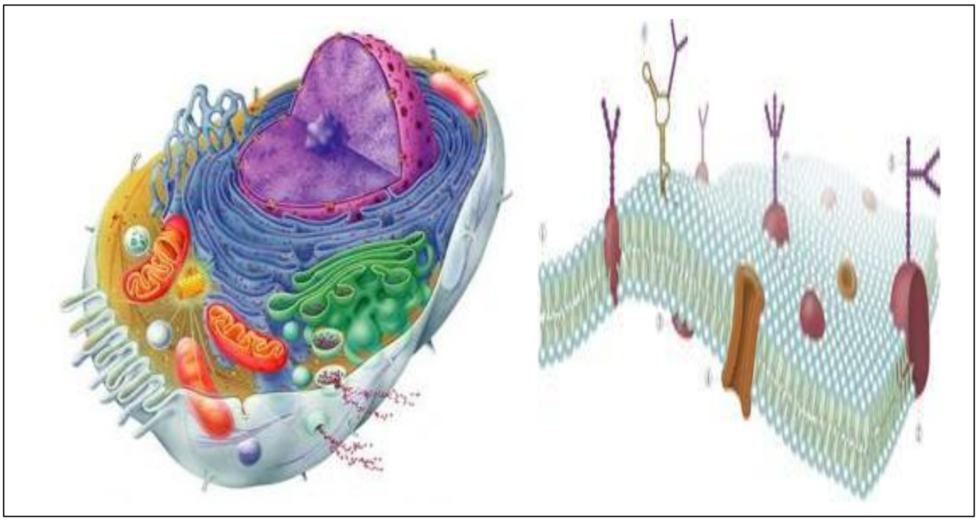
RAI FOUNDATION MEDICAL COLLEGE

FOUNDATION - I MODULE

FIRST YEAR MBBS, ACADEMIC SESSION 2024-25

BLOCK: I(FOUNDATION - I)
Academic Year: 2025
Duration: 8 Weeks



DISCLAIMER

- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- It is to declare that the learning objectives (general and specific) and the distribution of assessment tools (both theory and practical) are obtained from Rai Foundation Medical College, Sargodha. These can be obtained from: https://www.uhs.edu.pk/
- The time tables are for guiding purpose. It is to advise that final timetables are always displayed over the notice boards of each lecture hall.
- Students are encouraged to provide feedback via module coordinator.

Vision Statement

To be an institution of excellence in medical education, research, and patient care, fostering innovation, compassion, and a profound commitment to addressing healthcare challenges at local and global levels.

Mission Statement

We are dedicated to producing competent, ethical medical graduates who exemplify empathy, social accountability, and excellence in patient care. Through innovative education and critical thinking, they will advance clinical practice, scientific research, and lifelong learning to meet local and global healthcare needs.

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Module Committee

Sr.no	Name	Department	Role
1.		Principal	
2.		DME	Director
3.		DME	Assistant Director
4.		DME	Senior Demonstrator
Module Team			
5.		Professor Biochemistry	Block Coordinator
6.		Asst. Prof. Physiology	Module Coordinator
7.		Asst Professor DME	Module Developer
8.		Senior Demonstrator	Module Developer
9.		Asso. Prof. Anatomy	Member
10.		HOD Physiology	Member
11.		HOD Anatomy	Member
12.		Asso. Prof. Physiology	Member
13.		Physiology	Member
14.		Senior Demonstrator Pathology	Member
15.		Asso.Prof. Pharmacology	Member
16.		Professor Medicine	Member
17.		Professor Surgery	Member
18.		Senior Lecturer Community Medicine	Member
19.		Asst. Prof. Psychiatry (Behavioral Science)	Member

Introduction to Study Guide

It is an aid to Inform students how student learning program of the module has been organized, to help students organize and manage their studies throughout the module and 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.

Module Outcomes:

- 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 on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's performance.

Achievement of Objectives:

- Focuses on information pertaining to examination policy, rules and regulations.

Students will experience an integrated curriculum.

Integrated Curriculum:

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. 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. Case based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

Marks Distribution

BLOCK I – Foundation + Hematopoietic & Lymphoid 1 Module					
Theory	Part I - MCQs	85 Marks	**Practical**	OSPE	56 Marks
				OSCE	16 Marks
	Part II- SEQs	35 Marks		OSVE	48 Marks
	Internal Assessment	30 Marks		Internal Assessment	30 Marks
	Total	150 Marks		Total	150 Marks

Theme	Subject	MCQ (1 Mark)	SEQ (5Mark each)	Marks	Oral / Practical / Clinical Exam			
					OSPE (08 Marks each)	OSCE (10 Marks each)	Structured OSVE (16 Marks each)	Marks
Normal Structure	Anatomy & Applied / Clinical	20	3	35	3	-	1	**40**
Normal Function	Physiology & Applied / Clinical	22	2	32	2	-	1	**32**
	Biochemistry & Applied / Clinical	22	2	32	2	-	1	**32**
Disease Burden & Prevention	Community Medicine Public Health	05	-	05	-	-	-	**-**
	Behavioral Sciences	05	-	05	-	-	-	**-**
Pathophysiology & Pharmaco-therapeutics	Pathology	06	-	06	-	-	-	**-**
	Pharmacology	05	-	05	-	-	-	**-**
CFRC	CFRC 1-1	-	-	-	-	1	-	**08**
PERLS	PERLS 1-1	-	-	-	-	1	-	**08**
		85	**7×5 = 35**	**120**	**08×7 = 56**	**2×08 = 16**	**3 × 16= 48**	**120**

Organization of Module

INTRODUCTION

The cell is a structural and functional unit of life and has a role in normal homeostasis ensuring appropriate cellular functions. Hence, this module has been designed to introduce a blend of molecular, genetic, anatomical, physiological, and psychosocial information essential for developing a perspective on the function of the human body in health and disease. Besides, an initial orientation to pharmacology and pathology subject has been provided so that students are able to use this information in the coming modules.
This study guide has been developed to help guide you and keep you focused on the objectives for this module.
Welcome to the field of medicine and hope that the journey ahead will be exciting and fulfilling for you all!!

Teaching and learning strategies:

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

1. Interactive Lectures
2. Hospital / Clinic visits
3. Small Group Discussion
4. Practical
5. Skills session in skill labs
6. Case-Based Learning (tutorials)
7. Directed Self-Learning

- **Interactive lectures:**
  An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture - based class of any size.

- **Hospital / Clinic visits:**
  In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

- **Small group discussion (SGD):**
  Students learn from each other. Everyone gets more practice at expressing their ideas. A two-way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation.

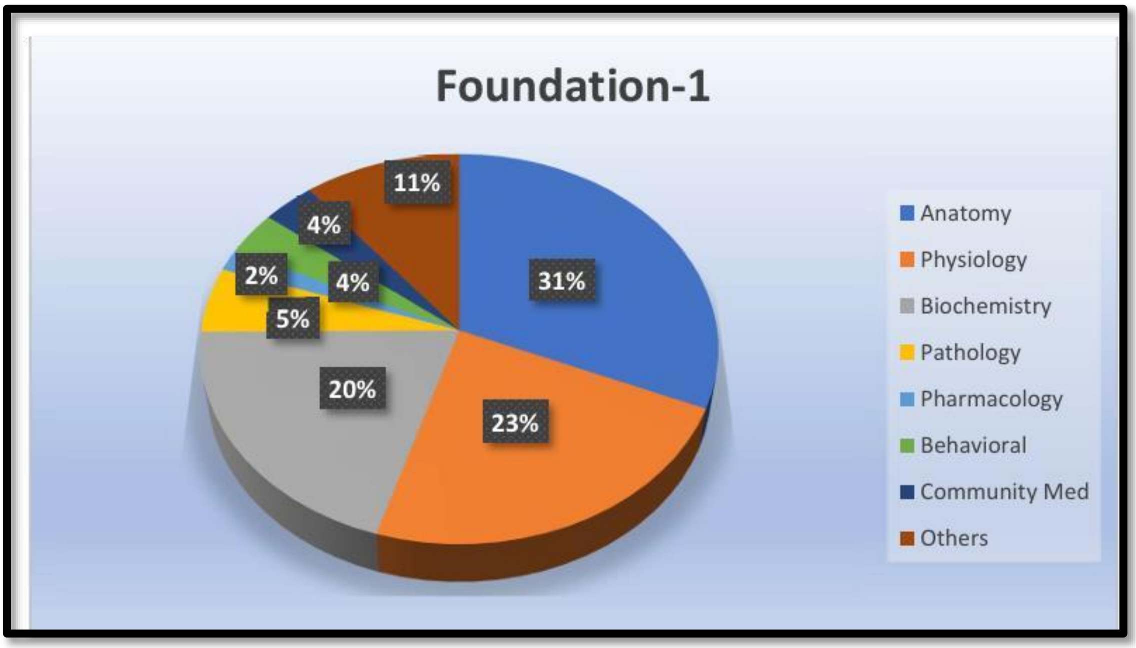
- **Skills session:**
  Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

- **Case Based Learning (CBL):**

  A small group discussion format where learning is focused on a series of questions based on a clinical scenario. Students discuss and answer the questions by applying relevant knowledge gained previously in clinical and basic health sciences during the module and construct new knowledge. The CBD will be provided by the concerned department. It is an active learning & teaching strategy which promotes application of foundational knowledge in relevant clinical scenarios.

- **Directed Self-learning (DSL):**
  Directed Self-learning, which involves studying with indirect supervision in a classroom/Library, is a valuable way to learn and is quickly growing in popularity among parents and students.
  Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

INTEGRATING DISCIPLINES OF FOUNDATION I MODULE



Module Outcomes

By the end of Foundation I module, students of 1st year MBBS will be able to

- Describe the microscopic features of nerve cells, muscle cells, general features of epithelia of the body.
- Appraise the functional characteristics of various components of cell membrane and organelles of cell.
- Differentiate between the dynamics of various transport mechanisms along the cell membrane.
- Compare the functional differences between RBCs, WBCs and blood groups.
- Explain the significance of homeostatic mechanisms in keeping body's internal environment nearly constant.
- Appraise the formation and functions of autonomic nervous system.
- Correlate the structural design of each organ to its function.
- Acquire information about the different fascial planes in the different regions of the body & their surgical importance.
- Use descriptive anatomical terms of position to describe the different body structures in relation to each other.
- Describe the movements of body using proper anatomical terms of movement.
- Describe and demonstrate the various bony landmarks.
- Describe the types of joints and correlate them to the mechanisms of movement.
- Classify the bone, joints and muscles based on the structure, function and phylogenetic origin.
- Describe the structures associated with muscles and explain their functional correlations.
- Classify and describe the cardiovascular system and correlate it functionally.
- Amplify the anatomical basis for radiological, cross-sectional, anatomy.
- Correlate clinicopathologically the apoptosis in health & diseases.

Themes of Foundation- I Module

S. No	Theme	Duration
1.	Orientation	1 week
2.	Cell Transport	1 week
3.	Cell Chemistry	1 week
4.	Hemostasis & Blood	1 week
5.	Body's Defense System	1 week
6.	Growth & Development	1 week
7.	Autonomic Nervous System	1 week
8.	Structural & Tissue Organization	1 week

Specific Learning Objectives

ANATOMY				
GENERAL ANATOMY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Introduction to General Anatomy	Briefly describe the applied branches of anatomy.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the "Anatomical Position".		C2	
	Describe the anatomical planes of body.		C2	
	Describe the terms of relationship, commonly used in Anatomy.		C2	
	Describe the anatomical terms used specifically for Limbs.		C2	
	Describe the terms related to movements		C2	
	Briefly describe the applied branches of anatomy.		C2	
	Describe the "Anatomical Position".		C2	
Bones (Osteology)	Describe, identify, and exemplify the general morphological features of bones.		C2	
	Describe the developmental classification of bones.		C2	
	Describe the regional classification of bones.		C2	
	Describe the morphological classification of bones.		C2	
	Describe and exemplify Sesamoid, Pneumatic, Wormian and Heterotopic bones.		C2	
	Describe the general features of adult typical long bone.		C2	
	Describe the types of epiphyses		C2	
	Discuss the general concept of ossification (primary and secondary centers and rule of ossification)		C2	
	Describe the relationship of growing end of bones with the direction of nutrient foramen		C2	
	Describe the blood supply of various types of bones.		C2	
	Describe the salient features of common types of fractures and basic concept of healing of fracture.		C2	
Cartilage (Chondrology)	Describe the general features of cartilage and its importance in gross anatomy.		C2	
	Describe the subtypes and gross features of Hyaline, elastic and fibro Cartilage.		C2	
	Differentiate the three types of cartilages		C2	
Joints (Arthrology)	Explain with examples the structural classification of Joints (synovial, cartilaginous & fibrous) along with their sub-		C2	

	classification.			
	Describe the components and characteristic features of a Synovial Joints.		C2	
	Describe the blood supply, innervation of Synovial Joints, cartilaginous joints, and fibrous joints.		C2	
	List the factors stabilizing a synovial joint.		C2	
Integumentary System	Describe the structure and function of Skin on the basis of its two layers; Epidermis and Dermis		C2	
	Describe the structure of Hair as an appendage of skin.		C2	
	Describe the structure of Nail as an appendage of skin.		C2	
	Describe the structure of Sweat and Sebaceous Glands		C2	
	Describe the structure and function of Superficial Fascia		C2	
	Describe the structure, function, and modifications of Deep Fascia		C2	
	Describe important clinical correlates of skin (skin infections, sebaceous cyst, skin burns and skin grafting)		C2	
	Describe the structure and function of Skin on the basis of its two layers; Epidermis and Dermis		C2	
	Describe the structure of Hair as an appendage of skin.		C2	
Myology	Classify muscle tissue based on structure, function and development.		C2	
	Describe somatic and visceral muscles.		C2	
	Describe and differentiate the red and white variety of skeletal muscles.		C2	
	Classify the skeletal muscles based on architecture.		C2	
	Classify skeletal muscle based on action.		C2	
	Describe the parts of a skeletal muscle.		C2	
	Describe the basic organization of innervation to skeletal, smooth, and cardiac muscle.		C2	
	Differentiate the basic organization of skeletal, smooth, and cardiac muscle.		C2	
	Describe the structure of Synovial Bursae		C2	
	Comprehend the meaning of hypertrophy, hemiplegia, quadriplegia, paraplegia, and hemiparesis.		C3	
Vascular System (Angiology)	Classify the types of blood circulation.		C2	
	Classify various types of blood vessels.		C2	
	Describe with examples various types of anastomoses.		C2	
	Explain the importance of End arteries		C2	

	Describe the general organization of lymphatic circulation.		C2	
	Define the terms: Lymphoid Tissue, Tissue Fluid, Lymphatic, Capillaries, Lymph and Lymphatic Vessels.		C1	
	Define the terms; Lymphangitis, Lymphadenitis.		C1	
Nervous Tissue (Neurology)	Define neuron.		C1	
	Describe the anatomical structure of a neuron.		C2	
	Classify neurons based on morphology with examples.		C2	
	Classify neurons based on function.		C2	
	Describe the components of the central nervous system.		C2	
	Enumerate the supporting cells (neuroglia) of the central nervous system.		C1	
	Describe the structure and functions of the neuroglia of the central nervous system.		C2	
	Enumerate the supporting cells (neuroglia) of the peripheral nervous system.		C1	
	Describe the structure and functions of the neuroglia of the peripheral nervous system.		C2	
	Enlist the cranial nerves I to XII.		C1	
	Describe the types of nerve fibers carried by and distribution of the cranial nerves.		C2	
	Describe the formation, types of modalities carried by, and distribution of the spinal nerves.		C2	
	Explain dermatome and myotome.		C2	
	Describe the formation of Plexuses.		C2	
	Differentiate between Somatic and Visceral nervous system.		C2	
	Define Receptors.		C1	
	Describe the functions of receptors.		C2	
	Classify sensory receptors based on modality (with location).		C2	
Radiology				
	Identify dislocation of joints.		C2/P	

EMBRYOLOGY & POST- NATAL DEVELOPMENT

Topic	Specific Learning objectives	Teaching strategy	Levels C/P/A	Assessment
Cell division & Chromoso-mal Abnormaliti-es	Define chromosome theory of inheritance	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Enlist different stages of Mitosis and Meiosis		C1	
	Compare and contrast Mitosis and Meiosis		C2	
	Enlist the numerical chromosomal anomalies		C2	
	Describe the anatomical basis for numerical chromosomal abnormalities.		C2	

	Describe the clinical presentation of numerical chromosomal abnormalities along with their embryological justification.		C2	
	Describe the clinical presentation of structural chromosomal abnormalities along with their embryological justification.		C2	
	Describe the embryological basis for mosaicism		C2	
	Describe the embryological basis for teratoma		C2	
	Describe Concept of Gene Mutation.		C2	
	Enlist common diagnostic techniques for identifying genetic abnormalities.		C1	
	Define chromosome theory of inheritance.		C1	
Gametogenesis	Describe the Process of spermatogenesis and spermiogenesis.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the embryological basis for Abnormal gamete.		C2	
	Describe the prenatal and postnatal maturation of oocyte.		C2	
	Describe the significance of arrested development of oocyte.		C2	
	Compare and contrast oogenesis and spermatogenesis.		C2	
Fertilization	Describe the transportation of Oocyte	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe Capacitation & Acrosomal Reaction		C2	
	Define fertilization		C1	
	Describe Capacitation & Acrosomal Reaction		C2	
	Describe the phases of fertilization		C2	
	Draw and label a diagram illustrating the phases of fertilization		C2	
	Describe the results of fertilization.		C2	
Cleavage, Blastocyst Formation	Describe the process of cleavage of embryo and blastocyst formation	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the origin and uses of embryonic stem cells.		C2	
	Discuss techniques of obtaining these cells from the embryo (reproductive cloning & therapeutic cloning)		C2	
	Explain the embryological basis of spontaneous abortion.		C2	
	Compare and contrast the villi.		C2	
	Describe the process of Compaction.		C2	
	Describe the formation of morula (division into inner and outer cell mass)		C2	
Implantation	Describe the Uterus at the time of implantation (decidua reaction).	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Illustrate the concept of Implantation.		C2	

	Describe the Abnormal implantation/ extra uterine implantations.		C2	
	Define the Molar pregnancy.		C1	
	Describe the formation of amniotic cavity, embryonic disc, and umbilical vesicle Describe the formation of chorionic sac.		C2	
	Describe the Uterus at the time of implantation (decidua reaction).		C2	
Utero-Placental circulation	Describe the establishment of utero-placental circulation.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Gastrulation	Describe the Formation & fate of primitive streak.	LGIS	C2	
	Draw a concept map highlighting the sequence of events responsible for transformation of bilaminar germ disc into trilaminar germ disc.		C2	
	Describe the embryology behind sacrococcygeal teratoma and justify its clinical picture.		C2	
	Describe the molecular factors responsible for gastrulation.		C2	
Formation of Notochord	Describe the Invagination and movement of prenotochordal cells.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the Notochordal plate formation.		C2	
	Describe the Neuroenteric canal formation.		C2	
	Describe the fate of the notochord.		C2	
	Describe the Establishment of body axis.		C2	
	Draw and label the fate mapestablishment.		C2	
	Describe the Fate map establishment.		C2	
	Describe the molecular basis for notochord formation.		C2	
	Describe the role of notochord as an inducer.		C2	
	Describe the embryological basis for situs inversus, Sirenomelia, holoprosencephaly		C2	
			C2	
Derivatives of Ectoderm	Describe the Formation of neural tube from neural plate.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Justify embryologically the clinical picture seen in various neural tube defects.		C3	
	Describe the process of Migration of neural crest cells.		C2	
	Enlist the Derivatives of neural tube and describe the fate of each.		C1	
	Enlist the Derivatives of neural crest cells.		C1	
	Enlist the ectodermal derivatives.		C1	

	Describe the molecular and genetic factors for the process of neurulation.		C2	
	Describe important Neural tube defects.		C2	
Mesodermal Derivatives	Describe the differentiation of mesoderm into its constituting components.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the somite formation and its fate.		C2	
	Describe the estimation of age by somites		C2	
	Describe the formation of intra-embryonic coelom.		C2	
Early developmen t of CVS	Describe the processes of vasculogenesis & angiogenesis.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the features of primordial cardiovascular system.		C2	
	Describe the anatomical justification for capillary hemangiomas.		C2	
Folding of Embryo	Describe the Cephalo-caudal folding.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the Lateral folding.		C2	
	Describe the Regulation of embryonic development by homeo box genes.		C2	
	Enlist the characteristic features of the embryo during 2nd month.		C1	
	Describe the criteria for estimating the developmental staging in human embryos.		C2	
	Explain the estimation of gestational & embryonic age.		C2	
Germ Layers	Enlist the derivatives of germ layers.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe the Derivatives of intermediate and lateral plate mesoderm.		C2	
	Describe the derivatives of endoderm.		C2	
	Describe the derivatives of ectoderm.		C2	
Fetal Period	Explain the measurement & characteristics of fetus.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the overview of external appearance of fetus during fetal period.		C2	
	Enlist developmental horizons during fetal life event.		C1	
	Describe viability of fetuses and low birth weight babies		C2	
	Explain the factors influencing fetal growth		C2	
	Describe the clinical problems encountered by babies born with IUGR (Intra Uterine Growth Restriction)		C2	
Fetal Membranes	List the fetal membranes.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe the macroscopic & microscopic features of Decidua.		C2	
	Enlist the various parts of decidua functionally correlate the parts of the decidua with its structure.		C1	

	Describe the Changes in the trophoblast leading to the development of placenta.		C2	
	Describe the Structure (macroscopic & microscopic) of placenta.		C2	
	Enlist & correlate the Functions of placenta with its structure.		C2	
	Describe the Microscopic anatomy of Placental membrane.		C2	
	Describe the Placental circulation (fetal & maternal).		C2	
	Embryologically justify the hemolytic disease of the neonate (Erythroblastosis fetalis).		C3	
	Describe the functions of placenta.		C2	
Placenta	Describe the Formation & fate of Umbilical cord.	LGIS		MCQs, SEQs, OSVE, OSPE
	Describe the Cord abnormalities.		C2	
	Justify embryologically the clinical features observed in Absence of umbilical artery.		C2	
	Describe the formation and circulation of Amniotic fluid.		C2	
	Describe the Procedure of diagnostic amniocentesis.		C2	
	Explain the significance of amniotic fluid.		C2	
	Describe the factors responsible for Polyhydramnios and oligohydramnios.		C2	
	Describe the consequences of oligohydramnios and polyhydramnios Define Amniotic Bands.		C2	
	Explain the formation and fate of umbilical vesicle (yolk sac) .		C2	
	Define Physiological Umbilical Hernia.		C1	
Multiple pregnancies	Describe the development of Dizygotic twins.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the development of Monozygotic twins.		C2	
	Describe the fetal membranes in twin pregnancy.		C2	
	Describe Fetus Papyraceous.		C2	
	Explain the zygosity of the twins.		C2	
	Describe the characteristics of various types of conjoined monozygotic twins.		C2	
Prenatal Diagnosis and Fetal Therapy	Define preterm Birth.	LGIS	C1	MCQs, SEQs, OSVE
	Describe parturition & three stages of Labor.		C2	
	Describe the Various methods of prenatal diagnosis.		C2	
	Describe the Fetal therapy.		C2	

	Describe Maternal serum Screening.		C2	
	Corelate levels of Alpha feto protein levels and fetal anomalies.		C3	
	Describe stem cell transplantation and gene therapy.		C2	
Molecular regulations	Define morphogens, protein kinases, notch delta pathway, transcription factors, epigenetics.	LGIS	C1	MCQs, SEQs, OSVE
Teratogenicity	Define teratology and causes of birth defects		C1	
	Define genomic imprinting		C1	
	Define human disorders associated with genetic mutations.		C2	
	Describe birth defects caused by genetic numerical and structural anomalies.		C2	
	Define and enlist the teratogens		C1	
	Describe the role of following in causing teratogenicity in humans: 1. Drugs 2. Environmental agents 3. Chemicals & heavy metals 4. Infectious agents 5. Radiation 6. Hormones 7. Maternal diseases		C2	
	Describe the basis for male-mediated teratogens		C2	
	Describe prevention of birth defects.		C2	
Radiology	Describe the USG (Ultrasonography) report for the: • Fetal features, fetal age estimation, placental • attachment with variations, fetal membranes and • multiple pregnancies		C2	
MICROSCOPIC ANATOMY (HISTOLOGY)				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Cell Membrane	Describe the electron microscopic structure and fluid mosaic model of plasma membrane.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Draw the fluid mosaic model of plasma membrane.		C2	
	Describe the structure of glycocalyx coat and lipid raft and correlate it with function.		C2	
	Describe different types of membrane proteins and their functions.		C2	

	Explain different modes of transport across the cell membrane.		C2	
Cell Organelles	List the membranous and non-membranous cellular organelles	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe the structure of the following cellular organelles and correlate with their function: 1. Ribosomes 2. Endoplasmic reticulum (rough & smooth) 3. Golgi apparatus 4. Lysosomes 5. Proteasomes 6. Mitochondria 7. Peroxisomes		C2	
	Describe the structural components of cytoskeleton, and correlate them with their functions.		C2	
	Explain the histological basis of immotile cilia syndrome.		C2	
	Describe the histological features of cytoplasmic inclusions.		C2	
	Describe the structure of nuclear envelope and nuclear pores.		C2	
Cell Nucleus	Describe the structure of chromatin.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the structure of chromosome.		C2	
	Describe the structure of nucleolus.		C2	
	Describe the structure and types of DNA (Deoxy Ribonucleic Acid) and RNA (Ribonucleic Acid).		C2	
	Describe the histological basis for apoptosis and necrosis.		C2	
	Describe structure of different types of cell junctions.		C2	
			C2	
Epithelium	Describe the histological structure and function of basement membrane (light and electron).	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Draw and label a diagram illustrating the electron microscopic structure of basement membrane.		C2	
	Describe the basal surface modifications of epithelia.		C2	
	Describe the electron microscopic structure and functions of intercellular junctions (lateral surface modifications) along with their locations.		C2	
	Describe the Biochemical composition of the basolateral modifications.		C2	

	Describe the electron microscopic structure & functions of the following apical cell surface specializations: 1. Microvilli 2. Stereocilia 3. Cilia	LGIS	C2	
	Classify epithelia with their histological structure, locations, functions and examples.	LGIS	C2	
	Describe the structure of exocrine glands.		C2	
	Explain the mechanism of transport across the epithelia		C2	
	Describe the classification of exocrine glands on the basis of: • Shape of secretory portions and ducts • Mode of secretion • Type of secretion		C2	
Connective Tissue	Describe the composition and list the constituents of connective tissue Classify the connective tissue with examples.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the composition of ground substance of connective tissue.		C2	
	Describe the composition, distribution, and function of glycosaminoglycans in connective tissue.		C2	
	Describe connective tissue fibers, cells.		C2	
	Define Fibrosis.		C1	
	Describe the structure, distribution, and functions of the cells of macrophage mononuclear phagocytic system.		C2	
	Describe the role of macrophages in innate immunity & formation of foreign body Giant cell.		C2	
	Describe the structure & functions of Mast cells. Role of Mast cells in immediate hypersensitivity reactions.		C2	
	Describe structure of Plasma cells and their role in antibody formation.		C2	
	Describe the types of adipose tissue (white & brown), their histogenesis, locations and function		C2	
	Describe lipid storage and mobilization in and from adipocytes.		C2	
	Compare the brown and white adipose tissue.		C2	

MICROSCOPIC ANATOMY (HISTOLOGY) PRACTICAL				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Staining Techniques	Describe different types of staining techniques and their significance with special emphasis on H&E (Hematoxylin and Eosin) staining.	Practical	C2 / P	Integrated OSPE
Microscope	Enlist important features of different parts of light microscope.	Practical	C2 / P	
Cell Shapes	Identify and draw & label different cell shapes under the microscope.	Practical	C2 / P	
Epithelia	Identify under light microscope.	Practical	C2 / P	Integrated OSPE
	Draw & Label the different 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)			
Glands	Identify serous & mucous secreting glands under light microscope.	Practical	C2 / P	Integrated OSPE
	Draw a labelled diagram of these glands.			
Connective Tissue	Identify connective under light microscope.	Practical	C2 / P	Integrated OSPE
	Draw a labelled diagram of connective tissue.			

PHYSIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Hemostasis	Define Homeostasis	LGIS / SGD	C1	MCQs, SEQs, OSVE, OSPE
	Explain control system of body by giving examples.		C2	
	Differentiate between Extracellular and Intracellular Fluids.		C3	
	Explain the positive and negative feedback mechanisms with examples.		C2	
	Explain the significance of feed forward/ adaptive control/delayed negative feedback mechanisms.		C2	
Cell Membrane	Explain the structure of cell membrane.	LGIS		MCQs, SEQs, OSVE
	Enlist the types of cell membrane proteins.		C1	
	Enumerate the functions of membrane proteins.		C1	
	Enumerate the functions of cell Glycocalyx.		C1	
Cell Organelles	Enlist membranous and non-membranous organelles.	LGIS	C1	MCQs, SEQs, OSVE
	Enlist the self-replicative organelles.		C2	

	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.			
Cell Transport	Define and enlist types of endocytosis.	LGIS/ SGD	C2	MCQs, SEQs, OSVE
	Explain the mechanism of pinocytosis.		C2	
	Classify different transport mechanisms.		C2	
	Compare the composition of Na (Sodium), K (Potassium) and Cl (Chloride) in extracellular and intracellular fluid.		C2	
	Define and enlist different types of diffusion.		C1	
	Explain the process of facilitated diffusion with the aid of diagram.		C2	
	Classify different types of active transport .		C2	
	Describe primary and secondary active transport with examples.		C2	
	Explain voltage and ligand gated channels with examples.		C2	
	Name Na, K channel Blockers.		C1	
	Discuss functions and significance of Na/K ATPase pump.		C2	
Clotting Factors	Enumerate the functions of blood.	LGIS	C1	MCQs, SEQs, OSVE
	Explain the composition of blood.		C2	
	Enumerate the plasma proteins.		C2	
	Discuss functions of plasma proteins.		C2	
Red Blood Cells	Discuss the characteristics of red blood cells.	LGIS / SGD	C1	MCQs, SEQs, OSVE, OSPE
	Explain different types of Bone marrow.		C2	
	Enumerate the different sites of erythropoiesis at different ages.		C2	
	Explain the stages of erythropoiesis.		C2	
	Enumerate factors that regulate erythropoiesis.		C2	
	Discuss the site and role of erythropoietin in red blood cell production.			
	Explain the significance of vitamin			

	B12 and folic acid in maturation of red blood cell.			
Hemoglobin	Enumerate the types of normal hemoglobin in different ages of life.	LGIS/ SGD	C1	MCQs, SEQs, OSVE, OSPE
	Enlist the abnormal types of hemoglobin.		C1	
	Explain the role of Iron in Hemoglobin formation.		C2	
	Define blood indices.		C1	
	Describe their normal values & the conditions in which these values are disturbed.		C2	
White Blood Cells	Enumerate the types of white blood cells.	LGIS/ SGD	C1	MCQs, SEQs, OSVE
	Describe the characteristics and functions of Neutrophils.		C2	
	Explain the process of defense against invading agent by neutrophils.		C2	
	Define leukocytosis and leukopenia.		C1	
	Explain the effects of leukemia on body.		C2	
Defense System	Explain the process of defense against invading agent by macrophages.	LGIS	C2	
	Discuss different lines of defense during inflammation.		C2	
	Explain the functions of neutrophils and macrophages in spread of inflammation (walling off effect).		C2	
Reticuloendothelial System	Define the Reticuloendothelial system.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Enlist different components of reticuloendothelial system.		C1	
	Explain the characteristics and functions of basophil.		C2	
	Explain the characteristics and functions of eosinophils.		C2	
	Enlist conditions in which these cells are raised.			
Blood Groups	Enumerate different blood group types.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the basis of ABO and Rh blood system.		C1	
	Explain the Landsteiner law.		C2	
Autonomic Nervous System	Discuss Components of ANS (Autonomic nervous system).	LGIS/ SGD	C2	MCQs, SEQs, OSVE
	Explain the physiological anatomy of sympathetic and parasympathetic nervous system.		C2	
	Describe types of adrenergic and cholinergic receptors and their functions.		C2	

	Explain the effects of sympathetic and parasympathetic on various organs/ system of body.		C2	
	Explain the prevention of graft rejection by suppressing immune system.		C2	

PRACTICAL

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Consent	Obtain verbal consent from subject before starting a procedure.	Lab	C2 / P	OSPE, OSCE
RBCs (Red Blood Cells)	Determine ESR and packed cell volume.		C2 / P	
	Determine blood group.		C2 /P	
WBCs (White Blood Cells)	Interpret Total Leucocyte Count, Differential Leucocyte Count (normal & abnormal) in a CBC report generated by Automated Cell Counter.		C2 /P	
	Identify various types of WBCs in a prepared DLC (Differential Leukocyte Count).		C2 /P	

BIOCHEMISTRY

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Structure of Cell	Differentiate between different types of cells.	LGIS / SGD	C2	MCQs, SEQs, OSVE
	Explain the concept of organization of cells to tissue, tissues to organ, organs to system.		C2	
	Differentiate between the eukaryotic and prokaryotic cells.		C2	
Cell Membrane	Describe the composition and structure of cell on biochemical basis.	LGIS / SGD	C2	MCQs, SEQs, OSVE
	Justify cell membrane as fluid mosaic model.		C2	
	Describe the structure and function of cell membrane with particular reference to the role of 1. Lipids 2. Carbohydrates 3. Proteins		C2	
	Explain why the cell membrane is called fluid mosaic model.		C2	
Signal Transduction	Discuss the various ways of cell-to-cell communication and to the environment.	LGIS	C2	
	Describe cell to cell communications. Cell signaling pathways (only G protein signaling I e. Gs, Gi and Gq).		C2	
	Describe cell to cell adhesion.		C2	

Subcellular Organelles	Explain the biochemical markers and importance of subcellular organelles and their inherited disorders especially: 1. Cell disease 2. Refsum disease 3. Parkinsonism 4. Progeria	LGIS / SGD	C2	MCQs, SEQs, OSVE
Chemistry of purine and pyrimidines	Describe the chemistry of purines and pyrimidines and their linkage in nucleic acid synthesis and their metabolism.	LGIS	C2	MCQs, SEQs, OSVE
DNA	Discuss the organization of DNA with special reference to Watson and crick model, composition, structure, role of Pairing.	LGIS	C2	MCQs, SEQs, OSVE
	Describe the structural forms of DNA.		C2	
RNA	Discuss the structure of different types of RNAs with special reference to composition, linkage, functions of RNA, micro-RNA	LGIS / SGD	C2	MCQs, SEQs, OSVE
	Illustrate the structure and functions of various types of RNAs.		C2	
	Describe the functions of various small RNAs present in cell.		C2	
	Explain the structure and nomenclature of nucleotides, biomedical importance of natural and synthetic analogues.			
	Interpret the role of synthetic analogues of nucleotides in medicine based on sign/symptoms and data e.g Methotrexate, 5 Flurouracil and Allupurinol.			
Chromosome	Explain the higher organization of DNA.	LGIS		MCQs, SEQs, OSVE
	Difference between DNA, chromatid and chromosome.			
Enzymes	Describe enzymes with reference to: active sites, specificity, catalytic efficiency, cofactor, coenzyme, holoenzyme, apoenzyme, prosthetic group, zymogens & location.	LGIS	C2	MCQs, SEQs, OSVE
	Classify enzymes according to the reaction they catalyze and their nomenclature.		C2 / C3	
	Explain the mechanism of enzyme action from reactants to products (catalysis).		C2	
	Discuss the effect of various factors on enzymatic activity: 1. Substrate concentration 2. Temperature 3. PH 4. Enzyme concentration	SGD	C2	
	Explain the regulation of enzymatic		C2	

	activity (Michaelis Menten and Line weaver Burk's equation).			
	Discuss inhibitors of enzymatic activity (with special reference to Km/V max) 1. Competitive 2. Non competitive 3. uncompetitive		C2	
	Explain the application of enzyme in clinical diagnosis and therapeutic use		C2	
Amino Acids	Classify amino acids based on polarity, nutritional importance and glucogenic /Ketogenic properties.	LGIS	C2	MCQs, SEQs, OSVE
	Explain the structure, physical, chemical properties of amino acids and their biomedical importance.		C2	
Proteins	Classify proteins on the basis of functions, solubility and physicochemical properties	LGIS/ SGD	C2	MCQs, SEQs, OSVE
	Explain the biomedical importance of proteins.		C2	
	Distinguish between class A and B proteins.		C2	
	Explain the structural levels of proteins.		C2	
	Differentiate between alpha helix and beta pleated protein structures.		C2	
	Identify bonding at different levels of proteins.		C2	
	Describe the role of chaperons in protein folding.		C2	
	Interpret disorders related to protein misfolding on basis of given data.		C3	
	Describe the biochemical basis of Alzheimer's disease/ prion disease.		C2 / C3	
Plasma Proteins	Classify and explain the bio-chemical role of each class of plasma proteins.	LGIS	C2	MCQs, SEQs, OSVE
Immunoglo-bulins	Explain the structure and biochemical role of immunoglobulins.	LGIS/ SGD	C2	MCQs, SEQs, OSVE
	Describe the production, structure and functions of B cells, plasma cells, and antibodies (IgA, IgD, IgE, IgG, and IgM).		C2	
	Discuss the functions of the cytokines (Interleukins (ILs), Tumor Necrosis Factor (TNFs), IFs, Platelet derived growth factor (PDGF), and Platelet activating factor (PAF)).		C2	
	Interpret multiple myeloma on basis of given data.		C3	

PRACTICAL BIOCHEMISTRY

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Lab Hazards	Demonstrate the step taken to prevent or rectify the laboratory hazards.	Practical Lab	C2 / P	OSPE / OSVE
Cells	Identify the structure of cells under microscope.		C2 / P	

Cell Organelles	Identify the methods of isolation of cell organelles.		C2 / P	
Equipment	Identify the different parts of equipment i.e., centrifuge, Microlab, Electrophoresis, Hot Oven, water bath.		C2 / P	
Chromato-graphy	Detection of amino acids by paper chromatography.		C2 / P	
	Prepare different types of solution Molar, Molal, normal and percentage.		C2 / P	

Community Medicine				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Concept of Health	Describe the changing concepts and new philosophy of health.	LGIS	C2	MCQs
	Explain responsibility for health.		C2	
Positive Health Dimensions, Health Determinants	Explain dimensions and determinants of health and their role in achieving positive health.		C2	
	Discuss concept of health and wellbeing.	LGIS	C2	
	Describe the Physical quality of Life Index & Human Development Index.		C2	
Health Indicators	Describe the importance of health indicators.	LGIS	C2	
	Classify health indicators.		C2	
	Calculate Morbidity and Mortality.		C2	
	Describe Disability indicators and compare indicators among different countries.		C2	
Disease Causation	Conceptualize disease causation and natural history of disease.	LGIS	C2	MCQs
	Explain germ theory & multifactorial causation.		C2	
	Discuss epidemiological triad and web of disease causation		C2	
	Describe Gradient of infection.		C2	
Disease Prevention	Describe principles of prevention and control on prevalent diseases.	LGIS	C2	MCQs
	Explain difference between elimination and eradication.		C2	
	Describe disease surveillance, types and cycle.		C2	
	Explain Primary, secondary, & tertiary prevention of diseases.		C2	
	Describe five levels of interventions.		C2	

BEHAVIORAL SCIENCE				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Biological Basis of Behavior	Discuss importance of behavioral science in medicine.	LGIS	C2	MCQs
	Identify the biological Basis of human behavior.		C2	
	Describe processes such as neurobiology of memory, emotions, sleep, learning, motivation, sex, arousal, reward and punishment		C2	
Psychological Disorders	Identify the burden of mental illness on the person, family and society.	LGIS	C1	MCQs
	Describe intellectual disability, mental disorders and personality disorders.		C2	
Psychology and Disease	Identify the role of psychosocial factors in various illnesses.	LGIS	C1	MCQs
	Describe psychosocial aspects of various system diseases such as • Cardio-vascular system (CVS), • Central Nervous System (CNS), • Gastro Intestinal Tract (GIT), • Respiratory system • Renal system • Endocrine system • Cancer		C2	
Behavioral Factors & Pharmacological Treatment	Discuss Health belief model, treatment compliance and its psychosocial factors, social factors in drugs prescription and drug resistance.	LGIS	C2	MCQs
	Enlist the behavioral factors associated with pharmacological treatment of diseases		C1	
Palliative Care	Identify the rehabilitation work for patients on dialysis and any kind of physical disability	LGIS	C2	MCQs
	Discuss the care requirements in chronic debilitating conditions.		C2	
Stress	Enlist the various physiological effects of stress.	LGIS	C1	
	Describe behavioral manifestations of stress, stress related multiple sclerosis and autoimmune diseases.		C2	

PHARMACOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Absorption, Distribution, Metabolism and	Define Pharmacology, drug, pro-drug, placebo, active principles, sources of drugs.	LGIS	C1	MCQs

Excretion of drugs	Briefly discuss concepts of Absorption, Distribution, Metabolism and Excretion of drugs.		C2	
Basic terminologies of Pharmacology	Define the terms; receptor, agonist, partial agonist, inverse agonist, antagonist and types of receptors and second messengers.	LGIS	C1	MCQs
	Explain diagrammatically the concept of signaling mechanisms of drugs.		C2	
Autonomic System	Discuss pharmacological aspects of autonomic receptors (types of autonomic receptors, important sites and actions)	LGIS	C2	MCQs

PATHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Cell Injury	Discuss the significance of pathology.	LGIS	C2	MCQs
	Discuss the causes of cell injury.		C2	
	Enlist the types of cell injury.		C1	
	Describe the mechanism of cell injury.		C2	
	Enumerate the types of cell death.		C1	
	Define necrosis and apoptosis.		C1	
	Describe different types of necrosis. .		C2	
	Compare apoptosis with necrosis.		C2	
	Discuss different types and mechanism of cellular adaptations to stress.		C2	
	Define important clinic pathological terms:Atresia, Hypertrophy, Atrophy, Hyperplasia, Metaplasia, Anaplasia, Neoplasia, Inflammation, Metastasis		C1	
	Discuss the mechanism and types of intracellular accumulations and pathological calcifications.		C2	

GYNECOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Female Reproductive Cycle	Describe the hormonal control of female reproductive cycles	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the steps of the ovarian cycle		C2	
	Describe the process of ovulation		C2	
	Describe the formation, function and fate of corpus luteum.		C2	
	Define Mittelschmerz pain.		C1	

	Define menstrual cycle.		C1	
	Describe the phases of menstrual cycle.		C2	
Infertility & Assisted Reproductive Techniques	Describe the anatomical and physiological basis of male and female infertility	LGIS	C2	MCQs, SEQs, OSVE
	Define assisted reproductive techniques Describe the mechanisms of In vitro fertilization (IVF) & embryo transfer		C1	
	Explain the correlation of multiple births with assisted reproductive techniques		C2	
	Describe the anatomical and physiological basis of male and female infertility		C2	
Fetal Status	Tabulate the criteria for estimating fertilization age during the fetal period.	LGIS	C2	MCQs, SEQs, OSVE
	Calculate fertilization age, gestational age, embryonic/fetal age and expected date of delivery.		C2	
	Describe the procedures for assessing fetal status.		C2	
	Describe the clinical picture of IUGR & factors resulting in IUGR (Intra Uterine Growth Restriction).		C2	
	Define Pre-eclampsia.		C1	

CLINICAL SKILLS (CSIM)				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Hand Washing	Demonstrate steps of hand washing.	Skill Lab	C2 / P	OSCE
Pulse	Demonstrate the procedure of taking the pulse.	Skill Lab	C2 / P	
Respiratory Rate	Record the Respiratory Rate of patient	Skill Lab	C2 / P	
Blood Pressure	Demonstrate the procedure of taking the Blood Pressure.	Skill Lab	C2 / P	
Donning & Doffing	Demonstrate the process of wearing the gloves	Skill Lab	C2 / P	

PERLS (PROFESSIONALISM, ETHICS, RESEARCH, LEADERSHIP SKILLS)				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
REFLECTION	Describe a Portfolio.	LGIS	C3	OSCE
	Write reflection based on Gibbs reflective cycle.		C4	
COMMUNICATION SKILLS	Describe the principles and types of Communication.	Role Play	C2	OSCE

	Identify different Communication Styles.		C2	
	Explain the importance of nonverbal communication.		C2	
TEAM BUILDING	Describe characteristics and types of a team along with stages of team development.	LGIS	C2	OSCE
	Write a reflection on team work in small groups.			
DIGITAL CITIZEN	Discuss digital rights and responsibilities.	LGIS	C2	OSCE
	Identify cyberbullying, harassing, and Sexting.		C2	
	Describe cybersecurity laws.		C2	

Time Tables:

The timetables for the module will be shared via WhatsApp groups and the notice boards in advance.

Assessment Tools

Theoretical knowledge is tested by a written examination system constituted by multiple choice questions (MCQ) and SEQs. The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

Multiple Choice Questions (MCQ/SEQs):

Multiple choice questions (MCQ/SEQs) are a form of assessment for which students are asked to select the best choice from a list of answers.
MCQ/SEQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.
Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.

Students mark their responses on specified computer-based sheet designed for the college.
The block exam will comprise of 85 MCQ/ 7 SEQs each of 5 marks and will be compiled according to the shared blueprint.

Short Essay Questions (SEQ)

Short Essay questions generally ask for brief, text-based responses. They can be used to assess students' understanding of and ability to think with subject matter content, discourage guessing of answers, in-depth knowledge of concepts, and formulation of an answer.

Objective Structured Practical or Clinical Examination (OSCE / OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Rest station is a station where there is no task given, and in this time student can organize his/her thoughts.
- The Block OSPE / OSCE will be comprise of 12 examined stations. The stations will be assigned according to the shared blueprint.

Internal Evaluation:

Internal evaluation is a process of quality review undertaken within an institution for its own ends. Internal evaluation criteria will be shared with faculty and 20 % on internal assessment will be observed in each module.

Attendance Requirement:
A minimum of 85% attendance is mandatory to sit for the examinations.

Professional Examination:
Criteria for appearing in Professional examination are according to rules and regulations shared by UHS which are available on their website. The criteria is;

- At least 85 % cumulative attendance in all blocks.
- An average 50 % minimum score in all blocks
- Certificate of good conduct from college
- Certificate of having appeared in all block exams conducted by the college

Learning Resources for Students

Anatomy

- Snell Clinical Anatomy 10th ed
- B.D Churasia
- Nelter Atlas
- Langman Embryology (12th Edi)
- Laiq Hassain Basic Histology (8th Ed)
- Difore Atlas Histology

Physiology

- Guyton and Hall physiology (14th Ed)
- Essentials of Medical Physiology by Mushtaq Ahmed

Biochemistry

- Harpers Illustrated Biochemistry (32nd Ed)
- Lippincott's Biochemistry
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Community Medicine:

- Parks Textbook of Preventive and Social Medicine. K. Park (Editor)

Pathology:

- Vinary Kumar, Abdul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.

Pharmacology:

- Basic and Clinical Pharmacology by Katzung, McGraw-Hill.

Behavioral Sciences:

- Handbook of Behavioral Sciences by Prof. Mowaddat H.Rana, 3rd Edition

Apart from these resource learning, students can consult books available in library or recommended by the specialty experts.