2nd Year MBBS Anatomy Study Guide 2020

CMH Lahore Medical College & Institute of Dentistry Lahore Cantt, Pakistan

Contents

TIME TABLE FOR THE SECOND YEAR M.B.B.S CLASS (SESSION 2019-20)
C.M.H LAHORE MEDICAL COLLEGE, LAHORE
ANATOMY DEPARTMENT

Day	08:00 - 08:55	08:55 - 9:50	09:50 - 10:45	10:45 – 11:15	11:15 - 12:10	12:10 - 13:00	13:00 - 13:15	13:15-14:00	14:00 - 15:00
Monday	Medicine (Clin Lec)	Physiology Lecture	Anatomy Lecture	Break	Gynae (Clin Lec) / Comm Med (Res Method)	Biochemistry Lecture	Prayer Break	Tutorial Physiology (T1,T2) Biochemistry (T3, T4)	
Tuesday	Anatomy Lecture	Dissection (DH) Small Group - All Staff			Physiology Lecture	Biochemistry Lecture		Tutorial Physiology (T1,T2) Biochemistry (T3, T4)	
Wednesday	Physiology Clinical	Practical A Biochemistry B Physiology C Anatomy			Physiology Lecture	Biochemistry Lecture		Behavioral Sciences	Dissection (DH) Small Group - All Staff
Thursday	Biochemistry Lecture	Practical A Physiology B Anatomy C Biochemistry			Dissection (DH) Small Group - All Staff			Physiology Lecture	ISL/PAK BEHAVIOURAL SCIENCE
	08:00-08:50	08:50-10:35		10:35-11:15	11:15 – 13:00			13:00 – 14:00	11:15 – 13:00
Friday	Anatomy Lecture	Practical A Anatomy B Biochemistry C Physiology		Surgery (CLIN LEC)	Dissection (DH) Small Group - All Staff			Jumah Break	Directed Self Learning BEH SC

All lecture in Lecture Theatre C. Biochemistry Tutorial class in Lecture Theatre C. Physiology Tutorial class in Lecture Theatre B.

Dissection Batch:	1—25 **A**	26—50 **B**	51—75 **C**	76—100 **D**	101—125 **E**	126—Onward **F**
Practical Batch	1—50 **A**	51—100 **B**	101— Onward **C**			

All Staff: **Professor Dr. Uzma Naseer** **Dr. Rohina Khizer** **Dr. Muhammad Atif Ameer**
Histology Practical: **Dr. Tayyaba Mahmud** **Dr. Yumna Muzaffar**

MBBS ANATOMY PROGRAMME AT NUMS

Vision:
To train undergraduate students by qualified faculty and state of the art infrastructure and technology so that students can meet the community challenges of 21st century infrastructure.

Mission:
To impart core knowledge of anatomy in interesting, compact and practical way to undergraduate students by Hybrid/Spiral integrated system of teaching so that they can differentiate between normal and abnormal structure at gross, microscopic and embryological level.

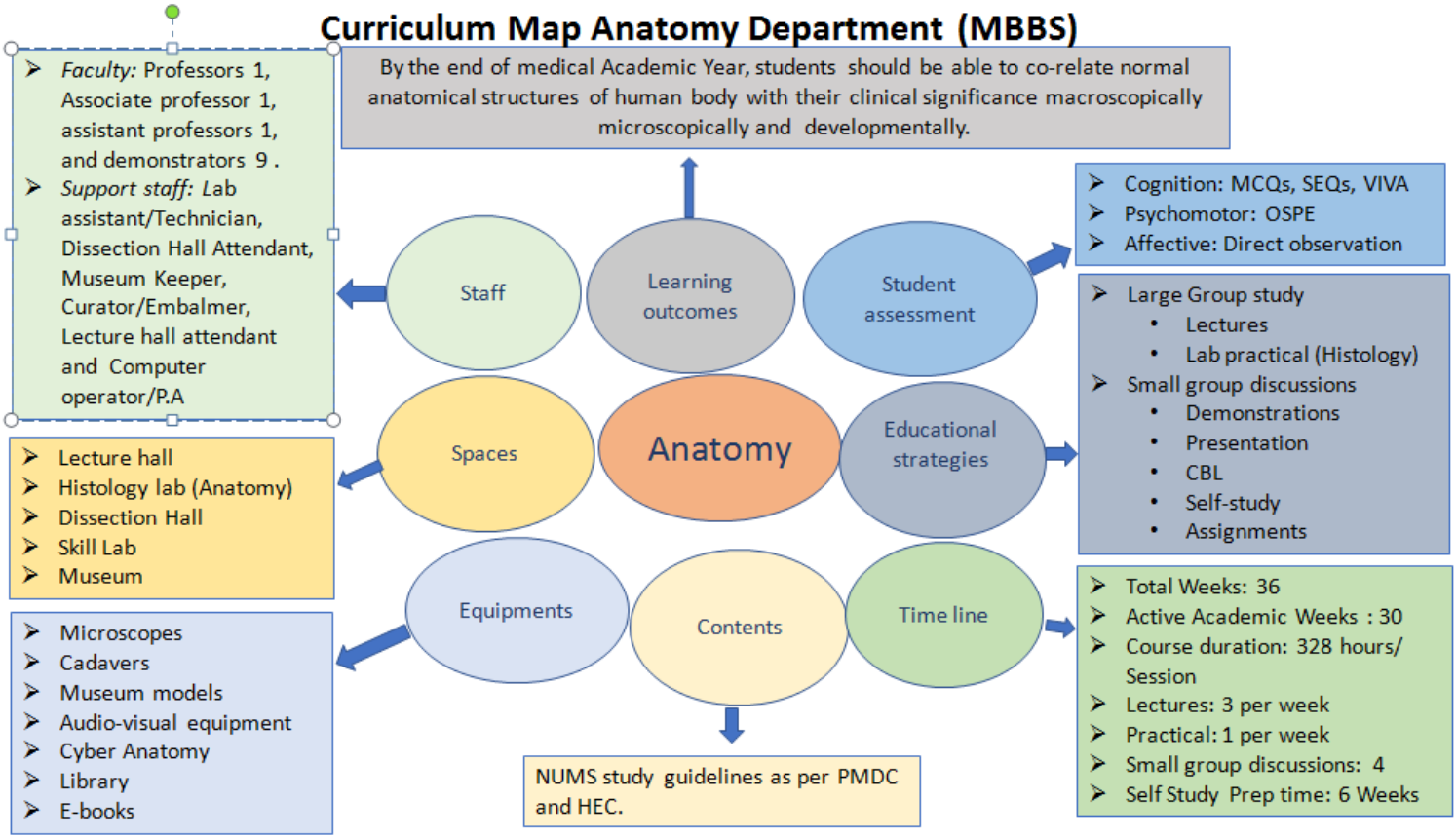
Objectives:
For this we need to impart:

Knowledge of Anatomy - On principles of pedagogy

Skills
- Dissection & Prosection
- Simulation – Models
- Cyber teaching
- Surface Anatomy
- Modern Histological techniques

Attitude:
- Communication Skills
  - Lecture & Presentation
- Self directed learning
  - RBL Museum Atlas
  - Integrated Journal
  - Cyber Teaching
  - E-Learning
- Quest for Research
  - Journal club meeting
  - Library
- Professionalism
- Empathy
- Inter Personal Skills
- Extra Curricular activities

Curriculum Map Anatomy Department (MBBS)



Faculty:

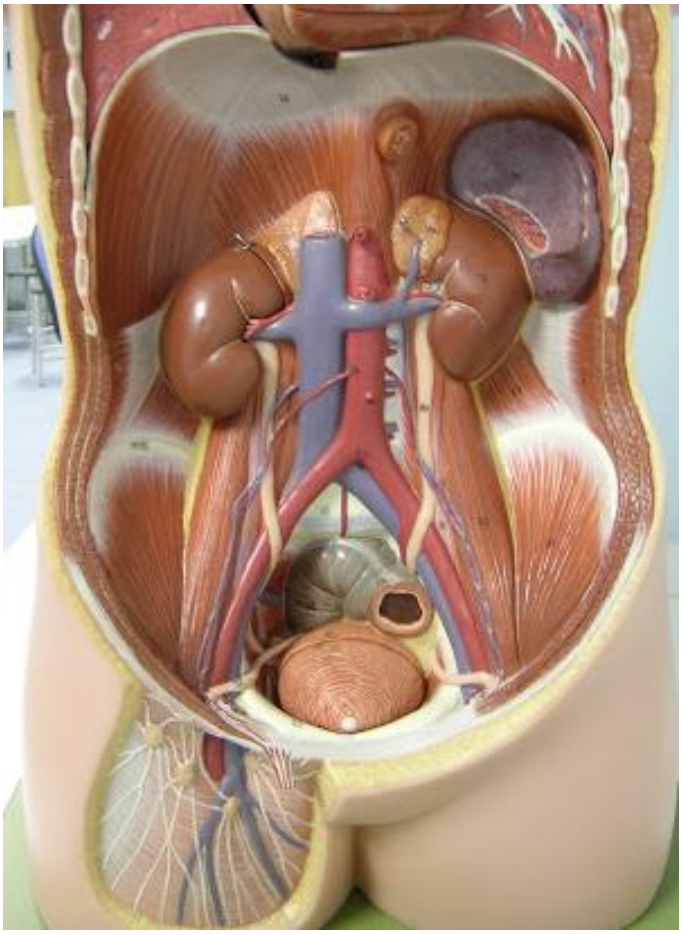
Prof. Dr. Uzma Naseer	Professor & Head of Department
Dr. Shaista Arshad Jarral	Associate Professor
Dr. Tayyaba Mahmud	Assistant Professor

Demonstrators:

Dr. Yumna Muzaffar
Dr. Arwa Khawar
Dr. Saman Rauf
Dr. Ayesha Khalid
Dr. Rohina Khizer
Dr. Muhammad Atif Ameer

Block-I

Anatomy



Abdomen & Pelvis

Summary:

Name	***Anatomy***
Duration	*10 weeks*
Broad Themes of Module (Theme: a subject that is being integrated a majority of time of module)	• Abdomen, pelvis and perineum • GIT • Urinary system
Subject Themes	**Gross Anatomy** Abdomen, pelvis and perineum **Embryology** Development of ○ GIT ○ Urinary system **Histology** ○ GIT ○ Urinary system

Mode of Information Transfer:

Lectures
Dissection / Prosection
Demonstration
CBL
Practical
Dissection movies
Cyber Anatomy
Integrated and Proactive Histology Journal
Models with Museum Atlas

GROSS ANATOMY:

Topic	Learning Objectives	MITs
Abdomen	**Division of abdomen into regions and quadrants and their contents** • Describe the Division of abdomen into regions and quadrants • Enlist the contents of abdominal regions **Anterior abdominal wall** • Describe the details of anterior abdominal wall. • Identify the layers of abdominal wall. • Identify the superficial and deep fascia and muscles of abdominal wall. • Describe the formation of rectus sheath and its importance. **Nerves of abdomen** • Describe nerve supply of anterior and posterior abdominal wall. • Identify & create a visual representation of nerves supplying the abdomen. • Sequence and categorize information on the segmental sympathetic supplies and referred pain. • Explain the basic structure of paravertebral plexuses. • Describe somatic nervous supply of abdomen **Inguinal Canal** • Describe Walls of Inguinal Canal • Describe Deep Inguinal Ring & Superficial Inguinal Ring • Identify Structures passing through the inguinal canal • Enlist Coverings of spermatic cord • Explain Mechanics of the inguinal Canal • Define hernia and describe its types • Discuss Direct & indirect Inguinal Hernia • Discuss Surface marking of inguinal canal **Peritoneal Cavity & Peritoneal Relationships** • Define peritoneum • Understand the different folds of peritoneum, i.e., peritoneal ligaments, omenta and mesenteries. • Discuss the pouches, recesses and gutters formed by peritoneal enfoldings • Describe greater and lesser sacs • Enlist the intraperitoneal and retroperitoneal viscera • Discuss vertical tracings of peritoneum	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**

	• Describe arrangement of peritoneum in transverse section of abdomen • Describe arrangement of peritoneum in transverse section of male pelvis • Describe arrangement of peritoneum in transverse section of female pelvis • Discuss nerve supply of peritoneum • Discuss clinical correlates of peritoneum including peritoneal infection, peritoneal pain. • Discuss the clinical importance of peritoneal cavity as dialyzing chamber **Posterior Abdominal Wall** • Identify structures forming posterior abdominal wall. • Describe muscles of posterior abdominal wall. • Identify attachments of lumber fascia **Lymphatic Drainage of Abdomen** • Name the lymph nodes draining the abdomen • Enlist the lymphatics draining the abdominal wall & the abdominal viscera. • Identify the terminal group of lymph nodes around abdominal aorta • Describe the lymphatic trunks, cisterna chili & the thoracic duct. • **Lumbar Vertebrae** • Explain general characteristics of lumbar vertebrae including body and arch of lumbar vertebrae • Describe processes like superior and inferior articular, transverse, spinous, mammillary accessory processes • Describe first lumbar vertebra & fifth lumbar vertebra • Discuss lumbar spinal stenosis **Esophagus (abdominal part), stomach** • Explain gross features of abdominal part of esophagus & stomach. • Name their peritoneal & visceral relations. • Explain their blood supply, lymphatic drainage & nerve supply • Describe achalasia, GERD and esophageal varices. • Discuss gastric ulcer and its perforation, cancer of stomach and its lymphatic spread. **Duodenum and pancreas** • Identify duodenum • Describe four parts of duodenum • Identify the relations of different parts of duodenum • Give their blood supply and venous drainage.	

	Small Intestine & large intestine (comparison of two) • Describe the basic anatomy of small &large intestine • Identify the important gross features of large intestine • Explain the basic gross features which differentiate large intestine from small intestine • Identify the appendix on the basis of its distinguished features • Give relations of small and large intestine. • Describe the characteristics of ano-rectal regions • Discuss the blood supply, nerve supply and venous and lymphatic drainage of small and large intestine. • Discuss clinical correlates of small and large intestines and appendix • Discuss meckels diverticulum, resection of different parts of gut and its clinical effect • Discuss clinical problems occurring due to occlusion of GIT blood vessels **Abdominal aorta+ blood supply of abdomen** • Describe the position and the vertebral levels of aorta in the abdomen. • Enlist the main branches of the aorta and their territories. • Explain the applied anatomy of the aorta. **Inferior vena cava + venous drainage of abdomen** • Describe the formation of inferior vena cava • Enlist the tributaries of inferior vena cava • Explain abdominal and thoracic relations of this vein • Discuss clinical importance of inferior vena cava. **Liver** • Describe the anatomical structure of liver. • Identify lobes, surfaces and ligaments • of liver. • Discuss its relations • Identify bare area of liver on a model of liver. • Give its blood supply lymph drainage and nerve supply • Discuss its clinical correlations **Gall bladder and biliary tract** • Describe the location, size, relation and blood supply of gallbladder • Explain differences between Intra & Extra Hepatic Biliary Systems • List different components of Extra-hepatic biliary System	

	• Identify the right & left hepatic ducts, common hepatic duct, cystic ducts, bile duct • Describe clinical conditions related to gallbladder **Hepatic portal system** • Describe the hepatic portal circulation. • Explain the anatomy of hepatic vein. • Describe the Portal -Caval anastomosis. • Explain the clinical correlation of hepatic portal system. **Kidney** • Describe the gross features of kidney and its coverings • Differentiate the anterior and posterior surfaces and relations of kidney. • Identify the internal structure of kidney • Describe the blood Supply of Kidney • Describe the Lymph nodes draining the kidney • Explain the Nerve supply of Kidney • Identify ureter, urinary bladder and urethra • Describe the course constrictions and relations of ureter • Discuss the blood supply and venous drainage of ureter. • Give location and description of suprarenal glands • Discuss their gross features and relations • Discuss their blood supply lymph drainage and nerve supply • Give clinical correlations of kidney ureter and suprarenal glands	
	• Identify surface marking of stomach, spleen, liver, gall bladder, kidney & appendicular orifice. • Identify the surface anatomy of ➢ Kidney, ➢ Ureter and ➢ Urinary bladder • Perform the Surface anatomy of the kidney on human bony landmarks	
Pelvis **Bones and joints**	• Define bony pelvis, true and false pelvis • Describe surfaces of sacrum. • Explain articulation. • Identify muscles associated with sacrum. • Differentiate between male and female sacrum. • Enlist various types of joints of pelvis. • Explain type, articulations, ligaments and relations of joints. • Enlist factors providing stability to joint. • Describe blood supply , nerve supply & movements of joint • Differentiate the greater & lesser pelvis. • Describe the superior & inferior circumference and	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**

	their boundaries. • Describe the anatomical position of pelvis. • Differentiate the shapes of female pelvis regarding childbirth. • Differentiate between male & female pelvis.	
Pelvic diaphragm **Vessels and nerve supply of pelvis**	• Describe the anatomy of the pelvic walls. • Discuss the muscles of pelvic floor and formation of pelvic diaphragm • Develop an understanding of blood supply, nerve supply, and lymphatic drainage of muscles. • Describe actions of pelvic diaphragm • Identify pelvic nerves. • Describe Sacral plexus. • Identify coccygeal plexus. • Describe pelvic hypogastric plexus. • Discuss main arteries of pelvis common iliac artery external iliac artery internal iliac artery arteries of true pelvis. • Describe main veins of the pelvis and their tributaries. • Identify area of drainage of these veins. • Describe different groups of lymph nodes. • Explain the role of lymphatics and common route and spread of malignancies of pelvis.	**LGIS/ Demos Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Sigmoid colon and rectum	• Describe sigmoid colon. • Describe rectum. • Explain relations, blood supply and innervation of these pelvic organs • Discuss their important clinical correlations	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Urinary bladder	• Discuss urinary bladder, its peritoneal covering and internal structure • Discuss blood supply venous drainage and lymph drainage of urinary bladder • Describe nerve supply and mechanism of micturition • Discuss clinical correlates of urinary bladder including urinary retention, difficulty with micturition after spinal cord injury, bladder injuries	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Male genital organs	• Explain male genital organs, their structure, position, function and important relations • Discuss vas deferens, seminal vesicle, and ejaculatory ducts • Give their blood supply and lymphatic drainage • Discuss prostate, its lobes and its relations • Describe its blood supply and lymphatic drainage • Discuss its clinical correlates including benign prostatic hyperplasia and CA prostate.	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**

Ovaries fallopian tubes and uterus	• Identify ovaries and fallopian tubes. • Describe the parts of ovaries and fallopian tubes. • Identify the ligaments of ovaries	**LGIS/ Demos/ Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**

	• Enumerate the clinical correlates of ovaries and uterine tubes. • Explain the details of uterus, cervix and vagina. • Enumerate the parts of uterus, ligaments, relations and support of uterus. • Discuss the role of uterus in labour • Identify the clinical correlates of uterus, cervix and vagina	
PERINIUM	• Identify borders and relations of the perineum. • Describe divisions of the perineum. • Explain superficial and deep perineal pouch and their contents • Explain cutaneous nerves of the perineum. • Define perineal body.	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Anal canal	• Explain the gross anatomy of Anal Canal • Identify the relations of the anal canal with the surrounding structures. • Describe the blood supply, venous and lymphatic drainage of anal canal. • Explain innervations of anal canal. • Discuss clinical conditions of anal canal. • Describe hemorrhoids and their types • Discuss perianal hematoma, fissure, abscess and fistula • Discuss incontinence after trauma and spinal cord injury •	**Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Ischiorectal fossa	• Identify the boundaries and recessess of ischiorectal fossa • Describe the contents of ischiorectal fossa • Describe ischiorectal fossa infection	
Testis	• Describe the coverings of testis. • Recognize the internal features of testis. • Explain the significance of pampiniform plexus. • Justify the location of testis outside the body • Integrate the knowledge of descent of testis to its vessels, lymphatics and nerves. • Recall the different clinical conditions associated with testis.	
Male Urogenital Triangle	• Describe gross anatomy of male external genitalia. • Describe the gross structure of penis • Explain its arterial, venous drainage & nerve supply. • Describe scrotum and its walls • Discuss its blood supply and lymphatic drainage • Describe the nerve supply of anterior and posterior walls of scrotum. • Explain anatomy of male urethra, its arterial, venous drainage & nerve supply. • Discuss injury to different parts of male urethera and extravastion of urine.	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**

Female Urogenital Triangle	• Enlist the names and anatomical location of female external genitalia.	**LGIS/ Demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**

	• Explain function, arterial supply, venous drainage and nerve supply of female external genitalia. • Discuss clinical importance of female external genitalia. • Explain course & relations of female urethra. • Describe arterial supply, venous drainage and nerve supply of female urethra. • Discuss clinical importance of female urethra.	
	EMBROYOLOGY	
GIT	• Describe the divisions of primitive gut. • Describe the derivatives of foregut. • Describe the development of the derivatives of foregut. • Describe the applied anatomy of derivatives of foregut • Describe the derivatives of midgut. • Explain physiological herniation of midgut • Explain the rotation of midgut. • Describe derivatives of hindgut. • Discuss the formation of dorsal and ventral mesentry and structures taking origin from them • Describe the clinical correlation of mid and hind gut. • Describe the congenital anomalies of gut • Enlist the special features associated with common anomalies related to gut including: ➢ Cleft lip or cleft palate ➢ Hernias • Esophageal atresia • Describe the congenital anomalies of gut • Enlist the special features associated with common anomalies related to gut including: ➢ Mal-rotation of gut ➢ Anorectal malformations • Explain the hepatic and cystic buds • Discuss the site and source of parenchymal and stromal tissue of liver and gall bladder. • Explain the origin of pancreatic buds and their derivatives in adult pancreas • Explain congenital anomalies of liver, gall bladder and pancreas.	**LGIS / Models with Museum Atlas**
Urinary System	• Describe the development of kidneys, their collecting system and excretory system • Discuss the congenital anomalies of kidneys, renal agenesis, horse shoe kidney, and wilms tumor • Describe the development of urinary bladder. • Explain the development of urethra. • Describe the congenital anomalies related to them.	**LGIS/ Models with Museum Atlas**
	HISTOLOGY	
GIT	• Give overview of digestive system • Describe structure of the gastrointestinal tract, GIT • Explain histological features of layers of GIT	**LGIS / Lab/ Models with Museum Atlas**

	• Describe histological features of structure of each layer of esophagus • Describe different regions of stomach, grossly and histologically • Explain various layers of the wall of stomach • Describe different glands and the various kind of cells present in them • Identify the parts of small intestine. • Describe the histological features of different parts of small intestine. • Briefly review the gross anatomy of pancreas • Discuss the histological components of pancreas • Discuss the histological details of Parenchyma and Lobules (acini) of Pancreas • Discuss the Duct System of Pancreas • Describe the endocrine component of pancreas • Describe the basic anatomy of large intestine • Identify the important histological features of large intestine • Explain the basic histological features which differentiate large intestine from small intestine • Identify the appendix on the basis of its distinguished features • Describe the characteristics of anorectal regions • Identify histology of liver • Explain common liver disorders • Explain clinical manifestations of liver disorders. • Describe Gall bladder histology • Describe the histological architecture of liver • Identify the structural details of hepatocytes, portal triad, hepatic sinus & hepatic lobule • Describe the different components of biliary tract • Identify the histological appearance of gall bladder	
Urinary System	• Describe the detailed microscopic features of nephron and collecting ducts • Describe the location of the ureter & urinary bladder • Explain the histology of ➢ Ureter, ➢ Urinary bladder and Urethra	**LGIS / Lab/ Models with Museum Atlas**

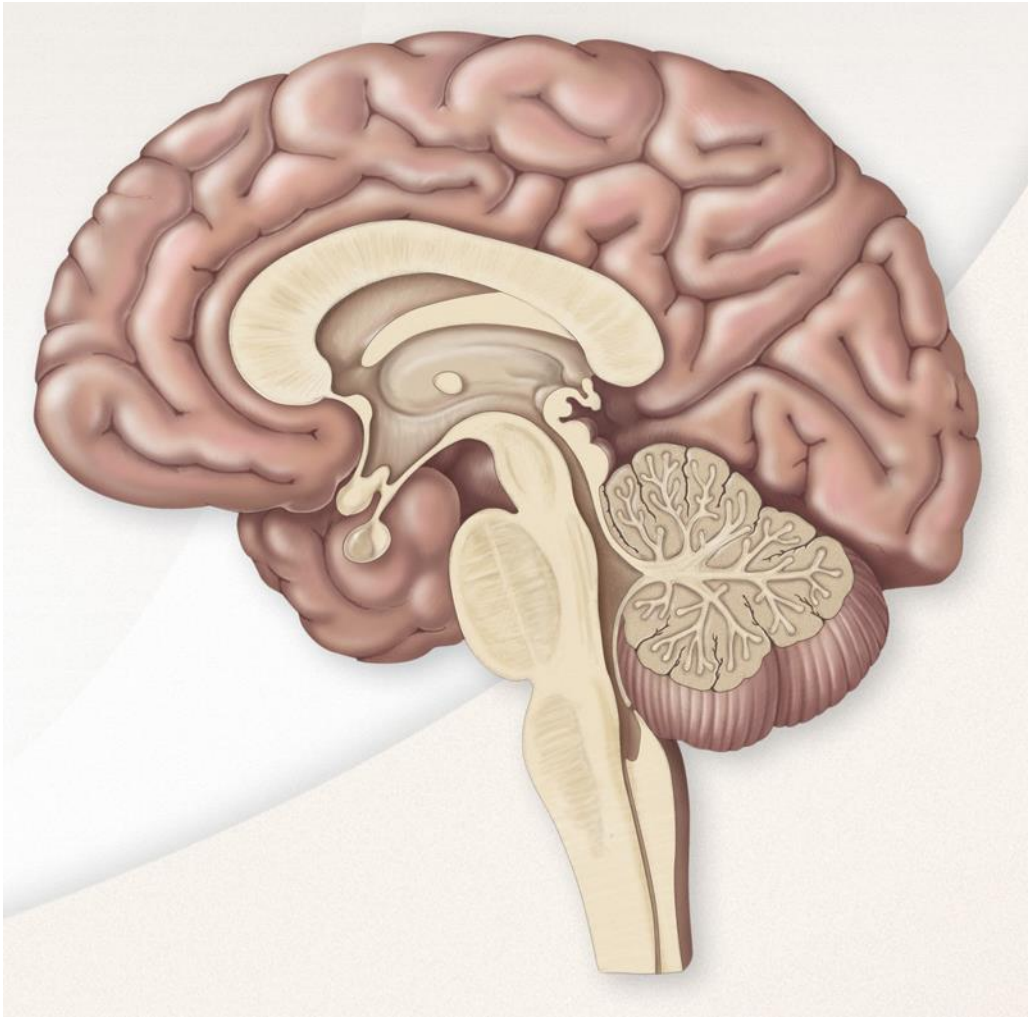
List of Histology Practical's- 1st Year MBBS Class first module

Histology Practical's Y2 M1

a. Esophagus
b. Gastro-esophageal junction, Stomach, Pyloric-duodenal junction
c. Small intestine
d. Large intestine
e. Appendix
f. Pancreas
g. Liver & gall bladder
h. Kidney
i. Ureter
j. Urinary bladder

Block -II

Anatomy



Brain

Summary:

Name	***Anatomy***
Duration	*10 weeks*
Broad Themes of Module **(Theme: a subject that is being integrated a majority of time of module)**	1. Brain and Spinal cord 2. Nervous system
Subject Themes	**Gross Anatomy** o Brain and Neuro anatomy **Embryology** Development of o CNS o Skull o Development of genital system **Histology** o Nervous System o Special senses o Reproductive System

Mode of Information Transfer:

Lectures
Dissection / Prosection
Demonstration
CBL
Practical
Dissection movies
Cyber Anatomy
Integrated and Proactive Histology Journal
Models with Museum Atlas

Anatomy Learning Outcomes

GROSS ANATOMY

Topic	Learning Objectives	MITs
Nervous System	• Describe the divisions of the nervous system and their components and briefly describe how they function. • Enumerate structures within spinal and cranial cavities • Define ventricles and CSF. Define coverings of brain and spinal cord.	**LGIS/ demos/ Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Meninges of brain	• Identify meninges of brain on the given model • Describe the dural reflections with special emphasis on tentorium cerebelli and falxc erebri. • Explain the features of spaces within meninges • Define Meningitis • Explain the structures encountered during lumbar puncture • Enumerate the nerves and blood vessels supplying the meninges.	
	• Describe the attachments of meninges with the help of dissection • Demonstrate the supratentorial and infratentorial compartments of tentorium cerebelli with the help of dissection. • Describe the extradural and subdural hematoma.	
Venous Sinuses of Brain	• Explain the attachments of dural venous sinuses of brain with the help of diagrams • Describe the important relations with the help of diagrams • Discuss the importance of facial vein connection with dural venous sinuses.	
Structure of Spinal Cord	• Describe the structure of spinal cord • Describe the structure of gray matter and white matter in spinal cord. • Enumerate the major ascending and descending tracts of spinal cords	
Ascending Tracts of Spinal Cord	• Describe the pathways for superficial and deep sensations. • Describe the effects of lesions of section of spinal cord.	
Descending Tracts of Spinal Cord	• Outline the pathways of voluntary movements • Describe the location of first ,second and third order neurons	

Structure of Medulla	• Identify the gross features of medulla on a given model. • Describe gross features of medulla on a given model • Describe the internal structure of medulla with the help of different cross sections • Correlate the significance of raised pressure in posterior cranial fossa to its effects on medulla oblongata	

	• Discuss nuclei of cranial nerves present in medulla. • Describe clinical correlations of medulla	**LGIS/ demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Structure of Pons	• Identify the gross features of Pons on a given model. • Explain the internal structure of Pons with cross sections at different levels • Discuss nuclei of cranial nerves lying in pons • Discuss the anatomical structures involved in Pontine hemorrhage	
Gross Anatomy of Midbrain	• Identify the gross structure of midbrain on a given model. • Describe the internal structure of midbrain with cross sections at different levels • Discuss nuclei of cranial nerves lying in midbrain. • Enumerate the clinical consequences of trauma to midbrain	
Cerebellum	• Describe the gross features of cerebellum on the given model • Explain the cerebellar nuclei and their connection with other parts of brain. afferent fibers and efferent fibers • Discuss the effect of lesions of cerebellum on voluntary movements	
Gross anatomy of Interior cerebrum	• Describe the features of parts of following on a given model ➢ Cerebrum ➢ Diencephalon ➢ Telencephalon • Identify gross features of parts of diencephalon. ➢ Thalamus ➢ hypothalamus • Correlate the anatomical lesions of nuclei of thalamus and hypothalamus with the clinical conditions like diabetes inspidus and obesity	
Reticular formation and limbic system	• Discuss reticular formation and its afferent and efferent projections • Describe functions of reticular formation • Discuss components of limbic system • Discuss connecting pathways of the limbic system • Discuss afferent and efferent pathways of hippocampus • Discuss clinical correlations of reticular formation and limbic system	

The basal nuclei	• Discuss corpus striatum and its nuclei • Discuss their connections, direct and indirect pathway • Discuss clinical correlations of basal nuclei • Discuss parkinsonism in detail	
Gross Features Of Cerebral Hemispheres	• Identify the main sulci and gyri of cerebral hemispheres on the given model • Describe the gross features of the lobes of cerebrum. • Explain the phenomenon of cerebral dominance • Discuss clinical correlations of cerebral cortex • Discuss the effects of lesions in the Motor cortex on voluntary movements and speech. • Discuss the effect of lesion in the Frontal eye field in relation to personality change.	**LGIS/ demos / Dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas**
Dissection Of Cerebrum	• Identify the location of major sensory and motor areas within specific lobes with the help of dissection • Describe the major sensory and motor areas of cortex with the help of dissection	
Gross Anatomy Of White Matter Of Cerebrum	• Classify the cerebral fibers of according to their connections. • Describe the fibers present in the brain. ➢ Commissural fibers ➢ Association fibers ➢ Projection fiber • Explain the effects of lesions of different parts of internal capsule	
Blood supply of brain stem and spinal cord	• Describe the blood supply of different parts of brain • Explain the formation and importance of circle of Willis with diagram	
Blood supply of cerebrum	• Describe the blood supply of different parts of cerebrum	
Dural venous sinuses	• Explain the formation and importance of veins draining cerebrum	
Base and Interior of skull	• Identify the important features of bones forming inferior view of skull on the given bone. • Mark the foramina at the base of skull and enumerate the contents of clinically relevant foramina.	
Imaging Of CNS	• Describe the appearance of different parts of brain in ➢ Normal radiographs ➢ MRI ➢ CT scan	
Ventricles Of Brain	• Enumerate ventricles of brain • Describe the relations and boundaries of each ventricle • Describe the formation of choroid plexus • Explain the process of production and absorption of CSF by arachnoid villi • Explain the causes of overproduction and blockage of CSF • Enumerate the varieties of hydrocephalus	

	EMBROYOLOGY	
Development of Spinal cord	• Describe the development of neural tube. • Describe the differentiation of neural tube into different parts of brain. • Describe the development of spinal cord. • Describe the positional changes of the cord	**LGIS / Models with Museum Atlas**
Developmental Anomalies Of Spinal Cord	• Explain the causes of neural tube defects • Explain the process of development of spin bifida • Describe the clinical conditions relevant to the development of neural tube defects Like Spina bifida spina bifida with meningomyelocele.	**LGIS / Lab/ Models with Museum Atlas**
Development Of Cerebrum	• Describe the development of cerebral hemispheres and ventricles. • Explain the relation of congenital aqueduct stenosis and hydrocephalus. • Enumerate and briefly describe the congenital anomalies associated with development of cerebrum.	**LGIS / Lab/ Models with Museum Atlas**
Development of Brainstem	• Describe the development of medulla, Pons, midbrain and cerebellum • Describe the developmental changes in alar and basal plates in brainstem	**LGIS / Lab/ Models with Museum Atlas**
Development Of Skull	• Describe the stages of development of neurocranium • Describe the stages of development of viscerocranium • Describe the stages of differentiation of neurocranium into Membranous Neurocranium and chondrocranium • Describe the importance of fontanelle of skull in relation to ➢ normal ossification of the skull ➢ changes in intracranial pressure • Describe the features of Newborn Cranium	**LGIS / Lab/ Models with Museum Atlas**
Development of external genital organs	• Describe the development of cloacal folds • Describe the development of genital swellings • Describe the differentiation of male and female external genitalia from genital swellings • Enlist common anomalies	**LGIS / Lab/ Models with Museum Atlas**
Development of uterus and ovary	• Describe development of • ovary • Enlist common anomalies	**LGIS / Lab / Models with Museum Atlas**
Development of fallopian tubes and vagina	• Describe development of • Uterus • fallopian tubes • vagina • Enlist common anomalies	
Development of male reproductive system	• Describe the formation of indifferent gonad • Describe the development of testis from indifferent gonad • Enumerate the developmental anomalies of male genital organ	

HISTOLOGY		
Histology Of Nerve Tissue	• Describe the histological features of nerve tissue with the help of drawings on board in the skill lab • Identify the type of nerve tissue on given slides under microscope. . • Draw a labeled diagram of the identified structures with the help of eosin and hematoxylin pencils on the histology notebooks • Describe the histological changes in nerve in injury, neuroma and regeneration	**LGIS / Lab / Integrated and Proactive Histology Journal / Models with Museum Atlas**
Histology Of Spinal Cord	• Identify the microscopic features of spinal cord on a given slide. • . • Draw a labeled diagram of the identified tissue on the histology note book with the help of H&E pencils.	**LGIS / Lab / Integrated and Proactive Histology Journal / Models with Museum Atlas**
Structure of nerve and Concept of myelinated and unmyelinated Fibres	• Describe the structure of Nerve • Explain the Myelination of nerve fiber • Describe the importance of Myelination • Define SLE	**LGIS/ lab / Integrated and Proactive Histology Journal / Models with Museum Atlas**
Neurons and Neuroglia	• Describe the structure of neuron • Classify the supporting cells and • Enumerate their functions	
Joint Receptors	• Describe the anatomical structure of neuromuscular spindles • Differentiate between the anatomical structure of annulospiral and flowerspray endings	
Histology Of Cerebrum and cerebellum	• Identify the histological features of cerebrum and cerebellum under microscope. • Draw a labeled diagram of cerebrum and cerebellum in practical notebook. • .	
Histology of female reproductive system	• Describe the histology of female reproductive tract with the help of microscopic images • Describe the changes in epithelium in each part • Describe the histological changes in menstruation	
Histology of ovary and uterine tubes	• Identify the slides under the microscope and enumerate the characteristics of each ➢ Ovary ➢ Uterine tube ➢ Uterus – 3 stage ➢ vagina ➢ Give two points of identification for each slide • Draw a labeled diagram of identified tissue in note books	
Histology male reproductive system	• Describe the histological features of following on the given slide ➢ Testis ➢ Seminal vesicles ➢ Ductus deferens ➢ Ductus epididymis	

	• Draw a labeled diagram of identified tissue in practical note book	
Histology Of Eye	• Identify these structures under microscope • Draw a labeled diagram of the identified structure on histology notebook • Describe the histological features of lens, cornea & retina	**LGIS/ lab / Integrated and Proactive Histology Journal / Models with Museum Atlas**
Organ Of Corti	• Identify the histological features of organ of corti under microscope • Identify the cells and spaces present in the cochlea on the given slide • Draw a labeled diagram of identified tissue in histo note books	
Taste buds	Describe the structure of the taste buds and their cells	
Olfactory epithelium	• Describe the structure of the olfactory receptors and other cells involved in olfaction	

List of Practical:

Histology Practical's

1. Testis & Epididymis
2. Vas deferens, Seminal vesicle
3. Prostate
4. Ovary
5. Fallopian tube, Uterus
6. Cervix, Vagina
7. Histology of Nervous Tissue, Neurons, Neuroglia , Structure of nerve and ganglia
8. Histology of Spinal cord
9. Histology of cerebellum
10. Histology of cerebral cortex
11. Histology of retina, cornea .lens, inner ear, Olfactory epithelium and taste buds

Block-III

Anatomy

Head & Neck

Summary:

Name	***Anatomy***
Duration	*10 weeks*
Broad Themes of Module **(Theme: a subject that is being integrated a majority of time of module)**	Head, Neck and Special Senses Endocrine System Reproductive system
Subject Themes	**Gross Anatomy** o Head and neck **Embryology** Development of o Head and neck o Special senses Development of integumentary system **Histology** o Endocrine glands o Histology of integumentary System

Mode of Information Transfer:

Lectures
Dissection / Prosection
Demonstration
CBL
Practical
Dissection movies
Cyber Anatomy
Integrated and Proactive Histology Journal
Models with Museum Atlas

Anatomy learning outcomes:

Gross Anatomy

Topic	Learning outcomes	MIT
Skull Anterior And Posterior View	• Describe the bones forming the anterior view of skull on the given bone. • Identify the bones forming the boundaries of orbit, nasal cavity and oral cavity and mark their boundaries. • Describe the bones forming posterior view of skull on the given bone • Mark the main anatomical landmarks on normaoccipitalis	SGD (small group discussion) and dissection / Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Lateral View of Skull	• Describe the bones forming the lateral view of skull on the given bone • Identify the boundaries of temporal, infratemporal fossa and pterygopalatine fossa on the given bone. • Mark the bones forming pterion and explain the clinical importance of pterion with the help the diagram	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of scalp	• Enumerate layers of scalp • Describe gross features of each layer • Describe the course of arteries, veins and nerves supplying the scalp with the help of model • Describe the danger area of the scalp • Describe the role of occipitofrontalis in preventing spread of scalp infections towards neck	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of face	• Describe the muscles of face along with their nerve supply with the help of models • Describe the actions of muscles of face. • Describe the course of arteries, veins and nerves supplying the face with the help of model • Describe the features of facial infections and cavernous sinus thrombosis	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

Gross anatomy of trigeminal nerve	• Trace the pathway of trigeminal nerve from nucleus to target organs • Enumerate the divisions of trigeminal nerve • Describe the features of trigeminal neuralgia	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Branches of trigeminal, nerve, mandibular, maxillary	• Describe the pathway of mandibular nerve from nucleus to target organs • Describe the pathway of maxillary nerve from nucleus to target organs • Describe the lesions of nerves with special reference to infections of molar teeth	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of facial nerve	• Describe the course of facial nerve in face • Enumerate its branches • Discuss the involvement of nuclei of facial nerve in bell palsy • Differentiate between upper and lower motor neuron lesions	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Salivary glands	• Enumerate salivary glands • Describe the locations of major salivary glands • Trace the secretomotor nerve supply of major salivary glands • Describe the structures involved in parotid infections	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Temporomandibular joint	• Identify the type of TMJ. • Identify the articular surfaces of TMJ on a given model or dry bones. • Name the ligaments of TMJ. • Describe the movements of jaw at TMJ with special reference to axis and muscles producing them. • Describe the clinical signs of anterior dislocation of TMJ and explain the steps of its reduction.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Infratemporal region	• Identify the location of infratemporal fossa on a given model and skull. • Enlist the structures forming various boundaries of infratemporal fossa. • Enlist the communications of infratemporal fossa and the structures traversing each. • Enumerate the contents of infratemporal fossa.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

	• Discuss the relationships of various contents of infratemporal fossa. • Discuss the attachments, actions and nerve supply of muscles of mastication.	
Deep cervical fascia – I	• Enumerate the layers of deep cervical fascia • Describe the attachments of investing, pretracheal, and prevertebral layers of fascia • Describe the modification of prevertebral layer into axillary sheath • Describe the formation of carotid sheath and its contents	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Deep cervical fascia – II	• Describe the spaces within fascia • Describe the clinical significance of retropharyngeal space • Describe the relation of layers of fascia and spread of infection • Describe the significance of merging of carotid sheath with pretracheal layer of fascia to prevent spread of infections	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Muscles of neck	• Describe the muscles of neck along with their nerve supply with the help of models • Describe the features of torticollis	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Triangles of neck	• Enumerate triangles of neck • Describe the muscles forming the boundaries of triangles • Describe the contents of triangles and their importance • Describe the lesions of the spinal accessory nerve in posterior triangle	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Vessels of neck	• Enumerate the main vessels in neck • Describe the course and branches of: ➢ Common carotid artery ➢ External carotid artery ➢ Internal carotid artery ➢ subclavian artery ➢ External jugular vein ➢ Internal jugular vein • Describe the importance of monitoring jugular venous pulse in heart diseases • Enumerate causes of prominence of external jugular vein	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

	• Discuss subclavian vein thrombosis	
Oral Cavity	• Identify structures forming the boundaries of oral cavity • Identify structures in the floor of oral cavity with the help of models • Identify the structures forming the boundaries of oral vestibule • Enumerate the vessels and verves supplying the oral cavity • Discuss clinical correlations of oral cavity	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of palate	• Identify the main features of hard palate and soft palate. • Enumerate muscles of soft palate on the model • Enumerate blood supply and nerve supply of soft palate • Identify the main muscles forming the palatoglossal and palatopharyngeal arches	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Tongue	• Describe the gross features of parts of tongue • Describe the blood supply, nerve supply, lymphatic drainage of tongue • Describe the movements of tongue	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Pharynx	• Describe the following parts of pharynx on the given model • Oropharynx • Nasopharynx • Laryngopharynx • Describe muscles of pharynx • Describe lymphoid tissue in the pharynx • Describe the importance of structures passing through the spaces between muscles of pharynx while performing tonsillectomy • Describe spread of infections from nasopharynx to middle ear	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Viscera of neck	• Describe the relations of trachea and esophagus in neck region with the help of dissection • Describe the structures involved in cricothyroidotomy and tracheostomy with the help of dissection	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

	• Demonstrate the gross features of thyroid and parathyroid glands on models • Describe blood supply and nerve supply of thyroid and parathyroid gland through models • Describe the relations of vessels and nerves supplying the thyroid gland and their significance while performing thyroidectomy	
Joints of neck	• Name the typical and atypical intervertebral joints of neck. • Identify the types of atlanto-occipital and atlanto-axial joints. • Describe the movements of these joints with muscles producing them.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Prevertebral region and root of neck	• Name the prevertebral muscles. Give their origin, insertion, action and nerve supply of prevertebral muscles • Describe the relations of key muscle of root of neck (scalenus anterior) • Describe the parts and branches of subclavian artery.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Back of neck	• Name the muscles of back of neck. • Identify the boundaries and contents of suboccipital triangle. • Describe the course and relations of 3rd and 4th parts of vertebral arteries.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Submandibular region	• Describe the muscles present in the submandibular region and sublingual region with the help of model and prosection. • Enumerate the nerves vessels and ganglion in submandibular and sublingual region	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Nerves of neck	• Enumerate the main nerves in neck • Trace the course of glossopharyngeal nerve, vagus nerve, accessory nerve and hypoglossal nerve on the given model,from nucleus to target organs. • Enumerate branches of each of the above nerve	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Lymphatic drainage of head and neck	• Enumerate the groups of lymph of nodes draining the neck	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

	• Describe their location and areas of drainage • Describe the formation of jugular lymph trunk • Describe the clinical importance of lymphatic drainage of head and neck	
Gross anatomy of larynx	• Explain the gross features of inlet of larynx, piriform fossa, laryngeal folds, cavity of larynx • Correlate the laryngeal anatomy to foreign bodies aspiration • Explain the gross features of intrinsic muscles of larynx, extrinsic muscles of larynx, movements of vocal folds • Describe the cartilage involvement in fractures of the laryngeal skeleton	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of larynx	• Identify the gross features of ➢ cartilages of larynx ➢ membranes of larynx • Trace the course of following nerves of larynx ➢ Internal laryngeal nerve ➢ External laryngeal nerve ➢ Inferior laryngeal nerve • Discuss clinical correlations of larynx including recurrent laryngeal nerve and external laryngeal nerve damage	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross Anatomy External Ear	• Describe the gross anatomical features of external ear Auricle External auditory meatus • Describe the blood supply, nerve supply and lymphatic drainage of external ear. • Correlate the significance of straightening the auditory canal during clinical examination with the anatomical structure of canal.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Functions of external and middle ear	• Describe the following three functions of the external ear: ➢ Transmission of sound to tympanic membrane ➢ Amplification of sound ➢ Prevention of dust and dirt from reaching ear drum • Describe the function of ossicles of the middle ear in conduction of sound from tympanic membrance to cochlea	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

Functions of external and middle ear	• Describe the phenomenon of impedance matching provided by the tympanic membrane and Ossicular system of the ear • Describe attenuation reflex along with its two functions of: ➢ Protecting cochlea ➢ Masking low frequency sound waves	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy middle ear-I	• Describe the gross anatomical features of middle ear • Describe the structures forming the walls of middle ear cavity on the given model • Describe the contents of middle ear cavity	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy middle ear-II	• Identify the parts of ear ossicles on the given model • Describe the muscles present in middle ear cavity • Describe the gross features of auditory tube • Describe the nerve supply of auditory tube • Describe the anatomical structures involved in paralysis of the stapedius • Blockage of pharyngotympanic tube	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Conduction of sound	• Describe the role of the following in conduction of sound vibrations: ➢ Scala vestibule ➢ Scala media ➢ Scala tympani	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy inner ear-I	• Identify the parts of bony labyrinth on the given model • Identify the parts of membranous labyrinth on the given model • Identify the parts of cochlea of semi-circular canal on the given model.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy inner ear-II	• Describe the gross features of bony labyrinth • Describe the gross features of membranous labyrinth • Describe the orientation of semicircular canals and ducts within the inner ear • Describe the gross features of internal acoustic meatus • Describe anatomical structures involved in perforation of tympanic membrane	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

	• Describe mastoiditis • Discuss the role of membranous labyrinth in motion sickness • Discuss the role of spiral organ of corti in high-tone deafness • Define otic barotraumas	
Vestibulococchlear nerve	• Trace the course of vestibulocochlear nerve in the inner ear on the given model • Identify the area of supply of vestibular nerve on the given model • Identify the area of supply of cochlear nerve • Identify the gross features of vestibulocochlear ganglion on model • Discuss the consequences of damage to vestibulocochlear nerve	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross Anatomy of Orbital Region	• Describe the bony orbit • Enlist the structures present in the orbit • Describe gross features of eye lids • Describe the attachment of muscles of eyelid • Describe the attachment of orbital septum • Describe the distribution of Blood Vessels and Lymph Vessels of the Orbit • Describe the anatomical structures involved Inflammation of the Palpebral Glands	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Extraocular muscles	• Describe the extraocular muscles of eye • Describe the movements of eyeball • Correlate the anatomical lesions in nuclei of nerve supplying the extraocular muscles with the loss of function in muscles.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Occulomotor Nerve	• Trace the pathway of Occulomotor never from nucleus to target organs • Correlate the anatomical lesions in nuclei of occulomotor never with clinical conditions like ➢ External Strabismus ➢ Ptosis and Diplopia	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

Trochlear Nerve	• Trace the pathway of Trochlear nerve from nucleus to target organs. • Discuss the effect of lesion of trochlear nerve	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of lacrimal apparatus	• Enumerate the structures forming lacrimal apparatus • Describe the gross features of each part of lacrimal apparatus • Describe the nerve supply of lacrimal apparatus • Co relate the anatomical structures of lacrimal apparatus with the features of blocked Lacrimal duct	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy of eyeball	• Describe the coats and parts of eye ball on a given model. ➢ Fibrous coat ➢ Vascular pigmented coat ➢ Nervous coat • Describe the blood supply and verve supply of eyeball • Describe the actions of muscles of pupil • Describe the appearance of optic disc and macula lutea on ophthalmoscope	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Optic Nerve	• Trace the pathway of optic nerve from nucleus to target organs • Describe the formation of olfactory bulb and optic tract. • Correlate the anatomical lesions in visual pathway with clinical conditions like hemianopia, homonymous hemianopia • Bitemporal hemianopia.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Gross anatomy nose	• Describe the structure of external nose and nasal cavity • Describe the concha and meatus in the lateral wall • Enumerate the sinuses opening in them • Discuss anatomical structures involved in nasal fractures • Correlate the anatomical structure of nasal mucosa with clinical manifestations of rhinitis	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Olfactory Nerve	• Trace the pathway of Olfactory nerve form nucleus to target organs on a model • Describe the formation of olfactory bulb and olfactory tract.	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

	• Correlate the effects of lesion of olfactory nerve with special reference to clinical conditions causing anosmia	
Paranasal Sinuses	• Describe the gross features of paranasal sinuses • Describe infections of sinuses • Describe the Drainage of mucus in relation to sinusitis • Describe the Function of Paranasal Sinuses • Discuss the anatomical structures involved in sinusitis with special reference to clinical consequences of infections of the ethmoidal cells of the ethmoidal sinuses	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Cranial nerves	• Discuss the intracranial and extra cranial course of all cranial nerves • Discuss clinical correlations and examination of all cranial nerves.	
Imaging of Head	• Identify the bones forming skeleton of head on radiograph • Identify boundaries of orbit &paranasal sinuses on radiograph	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Imaging of neck	• Describe the appearance of structures of neck and face in: ➢ Radiograph ➢ CT scan ➢ MRI	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas
Surface marking of Head & neck	• Mark the main vessels of head & neck on the given subject ➢ Superficial temporal artery ➢ Supra orbital and supra trochlear ➢ Facial Artery ➢ External Carotid artery ➢ External Jugular vein ➢ Subclavian artery • Palpate the following muscles ➢ Trapezuis ➢ Sternocleidomastoid	SGD and dissection/ Prosection / CBL / Dissection movies / Cyber Anatomy / Models with Museum Atlas

Embryology

Integumentary System	• Describe the development of skin, hair, glands, nail, mammary glands and tooth • Enlist common anomalies
Development of Pharyngeal Arches	• Describe the development of pharyngeal arches • Describe the components of pharyngeal arches • Enumerate the components developing from all three layers of each arch • Describe the anomalies associated with them.
Development of pharyngeal pouches	• Describe the development of pharyngeal pouches and membranes • Describe the components of pharyngeal pouches and membranes • Describe the features of anomalies associated with the development of pouches and membranes
Development of face	• Describe the role of frontonasal prominences, maxillary prominences and mandibular prominences in development of face • Describe the formation of of oblique facial clefts • Describe the features of Congenital microstomia
Development of palate	• Describe the stages of development of primary palate • Describe the stages of development of secondary palate • Describe the process of development of Cleft Lip and Cleft palate
Tongue	• Describe the development of tongue • Describe the anomalies associated with development
Development of nose	• Describe the development of nose • Describe the development of paranasal sinuses & nasal conchae
Development of Thyroid and parathyroid glands	• Enumerate the arches from which thyroid and parathyroid glands develop. • Describe the mechanism of descent of thyroid and parathyroid glands during development. • Describe the features of congenital hypothyroidism • Enumerate congenital anomalies of thyroid gland • Describe thyroglossal cyst. • Describe clinical features of thyroglossal cyst
Development of adrenal glands	• Describe the development of adrenal glands • Describe the process of differentiation of fetal cortex into adult cortex • Enlist congenital anomalies of adrenal gland
Development of Eye-I	• Describe the development of optic cup • Relate the differentiation of wall of optic cup with the formation of sclera and cornea • Enlist developmental anomalies of sclera and cornea
Development of Eye-II	• Describe the development of ciliary body, ciliary muscles and retina • Describe the differentiation of mesenchyme into chambers of eye. • Describe the transformation of optic stalk into optic nerve

	• Enlist related common anomalies • Describe the anatomical structures involved in congenital retinal detachment
Development of external ear	• Describe the embryological development of external & middle ear • Describe the associated developmental anomalies
Development of inner ear	• Describe the embryological development of inner ear. • Describe the differentiation of otic vesicle into different parts of inner ear • Describe the anomalies related to the development of inner ear

Histology

Skin	• Describe components of skin,nail,hair. • Explain histological difference between thick and thin skin • Describe the various appendages of skin • Draw labeled diagram of thick and thin skins on sketch book
Lip &Tongue	• Describe the histological features of lip & tongue with the help of microscopic images. • Identify the microscopic features on given slides ➢ Lip ➢ Tongue • Draw labeled diagrams of identified tissue
Histology salivary glands	• Describe components of salivary glands • Identify the following on given slides: ➢ Parotid gland ➢ Submandibular gland ➢ Sublingual glands • Draw labeled diagrams of identified tissue
Histology of pituitary gland	• Describe the various parts of pituitary gland. • Identify the gland under the microscope and write two points of identification for the gland • Identify the various hormonal disorders of pituitary gland
Thyroid Gland & Parathyroid Gland	• Describe histological features of thyroid and parathyroid gland • Describe the role of thyroid follicular cells in thyroid disorders • Identify the microscopic features of thyroid and parathyroid gland under microscope on the given slide. • Draw labeled diagram of the identified tissue on the histology note book
Adrenal Gland	• Describe the histological features of adrenal gland • Describe the cell types present in zones of adrenal gland and enumerate the hormones produced by each zone • Identify the histological features of adrenal gland under microscope. • Draw labeled diagrams of the identified tissues on the histology notebooks
Pancreas	• Describe the histological features of islets of Langerhan's • Describe the cell types present in islets of Langerhan's • Draw labeled diagrams of the identified tissues on the histology notebooks

Larynx	• Different layers of larynx • Histological characteristics of each layer of larynx • Histological classification of laryngeal cartilage
Nose	• Describe the different types of mucosa of the different parts of the nose • Histology of nasal cartilage

List of Practical work:

1. Thyroid gland
2. Pituitary gland
3. Pancreas (islets) and adrenal gland
4. Lip
5. Tongue
6. Salivary glands
7. Nose and larynx
8. Skin and appendages

Second Professional MBBS Examination (2020)

ANATOMY

Table of Specifications for Annual 2nd Professional Examination: Theory

Time Allowed =03 hrs. *(Including MCQs)*
Marks of theory paper =90
Internal assessment =10
Total marks =100
Pass Marks =50

Paper-1

45 x MCQs (45 Marks) Time =50 min

Paper-2

Q. No. 1,2,3,4,5,6,7,8,9
5x SAQs/SEQs (Recall) = 05 marks each
4x SAQs/SEQs (Application) = 05 marks each
Total Marks = 45 Marks Time = 2 hours & 10 min

S.No	Topic	NUMBER OF MCQs (45) Recall: 25 Application: 20 1 mark each	NUMBER OF SAQs/SEQs (09) 05 marks each	
			Recall	Application
1.	Special Embryology	08	01	01
2.	Special Histology	09	01	-
3.	Abdomen Pelvis & Perineum	10	01	01
4.	Head and neck	10	01	01
5.	Brain & Neuro Anatomy	08	01	01
Total		45 (45 Marks)	05 (25 Marks)	04 (20 Marks)
			09 (45 Marks)	

Theory: Internal Assessment (IA) Calculation

A	B	C	D
Roll No.	Name	All Modules/ Pre annual Exams or any other exam	Total Marks of internal assessment Out of 10
Total Marks		Sum of Marks obtained x10/ sum of total marks in all exams	

Table of Specifications for Annual Professional Exam: Practical

VIVA 50 marks		Practical 40 marks				Total
		Non Observed OSPE		Observed station OSPE	Histology Manual	
Internal Examiner	External Examiner	Gross embryology, & X – rays	Histology	Long Slides 05 marks. Surface marking 02 marks.		
25 Marks	25 Marks	20* Marks	10 Marks	07 Marks	03 marks	90 mark

* 10 stations (2 Abdomen and Pelvis, 2 Head & Neck, 2 Brain, 2 embryology, 2 radiology)

Practical: Internal Assessment Calculation

A	B	C	D
Roll No.	Name	OSPE /Practical Class tests throughout the year /Pre annual Practical Exams or any other exam	Total Marks of internal assessment Out of 10
Total Marks		Sum of Marks obtained x10/ sum of total marks in all exams	

BOOKS RECOMMENDED FOR MBBS/BDS

GROSS ANATOMY	
Text Books	**Reference Books**
Clinically oriented Anatomy By Keith L Moore (7th Edition)	LAST`s Anatomy Regional & Applied (12th Edition)
Clinical Anatomy for medical students By Richard S. Snell (9TH Edition)	Gray`s Anatomy By Henry Gray`s (40th Edition)
Cunningham`s manual of practical anatomy 15th Edition **Vol-1, II** (Upper limb, Lower limb & Thorax) (Only For 1st year MBBS) **Vol-3** (Head & Neck, Brain) (Only For BDS) **Photocopy** of "General Introduction" from Cunningham's manual Vol-I (Page 1-19) (Only For BDS)	Atlas of Anatomy By Netter (6TH Edition)/ Atlas of Anatomy By Grant`s
Sketch book Gross CMH	
Clinical Neuroanatomy By Richard S. Snell (7th Edition) only for BDS	Atlas of Anatomy By Netter (6TH Edition)/ Atlas of Anatomy By Grant`s

EMBRYOLOGY	
Text Books	**Reference Books**
Langman's Medical Embryology(13th Edition)	Netter's Embryology Atlas
The Developing Human By Keith L-Moore (10th Edition)	

HISTOLOGY	
Text Books	**Reference Books**
Basic Histology By Luiz carlos Junqeira (14th Edition)	Medical Histology by Prof. Laiq Hussain (6th edition)
Di-fiore`s Atlas of Histology (12th Edition)	Histology By Michel H. Ross (6th Edition)