (EPIDEMIOLOGY, SOCIOLOGY/SOCIETY, COMMUNITY MEDICINE & PUBLIC HEALTH)

Behavioral Sciences

F-BhS-001: Biological Basis of behavior

- Identify the Biological Basis of human behavior and discuss social behavior
- Describe processes such as neurobiology of memory, emotions, sleep, learning, motivation, sex, arousal, reward and punishment

F-BhS-002: Psychological Disorders

- Identify the burden of mental illness on the person, family and society
- Describe Intellectual disability, Mental Disorders and Personality Disorders

F-BhS-003: Psychology and Disease

- Identify the role of psychosocial factors in various illnesses
- Describe psychosocial aspects of various system diseases such as CVS, CNS, GIT, respiration, renal, endocrine and cancer

F-BhS-004: Behavioral factors and pharmacological treatment

- Identify the behavioral factors associated with pharmacological treatment of diseases
- Discuss Health belief model, treatment compliance and its psychosocial factors, social factors in drugs prescription and drug resistance

F-BhS-005: Palliative care

- Identify the rehabilitation work for patients on dialysis and any kind of physical disability
- Discuss the care requirements in chronic debilitating conditions like Diabetes, multi infarcts dementia, chronic renal disease, limb amputation

F-BhS-006: Stress

- Identify the various physiological effects of stress
- Explain ANS response to stress
- Describe behavioral manifestations of stress
- Stress related multiple sclerosis and autoimmune diseases

AGING

Geriatrics

F-Ag-001: Process of Aging **(Integrate with Biochemistry)**

- Discuss telomeres and telomerase and their clinical significance in aging.

FOUNDATION MODULE C-FRC:

DEPTT OF SURGERY:

- Demonstrate steps of hand washing
- Demonstrate the process of wearing the gloves

DEPTT OF MEDICINE:

- Demonstrate the procedure of taking the pulse
- Record the respiratory rate of a patient
- Demonstrate the procedure of taking the blood pressure

HEMATOPOIETIC AND LYMPHATIC MODULE
NORMAL STRUCTURE

GROSS ANATOMY

Human Anatomy

HL-A-001: Hematopoietic and Lymphoid Tissue

- Identify and describe the components of the hematopoietic & lymphoid tissue and

their functions

- Location, coverings, relations of spleen
- Origin, course branches and distribution of splenic artery
- Venous drainage of spleen, portal vein formation, tributaries, and areas of drainage.
- Location and relations of thymus
- Age related changes in thymus

Embryology and Postnatal development

HL-A-002: Developmental Anatomy of Spleen

- Intrauterine development of spleen

PRACTICAL

HL-A-003: Histological features of lymph node, spleen and thymus

- Light microscopic structure of spleen, thymus,lymph nodes, tonsils and Mucosa associated lymphoid tissue (MALT) including appendix.

NORMAL FUNCTION

Medical Physiology

HL-P-001: Anemia

- Define, classify and explain anemia on the basis of morphology and cause
- Discuss the effects of anemia on the body

HL-P-002: Polycythemia

- Define polycythemia
- Explain types of polycythemias
- Discuss the effects of polycythemia on the body

HL-P-003: Hemostasis

- Define hemostasis
- Describe the mechanisms by which hemostasis is secured

HL-P-004: Platelets

- Discuss the characteristics and functions of platelets
- Explain the mechanism of formation of platelet plug

HL-P-005: Coagulation Factors

- Enlist the clotting factors in blood
- Explain the conversion of Prothrombin to Thrombin and formation of Fibrin Fibers
- Explain the Intrinsic & extrinsic clotting pathway.
- Name & explain the mechanism of anticoagulants used in laboratory.
- Explain the factors that prevent intravascular coagulation
- Explain the role of calcium ions in Intrinsic and Extrinsic pathways
- Enlist the vitamin K dependent clotting factors
- Explain the prothrombin time, INR, and its clinical significance.

HL-P-006: Coagulation disorders

- Enlist and explain the conditions that cause excessive bleeding

- Define thrombocytopenia (Integrate with Medicine)
- Enlist the causes and consequences of thrombocytopenia (Integrate with Medicine)

HL-P-007: Immunity (Integrate with Microbiology)

- Define immunity
- Classify immunity
- Explain humoral immunity
- Explain innate immunity.
- Elaborate cell mediated immunity.
- Describe the structure of antigen and immunoglobulin
- Describe the role of Helper T-cells in cell mediated immunity
- Enlist the types of immunoglobulins along with their functions
- Explain the role of memory cells in enhancing antibody response (secondary response)
- Describe the mechanism of action of antibodies
- Elaborate the complement system.

HL-P- 008: Tolerance (Integrate with Pathology)

- Elaborate immune tolerance
- Explain the process of clone selection during T cell processing
- Discuss the failure of tolerance mechanism

HL-P-009: Immunization (Integrate with microbiology)

- Discuss immunization
- Define passive Immunity
- Explain features and physiological basis of delayed reaction allergy
- Explain features and physiological basis of atopic allergy
- Explain features and physiological basis of anaphylaxis, urticaria and Hay fever

HL-P-010: Blood group Incompatibility

- Discuss the pathophysiology, features and treatment of ABO and Rh incompatibility
- Enlist the changes that take place in the stored blood

HL-P-011: Blood mismatch transfusion reactions (Integrate with Pathology)

- Discuss the features and complications of mismatched blood transfusion reaction
- Describe the hazards of blood transfusion
- Elaborate the transplantation of tissues and organs

HL-P-012: Transplantation of tissues (Integrate with Pathology)

- Explain the process of tissue typing
- Explain prevention of graft rejection by suppressing immune system

MEDICAL BIOCHEMISTRY

HL-B-001: Hemoglobin and its types/ RBCs

- Explain the steps of synthesis of hemoglobin and interpret Porphyrias on basis of sign symptoms and data
- Discuss the biochemical role and types of hemoglobin

- Differentiate between hemoglobin and myoglobin
- Explain oxygen dissociation curve of hemoglobin & myoglobin and factors regulating them
- Interpret CO toxicity on the basis of signs and symptoms
- Explain the role of 2,3 BPG in fetal circulation

HL-B- 002: Hemoglobinopathies/ RBCs/ Homeostasis (Integrate with Pathology)

- Discuss hemoglobinopathies and their biochemical and genetic basis with special emphasis on sickle cell anemia, thalassemia and methemoglobinemia
- Discuss the following types of anemia on the basis of signs and symptoms and laboratory data:
  - Hypochromic microcytic
  - Normochromic microcytic
  - Normochromic normocytic
  - Macrocytic (megaloblastic)

HL-B-003: Iron Metabolism/RBCs (Integrate with Medicine)

- Explain the iron metabolism with mechanism of absorption and factors affecting it.
- Interpret iron deficiency anemia on basis of given data and microscopic findings
- Interpret folic acid and cobalamin deficiency in relation to anemias on given data and microscopic findings
- Discuss biochemical role of pyridoxine and vitamin C in microcytic anemia

HL-B- 004: Heme Degradation/ RBCs

- Discuss the degradation of heme in macrophages of reticuloendothelial system
  - Describe the formation of bile pigments, their types and transport
  - Discuss the fate of bilirubin

HL-B- 005: Hyperbilirubinemias / RBCs/ blood groups

- Discuss hyperbilirubinemias and their biochemical basis
  - Differentiate between types of jaundice on basis of signs/symptoms and data
  - Evaluate the genetic basis of jaundice on the basis of lab investigations

HL-B-006: Genetics

- Explain and interpret pedigree of single gene defect i.e. sickle cell anemia (Autosomal recessive) and beta Thalassemia (X-linked recessive)

PRACTICAL

Medical Physiology

HL-P-013: Bleeding/ clotting time

- Interpret the Red Blood Cell Count, hemoglobin concentration, hematocrit and RBC Indices by automated cell counter
- Interpret the Total leucocyte count, Differential leukocyte count, Platelet Count by automated cell counter.

HL-P-014: Jaundice & Anemias/ RBCs/Homeostasis

- Determine bleeding time.

- Determine clotting time.

Medical Biochemistry

HL-B-007: Jaundice & Anemias

- Interpret types of jaundice on the basis of data
- Perform estimation of LFTs (bilirubin, ALP, AST & ALT)

PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS

Pharmacology & Therapeutics

HL-Ph-001: Anemia

- Describe the oral and parenteral iron preparations including their pharmacokinetics, uses, adverse effects
- Vitamin B_{12} preparations, Iron antidotes

Pathology

HL-Pa- 001: Blood Cells, Platelets and blood groups

- Should know the terms: Hematopoietic growth factors, their names, mechanism of actions, uses and adverse effects
- Define and classify anemias according to underlying mechanism and MCV/MCH
- Discuss the causes and investigations of iron deficiency anemia and megaloblastic anemia
- Classify the benign and malignant disorders of WBCs
- Discuss the causes leading to reactive leukocytosis
- Interpretation of anemias on the basis of peripheral blood smear and bone marrow findings
- Classify bleeding disorders
- Discuss first line laboratory investigations for bleeding disorders
- Describe the basic concept of blood grouping and acute hemolytic transfusion reaction

DISEASE PREVENTION AND IMPACT

Community Medicine and Public Health

HL-CM- 01: Anemia

- Describe the nutritional aspects of iron deficiency anemia and psychological aspects of diseases

HL-CM- 002: Communicable diseases

- Enlist most common blood borne diseases in Pakistan
- Describe the routes of spread of blood borne diseases

HL-CM-003: Genetic diseases

- Genetic counseling of parents

Behavioral Sciences

HL-BhS- 01: Counseling,informational care

- Psychological counseling of patients and their families

HL-BhS- 02: Personal, Psychosocial and vocational issues

- Identify and deal with the various psychosocial aspects of hematopoietic System disorders (such as sickle Cell Disease, hemophilia, and conditions of the blood) on individual, family and society.

AGING

Biochemistry/Dermatology

HL-Ag-001: Platelet Rich Plasma Therapy

- Discuss the role of platelets in Platelet rich plasma (PRP) treatment in old age (for skin, hair and joints)

HL-Ag-002: Glutathione

- Explain the role of glutathione in skin whitening

H&L MODULE C-FRC:

DEPTT OF SURGERY:

- Detail the steps of drawing blood from a vein

DEPTT OF MEDICINE:

- Check for pallor in the conjunctiva, tongue and palm of hands

PERLS BLOCK-1

ORIENTATION

Professionalism:

History of Medical Profession

- Discuss the origins of Medicine in Ancient Civilizations
- Explain the key Figures in Medical History (Hippocrates, Avicenna, Florence Nightingale)
- Discuss modernization of Medicine and Technological Advances
- Introduce the development of Medical Education and Licensing

Reflective Doctor:

- Discuss the concept of reflective practice and its importance in medical professionalism, including self-awareness, critical thinking, and continuous improvement.
- Write a reflective entry after a learning experience, identifying key lessons, areas for improvement, and how these insights will influence their future practice.

Ethics

Hippocratic Oath taking:

- Explain the history and Significance of the Hippocratic Oath
- Discuss the importance of Professional Integrity and Moral Conduct
- Explain the need for lifelong Commitment to Patient Care and Wellbeing
- Describe ethical Principles in the Oath: Autonomy, Beneficence, Nonmaleficence, and Justice

Research:

Academic Writing Basics

Introducing the fundamentals of academic writing,

- Discuss organizing thoughts, writing basic sentences and paragraphs, and understanding the purpose of academic writing in medical education.
- Discuss College Rules and Regulations for assignment writing and submission

Leadership

The Doctor as a learner- Study Skills:

Time Management:

- Recognize the importance of planning and prioritizing tasks to make the most of available study time.
- Learn to break down complex tasks and schedule study sessions to optimize productivity.

Organization:

- Understand how to organize study materials, notes, and resources in a structured manner to make learning more efficient.
- Develop systems for tracking assignments, deadlines, and upcoming exams to stay on top of coursework.
- Learning Efficiency:
- Explore techniques for active learning, including summarization, self-testing, and spaced repetition.
- Understand how to avoid common distractions and maintain focus during study sessions.

Role Modelling/Mentoring Session I:

- Participate in the first mentoring session.
- Introduce yourself to your assigned mentor.
- Discuss their strengths and weaknesses with their mentor, receive feedback, and collaboratively create an action plan for personal and professional development

Computer/ IT

Academic Writing-IT Skills

- Demonstrate the use of essential IT skills for academic writing, including word

- processing software (e.g., Microsoft Word), formatting documents, and essential editing tools to enhance the quality of academic papers.
- Practice creating and formatting a simple document using a word processing tool, applying basic formatting features like headings, bullet points, and spacing to organize their writing

FOUNDATION MODULE

Professionalism

Introduction of medical Professionalism:

- Define Medical Professionalism
- Discuss Core Values: Altruism, Accountability, Integrity
- Explain Ethical Practice and Moral Responsibility. Reflect on a scenario or case study that demonstrates professionalism in healthcare, identifying key behaviors and attitudes that align with professional standards

Responsible & Accountable Medical Student

- Understand the importance of responsibility and accountability in maintaining regularity and punctuality as core professional behaviors expected of medical students.
- Demonstrating regular attendance and punctuality in academic and clinical activities, reflecting on how this consistency contributes to their professional development.

Ethics:

Code of Conduct: Duties of healthcare professionals

- Appreciate student responsibility in following the code of conduct of the college
- Review the college's code of conduct and identify key responsibilities expected of them as medical students.
- Reflect on the importance of following these guidelines in
- Maintaining professionalism and being aware of actions for misconduct (academic, nonacademic/disciplinary).

Leadership

Personal Qualities: Self Directed Learner:

- Develop the ability to become a self-directed learner by setting achievable long-term and short-term goals and effectively managing time to meet academic and personal milestones.
- Create a personal plan that includes both long-term and short-term academic goals and a weekly time schedule to help manage their studies and personal responsibilities.

Verbal Communication:

- Develop effective verbal communication skills, focusing on clear and concise communication in academic, clinical, and team-based settings to enhance collaboration and leadership abilities.
- Practice delivering clear and concise verbal explanations of medical concepts or tasks during group activities, focusing on tone, clarity, and engagement with peers

HEMATOPOIETIC & LYMPHATIC MODULE

Research:

Structure of a Manuscript

Discuss the basic structure of a research manuscript using the IMRAD format (Introduction, Methods, Results, and Discussion) and its importance in scientific writing.

· Identify various components of a given research manuscript using the IMRAD structure,

Leadership

Non-Verbal Communication:

- Discuss the role of nonverbal communication, including body language, facial expressions, and gestures, in effectively conveying messages and building rapport in healthcare settings
- Practice using appropriate non-verbal communication during simulated patient interactions or group discussions, such as eye contact, posture, and active listening cues.

TOPICS REQUIRING INTEGRATION:

1. TOPICS REQUIRING INTEGRATION WITH RADIOLOGY

ANATOMY

F-A-009

- Identify displacement of fracture segments of the bone
- Identify dislocation of joints

2. TOPICS REQUIRING INTEGRATION WITH MEDICINE

PHYSIOLOGY

HL-P-006

- Define thrombocytopenia
- Enlist the causes and consequences of thrombocytopenia

BIOCHEMISTRY

HL-B-003

- Explain the iron metabolism with mechanism of absorption and factors affecting it.
- Interpret iron deficiency anemia on basis of given data and microscopic findings
- Interpret folic acid and cobalamin in relation to anemias on given data and microscopic findings
- Discuss biochemical role of pyridoxine and vitamin C in microcytic anemia

3. TOPICS REQUIRING INTEGRATION WITH GYNAECOLOGY

ANATOMY

F-A-012

- Describe the prenatal and postnatal maturation of oocyte

F-A-015

- Describe the hormonal control of female reproductive cycles
- Enumerate and describe the steps of the ovariancycle
- Describe the process of ovulation
- Describe the formation, function and fate of corpus luteum
- Define Mittelschmerz pain
- Define menstrual cycle
- Describe the phases of menstrual cycle

F-A-019

- Describe the anatomical and physiological basis of male and female infertility
- Define assisted reproductive techniques
- Describe the mechanisms of in vitro fertilization (IVF) and embryo transfer
- Explain the correlation of multiple births with assisted reproductive techniques

F-A-020

- Compare and contrast the villi.

F-A-023

- Describe the formation and fate of primitive streak.
- Draw a concept map highlighting the sequence of events responsible for transformation of bilaminar germ disc into trilaminar germ disc.
- Describe the embryology behind sacrococcygeal teratoma and justify its clinical picture.
- Describe the molecular factors responsible for gastrulation.

F-A-028

- Describe the cephalo-caudal folding
- Describe the lateral folding

F-A-029

Enlist and describe the derivatives of ectoderm

F-A-033

- Tabulate the criteria for estimating fertilization age during the fetal period
- Describe the procedures for assessing fetal status
- Describe the clinical picture of IUGR and factors resulting in IUGR
- Define pre-eclampsia

F-A-034

- List the fetal membranes
- Describe the macroscopic and microscopic features of decidua
- Enlist the various parts of decidua

- Functionally correlate the parts of the decidua with its structure
- Describe the changes in the trophoblast leading to the development of placenta
- Describe the structure (macroscopic and microscopic) of placenta
- Enlist and correlate the functions of placenta with its structure
- Describe the microscopic anatomy of Placental membrane
- Describe the placental circulation (fetal and maternal) embryologically justify the hemolytic disease of the neonate (Erythroblastosis fetalis)
- Describe the functions of placenta

F-A-035

- Describe the formation and fate of umbilical cord
- Describe the cord abnormalities
- Justify embryologically the clinical features observed in absence of umbilical artery
- Describe the formation and circulation of amniotic fluid
- Describe the procedure of diagnostic amniocentesis
- Explain the significance of amniotic fluid
- Describe the factors responsible for polyhydramnios and oligohydramnios
- Describe the consequences of oligohydramnios and polyhydramnios
- Define amniotic bands
- Explain the formation and fate of umbilical vesicle (yolk sac)
- Define physiological umbilical hernia

4. TOPICS REQUIRING INTEGRATION WITH PEDIATRICS

ANATOMY

F-A-026

- Describe the differentiation of mesoderm into its constituting components
- Describe the somite formation and its fate
- Describe the estimation of age by somites
- Describe the formation of intra-embryonic coelom

F-A-029

- Enlist and describe the derivatives of ectoderm

PHYSIOLOGY

HL-P-009

- Discuss immunization.
- Define passive Immunity
- Explain features and physiological basis of delayed reaction allergy.
- Explain features and physiological basis of atopic allergy
- Explain features and physiological basis of anaphylaxis, urticaria and Hay fever.

5. TOPICS REQUIRING INTEGRATION WITH CARDIOLOGY

ANATOMY

F-A-027

- Describe the processes of vasculogenesis and angiogenesis
- Explain the features of primordial cardiovascular system
- Describe the anatomical justification for capillary hemangiomas

6. TOPICS REQUIRING INTEGRATION WITH NEPHROLOGY

PHYSIOLOGY

HL-P-012

- Explain the process of tissue typing
- Explain the prevention of graft rejection by suppressing immune system

7. TOPICS REQUIRING INTEGRATION WITH DERMATOLOGY

BIOCHEMISTRY

HL-Ag-01

- Discuss the role of platelets in Platelet-Rich Plasma (PRP) treatment in old age (for skin, hairs and joints)
- Explain the role of glutathione in skin whitening

8. TOPICS REQUIRING INTEGRATION WITH BIOCHEMISTRY

ANATOMY

F-A-044

- Describe the electron microscopic structure and functions of the following apical cell surface specializations:
  - Microvilli
  - Stereocilia
  - Cilia

F-A-045

- Describe the structure, distribution, and functions of the cells of macrophage mononuclear phagocytic system
- Describe the role of macrophages in innate immunity & formation of foreign body Giant cell
- Describe the structure & functions of mast cells.
- Role of mast cells in immediate hypersensitivity reactions.
- Describe structure of plasma cells and their role in antibody formation.

9. TOPICS REQUIRING INTEGRATION WITH GERIATRICS

BIOCHEMISTRY/AGING

F-Ag-001

- Discuss telomeres and telomerase and their clinical significance in aging.

10.TOPICS REQUIRING INTEGRATION WITH PHYSIOLOGY

ANATOMY

F-A-018

- Define contraception
- Explain the mechanisms of following contraceptive techniques:
  - Barrier methods
  - Hormonal methods
  - Intrauterine device (IUD)
  - Emergency contraceptive pills (ECPs)
  - Male and female sterilization

F-A-042

Describe the structure of nuclear envelope and nuclear pores

F-A-045

- Describe the structure, distribution, and functions of the cells of macrophage mononuclear phagocytic system
- Describe the role of macrophages in innate immunity & formation of foreign body giant cell
- Describe the structure and functions of mast cells.
- Role of mast cells in immediate hypersensitivity reactions.
- Describe structure of plasma cells and their role in antibody formation.

11.TOPICS REQUIRING INTEGRATION WITH PATHOLOGY

ANATOMY

F-A-041

- Explain different modes of transport across the cell membrane

F-A-042

- List the membranous and non-membranous cellular organelles
- Describe the structure of the following cellular organelles and correlate with their function:
  - Ribosomes
  - Endoplasmic reticulum (rough & smooth)
  - Golgi apparatus
  - Lysosomes
  - Proteasomes
  - Mitochondria
  - Peroxisomes
- Describe the structural components of cytoskeleton and correlate them with their functions

- Explain the histological basis of immotile cilia syndrome
- Describe the histological features of cytoplasmic inclusions

F-A-043

- Describe structure of different types of cell junctions
- Describe the cell cycle and cell division
- Define important clinic-pathological terms:
  Atresia, Hypertrophy, Atrophy, Hyperplasia, Metaplasia, Anaplasia, Neoplasia, Inflammation, Metastasis

F-A-044

- Classify and exemplify the epithelia with their histological structure, locations and functions

F-A-045

- Describe lipid storage and mobilization in and from adipocytes and compare the brown and white adipose tissue

PHYSIOLOGY

HL-P-011

- Discuss the features and complications of mismatched blood transfusion reaction
- Describe the hazards of blood transfusion
- Elaborate the transplantation of tissues and organs

BIOCHEMISTRY

HL-B-002

- Discuss hemoglobinopathies and their biochemical and genetic basis with special emphasis on sickle cell anemia, thalassemia and methemoglobinemia
- Discuss the following types of anemia on the basis of signs and symptoms and laboratory data:
  - Hypochromic microcytic
  - Normochromic microcytic
  - Normochromic normocytic
  - Macrocytic (megaloblastic)

12. TOPICS REQUIRING INTEGRATION WITH ANATOMY

PHYSIOLOGY

F-P-007

- Discuss components of ANS (autonomic nervous system)
- Explain the physiological anatomy of sympathetic and parasympathetic nervous system
- Describe the types of adrenergic and cholinergic receptors and their functions
- Explain the effects of sympathetic and parasympathetic on various organs/ system of body

X. TEACHING AND LEARNING METHODOLOGIES (INSTRUCTIONAL STRATEGIES)

- Large Group Interactive Session (LGIS)
- Team based learning (TBL)
- Problem based learning (PBL) and Case based learning (CBL)
- Tutorials
- Reflective Writing
- Bedside Teaching
- Simulation
- Skill laboratories
- Clinical Case based Conference
- Laboratory Practical
- Ward Rounds
- Demonstrations
- Case Presentations

XI. LEARNING RESOURCES

Books, handouts, and log books:

Books:

Anatomy

- Langman's Medical Embryology
- Snell's Clinical Anatomy
- Laiq H.S Medical Histology
- Laiq H.S General Anatomy

Physiology

- Guyton AC and Hall JE. Textbook of Medical Physiology
- Essentials of Medical Physiology by Mushtaq Ahmad

Biochemistry

- Harper's Biochemistry
- Lippincott's Illustrated Reviews Biochemistry
- Essentials of Medical Biochemistry vol. 1 & 2 by Mushtaq Ahmed

Pathology

- Robbins and Cotran Pathological Basis of Disease. Kumar, V., Abbas, A. and Aster, J. Latest Edition
- Richard Mitchall, Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pocket Companion to Pathologic basis of diseases, Saunder Harcourt.
- Walter and Israel. General Pathology. Churchill Livingstone.
- Robbins & Kumar, Medical Microbiology and Immunology Levinson.

Pharmacology

- Katzung and Trevor's Pharmacology: Examination and Board Review- 15th Edition
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 16th Edition-
- Current Medical Diagnosis and Treatment- reference book –Edition-2024
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 15th Edition
- Basic and Clinical Pharmacology by Katzung, McGraw-Hill. 16th Edition.
- Pharmacology by Champe and Harvey, Lippincott Williams & Wilkins 8th Edition.
- Katzung Basic and Clinical pharmacology, Lippincott Illustrated reviews.
- Clinical Pathology Interpretations by A. H. Nagi

Behavioral Sciences

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition
- Medical and Psychosocial aspects of chronic illness and disability 6th edition by Donna R.Falvo and Beverely E.Holland,
- Integrating behavioral sciences in healthcare, Asma Humayun,2003, 1st edition

Community Medicine

- Parks Textbook of Preventive and Social Medicine. K. Park
- Public Health and Community Medicine by Ilyas Ansari
- MSDS manual of Government of Punjab
- Text book of Community Medicine by Park J E. Latest Edition

Surgery

- Bailey & Love's Short Practice of Surgery (latest edition)
- Browse's Introduction to the Symptoms & Signs of Surgical Disease 4th Edition
- Bailey & Love Short Practice of Surgery, Clinical Surgery pearls by Dayananda Babu RACS for Surgical Audits

Medicine

- Principles and Practice of Medicine by Davidson (latest edition)
- Clinical Medicine by Parveen J Kumar & Michaell Clark
- Oxford Handbook of Medicine
- Macleod's Clinical Examination book
- Medicine and Toxicology by C.K. Parikh
- Hutchison's Clinical Methods by Michael Swash. 21st edition

Islamiyat

- Standard Islamiyat (compulsory) for MBBS by Prof. M. Sharif Islahi
- Ilmi Islamiyat (compulsory) for BA, BSc & equivalent

XII: ASSESSMENT (TOOLS, SCHEDULE & TOS)

- **Tools for formative and summative assessments:**
  - Written examination: MCQs and SEQs
  - Oral/Practical/Clinical: OSPE, OSCE, Structured Viva (OSVE)
- **Assessments schedule:**
  - Formative assessments

    A total of eight tests will be conducted in block-1

Block 1

Test-1	24-03-25	Physiology
Test-2	07-04-25	Anatomy
Test-3	14-04-25	Biochemistry
Test-4	21-04-25	Physiology
Test-5	28-04-25	Anatomy
Test-6	05-05-25	Biochemistry
Test-7	12-05-25	Physiology & Allied
Test-8	19-05-25	Biochemistry

- Summative Assessment of Block-1 from 09-06-25 to 13-06 -25

- **TOS for block-1 examination:**

THEME	SUBJECT	WRITTEN EXAM			ORAL/PRACTICAL/CLINICAL EXAM			
		MCQs (1 Mark)	SEQs (5 Marks each)	Marks	OSPE (8 Marks each) Observed	OSCE (5 Marks each) Observed	OSVE (14 Marks each)	Marks
Normal structure	Anatomy & applied/clinical	20	4	40	4	-	1	46
Normal Function	Physiology & applied/clinical	22	3	37	3	-	1	38
	Biochemistry & applied/clinical	24	2	34	2	-	1	30
Disease Burden & Prevention	Community Medicine & Public Health	6	-	6	-	-	-	-
	Behavioral Sciences	5	-	5	-	-	-	-
Pathophysiology & Pharmacotherapeutics	Pathology	8	1	13	1	-	-	8
	Pharmacology	5	-	5	1	-	-	8
CFRC	CF- 1	-	-	-	-	1	-	5
PERLs	PERLs- 1	-	-	-	-	1	-	5
Total		90	10x5= 50	140	11stations x 8=88	2 stations x 5=10	3 stations X 14=42	140

	Theory		Practical			Total
Block 1 (Foundation-I + Hematopoietic & Lymphatic modules)	Part I MCQs (90) Part II SEQs (10)	90 Marks 50 Marks	Practical /Clinical Exam	11 OSPE 02 OSCE 03 OSVE	88 10 42	**350**
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	Total	**175**	**Total**	**175**		

XIII. Assessment policy and eligibility criteria

Yet to be finalized by UHS