

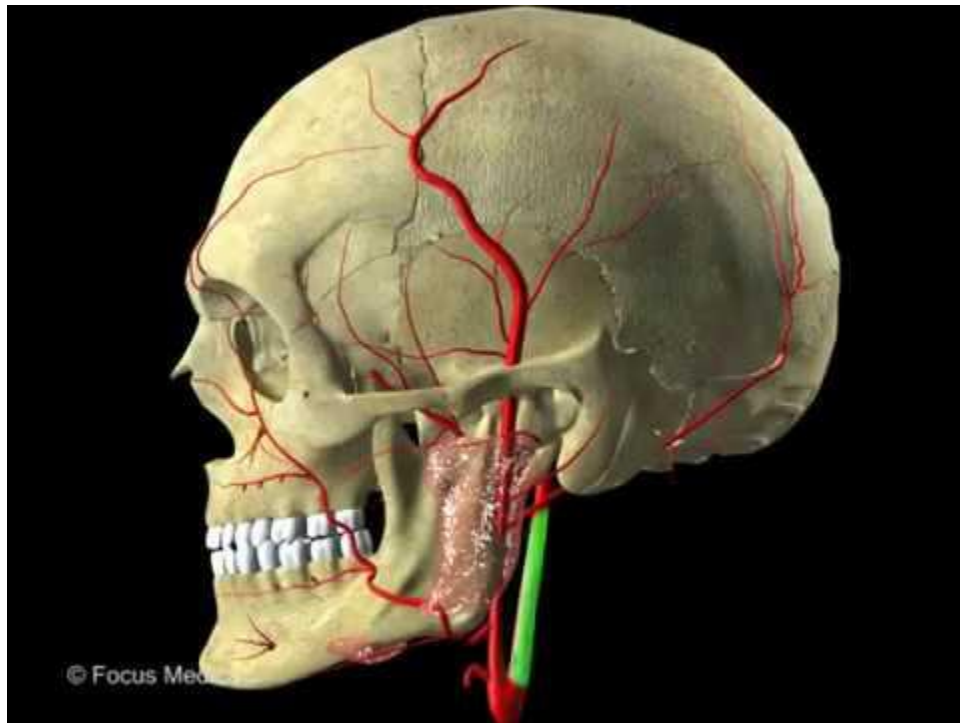


LAHORE  
MEDICAL & DENTAL  
COLLEGE

## **STUDY GUIDE**

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### **DEPARTMENT OF ANATOMY**



**LAHORE MEDICAL AND DENTAL COLLEGE**  
**Department of Anatomy, 2024**

**STUDY GUIDE OF ANATOMY FOR BDS STUDENTS**  
**PREPARED BY: PROF. DR. ARUNA BASHIR**

## **INTRODUCTION**

Medical education is a life-long process and BDS curriculum is a part of the continuum of education from pre-dental education, BDS, proceeding to house job, and post-graduation. PMDC outlines the guiding principles for undergraduate dental curriculum and has defined the generic competencies and desired outcomes for a dental graduate to provide optimal health care, leading to better health outcomes for patients and societies.

## **PURPOSE OF GUIDE**

To facilitate learning of the students by enlightening learning outcomes, content/syllabus given by PMDC, teaching and learning methodologies, learning resources available in the department of Anatomy and institution, assessment methods, examination regulations, academic planners and time tables. This will facilitate students in planning their educational activities in the subject of Anatomy for the one year period for BDS.

## **TARGET AUDIENCE**

1<sup>st</sup> year BDS students

## **DURATION OF SESSION**

1 year for BDS students

## **DEPARTMENTAL STAFF HIERARCHY PLAN**

### **BDS**

Prof. Dr. Aruna Bashir (Prof.)

Dr. Tuba Aftab (Demonstrator)

Dr. Momin Malik (Demonstrator)

### **LABORATORY ASSISTANTS**

M. Imran

M. Waseem

### **LABORATORY TECHNICIAN**

M. Ismaeel Khan

### **LABORATORY ATTENDANTS**

M. Tariq

Arif Masih

### **CURATOR OF MUSEUM**

Humayun Sarfraz

### **CLEANERS**

Rafaqat Masih

Johnsen

### **COMPUTER OPERATOR**

Shahid Raza

### **OFFICE BOY**

M. Amjad

## **LEARNING OBJECTIVES**

At the end of the 1st year BDS course in Anatomical Sciences the undergraduate student should be able to:

- Identify the key concepts of the structure of human anatomy particularly of head and neck.
- Correlate clinical anatomy with physical diagnosis, radiologic findings and invasive procedures.
- Comprehend anatomical basis of disease and injury related to head and neck region.
- Comprehend structure of the various tissues, a pre-requisite for understanding of the disease processes.
- Comprehend nervous system to locate the site of lesions according to the sensory and or motor deficits encountered.
- Understand the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards.
- Demonstrate an understanding of clinical presentations and strategies for health maintenance.
- Build communication skills while involved in peer teaching of clinical anatomy.

## **TEACHING METHODOLOGIES FOR ANATOMY**

- Interactive Lectures
- Gross Anatomy Demonstrations to Small Group
- Histology Practical Demonstrations to small group
- Power Point Presentations by students
- Clinico-Anatomical conferences
- Self Directed Learning
- Virtual dissection on Virtual Dissection Table

## **ATTENDANCE REQUIREMENT FOR ANATOMY**

- 1) Students are expected to attend all scheduled teaching sessions and examinations
- 2) Attendance in lectures, practicals, and demonstrations is mandatory. Absence from these sessions will make the students ineligible to sit the final summative assessment.
- 3) A minimum of 75 % attendance in the lectures, practicals and demonstrations is mandatory to appear in the summative UHS examination
- 4) Attendance will be recorded through a log-in/log-out biometrics system
- 5) Absence due to illness must be certified appropriately by the General Physician

## **SYLLABUS FOR 1<sup>ST</sup> PROFESSIONAL BDS (PMDC AND UHS)**

### **GENERAL ANATOMY**

- Body organization
- Various disciplines of anatomy
- Anatomical nomenclature
- Anatomical planes
- Descriptive terminology
- Body regions
- Important definitions

### Bones

- Introduction
- Functions of bones
- Organization of skeletal system
- Surface features of bone
- Shape of bones
- Structure of bone
- Bones development and growth
- Bone remodeling
- Clinical considerations
  - Development disorders
  - Nutritional and hormonal disorders
  - Neoplasm of bones
  - Aging and bones
  - Osteoporosis

### Cartilages

- Introduction
- Structural classification
- Regional distribution

### Joints

- Introduction
- Classification according to range of movement
- Classification according to structure
- Structure of synovial joint
- Classification of synovial joints
- Movement at synovial joint
- Clinical considerations
  - Trauma to joints
  - Diseases of joints

## Muscles

- Introduction
- Functions of muscles
- Classification
- Muscle attachments
- Blood supply and nerve supply
- Neuromuscular junctions
- Applied anatomy of muscles with reference to spasm

## Cardiovascular system

- Introduction to CVS
- Classification of blood vessels
- Various types of blood circulations
- Anastomosis
- Introduction to lymphatic system
- Lymph nodes

## Nervous system

- Introduction
- Different parts of CNS with their brief description
- Peripheral nervous system
- Autonomic nervous system

## Introduction to

- Radiography
- CT scan
- MRI
- Ultrasonography
- Angiography

## **GROSS ANATOMY**

The gross anatomy of head and neck, spinal cord and brain is included in course. Gross anatomy of these regions is taught through dissection and demonstrations. Special emphasis and study is to be placed on oral and maxillofacial regions. Lectures should stress morphological concepts, functional correlations and practical applications to clinical problems. Lectures on radiographic anatomy of head and neck and the development of human body should also be integrated with teaching gross anatomy.

## **PRACTICAL WORK**

Study of gross anatomical features of dissected out specimens of head and neck, brain and spinal cord. This includes demonstrations on models and dissected parts.

## **ESSENTIAL SKILLS**

The candidate should be able to perform following

- Cadaveric dissection to identify important anatomical structures
- Surface marking of anatomical structures
- Identification of important anatomical structures on study models

## **EMBRYOLOGY**

- Gametogenesis
- Fertilization
- Embryonic period with emphasis on granulation and derivatives of germ layers
- Development of head and neck including eye , ear and related congenital anomalies

## **HISTOLOGY**

- General histology
  - Introduction
  - Cell
  - Epithelium
  - Connective tissue
  - Muscle
  - Nervous tissue
  - Circulatory system
  - Lymphatic system
  - Integumentary system
- Special histology
  - Special histology of head and neck (including eye , ear ,trachea and esophagus)

## **ALLOCATION OF CREDIT HOURS IN BDS COURSE**

Lecture Hours	100 Hrs
Practical Hours	300 Hrs
Total Hours	400 Hrs

**ALIGNMENT OF EDUCATION WITH TIME TABLE**  
**1<sup>ST</sup> YEAR BDS HISTOLOGY LECTURES SCHEDULE 2024**

<b><u>DATE</u></b>	<b><u>TOPIC</u></b>
26/2/24	Epithelium 1
27/2/24	Epithelium 2
28/2/24	Glandular epithelium
28/2/24	Cell surface specialization
29/2/24	Cell Surface Specialization
1/3/24	Connective tissue 1
4/3/24	Connective Tissue 2
5/3/24	Connective Tissue 3
6/3/24	Bone and Cartilage 1
6/3/24	Bone and Cartilage 2
7/3/24	Muscle tissue 1
8/3/24	Muscle tissue 2
11/3/24	Circulatory system 1
12/3/24	Circulatory system 2
14/3/24	Circulatory system 2
<b>11/3/24/3/24</b>	<b>TEST 1</b>
18/3/24	Nervous tissue 1
19/3/24	Nervous tissue 2
20/3/24	Nervous tissue 3
21/3/24	Lymphoid system 1
25/3/24	Lymphoid system 2
26/3/24	Lymphoid system 3
27/3/24	Integumentary system 1
28/3/24	Integumentary system 2
2/4/24	GIT
4/4/24	GIT
5/4/24	Respiratory system
15-16/4/24	Respiratory system
17/4/24	Eye
18/4/24	Ear
19/4/24	Endocrine
22/4/24	Endocrine
<b>23/5/24</b>	<b>TEST 2</b>

## 1<sup>ST</sup> YEAR BDS EMBRYOLOGY LECTURES SCHEDULE 2024

<b>DATE</b>	<b>TOPIC</b>
18/9/24	Gametogenesis
19/9/24	Gametogenesis
20/9/24	Gametogenesis
23/9/24	Ovarian cycle
24/9/24	Fertilization
25/9/24	Cleavage, Blastocyst formation, Uterus at the time of implantation
26/9/24	2 <sup>nd</sup> week of development
27/9/24	2 <sup>nd</sup> week of development
30/9/24	2 <sup>nd</sup> week of development
1/10/24	Gastrulation
2/10/24	Notochord formation and neurulation, fate map
3/10/24	Growth of embryonic disc,
4/10/24	Revision
<b>7/10/24</b>	<b>TEST 1</b>
8/10/24	Further development of trophoblast
9/10/24	Embryonic period 3-8 week of development
10/10/24	Embryonic period 3-8 week of development
11/10/24	Embryonic period 3-8 week of development
14/10/24	Embryonic period 3-8 week of development
15/10/24	Fetal period monthly changes
16/10/24	Head and Neck
17/10/24	Head and Neck
18/10/24	Head and Neck
21/10/24	Head and Neck
22/10/24	Birth Defects
23/10/24	Teratology
24/10/24	Special senses 1
25/10/24	Special senses 2
28/10/24	Special senses 3
29/10/24	Special senses 4
<b>4/11/24</b>	<b>TEST 2</b>



**1<sup>ST</sup> YEAR BDS GENERAL ANATOMY LECTURE SCHEDULE 2024**

<b>DATE</b>	<b>TOPIC</b>
5/11/24	INTRODUCTION
5/11/24	BONES AND CARTILAGES
6/11/24	BONES AND CARTILAGES
6/11/24	BONES AND CARTILAGES JOINTS
7/11/24	JOINTS
7/11/24	JOINTS
8/11/24	MUSCLES
11/11/24	MUSCLES
11/11/24	MUSCLES and STRUCTURES RELATED TO MUSCLES
12/11/24	CARDIOVASCULAR SYSTEM
12/11/24	CARDIOVASCULAR SYSTEM
13/11/24	NERVOUS SYSTEM
14/11/24	NERVOUS SYSTEM/SKIN
<b>15/11/24</b>	<b>TEST</b>

## 1<sup>ST</sup> YEAR BDS HISTOLOGY PRACTICAL SCHEDULE 2024

<b>DATE</b>	<b>TOPIC</b>
26/2/24	Microscope
4/3/24	Epithelium 1
11/3/24	Epithelium 2
18/3/24	Glandular epithelium
25/3/24	Connective tissue 1
1/4/24	Connective tissue 2
8/4/24	Cartilage
15/4/24	Spongy and compact bone
22/4/24	Smooth, skeletal and cardiac muscle
29/4/24	Circulatory system
6/5/24	Circulatory system
13/5/24	Peripheral nerve and ganglia
20/5/24	Spinal cord, cerebellum and cerebrum
27/5/24	Lymphoid system 1
3/6/24	Lymphoid system 2
10/6/24	Integumentary system
17/6/24	Revision
29/7/24	Tooth/gum/tongue
5/8/24	Oral cavity/lip/salivary glands
12/8/24	Esophagus
19/8/24	Epiglottis/trachea
26/8/24	Pinna/eyelid/cornea
2/9/24	Retina
9/9/24	Endocrine
16/9/24	Endocrine
	<b>TEST</b>

**1ST YEAR BDS TEACHING SCHEDULE FOR HEAD AND NECK**  
**SESSION 2024**

<b>DATE</b>	<b>TOPIC</b>
26/2/24	Introduction (Terms, bones, anatomical position)
27/2/24	Skull (Norma Verticalis)
28/2/24	Skull (Norma Frontalis)
1/3/24	Scalp
4/3/24	Face (Muscles of facial expression)
5/3/24	Face (Blood vessels)
6/3/24	Face Extracranial course of facial nerve
8/3/24	Clinical
8/3/24	Lacrimal Apparatus +eyelids and palpabrae
11/3/24	Deep cervical fascia
12/3/24	Deep cervical fascia
13/3/24	Posterior triangle of neck
13/3/24	Posterior triangle of neck
15/3/24	Revision
<b>18/3/24</b>	<b>SUBSTAGE 1</b>
19/3/24	Anterior triangle of neck
20/3/24	Anterior triangle of neck
22/3/24	Anterior triangle of neck
22/3/24	Anterior triangle of neck
22/3/24	Cranial fossa
25/3/24	Meninges
26/3/24	Meninges
27/3/24	Venous sinuses
29/3/24	Venous sinuses and pituitary gland
<b>1/4/24</b>	<b>SUBSTAGE 2</b>
2-3/4/4/24	Orbital cavity and muscles
5/4/4/24	Ophthalmic nerve
15/4/4/24	3,4,6 cranial nerves
16/4/4/24	Vessels of the orbit
17/4/4/24	Hyoid Bone
19/4/4/24	Mandible
22/4/4/24	Temporomandibular joint
23/4/4/24	Temporal & infratemporal fossa,
24/4/4/24	Mandibular nerve
24/4/4/24	Pterygopalatine fossa, maxillary nerve
25/4/4/24	Muscles of mastication
26/4/4/24	Maxillary artery
<b>29/4/4/24</b>	<b>SUBSTAGE 3</b>
30/4/4/24	Thyroid and parathyroid gland
2/5/24	Submandibular gland

3/5/24	Parotid gland
3/5/24	Tongue, Oral cavity and hypoglossal nerve
6/5/24	Hard palate
6/5/24	Soft palate
7/5/24	Pharynx
8/5/24	Pharynx
9-10/5/24	Nose
13/5/24	Larynx
14/5/24	Larynx
15/5/24	Base of skull
16-17/5/24	External ear + Middle ear cavity
20/5/24	Middle ear cavity
21/5/24	Internal ear
22/5/24	7,8 cranial nerves, Eyeball
23-24/5/24	Revision
<b>27/5/24</b>	<b>SUBSTAGE 4</b>
28/5/24	Norma lateralis
29/5/24	Norma occipitalis, Cervical vertebrae
30/5/24	Joints of neck
31/5/24	Muscles of prevertebral region, suboccipital triangle and scalene muscles
3/6/24	Muscles of prevertebral region, suboccipital triangle and scalene muscles
4/6/24	Cervical sympathetic trunk, cervical plexus + Dermatomes of neck
5/6/24	Subclavian system and cervical part of oesophagus and trachea
<b>10/6/24</b>	<b>SUBSTAGE 5</b>
11/6/24	Cranial nerves 9,10,11
12/6/24	Cranial nerves 9,10,11
13-21/6/24	Revision
<b>22/7/24</b>	<b>FINAL STAGE 2/MID TERM</b>

**1ST YEAR BDS TEACHING SCHEDULE OF BRAIN 2024**

<b>DATE</b>	<b>TOPIC</b>
29/7/24	Spinal cord
30/7/24	Spinal Cord
31/7/24	Spinal cord
1/8/24	Spinal Cord
2/8/24	Medulla
5/8/24	Medulla
6/8/24	Pons
7/8/24	Pons
8/8/24	Mid brain
9/8/24	Mid Brain
12/8/24	Floor of fourth ventricle and Auditory pathway
13/8/24	Cerebellum
15-16/8/24	Revision
<b>19/8/24</b>	<b>SUBSTAGE 1</b>
20/8/24	Cerebellum
21/8/24	Cerebral cortex
22/8/24	White matter including internal capsule
23/8/24	Basal ganglia
26/8/24	Thalamus
27/8/24	3rd Ventricle, metathalamus,
28/8/24	Hypothalamus, epithalamus, subthalamus
29/8/24	Lateral ventricle, 4th ventricle, CSF, cisterns
30/8/24	Lateral ventricle, 4th ventricle, CSF, cisterns
2/9/24	Limbic system
3/9/24	Blood supply of brain
4/9/24	Olfactory and visual pathways
5/9/24	Revision
<b>6/9/24</b>	<b>SUBSTAGE 2</b>
9-13/9/24	Revision
<b>16-17/9/24</b>	<b>FINAL STAGE</b>

**ASSESSMENT METHODOLOGY FIRST PROF. BDS****FORMATIVE****SUMMATIVE** (To be held at the end of the year)

One Written Paper

**Marks Distribution:**

Paper Marks 90

Internal Evaluation Marks 10

Oral &amp; Practical Marks 90

Internal Evaluation Marks 10

Total Marks 200

**TABLE OF SPECIFICATIONS FOR FIRST PROF. BDS WRITTEN PAPER (UHS)**

<b>Sr. No.</b>	<b>Contents</b>	<b>MCQs</b>	<b>SEQs</b>
1	General Anatomy	3	1
2	General Embryology (Gametogenesis, fertilization and embryonic period)	3	1
3	Development of head and neck including development of eye and ear	3	1
4	General Histology (Introduction to histology and microscopes, microscopic structure of the cell, epithelial tissue, connective tissue, muscle tissue, nervous tissue, circulatory system, lymphoid system and integumentary system)	6	2
5	Special Histology of head and neck including histology of eye ear trachea and esophagus	3	1
6	Gross Anatomy of head and neck	21	7
7	Gross structures of brain and spinal cord	6	2
	Total Items	45	15
	Total Marks	45X1=45	15X3=45

## **LEARNING RESOURCES FOR BDS STUDENTS**

### **Recommended books**

#### **The latest edition of following books are recommended**

- Langman's Medical Embryology By Sandler
- The Developing Human By Moore And Persaud
- Color Atlas Of Anatomy By Mc Minn
- Anatomy For Dental Students By Johnson And Moore
- Clinical Neuroanatomy By R. Snell
- Last's Anatomy By Mc Minn
- Clinically Oriented Anatomy By Moore
- Gray's Anatomy For Students
- Cunningham Manual Of Practical Anatomy Vol.III
- Basic Histology Junqueira, Carneiro Contopoulos
- Wheater's Functional Histology Text And Color Atlas
- Atlas of Histology by Difoire's
- Medical Histology by Dr. Laiq Hussain Siddique.

#### **Technologies to be used:**

- Online reading material through HEC digital library facility