

AL-ALEEM MEDICAL COLLEGE LAHORE

DEPARTMENT OF ANATOMY



Welcome to Anatomy Department

STUDY GUIDE – 1st Year MBBS

CONTENT

Syllabus

Gross Anatomy

- Upper Limb – 11 weeks
(SGD, Dissection, Models & Videos, PBL and Integrated Clinical Lectures)
- Thorax – 08 weeks
(SGD, Dissection, Models & Videos, PBL and Integrated Clinical Lectures)
- Lower Limb – 11 weeks
(SGD, Dissection, Models & Videos, PBL and Integrated Clinical Lectures)
- General Anatomy
(Lectures)
- **General Histology**
(Lectures & Practical)
- **General Embryology**
(Lectures)
- Islamiat
- Pakistan Studies

Recommended Books (Latest Editions)

Text Books

Book	Edition
Clinical oriented anatomy by Keith L Moore	8 th
Cunningham's manual of practical anatomy by G.J romance vol.1,2	
Developing human clinically oriented embryology by KLM	11 th
Medical textbook and Atlas of histology by Laiq Hussain	6 th
Understanding General anatomy by Tassaduq Hussain Sheikh	16 th
Di-fiore atlas of histology	
Netter's atlas	

Reference Books

Gray's anatomy by Susan Standring	
Clinical anatomy by R.J. Last	
Grant's atlas of Anatomy	
Clinical Anatomy by Snell	15 th
Basic Histology Text & Atlas by Junqueira	15 th
Embryology by Langman	14 th

Stationary & Other

Items required for Anatomy Practicals

- Practical histology copies by Prof. Tassaduq Hussain
- Sketch book =03 (One medium size for each gross anatomy region)
- Hematoxylin and eosin pencil
- Color box
- Lead pencils
- Ruler
- Eraser
- Sharpener
- Dissection box

- Latex Gloves, masks & goggles for dissection
- White Lab coat (full sleeves, knee length) = 03 per person

TEACHING ACTIVITIES

- General Histology Interactive Lectures
- General Embryology Interactive Lectures
- Gross Anatomy - All lectures in Lecture Theatre 1
(SGD, Dissection, Models & Videos, PBL and Integrated Clinical Lectures)
- 2 PBL per academic sessions

Practicals

- Dissection of upper limb, thorax and lower limb in dissection hall
 - Histology practical in histology laboratory
- Tutorials in small group discussion room
- Demonstrations

SYLLABUS

“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:

Upper Limb	-	12 weeks
Lower Limb	-	12 weeks
Thorax	-	8 weeks

“GENERAL ANATOMY”

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

1. Explain anatomical terms and sectional planes of the body.

2. Skeletal System:

1. Classify the skeleton system (appendicular and axial).
2. Classify bones on the basis of shape, size, evolution, structure, development, region and miscellaneous
3. Describe general features of bones of human body
4. Explain the functions of bones
5. Discuss the general concepts of ossification and growth of bones.
6. Describe the blood supply of bones
7. Comprehend clinical correlates of skeletal system (fractures, rickets, osteoporosis, osteomalacia, sternal puncture, avascular necrosis, radiological appearance of bone, cartilage and fractures)

3. Joints:

1. Explain the basis of classification of joints.
2. Discuss the characteristics, types and movement of synovial, cartilaginous and fibrous joints.
3. Mention and describe the factors responsible for the stability of joints.
4. Explain general principles of blood and nerve supply of joints.
5. Understand, describe, and analyze different clinical scenario resulting into dislocation of joints.

4. Muscles:

1. Describe different terms related to muscles.
2. Comprehend the basis of classification of muscles.
3. Describe general principles of blood and nerve supply of muscles.
4. Explain sprain, spasm, trophic degeneration and regeneration changes
5. Define and explain the mechanism of sprain and spasm.

6. Comprehend and explain the function of synovial structures related to muscles (tendon sheaths, bursae)
7. Understand and describe different form of fibrous structures occurring in skeletal muscles (aponeurosis, tendon, raphae)

5. Circulatory Systems:

1. Give the classification of circulatory systems (cardiovascular, lymphatic)

a) Cardiovascular System:

1. Understand and describe different types of cardiovascular circulation (Systemic, Pulmonary and Portal)
2. Understand and explain the classification and structures of different types of blood vessels.
3. Define, understand and classify anastomoses with examples and their clinical correlates

b) Lymphatic System:

1. Define and describe components of lymphatic system (lymph nodes and lymph vessels)
2. Comprehend the mechanism of production and circulation of lymph.
3. Describe the functions of lymphatic system and its role in spread of infection and cancer

6. Nervous System:

1. Name different components of nervous tissue (neuron, ganglion, nuclei, nerve, tracts)
2. Define and classify different types of nervous system (Somatic and Autonomic)
3. Enumerate different parts of somatic nervous system, their morphology and functions (central nervous system and peripheral nervous system).
4. Describe the formation and distribution of a typical spinal nerve.
5. Discuss the nerve plexus formation; define dermatomes and give their clinical importance.
6. Enumerate and describe different parts of autonomic nervous system and their functions (sympathetic nervous system and parasympathetic nervous system).
7. Define and comprehend reflex, reflex arc and referred pain.

7. Skin and Fascia:

1. Name different types of skin and mention its components (dermis and epidermis).
2. Enumerate its appendages and give their function (hair, nail, arrector pili muscles, sebaceous and sweat glands).
3. Comprehend and describe the structure and function of superficial and deep fasciae including retinaculae and septae.
4. Describe the skin lines and their significance.
5. Give clinical significance of discolouration of skin (jaundice, cyanosis and anemia).

8. Common Diagnostic Techniques used in the study of Human Body

1. Interpret normal radiographs of different regions of the body.
2. Identify displacement of the fracture segments of the bone.
3. Diagnose dislocation of the joints.
4. Understand and interpret ultra-sonographs of abdominal viscera.
5. Understand principle of CT scan and interpret the normal scans.
6. Comprehend MRI and interpret normal images of different diagnosis techniques i.e. X-rays and CT scans, MRI and Ultra-sonography.
7. Take the Biopsy and prepare it for examination.

“Course objectives of Upper & Lower Extremities / Limbs”

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

1. Develop an expertise in prosection and identification of structures in a cadaver
2. Develop clear concepts of the topographic anatomy of the regions.
3. Understand muscle attachments, their actions, nerve supply and effect of paralysis occurring in groups and important individual muscles
4. Develop clear concept of structure and mechanism of joints and the clinical conditions involving them.
5. Understand bones of the appendicular skeleton, their general and special features
6. Recognize and describe the bones of the foot and hand individually, in articulation and in skiagrams.
7. Develop clear concept about common fractures of the bones, displacement of their fragments and, factors causing it.
8. Understand nerve plexuses of limbs, their normal variations and different clinical conditions related to them.
9. **Understand different kinds of injuries to the important nerves of the extremities, the ways these injuries are produced, their effects and clinical tests to diagnose the conditions.**
10. Recognize important superficial veins and their clinical uses.
11. Understand the mechanism by which the blood is pumped from lower limb and anatomical factors which predispose to development of varicose veins.
12. **Understand anatomical relevance to important clinical conditions in the regions.**
13. Understand the scheme of regional lymphatic drainage and vascular supply.
14. Interpret normal skiagrams, C.T. Scans, MRI and Ultrasound.

“Course objectives of Thorax”

On completion of the Gross Anatomy of Thorax the students are able to:

1. Develop an understanding of the topographic anatomy of the region and describe it.
2. Understand and describe the anatomy of the bony thorax and costo-vertebral and other joints of thorax and the mechanism of respiration.
3. Understand and mark the important thoracic viscera and pleural reflections 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 precise account of the Anatomy of thoracic viscera, muscles, nerves, blood vessels and fasciae of the region and correlate anatomical information to common clinical conditions.
6. Understand and describe the scheme of the regional lymphatic drainage and lymph nodes.
7. Interpret normal skiagram, CT scan, MRI and other diagnostic techniques.

“GENERAL HISTOLOGY”

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

1. Enumerate and describe structure of different components of cell.
2. Classify the basic tissues of the body.
3. Classify and describe different types of epithelia with examples.
4. Comprehend and describe surface modification of plasmalemma (intercellular junctions, microvilli, cilia, stereocilia, basal striations).
5. Define, classify and describe different types of connective tissue proper with examples.
6. Comprehend and describe the structures of connective tissue cells, fibers and ground substance.
7. Classify and describe different types of cartilages with examples.
8. Classify bones from histological point of view (spongy and compact), and describe their microscopic structure.
9. Comprehend and describe histogenesis of bone (intramembranous and intracartilagenous).
10. Classify and describe light and electron microscopic structure of muscles (smooth, cardiac and skeletal).
11. Classify and describe the structure of neuron, neuroglial cells and nerve fibre
12. Describe microscopic structure of lymphoid organs (lymph node, spleen, tonsils and thymus) and give their functions.
13. Classify and describe different sub-division of vascular system.
14. Understand and describe microscopic structure of different types of blood vessels.
15. Describe microscopic structure of skin and its appendages (hair follicle, sebaceous and sweat glands) and give their functions.
16. Understand and describe the microscopic structure of mammary gland in different functional stages.
17. Describe the microscopic structure of respiratory system (nasal cavity, epiglottis, trachea, bronchi and lungs) and give the changes in structure correlating these to their functions.
18. Define apoptosis, hypertrophy, atrophy, metaplasia, hyperplasia, anaplasia, neoplasia, necrosis.
19. Identify, draw and label light microscopic structures of above mentioned tissues.

“EMBRYOLOGY”

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

1. Comprehend and describe the process of cell division (mitosis and meiosis) and gametogenesis.
2. Understand and describe ovarian and menstrual cycle.
3. Understand and describe fertilization, cleavage, blastocyst formation and implantation of the embryo (1st week of development).
4. Comprehend and describe stages of early embryonic development in second and third week of intrauterine life.
5. Understand and describe development of embryo (4th - 8th week of development).
6. Comprehend and describe fetal period (9th week to birth).
7. Define and describe fetal structures (amnion, chorion, yolk sac, allantois and umbilical cord)
8. Comprehend and describe formation of placenta, its structure and anomalies.
9. Understand and describe the basis of multiple pregnancies.
10. Understand and describe procedures for assessment of fetal status.
11. Define and understand clinical correlates i.e. anovulatory cycles, semen analysis and abnormal sites of implantation.
12. Understand In-Vitro Fertilization (IVF), assisted in-vivo fertilization.
13. Understand and describe the rationale of choriocarcinoma, pregnancy test, sacro-coccygeal teratoma, hydatidiform mole.
14. Understand the check points of estimation of gestational age and viability of fetus.
15. Understand the basis of intrauterine growth retardation, hydramnios, twin transfusion syndrome, conjoined twins, umbilical cord length variation, and amniotic bands.
16. Define teratogenesis and name common teratogens.
17. Describe the development of Integumentary system including mammary gland and their anomalies.
18. Describe the development of limbs and vertebral column including their anomalies.
19. Understand and describe the development of muscular system and their anomalies.
20. Understand and describe the structural and numerical chromosomal anomalies i.e. Klinefelter syndrome, Turner's syndrome, Super-female, Down's syndrome, Polyploidy.

Clinical Module

1. Describe clinical effects of nerve injuries of the upper and lower limbs
2. Explain the anatomical aspects of fracture of bones of upper and lower limbs (clavicle, humerus, radius, ulna, femur, tibia, fibula, scaphoid) and ribs
3. Explain the anatomical aspects of dislocation of joints of limbs
4. Describe anatomical basis of contracture, ganglia, pulp infection, carpal tunnel syndrome
5. Explain the anatomical basis of femoral hernia, varicose veins, bursitis and lymphadenitis
6. Describe anatomical basis of spread of carcinoma breast
7. Explain clinical importance of coronary circulation with reference to angina and myocardial infarction
8. Define cardiac tamponade, pericarditis and paracentesis in relation to anatomical aspects
9. Define pleural effusion, pleurisy, pleural tap, pneumothorax, hydrothorax, haemothorax, pneumonia, bronchogenic carcinoma, foreign body in airways in relation to anatomical aspects

SYLLABUS, ToS & OSPE

M.B.B.S.

FIRST PROFESSIONAL

PART-I

ANATOMY INCLUDING
HISTOLOGY

MBBS 1st PROFESSIONAL (PART-I)

TABLE OF SPECIFICATIONS (ToS)

Anatomy including Histology

General Anatomy	Anatomical Terms and Sectional Planes of the Body	1	One In reference to Upper and Lower Limbs
	Skeletal System		
	Joints	1	
	Muscles	1	
	Circulatory System (a) Cardio Vascular & (b) Lymphatic Systems	1	
	Nervous System	1	
	Skin and Fasciae	1	
	Diagnosis Techniques		
Histology	Cell	1	1
	Epithelium	1	
	Connective Tissue (a) Bones (b) Cartilage (c) Connect Tissue Proper	2	
	Muscular Tissue	1	
	Nervous Tissue, Skin and Mammary Gland	1	
	Lymphoid organs	1	
	Vascular System	1	
	Respiratory System	1	
Embryology	Cell Divisions (mitosis and meiosis) and Gametogenesis	1	1
	Fertilization, Development 1-2 weeks	1	
	Development 3- 8 weeks	1	
	Fetal Period and Teratogenesis	1	
	Fetal membranes & Placenta	1	1
	Multiple pregnancies and diagnostic procedures	1	
	Development of muscular system, skeletal system and limbs	2	
	Development of skin, appendages and mammary glands	1	
Upper Limb	Pectoral Region, Shoulder region, Axilla	2	1
	Arm	1	
	Forearm	2	1
	Hand	2	
Lower Limb	Gluteal region	1	1
	Thigh	2	
	Leg	2	1
	Foot	2	
Thorax	Heart	1	1
	Lung	1	
	Pericardium / Pericardial Sac	1	
	Pleura, Pleural Cavity	1	
	Thoracic Wall, Joints, Bones and Diaphragm	1	
	Intercostal space and contents	1	
	Mediastinum and its contents	1	
	Total	45	9

- 25% MCQ's and SEQ's should be clinical oriented or problem based
- In each limb, an equal distribution should be practiced for the following tissues
 - Skin
 - Muscles
 - Bones
 - Connective Tissue sheathes
 - Joints

- vi. Nerves
 - vii. Vessels
3. SEQs of general anatomy may be asked in reference to upper and lower limb

MBBS 1st Professional Part (I) OSPE

Gross Anatomy, Radiological Anatomy & Embryology

Gross & Radiological Anatomy and Embryology.

1. Total No. of stations 12, each station will have 02 marks and 04 spots of identification.
2. Each station shall be given 1.5 min.
3. Total marks shall be 24.

Gross Anatomy of Upper Limb, Lower Limb, Thorax, Radiological Anatomy & Embryology

Time per station: 1.5 minutes (18 minutes)

Sr.No	Region/ Area	Station No	No of Spots	Marks Each Stations
1	Upper Limb	01	04	02
	Upper Limb	02	04	02
	Upper Limb	03	04	02
2	Lower Limb	04	04	02
	Lower Limb	05	04	02
	Lower Limb	06	04	02
3	Thorax	07	04	02
	Thorax	08	04	02
4	Radiological Anatomy	09	04	02
5	Embryology	10	04	02
	Embryology	11	04	02
	Embryology	12	04	02
	<u>Total</u>	<u>12</u>	<u>48</u>	<u>24</u>

HISTOLOGY OSPE AND VIVA

1. There shall be 10 slides fixed on 10 microscopes.
2. They will move from one to the next slide in a predetermined direction.
3. For each station one minute shall be given, students will give point/points of identifications for each slide
(Annexure A).

4. Total number of identifications spots 10
 - a. Each spot will be given 01 mark (0.5 marks for identification and 2 points of identification, 0.25 marks each)
 - b. Total marks allocated shall be: 10
5. Time consumed shall be 10 min.

Long slide (Total Marks 10):

6. Time: 15 minutes will be given for

Identification	1 mark
Drawing	1 mark
Labeling	1 mark

Interactive Examination Long Slide: 7 marks

ANATOMY STRUCTURED VIVA

The following areas shall be examined; the questions are framed with emphasis on those areas which are not easily evaluated in theory examinations. Course segments, the marks allocation and number of questions for each are given as under:

Sr. #	Course Area	Marks allocated	Minimum Number of Questions
1.	Surface marking	04	01
2.	Upper limb	10	02
3.	Lower limb	10	02
4.	Thorax	10	02
5.	Embryology	12	03
<u>Total</u>		<u>46</u>	<u>10</u>

Note: Materials for the examination shall be the responsibility of the Department/ College which should be put in place well before the time of the examination. Examination space and facilities shall be evaluated by the external examiner who will make sure that the movements of the candidate are well organized to maintain the transparency of the procedure.

TIME TABLE

AL- ALEEM MEDICAL COLLEGE LAHORE

1st Year MBBS Session 2018- '19

Day	8:00am - 09:45am (Practical/Tutorial)	09:45am - 10:40am (Lecture)	10:40am – 11:00am	11:00am - 11:55am (Lecture)	11:55am – 12:50pm (Lecture)	12:50pm - 2:35pm			2:35pm-03:30pm
						Demonstration	Practical Dissection		
						12:50pm-01:45pm	01:45pm-02:35pm		
Monday	Batch:A(Histology) Batch:B(Physiology) Batch:C(Biochemistry)	Biochemistry	B R E A K	General Anatomy	Physiology	Dissection			SDL
Tuesday	Batch:A(Physiology) Batch:B(Biochemistry) Batch:C (Histology)	Physiology		Embryology	Clinical Anatomy SGD (Tutorial)	Dissection			SDL
Wednesday	Batch:A(Biochemistry) Batch:B(Histology) Batch:C(Physiology)	Histology		Physiology	Biochemistry	Dissection			SDL
Thursday	Clinical Physiology SGD (Tutorial)	Embryology		Biochemistry	Physiology	Dissection			SDL
Friday	08:00am-09:30am (Lecture)	09:30am-10:15am (Lecture)	10:15am-11:00am Physiology (Lecture)		11:00am-11:45am (Lecture)	11:45-12:30	12:30-1:30	1:30-2:30	2:30pm-3:30pm
	Clinical Biochemistry SGD (Tutorial)	Clinical Lecture			Biochemistry	Islm/Pk std.	Jumma Prayer	DSL	SDL

Assessment

All Final Terms/stages and sub-stages of Gross Anatomy

Written:

- SEQs
- MCQs

Practicals:

- Viva
- Surface markings
- OSPE including radiology

Histology

1. Written:

- SEQs
- MCQs

2. Practicals:

- Short Slide identification
- Viva & Long Slide (Draw and Label)

Embryology

1. Written:

- SEQs
- MCQs

2. Practicals:

Viva

Faculty

- Professor Dr Ferdose Sultana (General & Systemic Embryology Lectures & Supervision of all academic activities and assessment)
- Professor Dr Nazia Salman (General Anatomy)
- Dr. Masooma Ahmad (Histology/Embryology Lectures, Incharge 1st year MBBS)
(Gross Anatomy Demonstrations & Small group Discussions)
- Dr. Mohammad Faisal Shahzad (Gross Anatomy Demonstrations & Small Group Discussions)
- Dr. Hamna Umar (Gross Anatomy Demonstrations & Small Group Discussions)
- Dr. Mahmood Danishwar (Gross Anatomy Demonstrations & Small Group Discussions)
- Dr. Huma Jawad & Dr. Shumila Sohail (Histology Practicals)