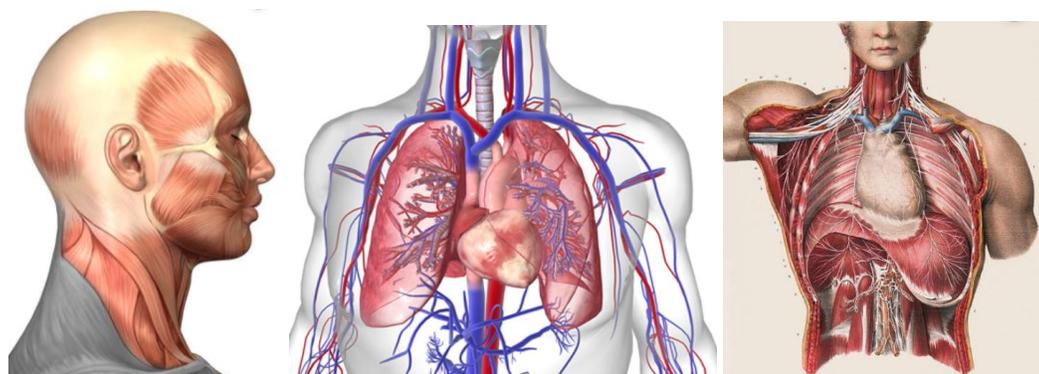




Study Guide
OF ANATOMY
FOR 2ND PROFF MBBS
2019-2020



PREPARED BY
DR. MUHAMMAD ALI TAHIR
M.B.B.S

MESSAGE FROM PRINCIPAL, AVICENNA MEDICAL COLLEGE



PROF. DR. GULFREEM WAHEED

It is a pleasure to see Avicenna Medical College develop, progress and achieve maximum academic excellence in a short period since its inception in 2009. The institution has lived up to its mission of training and producing medical graduates of international standards. We have achieved several milestones since 2009 including the recognition of our College for FCPS training by the College of Physicians and Surgeons of Pakistan (CPS), establishment of College of Nursing and Avicenna Dental College.

As a Principal I am fortunate to take quick decisions and student-friendly measures, yet managing the high standards of Medical Education at the campus. The students at Avicenna are provided with an encouraging environment conducive to their learning and growth and are trained on the pattern test concepts and strategies in Medical Education. They are groomed on modern lines with due emphasis on the highest standards of discipline, Medical Professionalism, Medical and Social ethics in conformity to our cultural and religious values. These attributes along with an inclination towards research and development in academics is the focal point of our education system. Beyond this, we provide students with various opportunities to engage in co-curricular activities thus enabling them to bring out their naturally gifted talent. The student committee and clubs at Avicenna Medical College organize events throughout the academic year which provide an opportunity to the students to enhance their talents and ability for teamwork. As an institution, we feel pride in the fact that we have won the confidence of the parents, who feel satisfied with the conservative yet progressive atmosphere of our Institution, high standards of Medical Education and discipline. Most parents show complete satisfaction once their child joins the 'Avicenna Family'. I welcome the batch of MBBS students to the continuously expanding family of Avicenna Medical College where diligent and devoted faculty members are ready to facilitate eager learners, enabling them to become future professionals and leaders. May Allah bless your endeavors with success and may you bring honors to your Alma Mater. Ameen!

MESSAGE FROM HOD, ANATOMY**AVICENNA MEDICAL COLLEGE****Prof. DR. ZARA HAIDER****PROFESSOR /H.O.D.**

The Anatomy curriculum has a balanced approach with a combination of dedicated lectures, dissections, and demonstration of cadavers, micro-study of individual organs and teacher-student interactions in the form of seminars and symposia. Lectures are made lively with the use of multimedia devices and students are divided into groups for better understanding & learning. The Dissection Hall (2,400 sq ft) with adjoining mortuary for 12 bodies, a well-equipped Bone bank, an Anatomy Museum and a separate Histology lab with slide preparation room facilitate the dissemination of knowledge among students and enable them to understand the concepts in an effective manner.

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WHAT IS A STUDY GUIDE?

- ☐ Inform students how student learning program has been organized according to their learning objectives.
- ☐ Help students organize and manage their studies throughout the course.
- ☐ Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

- ☐ Communicates information on organization and management of the course. This will help the student to contact the right person in case of any difficulty.
- ☐ Defines the objectives which are expected to be achieved at the end of the course.
- ☐ Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case-based learning that will be implemented to achieve the course objectives.
- ☐ Provides a list of learning resources such as books, computer assisted learning programs, web-links, journals, for students to consult in order to maximize their learning.

STUDENT'S OVERALL PERFORMANCE:

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

ACHIEVEMENT OF OBJECTIVES:

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

INTRODUCTION TO DEPARTMENT

The subject of Anatomy is one of the basic subjects of medical sciences which is taught in the first and second year of MBBS program. The courses within the domain of Anatomy include General Anatomy, Histology or Microscopic Anatomy, Embryology or Developmental Anatomy, Regional or Gross Anatomy and Neuroanatomy. The department offers a modern integrated teaching system for students. The teaching hours are in accordance with the recommendations of Pakistan Medical and Dental Council. Our teaching methodology includes small group interactive sessions, case based learning sessions, dissection/ demonstrations and practical's.

The Anatomy Department of Avicenna Medical College is comprised of:

DISSECTION HALL

A spacious and well lit dissection hall to accommodate 150 students at a time, having a mortuary with a capacity of eight bodies, cadaveric specimens and multimedia to facilitate the students during demonstrations.

ANATOMY MUSEUM

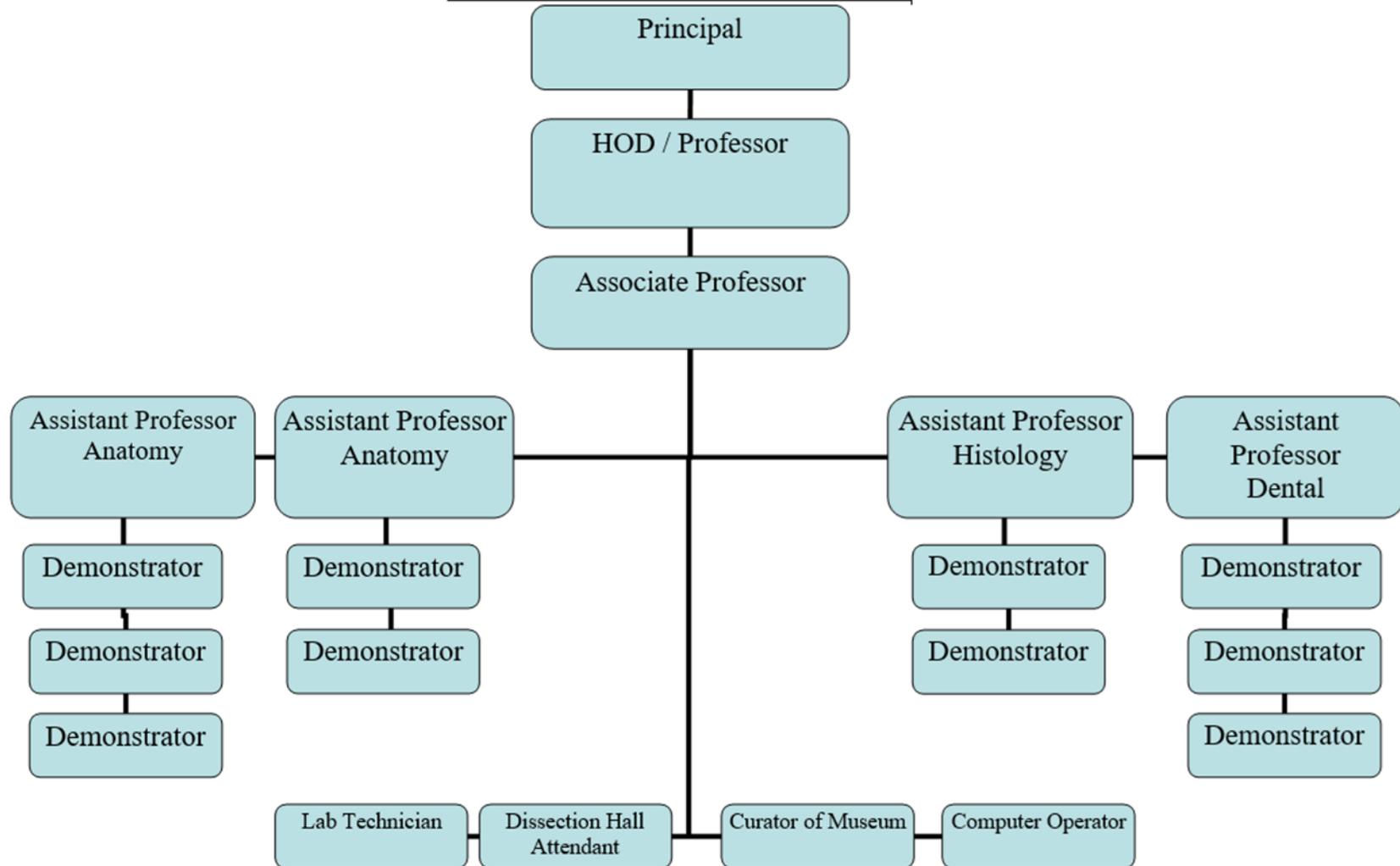
It is well equipped with models of Gross anatomy, Embryology, Histology and Neuroanatomy. It has X-rays and cross-sectional models for teaching radiological and cross-sectional anatomy. Articulated and disarticulated skeletons with a bone bank is also available.

HISTOLOGY LABORATORY

The department is equipped with a furnished, spacious and well ventilated histology laboratory with binocular microscopes and a slide projecting microscope with LED screen for demonstration of histological slides to the students.

GOALS OF THE DEPARTMENT

- To offer educational opportunities and convey emerging scientific knowledge to the students that contributes to improve personal development and professional fulfillment.
- To maintain the highest standards of ethical and professional conduct.
- To provide the students with a thorough introduction of the characteristics, structure, development, function and clinical significance of the human body.
- To recognize anatomical structures, appreciate their developmental processes and apply their knowledge of anatomy to the cases that they will encounter during their clinical training and future careers as medical practitioners.

DEPARTMENT OF ANATOMY

Avicenna Medical College
Calender 2019 - 2020
2nd Year M-18

Date: 28 JAN 2020

January 2020							February 2020							March 2020							SESSION START : 2020 SESSION END :				
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa					
			1	2	3	4	2							1	7	1	2	3 Lipid.1	4	5	6 Lipid.2	7	Winter vacations: 25 Dec 2019 To 5th Jan 2020		
5	6	7	8	9	10	11	3	2	3	4 ETC.	5	6	7 Endo1	8	8	8	9	10 S3 Abd	11	12	13 E&Rep.1	14			
	12	13	14	15	16	17	4	9	10	11 S1 Abd	12	13	14 CHO.1	15	9	15	16	17 Rep.2	18	19	20 Protein.1	21	White Coat Ceremony: 24 Jan 2020 Farewell Final Year: 25 Jan 2020 Sports day = 31 Jan 2020 Fumfire: 1 Feb 2020		
1	19	20	21	22	23	24	5	16	17	18 CHO.2	19	20	21 E1	22	SP.V	22	23	24	25	26	27	28			
	2	26	27	28	29	30	6	23	24	25 S2 Abd	26	27	28 Endo2	29	SP.V	29	30	31					Trips and Tours: 2020 Kashmir Holiday: 5 Feb 2020		
April 2020							May 2020							June 2020							Early Session:				
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa					
			1	2	3	4	13 R						1 Phy Endo2	2 Phy Repro	18		1	2 S2 H&N	3	4	5 Molbr.Sys	6	Spring Vacation: 22 Mar 2020 TO 5 Apr 2020		
10	5	6	7 E2	8	9	10 S4 Pel	11	14 R	3 Phy Sens.	4 Bio ETC+CHO.1	5 Bio CHO.2	6 Bio Lipid	7 Bio Protien	8 Ana Abd.1	9 Ana Abd.2	19	7	8	9 S3 H&N	10	11	12		13	
	11	12	13	14 FS Abd.Pel	15	16	17 Protein.2	18	15 E SE	10 Ana Pel	11 Ana H&N	12 Embryo	13 Hsto	14	15	16 Ana	20	14	15	16 Nuc.Met	17	18	19 E3	20	Ramadan : 25 April 2020 Labor Holiday: 1 May 2020
	12	19	20	21 H1	22	23	24 Sens.	25	16 E SE	17	18 Phy	19	20 Bio	21	22	23	21	21	22	23 S4 H&N	24	25	26 Water & ABR	27	
	13 R	26	27	28 S1 H&N	29	30 Phy Endo1		17.EID	24	25	26	27	28	29	30	22	28	29	30 HBF					Mid Session : Eid-ul-Fitar : 24 May 2020 Eid-ul-Fitar holidays : 22 May 20 - 26 May 20 Summer Vacation 2: 19 July 2020 TO 2 Aug 2020 Eid-UI-Adha: 31 July 20 - 2 Aug- 20	
								18	31																
July 2020							August 2020							September 2020							Muharram = 28 , 29 Aug 2020 Rabi Ul Awwal Holiday: 29 Oct 20 Send up Exam :				
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa					
			1	2	3 Xeno+Onco	4	SU.V						1	29 R			1 Phy	2 Phy	3 Phy	4 Phy	5 Phy				
	23	5	6	7 H2	8	9	10 S5 H&N	11	25	2	3	4 Renal.2	5	6	7 Genetics.1	8	30 R	6 Phy	7 Phy	8 Ana	9 Ana	10 Ana	11 Ana	12 Ana	
	24	12	13	14 FS H&N	15	16	17 Renal.1	18	26	9	10	11 Genetics.2	12	13	14	15	31.MSE	13 Ana	14 Ana	15 Ana	16	17	18 Ana	19	Rabi Ul Awwal Holiday: 29 Oct 20
	SU.V	19	20	21	22	23	24	25	27	16	17	18 Renal.3	19	20	21 H3	22	32.MSE	20	21 Phy	22	23	24 Bio	25 O	26 O	
	SU.V	26	27	28	29	30		28 R	23	24	25 S1 Brain	26 Bio	27 Bio	28 Bio	29 Bio	33	27	28 O	29	30					
								29 R	30 Bio	31 Bio															
October 2020							November 2020							December 2020											
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa					
				1	2	3	38	1	2	3	4	5	6	7											
	34	4	5	6	7	8	39	8	9	10	11	12	13	14			6	7	8	9	10	11	12		
	35	11	12	13	14	15	40	15	16	17	18	19	20	21			13	14	15	16	17	18	19		
	36	18	19	20	21	22		22	23	24	25	26	27	28			20	21	22	23	24	25	26		
	37	25	26	27	28	29		29	30								27	28	29	30	31				

AVICENNA MEDICAL COLLEGE											
M-18		2nd YEAR		TIME TABLE SESSION 2020-2020				WEEK		BASIC	
DATE	DAY	8.00-9.00	9.00-10.00	10.00-11.30	11.30-12.00	12.00-1.30		1.30-2.30			
	MON	LECTURE PHYSIOLOGY <u>LECTURE THEATER : 2</u>	LECTURE SP. HISTOLOGY <u>LECTURE THEATER : 2</u>	LECTURE GROSS ANATOMY <u>LECTURE THEATER : 2</u>	B R E A K	TUTORIAL DH GROSS ANATOMY -BATCH: A SP. EMBRYOLOGY- BATCH: B PHYSIOLOGY-BATCH: C SELD DL (BIOCHEMISTRY)-BATCH : D		LECTURE BIOCHEMISTRY <u>LECTURE THEATER : 2</u>			
	TUE	8.00-10.00 GRAND TEST <u>EXAMINATION Hall</u>		10.00-11.30 TUTORIAL KEY DISCUSSION /VIVA		TUTORIAL DH GROSS ANATOMY-BATCH: B SP. EMBRYOLOGY-BATCH : C PHYSIOLOGY-BATCH: D SDL (BIOCHEMISTRY)-BATCH : A		LECTURE PHYSIOLOGY <u>LECTURE THEATER : 2</u>			
	WED	LECTURE PHYSIOLOGY <u>LECTURE THEATER : 2</u>	LECTURE BIOCHEMISTRY <u>LECTURE THEATER : 2</u>	PRACTICAL BATCH A : DH GROSS ANATOMY BATCH B : HISTOLOGY BATCH C : BIOCHEMISTRY BATCH D : PHYSIOLOGY		TUTORIAL DH GROSS ANATOMY-BATCH: C SP. EMBRYOLOGY-BATCH : D PHYSIOLOGY-BATCH : A SDL (BIOCHEMISTRY)-BATCH : B		LECTURE GROSS ANATOMY <u>LECTURE THEATER : 2</u>			
	THU	LECTURE SP. EMBRYOLOGY <u>LECTURE THEATER : 2</u>	LECTURE PHYSIOLOGY <u>LECTURE THEATER : 2</u>	PRACTICAL BATCH B : DH GROSS ANATOMY BATCH C : HISTOLOGY BATCH D : BIOCHEMISTRY BATCH A : PHYSIOLOGY		TUTORIAL DH GROSS ANATOMY-BATCH: D SP. EMBRYOLOGY-BATCH: A PHYSIOLOGY-BATCH : B SDL (BIOCHEMISTRY)-BATCH : C		LECTURE BIOCHEMISTRY <u>LECTURE THEATER : 2</u>			
	FRI	8.00-10.00 GRAND TEST <u>EXAMINATION Hall</u>		10.00-10.30 KEY DISCUSSION/VIVA		10.30-12.00 PRACTICAL BATCH C : DH GROSS ANATOMY BATCH D : HISTOLOGY BATCH A : BIOCHEMISTRY BATCH B : PHYSIOLOGY	12.00-1.00 LECTURE GROSS ANATOMY <u>LECTURE THEATER : 2</u>				
	SAT	LECTURE BIOCHEMISTRY <u>LECTURE THEATER : 2</u>	LECTURE MEDICINE/ BEH. SCIENCE/EYE/ENT <u>LECTURE THEATER : 2</u>	PRACTICAL BATCH D : DH GROSS ANATOMY BATCH A : HISTOLOGY BATCH B : BIOCHEMISTRY BATCH C: PHYSIOLOGY	B R E A K	12.00-12.45 LECTURE SP. EMBRYOLOGY/ PHYSIOLOGY <u>LECTURE THEATER : 2</u>	12.45-1.30 LECTURE SURGERY/ COM.MEDICINE/PATHO LOGY/OBG/PAEDS <u>LECTURE THEATER : 2</u>	LECTURE ISLAMİYAT/ PAK. STUDIES <u>LECTURE HALL 2</u>			

Prepared by _____

Principal
Prof.Dr.Gulffreen Waheed _____



DEPARTMENT OF MEDICAL EDUCATION

Subject: Anatomy - 2nd Yr MBBS

GENERAL ANATOMY

TABLE OF SPECIFICATION

Date: 18th Nov. 2019

PMDC Requirement =

AVICENNA Curriculum Hour = 266 Hours

Sr. No.	Topic	LEARNING OBJECTIVES	KNOWLEDGE			SKILL	ATTITUDE	TOTAL %	Mode of information transfer				TOTAL HOURS	Lecture Topics	References	Practicals
			Cognitive Domain			Psychomotor Domain	Effective Domain		MIT							
			C1	C2	C3	P	A		Lecture	Tutorial	Practical	Clinical Rotation				
1	Head	Student should be able to:												KLM		
a	Skull and Mandible	1. Describe the different parts of neurocranium and viscerocranium. 2. Describe the internal surface of the cranial base; the three fossae 3. Enumerate the structures passing through the different cranial foramen 4. Differentiate between the adult and neonatal skull 5. Describe the different parts of mandible 6. Understand and reproduce the applied aspects of skull and mandible						2hrs.		6hrs.		8hrs.	1. Introduction of skull and bones of head and neck region 2. Applied Anatomy of Cranium 3. Structure of the Mandible	822 - 836 982 - 984 837 - 842	1. Views of Skull (Anterior, Superior, Posterior, Lateral, Inferior) 2. Anterior , Middle and Posterior Cranial fossae Mandible	
b	Scalp and Face	1. Describe the layers of scalp, its blood supply and nerve supply 2. Identify the muscles of the face and their nerve supply 3. Describe the cutaneous nerve supply, blood supply and lymphatic drainage of the face 4. Discuss and describe the applied aspects of Facial Anatomy						2hrs.		3hrs.		5hrs.	1. Scalp, Face and vasculature, Trigeminal nerve 2. Nerves of face and scalp, Facial nerve 3. Applied Anatomy of face and scalp	842 - 849 855 - 859 1065 849 - 853 1068 837 - 842 860 - 864	1. Muscles of face and Scalp	
c	Meninges and dural venous sinuses	1. Enumerate and describe the membranous coverings of brain 2. Enumerate and describe the dural venous sinuses						1hrs.		1.5hr.		2.5hrs.	1. Meninges and venous sinuses, Applied Anatomy	867 - 877	1. Meninges and venous sinuses	
d	Eye, Orbit, Orbital region and eyeball	1. Identify describe the walls of the orbit 2. Identify and describe the layers, neurovasculature and muscles of the eyeball 3. Locate and identify the different parts and innervation of lacrimal apparatus 4. Understand the mechanism of accommodation and it's clinical significance						2hrs.		1.5hr.		3.5hrs.	1. Orbit, eyelid, Lacrimal apparatus and eyeball 2. Extraocular muscles and neurovasculature of the orbit 3. Cranial nerves of the orbit (optic, oculomotor, trochlear and abducent, and ophthalmic nerves) 4. Applied Anatomy of the orbit	889 - 898 898 - 907 1061 - 1064 1068 908 - 913	1. Orbit 2. Extraocular muscles 3. Eyeball	

e	Parotid and Temporal regions, Infratemporal fossa and TMJ	1. Identify the Parotid region and describe the parotid gland along with its innervation											1. Parotid Region and Applied Anatomy	914 - 916 926 - 927	1. Parotid region	
		2. Locate the boundaries and contents of temporal and infratemporal fossae												2. Temporal and Infratemporal Fossae and contents	916 921 - 926	2. Temporal and infratemporal fossa
		3. Explain the type, articulation, ligaments, movements and muscles producing the movements of TMJ along with its neurovasculature						2hrs.			1.5hr.		3.5hrs.	3. Temporomandibular Joint, muscles of mastication and Applied Anatomy along with Mandibular Nerve	916 - 921 927	3. TMJ and Muscles of mastication
		4. Enumerate the muscles of mastication and recall their origin, insertion, nerve supply and action														
f	Oral Region	1. Describe the oral cavity, tongue along with its neurovasculature and lymphatic drainage														
		2. Describe the formation, muscles and neurovasculature of the hard and soft palate						2hrs.			3hr.		5hrs.	1. Oral cavity, Palate	928 - 930 934 - 937	1. Oral cavity and Palate
g	Salivary glands	1. Enumerate and describe the salivary glands along with their location and innervation											1. Tongue, Salivary glands and Applied Anatomy of oral region, hypoglossal nerve	938 - 950 1075	1. Tongue and salivary glands	
h	Pterygopalatine region	1. Identify and describe the boundaries and contents of the pterygopalatine fossa											1. Pterygopalatine fossa and contents and Maxillary Nerve	951 - 954	1. Pterygopalatine fossa	

i	Nose	1. Describe the Skeleton of the nose 2. Describe the boundaries and features of the nasal cavities along with its neurovasculature 3. Enumerate, locate and describe the paranasal sinuses							1hr.		1.5hrs.		2.5hrs.	1. Nose and Paranasal sinuses, olfactory nerve	955 - 965 1054	1. Nose
j	Ear	1. Locate and identify the different parts of the ear along with their features and contents. 2. Describe the neurovasculature of different parts of ear							2hrs.		1.5hrs.		3.5hrs.	1. Ear and Applied Anatomy, vestibulocochlear nerve	966 - 980 1071	1. Ear
2	Neck	Students should be able to:														
a	Bones	1. Enumerate, describe and differentiate between the cervical vertebrae 2. Describe the hyoid bone and its clinical significance							1hr		1.5hr		2.5hrs.	1. Cervical Vertebrae and the Hyoid Bone		1. Cervical vertebrae and Joints
b	Fascia	1. Enumerate and describe the attachments of the layers of the deep cervical fascia. 2. Locate and describe the carotid sheath along with its contents							1hr.		1.5hr.		2.5hrs.	1. Fascia of the neck and applied	985 - 989	
c	Triangles of neck	1. Locate and describe the boundaries and contents of the anterior and posterior triangles of the neck							1hr.		1.5hr.		2.5hrs.	1. Triangles of Neck, Accessory nerve	989 - 990 1075	1. Triangles of neck
d	Deep structures of neck	1. Enumerate and describe the roots and branches of the cervical plexus 2. Describe the chain of lymph nodes present in the neck region 3. Locate and describe the course of external carotid artery and enumerate its branches 4. Identify and describe the structure present at the root of the neck							2hrs.		1.5hrs.		3.5hrs.	1. Deep structures of neck	1012 - 1017	1. Viscera of neck
														2. Suboccipital triangle	492	2. Suboccipital triangle
														3. Neurovasculature of Cervical region	992 - 999	

j	Thalamus	1. Describe the location, subdivisions and nuclei of thalamus 2. Describe the connections and functions of thalamus						1hr.		1.5hrs.		2.5hrs.	1. Diencephalon, Thalamus	372-377	
k	Hypo-thalamus	1. Describe the location and nuclei of hypothalamus 2. Describe the connections and functions of hypothalamus						1hr.		1.5hrs.		2.5hrs.	1. Hypothalamus, Applied Anatomy of Diencephalon	382-392	
l	Meninges of brain and spinal cord	1. Enumerate and describe the membranous coverings of brain 2. Enumerate and describe the dural venous sinuses						1hr.		1.5hrs.		2.5hrs.	[Covered in Head and Neck anatomy]		
m	The Ventricular System	1. Describe the boundaries of lateral, third and 4th ventricles. 2. Describe the choroid plexus 3. Understand and reproduce the formation, circulation and absorption of CSF 4. Locate the subarachnoid space and its cisterns 5. Understand the formation of BB barrier and BCSF barrier						1hr.		1.5hrs.		2.5hrs.	1. Lateral ventricle 2. Third and Fourth Ventricle 3. Circulation of CSF	446-449	1. 4 th ventricle 2. 3 rd ventricle 3. Lateral Ventricle 4. Cisterns and Circulation of CSF
n	Blood supply of Brain and Spinal cord	1. Locate the internal carotid, vertebral and Basilar arteries 2. Enumerate the intracranial branches of internal carotid, vertebral and Basilar arteries 3. Understand and reproduce the formation of circle of Willis 4. Describe the arterial supply and venous drainage of each part of brain 5. Draw and label a diagram showing the blood supply of superolateral and medial surface of brain 6. Describe the blood supply of spinal cord						2hrs.		1.5hrs.		3.5hrs.	1. Circle of Willis and Blood supply of Brain, Applied Anatomy	475 - 481 483 - 493	1. Circle of Willis and Blood supply of Brain



DEPARTMENT OF MEDICAL EDUCATION

Subject: Anatomy - 2nd Yr MBBS

TABLE OF SPECIFICATION

PMDC Requirement = 250 Hours

GROSS ANATOMY

Date: 18th Nov. 2019

AVICENNA Curriculum Hour = 266 Hours

Sr. No.	Topic	LEARNING OBJECTIVES	KNOWLEDGE			SKILL	ATTITUDE	TOTAL %	Mode of information transfer				TOTAL HOURS	Lecture Topics	References	Practicals	
			Cognitive Domain			Psychomotor Domain	Effective Domain		MIT								
			C1	C2	C3	P	A		Lecture	Tutorial	Practical	Clinical Rotation					Hour
1	Abdomen	Student should be able to: 1. Discuss the regions, fascia, and musculature of the Anterior Abdominal wall, including it's nerve and bloody supply and lymphatic drainage. 2. Understand the basis of abdominal incisions 3. Understand the structure and clinical implications of the Inguinal Canal. 4. Understand the structure of the Scrotum, Testis, Epidymis, and Spermatic Cord. 5. Discuss the Peritoneum (Vertical and Horizontal disposition) 6. Explain the Extra-Hepatic Biliary Apparatus and the Liver 7. Discuss the Structure of the Stomach and Abdominal part of Oesophagus, along with related Hernias 8. Understand the structure of the Small Intestines 9. Understand the structure of the Large Intestine, along with blood supply of foregut, midgut, and hindgut. 10. Discuss the structure of the Pancreas and Spleen 11. Explain the structure of Abdominal Aorta and Inferior Vena Cava. 12. Explain the Portal Systemic Anastomosis and the Lymphatic System of the Abdomen 13. Explain the features of the Lumbar Vertebrae and Sacrum 14. Explain the features of the Intervertebral Joints 15. Discuss the structure of the Posterior Abdominal Wall along with associated muscles, and fascia and the Lumbar Plexus. 16. Explain the structure of Kidneys, Abdominal part of Ureter and Supra-renal Gland 17. Detail the Autonomic Plexuses															
								16 hrs	4 hrs	4 hrs	24 hrs		1. Overview of abdomen, Anterolateral abdominal wall (fascia, muscles) 2. Neurovasculature of Anterolateral abdominal wall 3. Applied Anatomy of anterolateral abdominal wall 4. Internal surface of Anterolateral abdominal wall, inguinal region, spermatic cord, scrotum and testis 5. Applied Anatomy of Internal surface of Anterolateral abdominal wall, inguinal region, spermatic cord, scrotum and testis 6. Peritoneum, peritoneal cavity and Applied Anatomy 7. Abdominal viscera – Esophagus, Stomach and Applied Anatomy 8. Small intestine and Applied Anatomy 9. Large intestines, Appendix and Applied Anatomy 10. Liver 11. Gall Bladder and biliary tract 12. Pancreas and Spleen 13. Applied Anatomy of Liver, Pancreas and Spleen 14. Diaphragm and Applied Anatomy 15. Posterior Abdominal Wall, muscles of the back and Applied Anatomy 16. Kidney, Ureter and Suprarenal gland 17. Applied Anatomy of Kidney, Ureter and Suprarenal gland 18. Autonomic Nervous System	183 - 193 193 - 196 197 - 199 201 - 211 211 - 215 217 - 225 226 - 238 254 - 257 239 - 246 257 - 258 246 - 253 258 - 261 268 - 277 278 - 281 263 - 268 281 - 288 306 - 309 316, 317 309 - 316 318 - 320 482 - 491 290 - 297 298 - 300 301 - 305	1. Abdominal planes and anterolateral Abdominal muscles 2. Inguinal canal(boundaries and contents) 3. Spermatic cord and contents 4. Scrotum and testes 5. Abdominal cavity and peritoneal folds 6. Abdominal viscera 7. Stomach and celiac trunk 8. Duodenum and Small intestines 9. Large intestines, Appendix 10. Mesenteric circulation 11. Liver 12. Gall bladder and biliary tract 13. Pancreas and Spleen 14. Relations of Abdominal viscera 15. Diaphragm 16. IVC 17. Abdominal Aorta and Branches 18. Posterior Abdominal Wall 19. Kidney and its Relation 20. Ureter 21. Lumber vertebrae		



DEPARTMENT OF MEDICAL EDUCATION

Subject: Anatomy - 2nd Yr MBBS

EMBRYOLOGY

TABLE OF SPECIFICATION

Date:

PMDC Requirement =

AVMC Curriculum Hours=

Sr. No.	Topic	LEARNING OBJECTIVES	KNOWLEDGE			SKILL	ATTITUDE	TOTAL %	Mode of information transfer			TOTAL HOURS Hour	Lecture Topics	References	Practicals
			Cognitive Domain			Psychomotor Domain	Effective Domain		MIT						
			C1	C2	C3	P	A		Lecture	Tutorial	Practical				
1	Central and Peripheral Nervous System	Student should be able to: 1. Explain the sources of development of nervous system 2. Explain development of the early brain regions 3. Detail the histogenesis of neural tube 4. Detail the development of supporting cells of the nervous system 5. Explain the process of rearrangement of neuroblasts to form lateral walls, roof and floor plate 6. Explain the development of ventral, dorsal and intermediate grey column 7. Detail the development of the Spinal Ganglia 8. Explain the development of Meninges and the change of spinal cord positions 9. Detail the process of myelination of nerve fibres 10. Understand the nature of congenital anomalies of Spinal Cord 11. Understand the significant of the flexure of the brain and the expansion of neural canal 12. Detail the events in the development of Hind Brain 13. Detail the development of the caudal and rostral part of myelencephalon 14. Detail the development of Metencephalon and Pons 15. Understand the process of the development of the Cerebellum 16. Discuss the histogenesis of the Cerebellum 17. Understand the development of the Midbrain 18. Discuss the development of the choroid plexus of ventricles, and formation and circulation of CSF 19. Understand the development of Forebrain (Prosencephalon) 20. Appreciate the significant and role of the Telencephalic Vesicle and the development of the Diencephalon 21. Understand the development of the Thalamus, Hypothalamus, Epithalamus, and the Pineal Gland 22. Understand the development of the Pituitary Gland 23. Appreciate the role and significance of Neurohypophysial but and Rathke's pouch 24. Understand the development of Pars Distalis, Tuberalis, and Intermedia 25. Understand the development of Pars Nervosa 26. Discuss formation and significance of the Pharyngeal hypophysis and Craniopharyngiomas 27. Understand the development of the Telencephalon 28. Discuss the development of Corpus Striatum 29. Understand the development of the lobes of the cerebral hemisphere 30. Understand the development of the parts of Lateral Ventricles 31. Discuss the histogenesis of the cerebral cortex 32. Discuss the significance of the cerebral commissures							7 hrs	2 hrs		1. Development of Spinal cord, Spinal meninges and Positional changes, Anomalies of Spinal cord 2. Development of Brain, flexures, Hind brain, Choroid Plexus and CSF 3. Development of Midbrain, Forebrain: Thalamus, Hypothalamus, Epithalamus, Pineal gland and Pituitary gland and its Anomalies 4. Development of Telencephalon, Birth defects of Brain 5. Development of peripheral and Autonomic Nervous System	392 - 398 398 - 406 406 - 410 410 - 423 423 - 426		

7	Development of Gastrointestinal Tract	<p>Student should be able to:</p> <ol style="list-style-type: none"> 1. State the derivatives of primitive gut 2. State the derivatives of foregut 3. Explain the development of oesophagus 4. Explain the development of stomach 5. Discuss the congenital anomalies associated with the development of the oesophagus and stomach 6. Explain the development of duodenum 7. Explain the development of the Liver 8. Explain the development of Gall Bladder, Cystic Duct, Common Hepatic Duct, and Common Bile Duct 9. Explain the development of Pancreas 10. Explain the development of Spleen 11. Discuss possible congenital anomalies in the development of the duodenum, liver, and pancreas 12. Explain the development and derivatives of Midgut 13. Explain the significance of Superior Mesenteric Artery 14. Explain the development of Caecum and the Appendix 15. Discuss the possible anomalies in the development of midgut 16. Explain the development of Hindgut 17. Explain the importance and fate of Cloaca and the development on Proctoduem 18. Explain the development of the Anal Canal 19. Discuss the nature of anomalies of the development of Hindgut 																						
8	Development of Urinary System	<p>Student should be able to:</p> <ol style="list-style-type: none"> 1. Discuss the development of the three sets of kidneys 2. Explain the derivatives and fate of Pronephroi, Mesonephroi, and Metanephroi 3. Discuss the significance of the metanephric diverticulum and metanephrogenic blastema 4. Discuss the positional changes and the changes in bloody supply of kidneys 5. Discuss the possible anomalies that can occur during the development of kidneys and their significance 6. Detail the formation of the urinary bladder along with positional changes with age 7. Detail the development of Urethra 8. Discuss the possible anomalies that can occur during the development of the Urethra and Bladder 																						



DEPARTMENT OF MEDICAL EDUCATION

Subject: Anatomy - 2nd Yr MBBS

HISTOLOGY

TABLE OF SPECIFICATION

Date:

PMDC Requirement =

AVMC Curriculum Hours=

Sr. No.	Topic	LEARNING OBJECTIVES	KNOWLEDGE			SKILL	ATTITUDE	TOTAL %	Mode of information transfer			TOTAL HOURS	Lecture Topics	References		Practicals
			Cognitive Domain			Psychomotor Domain	Effective Domain		MIT					Ref. Liaq Hussain	Ref. JUNQUEIRA	
			C1	C2	C3	P	A		Lecture	Tutorial	Practical					
1	Gastrointestinal Tract	Student should be able to 1. Describe the structure of lip and cheeks 2. Discuss the structure and functions of tongue, lingual papillae and taste buds 3. Understand the structure of the digestive tract and esophagus 4. Discuss the medical conditions associated with esophagus and nerve plexus 5. Describe the gastric glands of the mucosa and other layers of stomach 6. Discuss the importance of these glands 7. Compare and contrast the structures of cardiac, body, fundus and pyloric part of stomach 8. Discuss various types of clinical conditions associated with stomach 9. Discuss the histological structures and functions of mucosa and other layers of duodenum, jejunum and ileum 10. Describe the arrangements which increase surface area for absorption in small intestine 11. Explain the structural specifications present in the wall of colon 12. Discuss types of clinical conditions associated with small and large intestine 13. Correlate the structure of rectum and appendix with colon 14. Discuss the differences present in upper and lower half of anal canal 15. Discuss types of clinical conditions associated with appendix and anal canal 16. Enlist the major salivary glands and explain their histological structure 17. Discuss the duct system of salivary glands 18. Differentiate between types of salivary glands 19. Describe the microscopic structure of gall bladder and pancreas 20. Enlist the differences between pancreas and parotid gland 21. Discuss the liver's unique histologic organization and microvasculature 22. Identify the essential role of hepatocytes, hepatic sinusoids and space of disse 23. Explain the three interpretations of liver structure 24. Discuss types of clinical conditions associated with liver 25. Understand the duct system of liver	0.25%	2.25%	4%	3.25%					32.5 hrs	1. Oral cavity, lips, cheeks, palate, and Gums 2. Tongue 3. Pharynx, general structure of GIT 4. Esophagus 5. Stomach 6. Small intestine 1 7. Small intestine 2 8. Large intestine 1 9. Large intestine 2 10. Salivary glands - parotid, submandibular, and sublingual 11. Liver 1 12. Liver 2 13. Pancreas 14. Gall bladder	6 th ed Pg. No 191 - 192 195 192-194 197-199 200 200-206 206-209 209-211 211-213 213-214 215-218 221-224 224-228 220 228 228	14 th ed Pg. No 298 298-300 295-298 305-307 307-314 314-316 316-318 318-322 322-326 329-332 335-340 340-345 332-335 345-346	Identify and draw: 1. Lip 2. Tongue, taste bud 3. 4 coats of GIT 4. Esophagus upper 1/3 5. Esophagus lower 1/3 6. Stomach: Body, fundus and pyloric parts 7. Duodenum 8. Jejunum and ileum 9. Colon and rectum 10. Appendix 11. Salivary glands: parotid, submandibular 12. Sublingual gland 13. Liver 14. Pancreas 15. Gall bladder	

2	Urinary System	<p>Student should be able to:</p> <ol style="list-style-type: none"> 1. Discuss major characteristics of Renal cortex with reference to Renal Corpuscles and Blood Filtration 2. Enlist comparisons between the PCT and DCT 3. Tabulate the Histologic features and major functions of regions within renal tubules 4. Discuss the characteristics of the JG apparatus 5. Discuss tissues present in the wall of ureter 6. Discuss tissues of the wall of Urinary bladder and urethra 7. Recall types of clinical conditions associated with urinary system 	0.25%	0.50%	0.25%	1.50%					7.5 hrs	<ol style="list-style-type: none"> 1. Kidney 1 2. Kidney 2 3. Ureter, urinary bladder, urethra 	231-240	393-400	<ol style="list-style-type: none"> 1. Kidney 2. Ureter 3. Urinary bladder
3	Male Genital System	<p>Student should be able to:</p> <ol style="list-style-type: none"> 1. Describe the histological structure of TESTES 2. Enumerate the functions of Sertoli Cells and discuss their role in formation of blood testes barrier 3. Compare the major features, and important roles of male genital ducts 4. Enlist the accessory glands of the male reproductive tract and describe their histological structure and functions 5. Discuss various types of clinical conditions associated with male genital system 	0.50%	1.75	1.25%					7.5 hrs	<ol style="list-style-type: none"> 1. Testis 2. Epididymis, Vas Deferens 3. Seminal Vesicle, Prostate 	245-252	439-449	<ol style="list-style-type: none"> 1. Testis 2. Epididymis, Vas Deferens 3. Seminal vesicle, prostate 	
4	Female Genital System	<p>Student should be able to:</p> <ol style="list-style-type: none"> 1. Discuss the developmental stages of primordial follicle during ovarian cycle 2. Explain the role of LH in ovarian cycle 3. Describe the histologic features and functions of corpus luteum 4. Identify different parts of uterine tubes and the tissues present in its wall with their functional correlations 5. Discuss types of clinical conditions associated with female genital system 6. Describe the composition of uterine wall 7. Describe the cyclic structural modifications of endometrium during menstrual cycle 8. Link the changes taking place in ovary and uterus during ovarian and menstrual cycles 	0.50%	0.25%	1.25%	1.50%				7.5 hrs	<ol style="list-style-type: none"> 1. Ovary 2. Fallopian tubes, cervix, vagina 3. Uterus 	259-264	460-469	<ol style="list-style-type: none"> 1. Ovary 2. Fallopian tubes 3. Uterus 	

CURRICULUM OF ANATOMY

I. SPECIAL EMBRYOLOGY:

. SPECIAL EMBRYOLOGY:

Contents/topics	Outcomes / knowledge (the students should be able to understand the)
1. Development of body cavities	Development of pleural, pericardial and peritoneal cavities in embryo
2. Development of diaphragm	Formation of diaphragm from septum transversum, pleuroperitoneal membrane, dorsal mesentery of esophagus and muscular ingrowth
3. Development of Digestive System	
a. Esophagus	Development of esophagus from endodermal foregut and its congenital anomalies
b. Stomach	Development of stomach from foregut, its mesenteries, rotations and final positions
c. Duodenum	Development from foregut and midgut derivatives.
d. Hepatobiliary apparatus	Development from hepatic and cystic diverticulum, concept of bare areas of liver and their congenital defects
e. Pancreas	Development from ventral and dorsal pancreatic bud. Formation of its ducts and congenital anomalies
f. Midgut	Rotations of midgut loop Physiological herniation and then retraction back. Positioning of different parts of midgut and its congenital anomalies
g. Hindgut	Formation of anorectal septum, partitioning of cloaca. Developmental basis of nerve supply and blood supply of anal canal and congenital defects
4. Development of Cardiovascular System	
1. Early development of heart and blood vessels	Appearance of primary and secondary heart field areas, angiogenesis and vasculogenesis
2. Formation of cardiac loop	Formation of different parts of hearts from heart tube

3. Development of sinus venosus	Fate of sinus venosus
4. Partitioning of atrioventricular canal	Formation of endocardial cushion and septum
5. Formation of interatrial septum	Appearance of septum primum and secundum to form interatrial septum.
6. Formation of interventricular septum	Formation of membranous and muscular septum
7. Partitioning of conotruncus	Appearance of the bulbar ridges and septum formation
8. Development of arterial system	Fate of the pharyngeal arch arteries
9. Development of venous system	Developmental basis of the formation of inferior and superior vena cavae
10. Fetal circulation and birth changes	Differences in fetal and after birth circulation and changes after birth
5. Development of Respiratory System	
a. Larynx	Development from foregut endoderm and pharyngeal arches
b. Trachea	Development of trachea from the respiratory diverticulum and partitioning from esophagus by tracheoesophageal fistula
c. Development and maturation of lungs	Developmental basis of formation of bronchial tree, different stages of lung maturation and production of surfactant
6. Development of Urogenital system	
a. Kidneys and ureters	Development of kidneys from pronephros, mesonephros and metanephros.
b. Urinary bladder and urethra	Formation of urorectal septum for partitioning of cloaca and separation of anterior urogenital part
c. Development of testis, genital ducts and external genitalia in male	Development from intermediate plate mesoderm, role of SRY gene., descent of testis and role of mesonephric duct
d. Development of ovaries, genital ducts and external genitalia in females	Formation of the cortical sex cords and Role of paramesonephric duct

7. Development of Head and Neck	
a. Pharyngeal arches	Developmental basis of six pharyngeal arches and their derivatives with specific blood and nerve supply
b. Pharyngeal pouches	Developmental basis of six pharyngeal pouches and their derivatives
c. Pharyngeal cleft and membranes	Components of pharyngeal apparatus and their derivatives
d. Tongue	Developmental basis of the appearance of mesenchymal swellings as tuberculum impar, copula and hypobranchial eminence to form different parts of tongue with specific nerve supply
e. Thyroid gland	Appearance of the thyroid diverticulum from ventral wall of foregut. Role of ultimobranchial body from 5 th arch
f. Face	Development of face from frontonasal, maxillary and mandibular prominences
G8. Palate	Development of primary and secondary palate from intermaxillary segment and maxillary prominences
8. Development of Eye	Appearance of optic cup and optic vesicles, outer pigmented layer and inner neural layer of optic cup develops into retina, iris and ciliary body. Developmental basis of the cornea and sclera.
9. Development of Ear	Appearance of the otic placode as thickening of surface ectoderm. Ventral and dorsal division of the auditory vesicles and its derivatives

<p>1. RESPIRATORY SYSTEM</p>	<p>1. Know the basic components of the conducting and respiratory portions of the system and describe distinctive structural features of each component related to particular functions in respiration.</p> <p>2. Know the types of cells present in the respiratory epithelium and their functions in respiration.</p> <p>3. Able to identify the trachea, bronchi, terminal bronchioles, respiratory bronchioles, alveolar ducts and alveoli of the respiratory tract on the basis of: epithelial cell types present, and relative amounts of glands, cartilage, smooth muscles and connective tissue fibers present in the wall of the tubes.</p> <p>4. Able to name the cellular and structural elements that form the blood-air barrier.</p>
<p>2. GASTROINTESTINAL SYSTEM</p>	<p>1. Know the location and histological similarities and dissimilarities among the different types of oral mucosae (lining, masticatory, specialized).</p> <p>2. Know the histology of the tongue including the different types of papillae.</p> <p>3. Able to describe the layers in the wall of the digestive tract (mucosa, submucosa, muscularis (propria), and adventitia/serosa), and explain how they differ in the pharynx, esophagus, and stomach.</p> <p>4. Know the histological differences in the pharynx and the upper, middle and lower portions of the esophagus.</p> <p>5. Recognize gastric glands, identify their constituent cells, and know their secretory products.</p> <p>6. Differentiate gastric glands, cardiac glands, and pyloric glands.</p> <p>7. Describe the layers in the wall of the digestive tract (mucosa, submucosa, muscularis externa and adventitia/serosa), and explain how they differ in the small and large intestines.</p> <p>8. Identify and know the general functions of the following regions of the GI tract: Duodenum Jejunum/ileum Colon Appendix Rectum Anal canal</p>
<p>3. GLANDS ASSOCIATED WITH GASTROINTESTINAL SYSTEM</p>	<p>1. Identify parotid, submandibular and sublingual salivary glands on the basis of histological appearance and by the types of secretion produced by each gland.</p> <p>2. Identify striated ducts of the salivary gland at the light and correlate the structural features of the constituent cells to the functions of these ducts.</p> <p>3. Know the localization of myoepithelial cells and nerves in relation to the acinar cells, and their role in secretory functions.</p> <p>4. Discuss the blood supply of the liver</p> <p>5. Define the concept of the classic liver lobule and recognize it in histological tissue sections</p> <p>6. Learn about the structure of portal triads and identify its components</p> <p>7. Understand the structure of hepatic cords and liver sinusoids</p>

	<p>8. Learn about and identify the cells of the liver tissue: hepatocytes, Kupffer cells, endothelial cells and Ito cells</p> <p>9. Discuss the functions and ultrastructural features of hepatocytes</p> <p>10. Understand the concept of the Acinus of Rappaport</p> <p>11. Discuss the production of bile and the cellular structures involved</p> <p>12. Study the histological features of the gallbladder</p> <p>13. Discriminate between exocrine and endocrine pancreas</p> <p>14. Discuss the cellular structure of an exocrine pancreatic acinus and its function</p> <p>15. Identify intercalated ducts and centroacinar cells</p> <p>16. Recognize Islets of Langerhans (endocrine pancreas)</p> <p>17. Discuss the various types of endocrine pancreas cells</p>
4. URINARY SYSTEM	<p>1. Understand the organization of the renal corpuscle and the cells present within it.</p> <p>2. Describe the filtration barrier between blood and urine in the renal corpuscle.</p> <p>3. Name the divisions of the nephron, and specify their location</p> <p>4. Relate the histological specializations found in specific divisions of the nephron to the functions of that division.</p> <p>5. Describe the blood supply of the kidney.</p>
4. MALE REPRODUCTIVE SYSTEM	<p>1. Recognize germ cells at different steps of spermatogenesis in the seminiferous tubule, and 2. Explain which steps involve meiosis, and which involve cellular differentiation into sperm (spermiogenesis).</p> <p>3. Recognize Sertoli cells and Leydig cells, and explain their roles in the production of sperm and regulation of the male reproductive system.</p> <p>4. Recognize the various parts of the male reproductive tract in histological section, and explain the contribution of each part to the production of semen for the final ejaculate.</p> <p>5. Recognize and understand the histological organization of the prostate gland and know which regions are prone to benign hypertrophy compared to the regions in which most prostate cancers arise.</p> <p>7. Recognize and understand the histological organization of the penis and know the role of its components in erection and detumescence.</p>
5. FEMALE REPRODUCTIVE SYSTEM	<p>1. Understand and identify the stages of follicular growth (primordial, primary, secondary, tertiary), as well as the changes that occur in the follicular wall during pregnancy.</p> <p>2. Identify the regional variations in the structure of the oviduct.</p> <p>3. Describe the changes that occur in the ovary and oviduct during the menstrual cycle.</p> <p>4. Distinguish the cyclical alterations in the uterine endometrium and understand their hormonal bases.</p> <p>5. Describe the alterations and functional changes in the cytology of the cervix and vagina during the menstrual cycle, and during pregnancy.</p>
6. CENTRAL NERVOUS SYSTEM	<p>1. Identify tissues in the nervous system (nerves, cell bodies and ganglia, and white vs. gray matter in the spinal cord, cerebellum, and cerebrum).</p> <p>2. Describe the organization and understand some of the basic functions of regions of the:</p>

	<p>spinal cord (e.g. dorsal horn, ventral horn, lateral extension of the ventral horn, and dorsal nucleus of Clarke), cerebellum (e.g. molecular, Purkinje, and granule cell layers and the general interactions of the cells therein) cerebral cortex (e.g. layers I through VI, particularly pyramidal cells layers III and V)</p> <p>3. Observe ependymal cells of the choroid plexus, noting that these are the cells responsible for the production of CSF.</p> <p>4. Observe the 3-layered organization of the hippocampus and dentate gyrus (archicortex) as opposed to the 6-layered organization observed in other regions of the cerebral cortex (neocortex).</p>
7.ENDOCRINE SYSTEM	<p>1. Identify the parts of the pituitary gland, and describe their embryological origin.</p> <p>2. Name the cell types that produce the various hormones of the anterior pituitary, and know whether they are acidophils or basophils</p> <p>3. Describe the role of hypothalamic neurosecretion in the function of the posterior pituitary, and in the regulation of the anterior pituitary, and recognize the histological structures involved in these functions.</p> <p>4. Explain how structures seen in the thyroid gland, at both the light and electron microscope levels, are involved in the production of thyroglobulin, its storage, and its subsequent breakdown to yield thyroid hormones.</p> <p>5. Recognize the parathyroid gland in histological section, and within the gland identify the chief cells (source of parathyroid hormone) and oxyphil cells.</p> <p>6. Recognize the zones of the adrenal cortex that produce aldosterone and cortisol, and explain how the blood supply is arranged for efficient uptake of the hormones.</p> <p>7. Recognize the adrenal medulla in histological section, and explain the functional similarity of its cells to those of the sympathetic nervous system.</p>
8. EYE	<p>1. Understand the structural organization and functions of the various components of the eyelid and conjunctiva.</p> <p>2. Name the three layers of the eye, and describe the components of each at the level of the retina, lens and iris, and cornea. Relate retinal detachment to embryonic development of the eye.</p> <p>3. Explain the histological basis of glaucoma (including the source and path of flow of aqueous humor)</p> <p>5. Describe the ordered structures of cornea and lens that allow them to be translucent and explain how opacity can develop under pathological conditions.</p> <p>6. Describe the fovea, optic disk, and where blood vessels are located in the retina.</p>
9.EAR	<p>1. Know the structural differences between the outer, middle and inner ear and what their functions are.</p> <p>2. Recognize them at the light microscope and EM levels.</p> <p>4. Distinguish the auditory parts of the inner ear from those of the vestibular system. What are their roles in hearing and balance?</p> <p>5. What are sensory hair cells? How do they differ (in appearance and function) from neurons of the spiral ganglion?</p>

III. TOPIC. NEUROANATOMY

Contents	Outcomes/Knowledge (The student should be able to)
1. Introduction to nervous system	1. Describe the major organization of the nervous system, anatomical terms and planes section. 2. Explain the structure and function of neurons and glia 3. Describe the location/organization of grey matter and white matter in the CNS in general terms. • 4. Relate the three meningeal layers and the spaces between them
2. Spinal Cord	1. Describe the gross anatomy of the spinal cord and its relationship to the vertebral canal and the organization of blood supply to the spinal cord. 2. Identify the locations of the corticospinal tract, the posterior column-medial lemniscus system and the anterolateral system in a cross section of the spinal cord. 3. Identify the location of somatic sensory, visceral sensory, somatic motor and visceral motor neurons in the gray matter of the spinal cord. 4. Sketch the longitudinal course of the corticospinal tract, the posterior column-medial lemniscus system and the anterolateral system throughout the spinal cord and brainstem and demonstrate an understanding of somatotopic arrangement, site of crossing fibres, and modalities carried within these tracts. 5. Identify the meningeal layers around the spinal cord and relate these to the spaces between the border with and define. Explain the functional importance of these spaces for clinical practice.
3. Brain stem	1. Describe the major surface markings, including cranial nerve roots, of the brainstem and how they relate to tracts and structures within the brainstem. 2. Compare and contrast the corticobulbar tract to the corticospinal tract. 3. Describe the functional anatomy of the ascending and descending medial longitudinal fasciculus (MLF). 4. Identify the cranial nerves involved in eye movements on the surface of the brainstem and identify their nuclei within the brainstem on cross sections. 6. Explain the underlying pathways and connections of horizontal eye movements for saccadic and pursuit movements as well as the vestibulo-ocular reflex.
4. Cerebellum	Understand the location of the cerebellar vermis, cerebellar hemispheres, anterior lobe, posterior lobe, and flocculonodular lobe To learn the basic anatomical organization and functional roles of the cerebellum 2. To understand the anatomical and chemical organization of the cerebellar cortex (cell layers, cell types, transmitters 3. Know the blood supply of cerebellum 4. Describe the function of cerebellum
5. Diencephalon	Describe the nuclei and connections of thalamus

	<p>and epithalamus.</p> <p>2, Describe the nuclei and connections of hypothalamus and subthalamus.</p> <p>3. Describe the circumventricular organs of the brain</p>
6. Cerebrum	<p>1. Distinguish between the frontal, temporal, parietal, and occipital lobes of the cerebral cortex</p> <p>2. Describe the internal structure of the cerebrum.</p> <p>3. Describe the layers of the cerebral cortex.</p> <p>4. Describe the functional areas, their blood supply</p>
7. The basal nuclei and their connections	Describe the basal Nuclei, their connections, and their functions and relate them to diseases commonly affecting this area of the nervous system
8. Cranial nerves	Learn the basic information regarding the motor and sensory nuclei of the cranial nerves including their location and central connections
9. Autonomic nervous system	Understand the structure, physiology, and pharmacology of the autonomic nervous system
10. Meninges of the brain and spinal cord	<p>To learn the structure and function of the three meninges that surround the brain and spinal cord.</p> <p>Understand the venous sinuses within the skull and see how the meninges contribute to their walls.</p>
11. Ventricles and circulation of cerebrospinal fluid	Describe the parts and relations of the ventricular system
12. Blood supply of the brain and spinal cord	<p>1. Name the main blood vessels supplying the brain and spinal cord</p> <p>2. Identify the area of cerebral cortex and spinal cord supplied by a particular artery</p> <p>3. Describe the circle of Willis</p>

IV. GROSS ANATOMY

REGION. HEAD & NECK:

Contents	Outcomes/Knowledge (The student should be able to)
A. HEAD	
1. Bones of skull	1. Composition & names.
2. External views of skull	2. Various views of skull like anterior, lateral, posterior, superior, inferior & interior fossae (cranial cavity). The foramina & structures passing through these foramina of skull.
3. Neonatal skull	3. Features, different fontanelles, their locations & significance.
4. The Meninges & Dural venous sinuses	4. Types of meninges their reflections, nerve supply. Paired & unpaired venous sinuses, their locations, relations & communications.
5. The orbital region	4. Eyelids, the muscles of eye lids & eye ball, movements & nerve supply. Lacrimal apparatus including lacrimal gland, ducts, lacrimal sac & their nerve supply.
6. The orbit	6. Boundaries, openings into orbital cavity, orbital fascia, nerves of orbit, blood vessels & lymph vessels of orbit.
7. The Eye	7. Movements of eye ball, Extrinsic & intrinsic muscles, their nerve supply, fasci sheaths of eye ball, structure of eye ball & contents of eye ball.
8. The Ear	8. Structure of external, middle & internal ear, muscles of middle ear their nerve supply & actions, auditory ossicles, auditory tube & mastoid antrum.
9. The mandible	9. Bony features, muscular attachments, foramina & structures passing through them.
10. Temporomandibular joint.	10. Articulation, type, capsule, ligaments, movements & muscles producing these movements & nerve supply.
11. The Scalp	11. Structure, muscles, nerve supply, blood supply & lymphatic drainage.
12. The Face	12. The skin, cutaneous supply, blood supply & lymphatic drainage. Muscles of facial expression, their nerve supply & actions.
B. 13. The Neck	13. Bones of neck, muscles, relations, deep cervical fascia.
14. Muscular triangle of neck.	14. Boundaries & contents
15. Vessels of head & neck	15. Name, location, course, relations & branches.
16. Lymph drainage of head & neck.	16. Groups of regional lymph nodes & their draining areas.
17. Cranial Nerves	17. Name, components, functions, opening in skull, course, relations & branches.
18. Cervical plexus	18. Organization & branches.
19. The autonomic nervous system	19. Cervical part of sympathetic trunk its location, ganglia, relations & branches. Parasympathetic ganglia their location & branches.
20. The Digestive system in head & neck	20. The mouth, palate, tongue, salivary glands, pharynx & esophagus.
21. The Respiratory system in head & neck	21. The nose, paranasal sinuses, larynx, trachea.
22. Endocrine glands head & neck	22. Pituitary, pineal, thyroid & parathyroid glands their location, relations, blood supply & functions.
23. The root of neck	23. Muscles & vessels.
24. The Thoracic duct	24. Location & relations

25. Radiographic Anatomy.	25. Study the poster anterior & lateral radiographs of skull.
26. Surface Anatomy	26. Identify the anatomical landmarks of head & neck region.

REGION. ABDOMEN & PELVIS:

topics	Contents	Outcomes/ knowledge (the students should be able to know)
1. Anterior abdominal wall		Surface landmarks and abdominal quadrants on living.
2. Cutaneous supply, blood supply and innervation.		Origin, areas of supply and Differences in supply according to watershed line at umbilicus.
3. Muscles of anterior abdominal wall		Name, attachments, relations, nerve supply and actions
4. Rectus sheath		Anatomical features, formation, contents, functions, blood supply and nerve supply
5. Inguinal canal		Location, structure of superficial and deep inguinal rings, contents in male and female
6. Male external genital organs		Structure of corpus spongiosum and cavernosa. Their role in erection of penis. Vas deferens and epididymis.
7. Scrotum		Anatomical features, layers, blood supply, nerve supply and lymphatic drainage.

8. Testis	Anatomical features, coverings, structure, blood supply. Nerve supply and lymphatic drainage.
9. Peritoneum	Structure, ventral and dorsal mesenteries, retroperitoneal structures, lesser sac, epiploic foramen, localization and contents of various peritoneal folds and pouches.
10. Stomach	Location, anatomical features, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
11. Small intestine	Location, anatomical features, differences among its parts, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
12. Large Intestine	Location, anatomical features, differences among its parts, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
13. Portal vein	Formation, course, relations, termination, tributaries and portosystemic anastomosis
14. Liver	Location, anatomical features, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage, surgical segments and clinical anatomy
15. Spleen	Location, anatomical features, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
16. Pancreas	Location, anatomical features, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
17. Extrahepatic biliary apparatus	Location, anatomical features, visceral and peritoneal relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
18. Muscles of Posterior abdominal wall	Name, location, attachment, relations actions, and nerve supply
19. Kidneys	Location, anatomical features, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
20. Suprarenal gland	Location, shape, anatomical features, relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
21. Ureter	Location, parts, course anatomical features, relations in males and females, constrictions, blood supply, nerve supply, lymphatic drainage and clinical anatomy
22. Abdominal aorta	Location, course, relations, branches and their area of supply
23. Inferior vena cava	Location, course, relations and tributaries

24. Autonomic nervous system	Location, formation relations and branches of sympathetic chain, coeliac hypogastric ganglions and pelvic splanchnic nerves.
25. Cistern chyli	Location, course and relations.
26. Lumbar vertebrae	Anatomical position, bony landmarks, muscular and ligamentous attachments and radiological anatomy on Xrays
27. Bony Pelvis	Articulations of bones forming bony pelvis, boundaries of pelvic inlet and outlet.
28. True and false pelvis	Definition, location, contents and structures forming its walls.
29. Pelvic floor/ pelvic Diaphragm/ levator ani muscle	Structure, location, attachments, parts, functions relations, blood supply and nerve supply
30. Internal iliac artery	Origin, course, relations, branches along with their areas of supply
31. Lumbosacral plexus	Formation, location, relations, branches and areas of distribution
32. Urinary bladder	Location, anatomical features, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
33. Rectum and anal canal	Location, anatomical features, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
34. Male Reproductive Organs	
1. Prostate	Location, anatomical features, lobes, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
2. Seminal vesicles	Location, anatomical features, functions, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
3. Male urethra	Location, length, anatomical features, parts, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
35. Female Reproductive System	
1. Ovaries	Location, anatomical features, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
2. Fallopian tubes	Location, anatomical features, parts, visceral relations, blood supply, nerve supply, lymphatic drainage and clinical anatomy
3. Uterus	Location, anatomical features, visceral relations, support, blood supply, nerve supply, lymphatic drainage and clinical anatomy

36. Perineum	
a. Perineal membrane	Location, attachments, structures piercing the membrane in males and females clinical importance
b. Perineal body	Location, formation and clinical importance
c. Superficial and deep pouches	Locations, boundaries and contents
d. Ischiorectal fossa	Location, boundaries and contents
e. Pudendal canal	Location, boundaries and contents
f. Internal pudendal artery	Origin, course, relations, branches along with their areas of supply
g. Pudendal nerve	Formation, location, relations, branches and areas of distribution

UHS SYLLABUS

“NEURO AND GROSS ANATOMY”

The study of gross anatomy must lay emphasis on applied anatomy as related to clinical medicine and surgery. For teaching, actual dissection of cadaver, dissected specimens, models, and computer aided programs shall be used. Normal images of different diagnosis techniques i.e. X-rays and CT scans, MRI and Ultra-sonography shall also be introduced.

The time for dissection of the cadaver for each region is as under:

- | | |
|---|----------|
| 1. Neuroanatomy including Brain and Spinal cord | 09 weeks |
| 2. Head and Neck | 13 weeks |
| 3. Abdomen and Pelvis | 13 weeks |

NEUROANATOMY COURSE OBJECTIVES

After the end of the course, the students are able to:

1. Define, enumerate and describe the structure and functions of receptors.
2. Define and describe motor end plates and their functions.
3. Understand and describe the meninges of brain and spinal cord.
4. Describe subdural and subarachnoid spaces including subarachnoid cisterns.
5. Understand and describe internal structure of spinal cord at different levels:
6. Understand and describe ascending and descending tracts of spinal cord, their functions and effects of their lesions.
7. Understand and describe internal structure of medulla oblongata.
8. Comprehend and describe the internal structure of pons.
9. Understand and describe internal structure of mid brain.
10. Comprehend and describe the surfaces of cerebral hemisphere, its lobes, their sulci and gyri.
11. Locate, identify and describe functions of different functional areas of the brain.
12. Locate, identify and describe different types of projection and association fibres of brain and their functions.
13. Identify, locate and describe hypothalamus, its nuclei and their connection and functions.
14. Identify, locate and describe thalamus, its nuclei and their connection and functions.
15. Identify, locate and describe metathalamus and its connections and functions.
16. Understand and describe the ventricular system of the brain.
17. Comprehend and describe production and circulation of CSF and clinical conditions associated with it.
18. Comprehend, describe and discuss blood supply of the brain and spinal cord and the effect of hemorrhagic and thrombotic lesions.
19. Describe intra cranial course of cranial nerves and their applied aspects.

20. Identify, locate and describe cranial nerves nuclei and their connection and functions.
21. Understand and describe different lobes of cerebellum, its white and grey substances including the deep cerebellar nuclei.
22. Understand afferent and efferent connections of cerebellum and correlated these to its functions.
23. Understand and describe the signs and symptoms of cerebellum disease with logical explanation.
24. **Understand and describe clinical conditions related to nervous system.**
25. Comprehend and understand neuroanatomical basis of the following:
 - a) Hemiplegia / hemiparesis.
 - b) Upper motor and lower motor neuron lesions.
 - c) Parkinsonism
 - d) Syringomyelia.
 - e) Hemi-section / complete section of spinal cord.
 - f) Cerebellar ataxia
 - g) Other clinical conditions

“HEAD AND NECK COURSE OBJECTIVES”

On completion of the course of Head and Neck, the students are able to:

1. Describe mandible and different normae of the articulated skull.
2. Identify individual bones of the skull, their parts with important features.
3. Give post-natal growth changes in skull and face.
4. Comprehend cranial fossae, identify the foramina of the skull base and the structures passing through them.
5. Understand the vertebral column as a whole including sacrum and coccyx; describe regional features of the vertebrae, intervertebral joints, the movements thereof, and **comprehend clinical problems of the region.**
6. Identify, comprehend and describe cervical vertebrae, and the joints of the region i.e. temporo-mandibular, intervertebral, and cranio-vertebral. (cricothyroid and crico-arytenoid joints).
7. Identify and describe important muscles of the region i.e. muscles of: Facial expression, Mastication, prevertebral, postvertebral, infra and suprahyoid, suboccipital, tongue and palate; (pharynx, and larynx) **comprehend their actions nerve supply, effect of injury to them and clinical tests applied for diagnosis.**
8. Name and identify muscles of the floor of the mouth, sternocleidomastoid, trapezius, levator scapulae, and describe their origin, insertion, nerve supply, actions, important relations and effects of injury to their nerves and clinical tests to diagnose the nature of injury.
9. Identify and describe important arteries of the region, their branches and distribution i.e. subclavian, common, internal and external carotid arteries.
10. Comprehend clinical importance related to the arteries of head and neck and their branches

11. Identify subclavian, internal, external, and anterior Jugular veins, give their course, relationship, tributaries and clinical importance.
12. Identify and describe cranial venous sinuses and give their clinical significance.
13. Locate, identify and enlist the regional lymph nodes and describe the scheme of lymphatic drainage of the region.
14. Understand and describe the course and distribution of the cervical spinal and cranial nerves; comprehend formation of Cervical and Brachial plexuses, describe their branches and distribution.
15. **Understand and describe clinical conditions related to the nerve plexuses and their clinical manifestations.**
16. **Comprehend, understand and clearly describe the effects of injuries to different nerves and their clinical tests.**
17. **Identify sympathetic trunk and describe the scheme of sympathetic and parasympathetic innervations of the region, including the four parasympathetic ganglia, their roots, branches and distribution along with the clinical and applied anatomy..**
18. Identify and describe the boundaries, contents and subdivisions of the anterior and posterior triangles of the neck.
19. **Understand and describe the superficial and deep fasciae of the region and correlate different fascial planes to their clinical importance.**
20. Identify and describe the viscera of the region i.e. salivary, thyroid, parathyroid glands, trachea and esophagus, and describe their anatomy and its applied aspects correctly
21. **Identify the anatomical features of the oral cavity, tongue, cheek, lips, gums and teeth, and describe these in detail with particular emphasis on their clinical applications.**
22. **Understand and describe the anatomy of the scalp, orbital and cranial cavities, their contents including meninges with highlights on important clinical aspects.**
23. **Understand and describe the anatomy of the nasal cavity, Para nasal sinuses, eye ball and external, middle and internal ear along with the clinical aspects.**
24. **Understand and describe the anatomy of pharynx, its muscles, their nerve supply and actions; clinical and applied aspects of pharynx.**
25. **Comprehend and describe the anatomy of larynx, its joints, muscles, their nerve supply and actions; clinical conditions related to the organ.**
26. **Correlate the anatomical information of the region to their clinical applications.**
27. **Interpret normal radiographs, CT Scans, MRI, and Ultrasound images.**

Additional Clinical Correlates

Cranial nerves distributions and lesions, dislocation of temporomandibular and intervertebral joints, scalp wounds, danger area of face, Little's area, Horner's syndrome, cavernous sinus thrombosis, intracranial hemorrhages, tracheostomy, mumps, sinusitis and retropharyngeal abscess, lymph nodes and lymphatic drainage of head and neck and, different conditions associated with lymphatics. Important muscles of head and neck their functions and effect of their nerve lesions.

“COURSE OBJECTIVES OF ABDOMEN AND PELVIS”

On completion of the Gross Anatomy of Abdomen and Pelvis, the students are able to:

1. Develop a sound understanding of the topographic anatomy of the regions.
2. Mark the regions of the abdomen on the surface of the body.
3. Mark the important abdominal and pelvic viscera on the surface of the body
4. Understand the importance of percussion notes in eliciting the extent of resonant and non-resonant viscera and their clinical importance.
5. Give a description of the Anatomy of the anterolateral and posterior abdominal walls.
6. **Understand and give clear description of inguinal canal, different varieties of external hernias and their complications.**
7. **Understand the peritoneum, peritoneal cavity and possible sites of internal hernias along with their clinical features.**
8. **Comprehend, understand and describe the abdomino-pelvic fasciae and their clinical importance.**
9. Give a precise account of the Anatomy of abdominal and pelvic viscera, muscles, nerves and blood vessels of the regions and correlate anatomical information to common clinical conditions.
10. **Understand the clinical effects and apply clinical tests to verify injuries to different nerves of the region.**
11. Develop clear concepts of anatomy of normal male and female pelvises, and differences between them.
12. **Understand the dimensions of the normal and contracted adult female pelvis and their clinical importance in the mechanism of delivery.**
13. **Understand the anatomy of the perineal region in both male and female and comprehend the anatomical basis of clinical conditions of the area.**
14. **Understand anatomical basis of possible birth injuries to the mother in difficult labor and the clinical conditions produced thereafter.**
15. Understand the scheme of the regional lymphatic drainage and lymph nodes.
16. **Comprehend normal radiological anatomy of the region, CT Scans, MRI, Ultrasound and, other diagnostic techniques.**

Additional Clinical Correlates

Portosystemic anastomosis, spread of carcinoma stomach, duodenal and peptic ulcer, appendicitis, hemorrhoids, anal fistula, anterior abdominal wall hernias, abdominal incisions, varicocele, hydrocoele, benign prostatic hyperplasia and carcinoma of prostate and uterus prolapse

“SYSTEMIC HISTOLOGY”

At the end of the course, the students are able to:

Digestive System:

1. Name and describe the epithelium lining the oral cavity, tongue, gums, hard and soft palate, pharynx and lips and, explain the histology of tongue.
2. Understand and describe the histological structure of oesophagus, stomach, small intestine, large intestine, appendix and anal canal; explain the change in structure of their epithelium in relations to the function.
3. Comprehend and describe the histological structure and functions of salivary glands.
4. Understand and describe the histological structure and functions of Liver, Pancreas and Gall Bladder.

Urinary System:

Comprehend and describe the histological structure of kidney, ureter and urinary bladder, and their functions.

Male Reproductive System:

Comprehend and describe histological structure of testis, epididymis, vas deferens, seminal vesicle and prostate, and relate it to their functions.

Female Reproductive System:

Understand and describe histological structure of ovaries, fallopian tube, uterus and vagina, and explained their functions related to their structure.

Endocrine System:

Understand and describe the histological structure and functions of the following glands:

1. Pituitary
2. Thyroid
3. Parathyroid
4. Adrenal
5. Islets of Langerhans.

Eye and Ear:

1. Understand and describe the histological structure of eyeball with emphasis on cornea and retina, and give their functions related to their structure.
2. Comprehend and describe the Membranous Labyrinth and give the histological structure of different parts; correlate their functions to the structure.

Nervous System:

Understand and describe the histological structure of spinal cord, cerebellum and cerebrum and correlate it to the functions.

Identify, draw and label light microscopic structures of above mentioned tissues.

“EMBRYOLOGY”

At the end of the course, the students are able to:

Head and Neck:

1. Understand and describe the development and derivatives of pharyngeal apparatus (arch, cleft, pouch and membrane).
2. Comprehend and describe the development of tongue.
3. Describe the development of thyroid gland.
4. Understand and describe the development of pituitary gland.
5. Comprehend and describe the development of face and palate.
6. **Understand different congenital malformations of the region.**

Digestive System, Body Cavities and Diaphragm:

1. Understand and discuss the development of the body cavities, mesenteries and diaphragm.
2. Comprehend and describe the development of gastrointestinal tract (fore-gut, mid-gut and hind-gut).
3. Understand and describe the development of liver, pancreas and gall bladder.
4. Understand and describe the development of spleen.
5. **Understand different congenital malformations of the region.**

Respiratory System:

Comprehend and describe the development of upper and lower respiratory passages, and give their congenital anomalies.

Cardiovascular System:

1. Describe the development of heart, aortic arches, aorta, superior and inferior vena cavae and portal vein.
2. Describe the foetal circulation and changes at birth.
3. Understand and describe the congenital anomalies of cardiovascular system.

Urinary System:

1. Comprehend and describe the development of kidneys, ureters, urinary bladder and urethra, and their congenital malformations.

Reproductive System:

1. Understand and describe the development of testes, epididymis, vas deferens, seminal vesicles and prostate.
2. Comprehend and describe the development of the ovaries, uterus and vagina.
3. Describe the development of external genital organs.
4. **Comprehend and describe congenital abnormalities of the regions.**

Nervous System:

1. Name different brain vesicles, comprehend and describe their derivatives.

2. Understand and describe the development of spinal cord.
3. Comprehend and describe the derivatives of neural crest.
4. Understand and describe congenital abnormalities of the nervous system.

Ear:

1. Understand and describe the development of external, middle and internal ear.
2. Describe congenital abnormalities of the region.

Eye:

1. Comprehend and describe the development of lacrimal apparatus, eyeball and their congenital abnormalities.

SOURCE OF KNOWLEDGE

RECOMMENDED BOOKS

1. Clinically Oriented Anatomy by Keith L. More
2. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 15th Edition
3. The Developing Humans. Clinically Oriented Embryology By Keith L. More, 6th Edition
4. Medical Histology By prof. Laiq Hussain Siddiqui
5. Neurology by Richard S Snell

Reference Books

1. Grey's Anatomy By Prof. Susan Standring 39th Edition
2. Clinical Anatomy For Medical Students by Richard S. Snell
3. Clinical Anatomy by R.J. Last
4. Wheater's Functional Histology By Young and Heath
5. Langman's Embryology

POLICY & GUIDELINES OF

LEARNING STRATEGIES & STUDY SKILLS FOR MEDICAL

STUDENTS

This document is a Summary written for the purpose of the study guides. For details refer to the document "A HANDBOOK OF POLICY & GUIDELINES OF LEARNING STRATEGIES & STUDY SKILLS FOR MEDICAL STUDENTS" available for the students at website, Bookshop and the Department of Medical Education.

STEPS TO STRATEGIC LEARNING:

1. Set realistic learning goals.

These goals serve as the driving force to generate and maintain the motivation, thoughts, and behaviour necessary to succeed. Set and use long-term occupational goals (you want to be a doctor) and short-term learning goals (you want to understand this new material).

2. Types of knowledge needed to be a strategic learner:

- Know yourself as a learner (learning preferences, talents, best times of day to study, ability to match study skills to learning task) this knowledge helps you set realistic yet challenging learning goals.
- Knowing the nature and requirements of different types of educational tasks.
- Knowing a variety of study skills and learning strategies and how to use them.
- Knowing the contexts in which what is being learned can be used now or in the future.

3. Use a variety of learning strategies:

- Manage your study environment,
- Coordinate study and learning activities,
- Keep your motivation for learning clear,
- Generate positive behaviours toward learning,
- Make new information meaningful to you,
- Organize and integrate new information with existing knowledge, or Re-organize existing knowledge to fit the new understanding and information.
- Place new information in a present or future context.

ACADEMIC HOURS BREAKDOWN AS PER PMDC REGULATIONS

TABLE OF SPACING AND HOURS OF SUBJECTS IN MBBS COURSE

SUBJECT	1 st year	2 nd year	3 rd year	4 th year	5 th year	Total Hours
BEHAVIOURAL SCIENCES	5 Hrs.	25 Hrs.				
ISLAMIC & PAKISTAN STUDIES	15 Hrs.	15 Hrs.	10 Hrs.	10 Hrs.	-	50 Hrs.
ANATOMY	250 Hrs.	250 Hrs.	-	-	-	500 Hrs.
PHYSIOLOGY	250 Hrs.	250 Hrs.	-	-	-	500 Hrs.
BIOCHEMISTRY	100 Hrs.	100 Hrs.	-	-	-	200 Hrs.
PHARMACOLOGY	-	-	300 Hrs.	-	-	300 Hrs.
PATHOLOGY	15 Hrs.	25Hrs.	260 Hrs	200 Hrs	-	500 Hrs.
* FORENSIC MEDICINE	-	-	100 Hrs	-	-	100 Hrs.
** COMMUNITY MEDICINE	25 Hrs	25 Hrs	50 Hrs	150 Hrs	-	250 Hrs.
MEDICINE & Allied NUCLEAR MEDICINE	25 Hrs.	30 Hrs.	120 Hrs	265 Hrs.	360Hrs	800 Hrs.
EMERGENCY MEDICINE	-	10 Hrs.	-	10 Hrs	-	20 Hrs.
MEDICINE ELECTIVE, *** PSYCHIATRY, DERMATOLOGY AND GENERAL PRACTICE	-	-	-	-	-	-
PAEDIATRIC MEDICINE	5 Hrs.	10 Hrs.	15 Hrs	50 Hrs	70 Hrs	150 Hrs.
SURGERY & ALLIED	25 Hrs.	30 Hrs.	120 Hrs	265 Hrs	360 Hrs	800 Hrs.
**** RADIOLOGY ORTHOPAEDICS, PAED.SURGERY, NEUROSURGERY, SURGERY ELECTIVE, EMERGENCY SURGERY & ANAESTHESIA	5 Hrs.	10 Hrs.	-	10 Hrs	15 Hrs	40 Hrs.
OBSTETRICS & GYNAECOLOGY	10 Hrs.	10 Hrs.	50 Hrs	100 Hrs	130 Hrs.	300 Hrs.
OPHTHALMOLOGY	5 Hrs.	10 Hrs.	15 Hrs	70 Hrs	-	100 Hrs.
OTORHINOLARYNGOLOGY(E.N.T.)	5 Hrs.	10 Hrs.	15 Hrs	70 Hrs	-	100 Hrs.
CLINICO-PATHOLOGICAL CONFERENCE	-	-	-	60 Hrs	-	60 Hrs.
Total	740 Hrs	790 Hrs	1060 Hrs	1265Hrs	940Hrs	4795Hrs

- * Bioethics will be taught in the Forensic Medicine.
- ** Biostatistics will be taught in Community Medicine.
- *** Behavioral Sciences will be taught in Psychiatry.
- **** Biophysics will be taught in Radiology.

Distribution of subjects Instructional contents into Theory and Practical learning.

Type of subject	Theory Content	Practical Skills Content
All Basic Sciences	50%	50%
Pre-Clinical Sciences (Pharmacology and Therapeutics, Forensic Medicine, Community Medicine, Pathology)	40%	60%
Clinical Sciences	30%	70%
Internship/House Job	0%	100%

Time Allocation To Curriculum Content= 7493 hours

Subject specified competencies	General competencies
80%	20%
5994	1499

Time Allocation To the Study Design(5184)

Instructions	Self Study
80%	20%
4795	1198

Time Allocation to Site of Study(4147)

Institution Based	Community Oriented
80%	20%
3836	959

Distribution of Marks in Evaluation

University Examination	Internal Assessments
90%	10%

Examination of Subject Based MBBS Curriculum

Total 100%

Internal Assessment 20%

University Examination 80%

Internal Assessment Theory	Internal Assessment Practical	University Assessment Theory	University Assessment Practical	Total
10%	10%	40%	40%	100%

Generic Competencies

Total Hours = 1499

Compulsory

- Pakistan Studies
- Islamiyat

ACADEMIC HOURS BREAKDOWN (ACMC)

CURRICULUM					
2ND YEAR MBBS M-18 ACADEMIC YEAR 2020					
Subjects	PMDC Req. Study Hours	Lecture Hours	Tutorial Hours	Practical Hours	TOTAL STUDY HOURS
ANATOMY	250/250	6 x 38= 218	1.5 x 2= 3 hrs x 38 =114	1.5 x 2= 3 hrs x 38 =114	446 hrs
PHYSIOLOGY	250/250	5 x 38= 190	1.5 x 38= 57	1.5 x 38= 57	304 hrs
BIOCHEMISTRY	125/125	4 x 38= 152	1.5 x 38= 57	1.5 x 38= 57	266 hrs
ISLAMIYAT/ PAK. STUDIES	15+15	15+15	0	0	30 hrs
BEH. SCIENCES	5	5 hrs	0	0	5 hrs
PATHOLOGY	25	25 hrs	0	0	25 hrs
COM.MEDICINE	25	25 hrs	0	0	25 hrs
MEDICINE & ALLIED	30+10 allied	30+10= 40 hrs	0	0	40 hrs
PAEDS	10	10 hrs	0	0	10 hrs
SURGERY AND ALLIED (RAD)	30+10 allied	30+10= 40 hrs	0	0	40 hrs
OBG	10	10 hrs	0	0	10 hrs
EYE	10	10 hrs	0	0	10 hrs
ENT	10	10 hrs	0	0	10 hrs
SELF DIRECTED LEARNING (SDL)	100	0	0	0	100 hrs
TOTAL HOURS:	830/930	775	228	228	1241

INTERNAL ASSESMENT POLICY

The assessment policy of Avicenna Medical College clearly reflect that the assessment must covers knowledge, skills and attitude to be acquired by a medical student at the end of the each Professional Year and the entire MBBS Course.

- Theoretical knowledge is assessed by means of MCQs, SEQs, Structured Viva, CBD Tutorials and Pre-Test Tutorials.
- Professional and Clinical Skills are assessed through OSPE, OSCE, Practical Exams and Long and Short Cases.
- Attitudes are assessed through OSPE, OSCE, Practical Exams, Long Cases, Short Cases and Vivas

Assessment Procedures

Performance of students will be assessed as follows:

a. Programmatic Assessment During Academic Year: Grand Tests and Revision Test

It will incorporate both formative and summative assessment for all academic years.

1) Formative Assessments:

These are Conducted throughout the academic year. These are low stake examinations with feedback to improve student learning, leading to better performance in summative assessments and the UHS Professional Examinations. At Avicenna Medical College the formative assessment is in the form of Grand Tests, Revision Tests, Research, Tutorials, Assignments, Long Cases and Short Cases presentations etc.

2) Summative Assessments:

These are conducted at the end of each term, consisting of Session Examinations conducted on the pattern of UHS annual Prof Exams. These consist of One best type of MCQs and SEQs which has two to three parts require written short essay responses from the students. The MCQs, the SEQs are mostly clinical and scenario based and designed to test the concepts.

b. End of Term Assessment

This will be summative carried out at the end of each academic year.

Assessment Tools:

Various tools selected are as follows according to UHS guidelines.

a. Written Assessment

1) Multiple Choice Question (MCQ)

MCQs are extensively used for in both formative and summative assessment owing to their ability to offer a broad range of examination items that incorporate several subject areas. They are the one best type of MCQs and designed to test factual knowledge, understanding and clinical reasoning.

A multiple choice item consists of a problem, known as the stem, and a list of suggested solutions, known as the choices. The choices consist of one correct or best choice, which is the answer, and incorrect or alternatives, known as distractors. Each MCQ carries one mark. The number of MCQs vary in the Grand Tests, Revision Test and the Session Exams as needed.

2) Short Essay Questions (SEQs)

Written assessment formats are the most widely used assessment methods in medical education. Learning outcomes which are mainly based on cognitive domains (knowledge) can be assessed by them.

The SEQs have a statement or clinical scenario followed by two to three questions, which require application of concepts and are thought provoking.

b. Assignments and Presentations

Every month in various departments, topics of clinical significance are given to the students for assignment and presentations for small group discussions (SGD) sessions. These will be a part of formative assessment. Clinico- Basic and Clinico-Pathological Conferences (CPC) are held for preclinical and clinical years, respectively.

c. Practical/Clinical Assessment

1) Objective Structured Practical Exam (OSPE)

A formative OSPE will be held during terms and summative at the end of year. It will consist of laboratory-based and practical questions related to the learning objectives covered in the course. The students will be given feedback after formative assessment.

2) Objective Structured Clinical Exam (OSCE):

A formative OSCE will be held during the term and summative at the end of year. It will consist of clinical and practical questions related to the learning objectives covered in the course. The students will be given feedback after formative assessment.

3) Long Case

At the end of fourth and final year each subject will be assessed by a long case. Daily encountered problems will be the case scenarios for which students will be trained during formative assessment in clinics.

4) Structured Viva

At the end of examination an integrated viva will be taken in which relevant specialists will sit and ask questions. There will be guidelines for examiners to follow.

5) Log Books

In case of log books, required entries will be countersigned by observer. It will be criterion referenced whereas the students will have to fulfill the following criteria: for example assignments, case presentations in wards, departmental log books.

6) Observation

Internal Assessment

The progress report from teachers will have separate column about behavior and attitude of students in each term in addition to academic record with minimum pass of 50%.

Internal Assessment

The progress report from teachers will have separate column about behavior and attitude of students in each term in addition to academic record with minimum pass of 50%.

The question papers are prepared in secrecy and approved by the Principal. The department then gets sufficient copies made in secrecy and submits the same to the directorate of Medical Education 24 hours before the scheduled test / exam. On the day of the examinations these papers along with the answer sheets are collected from the DME and taken straight to the examination hall where they are opened and are distributed to the students for attempting the question.

After the papers have been solved, the MCQs are marked immediately and the SEQs marked and submitted within two days (except for revision tests where the results have to be submitted within 24 hours) from here, the assessment system as envisaged in the earlier paragraphs is applied.

Every test / examination is supported by keys both for MCQs and SEQs. Adequate time is air marked for key discussion in which the member of the faculty explains to the class how in fact they should have attempted the MCQs and SEQs. This gives an opportunity to the class to make the assessment of how they have attempted the paper and what mistakes they have made and how not to repeat them in future.

Avicenna Medical College endeavors to implement the assessment system of the UHS subject based curriculum as it is in vogue at present by implementing the curriculum with the basic ingredients of assessment implementation as follows:

- a. Grand Test
- b. Revision Test
- c. Session Examinations
- d. OSPE
- e. OSCE
- f. Viva
- g. Log books / Copies
- h. Assignments
- i. Research work
- j. Tutorials
- k. Long case
- l. Short case

Practical Assessments

The regulations for the preparation and conduct of practical assessments vary between subject areas. Where regulations have not been specified they have to be put up to the Academic Committee.

Clinical Assessment

The clinical assessment is carried out in the following forms:

- | | |
|----------------|-----------|
| b. SEQs | 45% marks |
| c. Viva / Copy | 10% marks |

Note: The DME maintains a record of all grand tests along with the keys to the MCQs and SEQs and the results. These results are used for the calculation and assessment of each student in terms of their acquisition of knowledge and skills.

Revision Test: The revision tests are designed to precede every session exam and they are aimed at breaking up the syllabus and covering the same in small bits so that the students can have exhaustive study of the portion of the syllabus to be tested upon. The schedule of revision test is decided jointly by the Assessment Committee and the students' class representatives so that the student input is brought into consideration. In this case the students' representatives include the weak students, the average ones and good students. And this mix ensures that adequate time is provided to weak students to do exhaustive studies.

Depending upon the syllabus covered. 8 to 10 revision tests are held in preparation for the session exams. The contents of the revision tests are:

- | | |
|--------------|----------|
| a. MCQs (30) | 30 marks |
| b. SEQs (6) | 30 marks |

Note: The DME maintains a record of all grand tests along with the keys to the MCQs and SEQs and the results. These results are used for the calculation and assessment of each student in terms of their acquisition of knowledge and skills. Four sets of revision tests are held annually. One each before the early session, mid-session, late session and/or send-up examination.

Session Examination: As per the annual planner and schedule, three session exams are held every year and these are generally held in March, June and August each year. The late session examination is held in August and as an extra opportunity for the students to qualify the send-ups for the border line cases is only held one month before the prof exam. The following session exams are held:

- | | |
|------------------------------|-------------------|
| a. Early Session Examination | 50% of syllabus |
| b. Mid-Session Examination | 85% syllabus |
| c. Late Session Examination | 100% syllabus |
| d. Send-up Examination | For the very weak |

The details of the session examination are as under

- | | |
|--|---------------------|
| a. Theory - 50% marks divided as under | |
| 1) MCQs | 45% of theory marks |
| 2) SEQs | 45% of theory marks |

3) Log book / copy 10% of theory marks

b. OSPE/OSCE/Viva - 50% marks

Note: The DME maintains a record of all session exams along with the keys to the MCQs and SEQs and the results. These results are used for the calculation and assessment of each student in terms of their acquisition of knowledge and skills. Four sessions examinations are held annually.

OSPE (Objective Structured Practical Examination): This depicts the scenario based clinical setting and various stations are arranged. The student has to go from one station to the other to answer the question or to display his practical skill. This is aimed at assessing both the knowledge and skills of the student. The format and the standard of the scenario based problems/questions are in line with the standards prescribed by the University of Health Sciences.

Note: The DME maintains a record of all OSPEs along with the keys to the OSPE and the results. These results are used for the calculation and assessment of each student in terms of their acquisition of knowledge and skills. Sample OSPE paper is attached as **Annexure-B**. Since OSPE is a part of session exams therefore four sessions of OSPE are held each year.

OSCE (Objective Structured Clinical Examination): This depicts the scenario based clinical setting and various stations are arranged. The student has to go from one station to the other to answer the question or to display his clinical skills. This is aimed at assessing both the knowledge and skills of the student. The format and the standard of the scenario based problems/questions are in line with the standards prescribed by the University of Health Sciences.

Note: The DME maintains a record of all OSCEs along with the keys to the OSCE and the results. These results are used for the calculation and assessment of each student in terms of their acquisition of knowledge and skills. Sample OSCE paper is attached as **Annexure-C**. Since OSCE is a part of session exams therefore four sessions of OSCE are held each year.

Viva: This is an oral examination to which the student is subject to be examined by two members of the Faculty one acting as the internal examiner and the other acting as the external examiner. The student is grilled in these oral questioning sessions. The student is asked on various clinical aspects to ascertain his knowledge.

Note: The DME maintains a record of all Viva and the results. These results are used for the calculation and assessment of each student in terms of their acquisition of knowledge and skills. Since Viva is a part of session exams therefore four sessions are held each year.

Copies and Log Books: Whereas copies are maintained in 1st 2nd and 3rd year of the basic sciences, the log books are maintained for the 4th year and the final year for the clinical subjects. The completion of the copies and the log books is mandatory and these have to be produced before the internal and the external examiner on all session examinations and annual Prof exam. Copies and

log books carry 10 marks and are a valid record for the purpose of assessment besides being a record of the students' clinical exposure.

Assignments: These are normally generated by the Community Medicine and the Department of Medicine in which the departments give assignments for the students to be completed in their own time. Assignments are included as a part of practical assessment and left to the discretion of the Head of Department.

Research work: The Department of Community Medicine as a part of its Curriculum train the students in carrying out research. These research projects are covered in Standard 12 – Research & Scholarship and research records are available in the Department of Community Medicine. Research works are included as a part of practical assessment and left to the discretion of the Head of Department.

Tutorials: These are held before every grand test to clear the concepts of the students on the subject. The performance of the students in the tutorials is included in the viva assessment.

Long Case and Short Case: This system of OSPE and OSCE is to ascertain the clinical acumen of the student. These are held with the session examinations and form a part of the practical/clinical assessment.

Notification of Results

The Assessment Committee will display result on notice board as well as the results are sent through SMS to the father of the student.

Results as hard copy will also be sent to parents after each term.

Conducting Examinations and Assessments

Conducting Examinations and Assessments According to University of Health Sciences Guidelines. In all examinations and assessments, the conditions underpinning the examination or assessment shall be displayed on concerned department notice boards to students prior to the examination or assessment taking place.

Note: Any requests for special assistance example reader/writer are to be made prior to the examination or assessment.

- g. Introducing students to the system of simulated and standardized patients

Response to Parents:

Parents are kept informed about the result of each student. The results are dispatched as follows:

- a. Grand Test: by SMS
- b. Revision Test: by SMS
- c. Session Examinations: as a report containing the results of all grand tests of all subjects for that class. Three session exam reports are sent. Reports of each session for each class are attached as **Annexure-I**.

d. OSPE	Included in the session result
e. OSCE	Included in the session result
f. Viva	Included in the session result
g. Log books / Copies	Included in the session result
h. Assignments	Included in the session result
i. Research work	Included in the session result
j. Tutorials	Included in the session result
k. Long case	Included in the ward test / clinical test
l. Short case	Included in the ward test / clinical test

Avicenna Medical College									
1st Term Test Schedule 2nd Year MBBS M- 18									
Week	Date	Day	Time	Subject	No. of Test	Test	Topic	Reference	
1	22-Jan-20	Wed	8.00-2.30	Beginning of 2nd Year MBBS					
1st	24-Jan-20	Fri	8.00-2.30	All subjects		Lectures		Time Divided	
2nd	28-Jan-20	Tue	8.00-2.30	All subjects		Lectures		Time Divided	
2nd	31-Jan-20	Fri	8.00-2.30	All subjects		Lectures		Time Divided	
3rd	4-Feb-20	Tue	8.00-10.00	Biochemistry	1	Grand Test -1	Bioenergetics	Lippincott's 7th ed Ch = 6 Harper's 31th ed Ch =11,12,13	
3rd	7-Feb-20	Fri	8.00-10.00	Physiology	2	Grand Test -1	Endocrinology - 1	Guyton CH : 75, 76	
4th	11-Feb-20	Tue	8.00-10.00	Gross Anatomy Abd 1st Substage	3	Grand Test -1	Ant Abd wall, external genitalia, peritoneum,Oesophagus,	KLM P: 181-215, 217-225	
4th	14-Feb-20	Fri	8.00-10.00	Biochemistry	4	Grand Test -2	Metabolism of Carbohydrates-1	Lippincott's 7th ed Ch = 7, 8, 9, 10	
5th	18-Feb-20	Tue	8.00-10.00	Biochemistry	5	Grand Test -3	Metabolism of Carbohydrates - 2	Lippincott's 7th ed Ch = 11, 12, 13	
5th	21-Feb-20	Fri	8.00-10.00	Sp. Embryology	6	Grand Test -1	Development Of GIT	KLM	
6th	25-Feb-20	Tue	8.00-10.00	Gross Anatomy Abd 2nd Substage	7	Grand Test -2	Portal system,Spleen, Liver, Gall Bladder , Pancreas, Intestine,Diaph.	KLM P; 226-288	
6th	28-Feb-20	Fri	8.00-10.00	Physiology	8	Grand Test -2	Endocrinology - 2	Guyton CH :77, 78, 79	
7th	3-Mar-20	Tue	8.00-10.00	Biochemistry	9	Grand Test -4	Metabolism of Lipids - 1	Lippincott's 6 ed Ch = 15,16	
7th	7-Mar-20	Fri	8.00-10.00	Biochemistry	10	Grand Test -5	Metabolism of Lipids - 2	Lippincott's 6 ed Ch = 17, 18	
8th	10-Mar-20	Tue	8.00-10.00	Gross Anatomy Abd 3rd Substage	11	Grand Test -3	Post. Abd. wall, Lumbar vertebra, kidney, Supra renal, Abd Aorta, IVC,Autonomic Plexus	KLM P; 290-320, 450-452	
8th	13-Mar-20	Fri	8.00-10.00	Physiology	12	Grand Test -3	Endocrinology+Reproduction-1	Guyton CH : 80, 81	
9th	17-Mar-20	Tue	8.00-10.00	Physiology	13	Grand Test -4	Reproduction-2	Guyton CH : 82, 83, 84	
9th	20-Mar-20	Fri	8.00-10.00	Biochemistry	14	Grand Test -6	Metabolism of Proteins - 1	Lippincott's 6 ed Ch = 19, 20	
Spring Vacations: 22 -Mar-20 To 5-Aril-20									
10th	7-Apr-20	Tue	8.00-10.00	Sp. Embryology	15	Grand Test-2	Body cavities, CVS, Urogenital	KLM	
10th	10-Apr-20	Fri	8.00-10.00	Gross Anatomy Abd 4th Substage	16	Grand Test -4	Pelvis & Perineum	KLM P: 325-438	
11th	14-Apr-20	Tue	8.00-10.00	Gross Anatomy Final Stage	17	Grand Test -5	Abdomen Pelvis Final Stage	KLM P: 182-324, 325-438	
11th	17-Apr-20	Fri	8.00-10.00	Biochemistry	18	Grand Test -7	Metabolism of Proteins -2	Lippincott's 7th ed Ch= 20,21	
12th	21-Apr-20	Tue	8.00-10.00	SP. Histology	19	Grand Test-1	GIT, Associated glands-1	Laiq; 18,19 Junqueira:	
12th	24-Apr-20	Fri	8.00-10.00	Physiology	20	Grand Test-5	Sensory System	Guyton CH : 46, 47, 48,49	
13th	28-Apr-20	Tue	8.00-10.00	Gross Anatomy Substage - I Head & Neck	21	Grand Test -6	Substage - I (Normas, Scalp, Bone, Face, Cranial Meninges) Triangles of neck,NVC region.	KLM PG. : 822- 1005	
EARLY SESSION EXAM 30-Apr-20 To 20-May-20									
15th	16-May-20	Sat	8.00-11.00	ESE		ANATOMY		Entire Syllabus Covered	
16th	18-May-20	Mon	8.00-11.00	ESE		PHYSIOLOGY		Entire Syllabus Covered	
16th	20-May-20	Wed	8.00-11.00	ESE		BIOCHEMISTRY		Entire Syllabus Covered	
End of 1st Term									

Avicenna Medical College									
2nd Term Test Schedule 2nd Year MBBS M- 18									
Week	Date	Day	Time	Subject	No. of Test	Test	Topic	Reference	
Eid-ul-Fitar Holidays: 22-May -20 To 26-May-20									
18th	2-Jun-20	Tue	8.00-10.00	Gross Anatomy Substage - II Head & Neck	22	Grand Test-7	(Meninges, venous sinuses, Orbit, Eyeball, Extraocular muscle, Neurovasculature, cranial nerve 2,3,4,6, Lacrimal Apparatus & Applied Anatomy of Orbit)	KLM PG. : 865-877,889-913,1064-1067	
18th	5-Jun-20	Fri	8.00-10.00	Physiology	23	Grand Test-6	Motor System-1	Guyton Chapter: 55, 56, 57, 58	
19th	9-Jun-20	Tue	8.00-10.00	Gross Anatomy Substage - III Head & Neck	24	Grand Test -8	Parotid region, Mandible, temporo-mandibular joints, muscles of mastication, sub-mandibular region, joints of neck, cranial nerve 5, Temporal and infra-temporal fossa and contents, pterigopalatine fossa with contents, cranial nerve 10	KLM PG. : 914-926, 927, 464-470, 1065,916- , 951-954 + 1073	
19th	12-Jun-20	Fri	8.00-10.00	All subjects		Lectures	Time Divided		
20th	16-Jun-20	Tue	8.00-10.00	Biochemistry	25	Grand Test-8	Biochemistry of Nucleotide	Lippincott 7th Ed. CH: 22 Harper's 31th ed CH: 33	
20th	19-Jun-20	Fri	8.00-10.00	SP. Embryology	26	Grand Test-3	Pharyngeal Apparatus, eye, ear, Respiratory System	Embryo KLM	
21st	23-Jun-20	Tue	8.00-10.00	Gross Anatomy Substage - 4 Head & Neck	27	Grand Test -9	(Nose & Paranasal sinuses, deep structures of Neck, Thyroid and Para-thyroid glands and sub occipital triangle, Cranial Nerve 1)	KLM PG. : 955-965, 1012-1021, 492, 1054 + 1040-1043	
21st	26-Jun-20	Fri	8.00-10.00	Biochemistry	28	Grand Test-9	Water & Electrolyte Balance + Acid Base Regulation	Chatterjee 8th ed Ch = 40, 41	
22nd	30-Jun-20	Tue	8.00-10.00	Physiology	29	Grand Test-7	Higher Brain Function	Guyton CH : 58,59,60,62	
22nd	3-Jul-20	Fri	8.00-10.00	Biochemistry	30	Grand Test-10	Metabolism of Xenobiotics + Oncogenesis	Harper's 31th Ed. Ch = 47,56	
23rd	7-Jul-20	Tue	8.00-10.00	SP. Histology	31	Grand Test	Urogenital system + Male & Female genitalia	Laiq: 20,21,22 Junqueira:	
23rd	10-Jul-20	Fri	8.00-10.00	Gross Anatomy Head & Neck Substage - 5	32	Grand Test-10	(Oral cavity, Larynx, Pharynx, Ear, Cranial nerve 8, 9, 11, 12, Applied anatomy)	KLM PG New Ed. : 928-930, 934-950, 1071-1082, 1043-1052, 966-980	
24th	14-Jul-20	Tue	8.00-10.00	Gross Anatomy Final Stage H & N	33	Grand Test -11	Head & Neck Stage	FULL COURSE	
24th	17-Jul-20	Fri	8.00-10.00	Physiology	34	Grand Test-8	Renal -1	CH: 25, 26, 27	
Summer Vacation : 19 July 20 To 2-Aug-20									
25th	4-Aug-20	Tue	8.00-10.00	Physiology	35	Grand Test-9	Renal - 2	Guyton CH : 28, 29	
25th	7-Aug-20	Fri	8.00-10.00	Biochemistry	36	Grand Test-11	Genetics 1: Replication, Transcription	Lippincott's 7th Ed. Ch: 30,31 Pg : 411-429, 433-443	
26th	11-Aug-20	Tue	8.00-10.00	Biochemistry	37	Grand Test-12	Genetics 2: Gene expression, Genetic Diseases.	Lippincott's 7th Ed. Ch : 32, 33 pg : 447-502	
26th	14-Aug-20	Fri	8.00-10.00	14 August Independence Day					
27th	18-Aug-20	Tue	8.00-10.00	Physiology	38	Grand Test -10	Renal - 3	Guyton CH : 30, 31,32	
27th	21-Aug-20	Fri	8.00-10.00	SP Histology	39	Grand Test	Endocrine , CNS, Special Senses	Laiq: 23,24,12,16 Junquiera:	
28th	25-Aug-20	Tue	8.00-10.00	Gross Anatomy Neuro 1st Substage	40	Grand Test-12	Spinal cord, medulla, pons, midbrain, cerebellum, meninges, venous sinuses 4th ventricle + Blood Supply of Spinal cord	Snell Neuro: 1-32, 132-245, 418-435, 471,472,474,479	
Mid Session Exam : 26th-Aug-20 To 24th-Sep-20									
31st	18-Sep-20	Fri	8.00-11.00	MSE	ANATOMY		Entire Syllabus Covered		
32nd	21-Sep-20	Mon	8.00-11.00	MSE	PHYSIOLOGY		Entire Syllabus Covered		
32nd	24-Sep-20	Thu	8.00-11.00	MSE	BIOCHEMISTRY		Entire Syllabus Covered		

