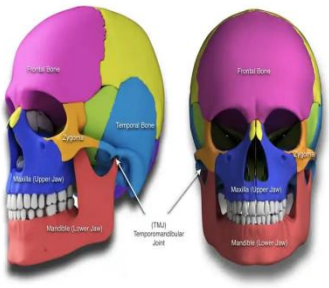
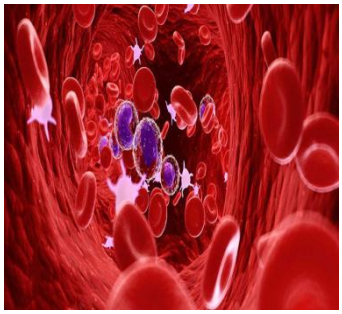
RIHS MEDICAL & DENTAL COLLEGE
INTEGRATED CURRICULUM





-FOUNDATION MODULE (I) 10101
-CRANIOFACIAL(I)&
HEMATOLOGY MODULE 10102

Session 2025-26

FIRST YEAR BDS

STUDY GUIDE BLOCK 1

PLANNED & DESIGNED BY:

DME, RIHS

Module 10101: FOUNDATION MODULE(Year 1, block code- 01, module code 01)		
Module 10102: CRANIOFACIAL &HEMATOLOGY MODULE(Year 1, block code- 01, module code(02)		
Pre-requisite: MDCAT		
Teaching faculty & Curriculum committee members		
	Disciplines	**Name of Faculty**
1.	**Principal**	**Prof. Dr. Saad Asad**
2.	**Anatomy**	**Dr. Maimoona Khan**
3.	**Physiology**	**Dr. Atiya**
4.	**Oral Biology**	**Dr. Nabeela Abbasi**
5.	**Biochemistry**	**Dr. Maria Sarfraz**
6.	**Pre-Prosthodontics**	**Dr. Amna Amjad**
7.	**Pre-Operatives**	**Dr. Hina Tariq**
8.	**Behavioral Sciences**	**Ms. Nargis Munir**
9.	**DME**	**Dr. Madiha Akhwand**
Module duration		**06 Weeks**
Module Coordinator		**Dr. Nabeela Abbasi**

Integrated Curriculum	• The Integrated Curriculum is becoming an increasingly popular concept internationally, in the field of Medicine. • The goal of integration is to break down barriers between the basic and clinical sciences, currently in practice as a result of traditional curricular models. • Integration should promote retention of knowledge and acquisition of skills through repetitive and progressive development of concepts and their applications. • There are three areas in need of improvement and clarification for successful integration: 1. Ensuring synchronous presentation of material 2. Avoiding the tendency to diminish the importance of the basic sciences,and 3. Using unified definitions (MEDICAL TEACHER) • The model adapted in this institution is an **Integrated, modular, system based, spiral curriculum**. • First spiral is for two years & second spiral is spread over three years.
Students as a curriculum coordinator and Class Representative	Student involvement in an integrated curriculum is the key to the process ofmaking him a self-directed, competent and ethical learner who can adjust and compete with the latest trends in medical education in todays and tomorrow's world. In order to achieve this: 1. Students will help the Module coordinators in accomplishing all tasks assigned to him/her. 2. They will be a part of curriculum planning and implementing team. 3. They will inform/discuss the ongoing activities /problems in teaching and learning with module coordinators and curriculum chairperson.
Module Rationale:	The modular rationale is centered on the integration of structural principles spanning various levels of magnification. Its core objective is to establish a foundational understanding of the relationship between structure and function and the general principles governing biological systems. The human body's normal functioning relies on the harmonious interplay of structural, biochemical, and functional processes, all aimed at maintaining a stable internal environment. Any deviation from the norm in intracellular and extracellular biological events can lead to cellular dysfunction, resulting in degeneration, overgrowth, and the development of congenital or acquired abnormalities. This module specifically delves into the fundamental structure of cells and their responses to variations in fluid levels, be it overload or depletion.
Module Outcomes	Upon completing Foundation module, students will achieve the following modular outcomes: • Comprehend fundamental anatomical terminology for position and movement.

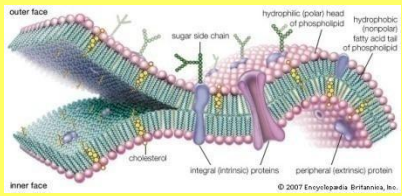
	• Understand the structure, function, and physico-chemical aspects of cells. • Demonstrate knowledge of general bone anatomy and microscopic epithelial, glandular, and connective tissue structures. • Acquire understanding of early embryo development, oral histology, tooth development, and morphology. • Appreciate the gross features of the skull and its clinical relevance through landmarks. Upon completing Craniofacial-1 & Hematology module, students will attain the following modular outcomes: • Understand the structure and function of cartilage, bone, joints, and muscles at both microscopic and macroscopic levels. • Explain in detail the bones of the face and neck, radiographs of the skull, and various imaging techniques. • Acquire knowledge about germ layer development and its derivatives, blood and blood vessel formation, and the ability to correlate normal development with abnormalities. • Learn about Cell biochemistry and Physiology, including Transport across the cell Membrane, Water pH, Buffers, and Body Fluids. • Describe the Biochemical Composition of the Cell, Cell Membrane, Transport across the Cell Membrane, ionization of Water, Weak Acids, Bases, pH, and pH Scale, Dissociation curve of weak Acids, Buffers and their mechanism of action, H-H equation, and its Applications, as well as the Biochemical importance of Osmosis, Diffusion, Viscosity, and surface Tension. • Develop comprehensive knowledge of cell biology, homeostasis, blood physiology, and water. • Explore the biological aspects of the face, oral cavity structures, and tooth morphology in detail, and understand clinical conditions related to these structures for future application. In addition, with regards to Junior Prosthodontics, students will be introduced to maxillary and mandibular landmarks critical for denture bearing areas. For Junior Operative, students will be initiated into the principles of tooth cavity preparation and the classification of carious lesions.

	transmission and muscle contraction. Relevant disorders like osteoporosis, osteomalacia, rickets and common joint diseases will also be covered.
Teaching and Learning methodology	**Interactive Lecture (IL):** The goal of interactive lecture is to engage the students' attention, through ways to interact with the content, the instructor, and their classmates. Accordingly, interactive lectures include segments of knowledge transfer combined with segments where students interact. One of the things that make the lecture interactive is the ability of the instructor to select the content of the lecture segments based on the students' needs. This demands a prior search for the baseline knowledge of the students at the start of the lecture. If students have difficulty answering a question, or an activity fails to develop the concept in most student groups, it's time to find a new and better way to deal with the material. LGIS clearly gives a better concept of the content and keeps students' attention captured throughout, as compared to yester years' didactic lectures. **Small Group Discussion (SGD):** 'The purpose and technique of small group teaching is that it is learner-centered, with all students joining in free discussion on a particular topic. A typical 'small group' is around eight to 12 learners facilitated by a teacher. The steps of SGD are Forming, Storming, Norming & Performing. The teacher acts only as a facilitator. Students are allowed to use their books or other search material during the discussion. SGD is a good method to clear the concepts and develop communication and conflict solving skills in the students. **Departmental teaching labs:** This is performance-based teaching & learning methodology where students learn handling and uses of laboratory equipment and models, safety rules and various clinical skills. **Dissection/ Model Demonstration:** Where necessary teaching of gross Anatomy is aided by cadaver dissection / model demonstration. **Problem based/ Task based/ Case based learning (PBL/TBL/CBL):** Students are presented with real life problems/tasks/cases. They are motivated through a standard process to seek answers to the given problem,task or case. This is a highly effective method to capture and maintain students' interest in patients' problems and their solution. **Self-directed learning (SDL):** is the basic requirement for the successful implementation of the PBL curriculum. Students need ample time to research for their learning needs. **Assignments and Presentations:** Both of methodologies are meant to make the students self-directed learners and good communicators by seeking knowledge from multiple sources and presenting it. **Multidisciplinary Seminars (MDS):** in which groups of students are encouraged to independently present topics of general interest before a larger audience. This encourages students to read beyond their textbooks and learn to support their knowledge with research. **Skill Lab Sessions:** students in groups will learn various behavioral and practical skills essential for a competent doctor. This will involve working with simulation aids, procedure demonstrations, role plays etc. **Web- based learning/Hybrid/Blended learning:** Refers to the type of learning that uses the Internet as an instructional delivery tool to carry out various learning activities. It can take the form of (1) a pure online learning in which the curriculum and learning are implemented online without face-to-face meeting between the instructor and the students, or (2) a hybrid in which the instructor meets the student's half of the time online and half of the time in the classroom, depending on the needs and requirement of the curriculum. Discussion forums are being conducted via email, videoconferencing, and live lectures. **Flipped classroom:** A flipped classroom is an educational strategy where students are introduced to new content before class, freeing up

	in-class time for interactive, higher-order thinking activities, rather than traditional lectures or passive instruction.
Assessment methodology:	1 Multiple Choice Questions (MCQs): Single best type 2. Short Essay Questions (SEQs) 3. Structured Viva: 4. Objective Structured Practical/Clinical Examination (OSPE /OSCE)

MODULE 1: FOUNDATION

ANATOMY



Learning Objectives At the end of learning session, students will beable to:	MIT	AT	Cognitive Domain
Terminology for planes, position, direction and Movement • Identify planes and sections of body • Describe different anatomical terms related tomovements of the body • Differentiate anatomical terms related to directions of the body	SGD x 3	MCQ SEQ	C
Structures met in dissection • Discuss different organizations of skin andfascia • Describe different modifications of deep Fascia	SGD	MCQ SEQ	C
General anatomy of Bone • Outline the general features of bone • Describe bone markings. • Demonstrate the regional distribution ofbones.	IL	MCQ	CP

• Classify different type of bones according totheir shape with examples • Categorize bones according to the types ofbone tissue. • Compare bones according to the	IL	MCQ SEQ	C
Histology: Cell surface modifications & Simple Epithelium • Describe the structure of various cell surfacemodifications • Classify the types of simple epithelium withexamples • Draw and label the different types of simpleepithelium • Explain the microscopic features of epithelialtissues and explain their functional importance			
Epithelium I • Draw and label different types of simple epithelial tissues using eosin and hematoxylinpencils • Identify the simple epithelial tissues on agiven slide	Practical	OSPE	CP
Stratified epithelium • Classify the types of stratified epitheliumwith examples • Describe the microscopic features of stratifiedepithelial tissues and explain their functional importance • Draw and label the different types of stratifiedepithelium	IL	MCQ SEQ	C
Epithelium II • Draw and label different types of stratifiedepithelial tissues • Identify the stratified epithelial tissues on agiven slide	Practical	OSPE	CP
Glandular Epithelium • Discuss glandular epithelium • Compare the types of glandular epitheliumwith examples	IL	MCQ SEQ	C
Epithelium III • Identify the types of glands on microscopicexamination • Identify the types of glands on given slide • Differentiate between serous and mucousglands	Practical	OSPE	CP

Histology of Connective tissue (CT- I) • Define connective tissue and examine itscomposition • Classify connective tissue with examples • Name the permanent and wandering cells ofconnective tissue • Correlate the types of fibers present in connective tissue with location of each type • Draw and label the different types ofconnective tissue • Identify the connective tissue on a given slide	IL Practical	MCQ SEQ OSPE	C CP
Histology of Adipose tissue (CT-II) • Draw and label the microscopic structure ofadipose tissue • Explain the types and distribution of adiposetissue • Enumerate the histological differences between white and brown adipose tissue • Summarize the functional significance ofvarious adipose tissues • Draw and label the different type of adiposetissue • Identify adipose tissue on given slide	IL Practical	MCQ SEQ OSPE	C CP
Gametogenesis • Differentiate between the stages of mitosisand meiosis • Interpret phases of cell cycle • Define oogenesis • Discuss oogenesis in terms of parental &postnatal development • Describe the phases of spermatogenesis • Define spermiogenesis & outline the changesthat occur during this process	ILx3	MCQ SEQ	CP
Ovarian cycle and Oocyte transport • Describe the ovarian cycle • Discuss the process of ovulation • Identify the time of ovulation by relating toits symptoms	IL	MCQ SEQ	CP
Fertilization • Interpret the phases of fertilization • Enumerate the sites of ectopic pregnancy • Diagnose the conditions related to abnormalimplantation	IL Assignment 1	MCQ SEQ	CP C3

End of 1st Week of development • Define cleavage and its stages • Discuss blastocyst formation • Draw and label blastocyst • Examine the phases of endometrial cycle **2nd Week of development** • Summarize the formation of bilaminar germdisc • Prepare the day-to-day account of development of blastocyst during 2nd week • Interpret the role of beta HCG and its clinical Significance **Embryology Models** • Name the stages of mitosis and meiosis on amodel • Demonstrate the different stages offertilization on a model • Identify cleavage divisions • Identify the parts of embryonic and extraembryonic tissues during blastocystformation	IL ILx2 Assignment 2	Practical	OSPE	MCQ SEQ MCQ SEQ	C C P
GROSS ANATOMY					
SKULL • Enumerate the paired and unpaired bonesof skull • Recognize the different external views ofskull		SGD	OSPE	MCQ SEQ	C
Individual bones of skull Recognize the parts of individual bones ofskull		SGD	OSPE	MCQ SEQ	C
Norma Verticalis (cranial vault) & NormaOccipitalis • Identify the bones forming the cranial vault • Recognize the bones forming the NormaOccipitalis • Inspect the sutures present in the cranialvault • Label the sutures present in the NormaOccipitalis		SGD	OSPE	MCQ SEQ	C
Norma Lateralis • Indicate the bones forming the NormaLateralis and its bony landmarks. • Locate the Temporal fossa. • Identify pterion and understand its clinicalsignificance		SGD	OSPE	MCQ SEQ	C
Norma Basalis • Recognize the divisions of Norma Basalis • List the foramina on this aspect • Identify all the grooves, fissures andimportant landmarks on this aspect		SGD	OSPE	MCQ SEQ	C
Cranial Cavity • Inspect the boundaries of anterior, middleand posterior cranial fossa. • Identify the foramina, grooves and fissures.		SGD x 2	OSPE	MCQ SEQ	C

Bony Orbit • Mention the bones forming the orbitalmargins. • Recall the Bones forming the walls of the orbit: Roof, Floor, Medial wall, Lateral andwall. • Identify the foramina leading to the orbitalcavity.	SGD	MCQ SEQ OSPE	C
Difference between neonatal and adult skull. • Compare the differences in terms of: Size,Type of Ossification, Fontanelles, and Sutures. • Discuss the differences between neonatal and adult skull in the following: tympanic part of Temporal bone, Mastoid process, Mandible	SGD Assignment 3	MCQ SEQ	C
Skull foramina and structures passing throughthem • Identify the nerves that pass through theforamina • Identify the blood vessels that pass throughthe foramina • Attachments of major muscles andligaments • Difference skull regions communicatethrough foramina	Assignment 4	MCQ SEQ OSPE	C
Temporal fossa • Inspect the location of Temporal fossa • Identify the bones forming the boundariesof Temporal fossa • Enumerate the contents of Temporal fossa • Recognize the point of attachment oftemporalis and its role in mastication	SGD	MCQ SEQ OSPE	C
Infratemporal fossa • Inspect the Location of infra temporalfossa • Recognize the bones forming the boundaries of infra temporal fossa • Enlist the contents of infra temporal fossa • Briefly describe otic ganglion and itsbranches	SGD	MCQ SEQ OSPE	C
PHYSIOLOGY			
Homeostasis & Cell Physiology • Discuss the importance of Physiology in modernmedicine. • Explain intracellular and extracellularenvironment • Explain negative & positive feedback & feedforward mechanisms with examples	IL	MCQ SEQ	C
• Outline the major components of the cell. • Enlist the membranous and non-membranousorganelles. • Discuss the composition of cell membrane andthe fluid mosaic model. • Describe the functions of different cytoplasmicorganelles.	IL SGD	MCQ SEQ	C
Transport across cell membrane • Enumerate various modes of transport across thecell membrane • Differentiate between primary and secondarytransport • Differentiate between active and passivetransport • Explain simple and facilitated diffusion withexamples	IL	MCQ SEQ	CP
• Describe equilibrium potential and role & contribution of ions (Na+, K+) and Na+-K+ pump in maintaining the equilibrium • Explain the physiological basis of restingmembrane potential	IL	MCQ SEQ	CP

• Define action potential • Explain the role of different types of channels inthe generation of action potential • Discuss the ionic basis of different phases ofaction potential. • Draw and label action potential in a nerve fiber • Describe the types and properties of actionpotential. • Discuss the propagation of action potential alongmyelinated and non-myelinated nerve fibers		IL	MCQ SEQ	CP
Nerve & Muscle Physiology • Classify different types of neurons • Define synapse • Explain role of neurotransmitter in synaptictransmission • Discuss the properties of synaptic transmission.		IL	MCQ SEQ	C
• Describe the morphological and functionalcharacteristics of skeletal muscle. • Discuss the mechanism of contraction of skeletalmuscle. • Define Power stroke. • Explain the walk along theory • Discuss the role of ATP in skeletal musclecontraction. • Explain the sequence of events involved in excitation -contraction coupling in skeletal muscle. • Describe the mechanism of relaxation in skeletalmuscle		IL SGD	MCQ SEQ	CP
• Explain the re-modelling of muscle to match thefunction. • Describe the physiological mechanisms of muscular hyperplasia, muscular hypertrophy and dystrophy • Describe the pathophysiology of Rigor mortis		IL SGD	MCQ SEQ	C
• Describe the physiologic anatomy ofneuromuscular junction. • Draw and label neuromuscular junction. • Explain the sequence of events taking place at neuromuscular junction during transmission of nerve impulse from nerve to muscle. • Describe the effect of various drugs acting atNMJ. • Explain the pathophysiological basis ofmyasthenia gravis		IL SGD	MCQ SEQ	C
• Discuss the structural and functional differencesbetween skeletal and smooth muscles. • Differentiate the mechanism of excitation contraction coupling in skeletal and smooth muscle. • Explain Latch mechanism		IL	MCQ SEQs	C
PRACTICAL: • Study of microscope • Identify different parts of microscope. • Describe the functions of each part	Practical		OSPE Viva	P
ESR • Define ESR • Identify the apparatus use to determine ESR • Demonstrate the procedure and protocols andprecautions for determination of ESR • Describe normal value of ESR in males and females & causes of increased and decreased ESR	Practical		OSPE Viva	P

Estimation of Hemoglobin • Demonstrate the procedure of determinationof hemoglobin along with precautionary measures. • Describe the normal value of hemoglobin indifferent age groups and gender • Appreciate the different causes of increasedand decreased Hb & hemoglobinopathies **Osmotic Fragility of RBCs** • Define osmotic fragility and its importance • Determine osmotic fragility of RBCs. • Explain the clinical effect of hypertonic, isotonic and hypertonic solutions on RBCs • Appreciate the conditions in which osmoticfragility is increased and decreased **Hematocrit (HCT) or Packed cell volume** • Define hematocrit • Demonstrate the procedure to determine thehematocrit • Describe the normal values of hematocrit inmales and females • Appraise the clinical importance of determination of hematocrit and conditionsassociated with increased and decreased Hematocrit	Practical Practical Practical	OSPE Viva OSPE Viva OSPE Viva	P P P
BIOCHEMISTRY:			
Introduction to Biochemistry • Describe Biochemistry Enlist biochemical component and functions of cell • Structure and function of cell organelles • Membranous and non-membranous organelles • Functional importance of cell junction Explain & differentiate the Biochemistry ofeukaryotes and prokaryotes Discuss the cell membrane and their chemicalcomposition • Structure of cell membrane • Composition of cell membrane • Various methods of transport across membraneExplain simple and diffusion • Specify the importance of lipids and proteins in cellmembrane **Functions of lipids in cell membrane** • Distinguish between integral and peripheral protein • Analyze the methods of study cell biochemistry • Scientific methods to study cell ➢ Microscopy ➢ Centrifugation ➢ Spectrophotometer ➢ Chromatography ➢ Electrophoresis ➢ Thermal cycler	IL IL IL IL IL IL	MCQ SEQ MCQ SEQ MCQ SEQ MCQ SEQ MCQ SEQ MCQ SEQ	C C C CP CP CP

• Illustrate the ionization of water, week acids and bases • Describe the Buffering capacity of solution of week acid and their salts	IL	MCQ SEQ	C	CP
• Define pH and pH scales, pK values, dissociationconstant and titration curves • Describe the Importance of pH, pK values and dissociation constant	IL	MCQ SEQ	C	C
Outline body buffer and describe their mechanism of action,Types of body buffers and their biomedical importance	IL	MCQ SEQ	C	CP
• Explain Handerson-Hasselbach equation • Discuss the application and biomedical importance of Handerson – Hasselbach equation in acid base balance	IL	MCQ SEQ	C	C
• Describe the acid base regulation in human body • Discuss the Biochemical mechanism for control of water and electrolytes balance • Describe the Regulation and disorders of acid base regulation	IL	MCQ SEQ	C	C
• Illustrate the importance of particles in solutions • Define Solutions and the types of solutions and theirimportance	IL	MCQ SEQ	C	C
• Explain the importance of osmotic pressure, surfacetension, and viscosity • Discuss the importance of osmosis, osmotic pressure, surface tension and viscosity	IL	MCQ SEQ	C	C
PRACTICAL:				
Introduction to Lab Describe Introduction to lab equipment, glassware and equipment handling	Practical	OSPE	P	P
Lab Precautions • Describe Lab safety and precaution • Describe Acid burn and Alkali burn • Discuss Handling of spilled chemicals	Practical	OSPE	P	P
Preparation of Solution • Demonstrate Preparing of normal solutions, molarsolution preparation of w/w, v/w, v/v solutions	Practical	OSPE	P	P
pH Meter • Demonstrate Measurement of pH-by-pH meter andpH paper	Practical	OSPE	P	P

Introduction to Spectrophotometer and clinicalpH meter • Describe the Principal, parts, Functions and usageof Spectrophotometer	Practical	OSPE	P
Effects of hypo and hyper solutions on RBCs(osmotic pressure) • Evaluate the osmotic pressure in different solutionsin the presence of RBCs	Practical	OSPE	P
Techniques and instrument used in biochemistryLab • Describe Centrifugation, Electrophoresis and PCR	Practical	OSPE	P
Surface tension • Describe the surface tension of different solution	Practical	OSPE	P
Adsorptions • Demonstrate the process of adsorption	Practical	OSPE	P
ORAL BIOLOGY:			
Structure of Oral tissues • Describe the difference between the clinicalcrown and the anatomical crown. • Define enamel, dentine, and pulp. • Enlist the structures of periodontium. • Classify oral mucosa.	IL	MCQ SEQ	C
• Enumerate major salivary glands. • Describe ductal system of salivary glands. • Explain anatomy of temporo-mandibular joint.	SGD	MCQ SEQ	C
• Discuss hard tissue formation. • Describe mineralization process. • Define crystal growth and alkaline phosphateactivity. • Discuss hard tissue degradation process.	IL	MCQ SEQ	C
Cytoskeleton • Define cytoskeleton • Explain intercellular junctions. • Explain epithelium-connective tissue interface. • Explain collagen, its type, its synthesis andassembly • Explain elastin, proteoglycans, glycoproteins,growth factors and cytokines. • Discuss extra-cellar matrix degradation ofcollagen	IL	MCQ SEQ	CP

• Differentiate between cell to cell, cell to matrixand communicating junctions • Explain fibroblast cellular organizations, motility, junction, heterogeneity and aging. • Describe inherited disease involving collagen.		SGD	MCQ SEQ	CP
• Describe Collagen synthesis		Practical	OSPE Viva	P
• Discuss Collagen degradation		Practical	OSPE Viva	CP
Introduction and Nomenclature • Describe eruption sequence of primary andpermanent dentition		IL	MCQ SEQ	CP
• Describe tooth numbering systems.		SGD	MCQ SEQ	CP
Anatomic and Physiologic considerations ofform and function • Identify tooth surfaces. • Identify Line angles and point angles • Explain the curve of Wilson, curve of Spee andsphere of monsoon • Identify contact areas and embrasures		IL	MCQ SEQ	CP
• Define anatomical structures of the tooth. • Identify anatomical structures of the tooth.		SGD	MCQ SEQ	CP
Form and Function of teeth • Describe Anatomical structures of teeth		Practical	OSPE Viva	CP
LEAPS				

MODULE 2: CRANIOFACIAL-1 & HEMATOLOGY

ANATOMY				
Sr.No	**Learning Objectives**	**MIT**	**AT**	**Cognitive Domain**

1.	**General Anatomy of Joints** • Classify joints according to their structure and function • Define sutures and give their types • Classify cartilaginous joints with examples • Categorize classification of synovial joints according to their shape with examples • Summarize the characteristic features of synovialjoints • Analyze the factors responsible for maintaining thestability of synovial joints	ILx2	MCQs SEQs	C1, C2
2.	**General anatomy of muscles** • Classify muscles according to shape with examples • Categorize muscles according to their action withexamples	ILx2 Assignment1	MCQs SEQs	C1, C2
3.	**Histology of Cartilage** • Describe the structure and composition of cartilage • Draw and label different types of cartilages • Locate each type of cartilage • Differentiate between types of cartilages	IL	MCQs SEQs	C1, C2
4.	**Bone 1: Compact** • Name bone cells and give functions of each type ofcells • Explain Haversian system **Bone 2: Spongy** • Explain the microscopic features of compact &spongy bone	IL x 2	MCQs SEQs	C1, C2
5.	**Muscle I: Striated Muscle** • Describe the structure of skeletal muscle along withits connective tissue coverings • Discuss light microscopic features of cardiacmuscle **Muscle II: Non-striated Muscle** • Draw and label the light microscopic features ofsmooth muscles • Differentiate between the types of muscles	IL x 2	MCQs SEQs	C1, C2
6.	**3rd week of development** • Define gastrulation (formation of Tri-laminar germdisc). • Summarize the process of gastrulation			

	• Interpret the abnormalities related to fate of primitive streak • Discuss the salient features of development of notochord, give its fate and function. • Differentiate between different types of villi.	ILx3	MCQs SEQs	C1, C2,C3
7.	**Embryonic period** • Discuss the process of Neurulation. • Explain the development of NCCs ad their derivatives • Explain the formation of somites and their derivatives • Discuss blood cell and blood vessel formation • Interpret the results of cephalocaudal and lateralfolding • Enumerate the derivatives of each germ layer.	ILx4 Assignment3	MCQs SEQs	C1, C2,C3
8.	**Pterygopalatine fossa** • Access the location of pterygopalatine fossa in the skull • Identify the bones forming the walls of the pterygopalatine fossa • Find the communications of fossa with other cavities (orbit, nasal cavity, oral cavity, middle cranial fossa, Infratemporal fossa) • Enumerate the contents of the pterygopalatine fossa • Discuss pterygopalatine ganglion and its branches	SGDx1	MCQs SEQs	C1,C2
9.	**Gross anatomy of Mandible** • Identify the parts of the mandible i.e. body, ramus,condylar process and coronoid process. • Outline the bony features on the medial and lateralaspects of the mandible. • Name the openings, foramina and their contents onthe mandible • Interpret the age-related changes in the mandible interms of: size, shape angle, and alveolar process	SGDx2	MCQs SEQs OSPE	C1, C2
10.	**Cervical vertebra** • Outline the salient bony features of Atlas, Axis, andTypical cervical vertebra. • Compare the major differences between the typicaland atypical cervical vertebras. • Locate the site of spinal cord, spinal nerves andvessels that pass through the cervical vertebra	SGDx2	MCQs SEQs OSPE	C1, C2

11.	**Atlanto-Occipital and Atlanto-Axial Joint** • Describe the articulation, type and ligamentsattached to the joint • Discuss the movements of atlanto-occipital joint i.e.Flexion, extension, lateral flexion. • Discuss the movements of atlanto-axial joint (rotation) • Infer the clinical significance of atlantoaxial joint	SGDx1 Assignment4	MCQs SEQs OSPE	C1, C2
12.	**Hyoid bone** • Show the location of hyoid bone in the neck • Identify the bony features on the hyoid bone • Recognize major muscle attachments on the hyoidbone • Enumerate important functions of the hyoid bone	SGDx1	OSPE	C1, C2
13.	**Radiographs of normal skull** • Identify the Different bones, bony features and landmarks on the radiograph • Recognize the sutures • Outline the radiolucent and radio opaque areas on the radiograph and clinical significance in Tumors,necrosis and overgrowths.	SGDx1	OSPE	C1, C2
14.	**Different imaging techniques** • Conclude the purpose of each imaging technique • Differentiate between each imaging technique	ILx1	OSPE	C1, C2,C3
	PRACTICAL			
1.	**Types of Cartilages** • Draw and label the hyaline and elastic cartilage • Identify the hyaline cartilage on given slide • Recognize elastic cartilage on given slide • Draw and label the fibrocartilage • Identify fibrocartilage on given slide	Practical Demonstration x 3	OSPE	P
2.	**Compact Bone** • Draw and label the compact bone • Identify compact bone on given slide **Spongy Bone** • Draw and label the spongy bone • Identify the spongy bone on given slide	Practical Demonstration	OSPE	P
3.	**Muscle** • Draw and label light microscopic features of threetypes of muscles • Identify types of muscles on a given slide	Practical Demonstration x3	OSPE	P
	PHYSIOLOGY			
1.	**RED BLOOD CELLS** • Enlist components of blood and explain its functions.			

	• Define erythropoiesis and explain the stages of erythropoiesis along with its regulation. • Explain the fate of RBC and subsequent metabolism ofits various components	IL	MCQs SEQs	C1 C2
2.	• Define blood indices and explain the significance ofeach • Define and classify anemias	SGD	MCQs SEQs	C1 C2
3.	**White blood cells – Inflammation and immunity** • Classify white blood cells and explain leucopoiesis • List the properties of WBCs • Explain the role of neutrophils and macrophages in inflammation • List the components of monocyte macrophage system (reticuloendothelial system) • Enumerate disorders involving increase or decrease indifferent types of WBCs.	IL	MCQs SEQs	C1 C2
4.	• Define and classify immunity and explain the preprocessing of B and T-lymphocytes • Define and explain humoral and cell mediated immunity with examples	IL	MCQs SEQs	C1 C2
5.	**Hemostasis** • Define hemostasis and explain the mechanism ofblood coagulation • List the clotting factors	IL	MCQs SEQs	C1 C2
6.	• Enlist the functions of platelets and explain their rolein hemostatic responses of the body	IL	MCQs SEQs	C1
7.	• Discuss various coagulopathies and their physiologicalbasis	IL	MCQs SEQs	C1, C2
8.	**Blood Groups** • Classify blood groups and describe the antigens and antibodies present in the ABO and the Rh blood groupsystem • Explain the terms universal donors and universalrecipient • Discuss Rh incompatibility during pregnancy(Erythroblastosis Foetalis)	IL	MCQs SEQs	C1
	PRACTICAL			
1.	**Study of hemocytometer** • Identify Neubauer's chamber and its differentcounting areas for RBC, WBC and platelets • Differentiate between RBC and WBC pipette	Practical Demonstration x1	OSPE Viva	P
2.	**Study of hemocytometer** • Demonstrate the procedure for determination ofRBC count while using hemocytometer • Explain the composition of Hayem's fluid • Explain the normal values and reasons forincreased and decreased RBCs	Practical Demonstration x1	OSPE Viva	P

3.	**RBC Indices** • Describe RBC indices and their interpretation • Calculate the normal values of MCV, MCH,MCHC • Describe the causes of increased and decreasedvalues	Practical Demonstration x1	-	P
4.	**Total Leukocyte Count (TLC)** • Describe the protocol while using hemocytometerfor determination of TLC • Explain the composition of Turk's fluid • Explain normal value of TLC and causes ofincreased or decreased values	Practical Demonstration x1	-	P
5.	**Differential Leukocyte Count (DLC)** • Determine percentage of different types ofleucocytes • Describe the composition of Leishman's stain • Explain the points of identification of differenttypes of leucocytes • Enumerate different causes of increase anddecrease of different types of leukocytes	Practical Demonstration x1	-	P
6.	**Platelet Count** • Identify the platelets in RBC counting area inNeubauer's chamber and count platelets in relevant boxes • Describe various conditions where platelets aredecreased	Practical Demonstration x1	-	P
7.	**Determination of bleeding time (BT)** • Demonstrate the Dukes method for measuringbleeding time • Interpret the clinical significance of BT in various bleeding disorders	Practical Demonstration x1	OSPE Viva	P
8.	**Determination of clotting time** • Demonstration of procedure for measuringclotting time by capillary tube method • Interpret the clinical significance of CT in variousclotting disorders	Practical Demonstration x1	OSPE Viva	P
9.	**Determination of clotting time** • Demonstrate the method for determination ofown blood group • Interpret the finding • Correlate the physiological basis of blood groupswith transfusion reactions	Practical Demonstration x1	OSPE Viva	P
	BIOCHEMISTRY			
1.	**Plasma protein and their significance** • Classify plasma protein and specify their significance	IL	MCQs SEQs	C2
2.	**Immunoglobulin** • Classify Immunoglobulin and illustrate their function	IL	MCQs SEQs	C2
3.	**Bilirubin production, transport and fat in the body** • Explain the production, transport of bilirubin in the body	IL	MCQs SEQs	C2
4.	**B-Thalassemia** • Classify alpha and B-Thalassemia and their clinicalsignificance	IL	MCQs SEQs	C3

5.	**Haemoglobin** • Enlist different types of Haemoglobin	IL	MCQs SEQs	C2
6.	• Explain the haemoglobin structure, functions	IL	MCQs SEQs	C1
7.	**Heme proteins, their functions and disorders linked** • Illustrate Heme proteins, their functions and disorders linked	IL	MCQs SEQs	C2
8.	**Heme synthesis and its regulation** • Enlist the steps of Heme synthesis and its regulation	IL	MCQs SEQs	C2
9.	**Hyperbillirubinemia** • Define Hyperbillirubinemias **Catabolism of Heme** • Specify the steps of Heme catabolism	IL	MCQs SEQs	C3 C2
10.	**Jaundice** • Discussion on jaundice, lab results showing patients with different causes of jaundice	IL	MCQs SEQs	C3
	PRACTICAL			
1.	**Estimation of Serum Bilirubin** • Describe Principal, Procedure, Reagents and estimationof serum Bilirubin	Practical Demonstration	OSPE	P
2.	**Estimation of Hb level** • Demonstrate Principal, Procedure, Reagents andcalculation of Hb	Practical Demonstration	OSPE	P
	ORAL BIOLOGY			
1.	**Development of the tooth and its supporting tissues** • Explain primary epithelial band, dental lamina andvestibule lamina. • Discuss initiation of tooth and tooth type determination. • Differentiate between bud, cap and bell stages.	IL	MCQs SEQs	C1 C2
2.	• Describe nerve and vascular supply during early development. • Explain formation of permanent dentition. • Discuss hard tissue formation.	SGD	MCQs SEQs	C1 C2
3.	• Discuss Root formation • Discuss the formation of supporting tissues. • Describe tooth eruption	IL	MCQs SEQs	C2 C3

4.	**Bone** • Explain gross bone histology. • Enumerate and explain bone cells in detail. • Discuss regulation of bone cell formation. • Differentiate between endochondrial, intramembranous and sutural bone formation.	IL	MCQs SEQs	C1 C3
5.	• Discuss bone turn over (Bone remodelling) in detail. • Discuss calcium metabolism in bone	SGD	MCQs SEQs	C2 C3
6.	**Tooth Morphology of Anterior Dentition (Incisorsand Canines)** • Describe the labial and lingual aspect of permanent maxillary and mandibular central incisor • Describe the labial and lingual aspect of permanentmaxillary and mandibular lateral incisor	IL	MCQs SEQs	C1 C2
7.	• Describe the labial and lingual aspect of permanentmaxillary and mandibular canines	SGD	MCQs SEQs	C1, C2
8.	**Development of maxilla and mandible** • Describe development of maxilla	IL	MCQs SEQs	C1
9.	• Explain development of mandible	IL	MCQs SEQs	C1, C2

PRACTICAL

1.	**Permanent central incisors** Identify labial and lingual aspect of permanentmaxillary and mandibular central incisors	Practical Demonstration	OSPE Viva	P
2.	**Permanent lateral incisors** Identify labial and lingual aspect of permanentmaxillary and mandibular lateral incisors	Practical Demonstration	OSPE Viva	P
3.	**Permanent canines** Identify labial and lingual aspect of permanentmaxillary and mandibular canines	Practical Demonstration	OSPE Viva	P
4.	**Permanent central incisors** Draw the different aspects of permanent maxillary andmandibular central incisors	Practical Demonstration	-	P
5.	**Permanent lateral incisors** Draw the different aspects of permanent maxillary andmandibular lateral incisors	Practical Demonstration	-	
6.	**Permanent canines** Draw the different aspects of permanent maxillary andmandibular canines	Practical Demonstration	-	
7.	**Development of mandible** Explain development of mandible	Practical Demonstration	OSPE Viva	P
8.	**Tooth development** Draw and discuss stages of tooth development	Practical Demonstration	OSPE Viva	P

9.	**Tooth development** Draw primary epithelial band	Practical Demonstration	-	
10.	**Tooth development** Draw and describe Bud, Cap and Bell stage of toothdevelopment	Practical Demonstration	OSPE Viva	P
11.	**Tooth development** Draw and discuss developing root	Practical Demonstration	OSPE Viva	P
12.	**Bone** Draw and label compact bone	Practical Demonstration	OSPE Viva	P
13.	**Bone** Draw and label osteocyte	Practical Demonstration	OSPE Viva	P
14.	**Embryology** Draw and discuss derivatives of neural crest cells	Practical Demonstration	OSPE Viva	P
	JUNIOR PROSTHETICS			
1.	**Impression materials** • Name different types of impression materials • Differentiate impression materials • Manipulate commonly used impression materials	Skill Lab Demonstration	MCQs SEQs OSPE	C1 C2 C3
2.	**Impression trays** • Differentiate different types of impression traysfor partially dentate and edentulous patient • Select an impression tray for a given case	Skill Lab Demonstration	MCQs SEQs OSPE	C2 C3
3.	**Types of Plasters** • Differentiate between hard and soft plaster • Dispense appropriate amount of plaster withwater for required work • Acquire desired consistency of material • Fabricate a plaster slab of given dimensions • Trim glass slab to given size • Perform pouring of ideal molds • Fabricate the ideal cast without bubbles	Skill Lab Demonstration	MCQs SEQs OSPE	C2 C3
	JUNIOR OPERATIVES			
1.	**Introduction to junioroperatives:** • Understand the basic need to study the biological basis of operative dentistry • Appreciate the importance of the development of their psychomotor skills	IL	OSPE SEQs	C2 C3
2.	**Armamentarium** • Understand the basic equipment used in Operativedentistry clinical procedures	IL SGD DSL	MCQs	C2

	• Understand their clinicaluses • How to avoid hazardous effects of these equipment		SEQs	C3
3	**Dental caries** • Diagnose the most infectious disease of teeth,Dental Caries • Understand the different methods of Caries prevention and Management	IL	MCQs SEQs	C2 C3
4.	**Principles of cavity preparation** • Understand the method of cavity preparation accordingto the extension of lesion • Understand the requirementof different armamentarium for specific cavity designs	SGD Skill Lab Demonstration	MCQs SEQs OSPE	C2
5.	**Restorative material(amalgam,composite, GIC, pit and fissure sealant** • Understand the use of different restorative materialaccording to different clinical situations, patient aesthetic and functional demands.	SGD Skill Lab Demonstration	OSPE	C2

LEARNING RESOURCES (RECOMMENDED BOOKS)

ANATOMY

1. Gray's Anatomy (3rd Edition)
2. Clinical Anatomy by Regions by Richard S. Snell (10th Edition)
3. Neuroanatomy by Richard S. Snell (8th Edition)
4. Clinically Oriented Anatomy by K.L. Moore Janqueira's
5. Basic Histology by Anthony L. Mescher
6. Di Fiore's Atlas of Histology with functional correlation (13th Edition)
7. General Anatomy by Laiq Hussain
8. Langman's Medical Embryology by T.W Sadler (14th edition)

PHYSIOLOGY

1. Textbook of Medical Physiology by Arthur C. Guyton, John E. HallHuman

   Physiology: from Cells to Systems by Sherwood Lauralee Ganong's

   Review of Medical Physiology.
2. Essentials of Medical Physiology by Mushtaq Ahmad Vol 1 & 2.

BIOCHEMISTRY

1. Harper's Illustrated Biochemistry; Robbert K. Murray, David A Bender, Peter J Kenneley.Victor W. Rodwell, P Anthony Weil.
2. Lippincott's Illustrated Review; Denise Ferrier &Richard A. Harvey

Community Medicine

1. J.E . Park's Text Book by K. Park Public Health &
2. Community Medicine

Behavioural Sciences

1. Handbook of behavioural sciences by Mowadat H. Rana

* LATEST EDITIONS of all books

Operative Dentistry:

1. Atlas of operative dentistry by Evans J.R
2. Art and Science of Operative Dentistry

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