



FIRST YEAR BDS ANATOMY STUDY GUIDE 2022-2023

*Updated on 18 September
2023*

Introduction to Anatomy

Department Vision:

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

Department Mission:

To impart core knowledge of anatomy in interesting, compact and practical way to undergraduate students by Hybrid/Spiral integrated system of teaching so that they can differentiate between normal and abnormal structure at gross, microscopic and embryological level. The objectives are achieved through knowledge of Anatomy on principles of pedagogy. Skills are developed by dissection and prosection, simulation – models, cyber teaching, surface anatomy, modern histological techniques. Attitudes are developed by employing communication skills, lecture and presentations, self-directed learning, museum Atlas, integrated journal, cyber teaching, e-learning, quest for research, journal club meetings, library, professionalism, empathy, inter-personal skills, and extra-curricular activities.

Resources

- A. Teaching resources
- B. Supporting staff
- C. Infrastructure resources

Teaching Resources Faculty Members

Department of Anatomy Involved in BDS Teaching			
1	Dr. Shaista Arshad Jarral	Associate Professor & HOD	MBBS, M. Phill, CMT,FCPS-IMM
2	Dr. Wara Butt	Demonstrator	MBBS
3	Dr. Sukaina M Nafey	Demonstrator	BDS

Supporting Staff

Sr No	Supporting staff	Number	Shared with MBBS
1	Computer operator	1	
2	Lab assistant	2	
3	Lab technologist	1	
4	Dissection hall attendant	3	
5	Curator	1	
6	Embalmer	1	
7	Runner	1	

Infrastructure Resources

Sr. #.	Infrastructure Resources	Quantity
1	Lecture hall <ul style="list-style-type: none">• Seating Capacity 140• Multimedia• Microphone• Computer system• White board	1
2	Small group discussion rooms (DH)	5
2	Histology Lab <ul style="list-style-type: none">• Microscopes• Histological slides	1
3	Museum <ul style="list-style-type: none">• Study models• Atlas	1
4	Dissection Hall	1

Teaching and Learning Strategies

Multiple educational methods will be used comprising of self-study, interactive lectures, group discussions, practical, and manual dexterity skill sessions.

(i) Methods for achieving cognitive objectives

- Interactive lectures using audio visual aids on power point presentation
- Group discussions in form of large group and small group
- Collaborative learning
- Self-study and reading from learning resources

(ii) Methods for achieving psychomotor objectives

- Focusing the histological slides on microscope
- Identification of normal histological structures on slides under different magnifications
- Drawing and labeling the histological slides on practical notebooks

(iii) Methods for achieving affective objectives

- Interaction with peers, group members, teachers, support staff etc.
- Group discussions (small and large)

Learning Methodologies

The following teaching/ learning methods are used to promote better understanding:

- Interactive lectures
- Small group discussions
- Large group discussions
- Demonstrations
- Dissections / Prosection (Skill sessions)
- Self-directed learning
- Practical
- Histology journal
- Study models

Curriculum Implementation

Curriculum implementation refers to putting into practice the official document including course content, objectives, learning and teaching strategies. Implementation process helps the learner to achieve knowledge, skills and attitudes required of the learning tasks. Learners are a pertinent component of the implementation process. Implementation occurs when the learner achieves the intended learning experiences, knowledge, ideas, skills and attitudes which are aimed to make the learner an effective part of the society. Curriculum implementation also refers to the stage at which curriculum is put into effect. There has to be an implementing agent as well. Teacher is an important part of this process and implementation of the curriculum is the way the teacher selects and utilizes various components of the curriculum. Implementation occurs when the teacher's formulated course content, teacher's personality and teaching and learning environment interact with the learners. Therefore, curriculum implementation is how the officially planned course of study is translated and reflected by the teacher into schemes of work, lesson plans, syllabus and resources are effectively transferred to the learners. Curriculum implementation can be affected by certain factors such as teachers, learners, learning environment, resource materials and facilities, culture and ideology, instructional supervision and assessments.

Personnel involved in teaching and facilitation

(i) Lectures delivery by: Dr. Shaista Arshad Jarral (Associate Prof & HOD), Dr. Ansa Rabia (Professor), Dr. Tayyaba Mahmud (Assistant Prof.), Dr. SaadiaHafeez (Assistant Prof.), Dr. Rabia Labia Latif (Assistant Prof)

(ii) Demonstrators and facilitators for practical, dissection and small group discussion sessions:

Dr. Wara Butt, Dr. Sukaina M Nefay, Dr. Gul Snober, Dr. Seemi Amna Zeeshan

(iii) Support staff: Lab assistants, lab technologist, computer operator, dissection hall attendants, curator, embalmer, runner

Time Frame

Course duration: 36 weeks

Lectures: Monday (9:50 to 10:45 am), Tuesday (8:00 to 8:55am), Thursday (8:00 to 8:55 am)

Dissection: Monday (11:15 am to 01:05 pm), Tuesday (1:05 to 3:00 pm), Wednesday & Thursday (8:55 to 10:45 am)

Practical: Thursday (1:05 to 3:00 pm), Friday (11:00 am to 01:00 pm)

Course Outline

Term	Subject	Teaching & Learning	Evaluation
Block - I	Gross Anatomy	Neck region, Nerve Supply of Upper & Lower Limb & Thorax	Two Substages EOB-I Exam
	Embryology	Gametogenesis Week 1-3 of development	EOB – I Exam
	Histology	Cell Epithelium Glands Connective Tissue	EOB – I Exam
	General Anatomy	Introduction Osteology Myology Arthrology	Test-I EOB – I Exam
Block - II	Gross Anatomy	Head Region, GIT, Liver & Kidney	2 Substages EOB – II Exam
	Embryology	Embryonic period (3 weeks) Placenta Birth defects Prenatal diagnosis	Test-I EOB – II Exam
	Gen. Anatomy	Circulatory system Skin & Fascia	EOB – II Exam
	Histology	Bone Cartilage Muscle Digestive System (Lip, Tongue, Salivary glands, esophagus)	EOB – II Exam
Block - III	Gross Anatomy	Brain & Neuro Anatomy	2 Substages Sendup Exam
	Embryology	Development of CNS and Skull	Sendup Exam
	Histology	Lymphoid System	Sendup Exam
	General Anatomy	Nervous System	Sendup Exam

ACADEMIC CALENDAR(MODULES)

Blocks	BLOCK-I 11+1= 12 weeks			BLOCK-II 11+1= 12 weeks			BLOCK-III 11+1= 12 weeks		
Duration	02 wks	04 wks	05 wks	03 wks	03 Wks	05 Wks	04 Wks	04 Wks	03 Wks
Blocks	Foundation	Cell & Genetics	CVS & Respiration	Digestive system & Metabolism	Renal system	Craniofacial - I	Craniofacial- II	Neuroscience	Endocrinology & Reproduction

Internal Assessment

Students will be assessed at the end of each block. The weighting of internal assessment is 20% in 1st professional BDS Examination. There will be three end of blocks and one pre -annual examination. The scores of tests of each end block assessment and pre-annual examination will be used for calculation of the internal assessment.

Annual Professional Examination.

The University will take the first professional Examination as per PM&DC guidelines at the end of the academic year. Annual Theory & Practical Examination will be of 200marks for Anatomy, Physiology, Biochemistry, Oral Biology and 100 marks theory paper of Islamiat & Pakistan Studies. The passing score is 50% in theory and practical separately

BDS YEAR I
BLOCK I
MODULE I
FOUNDATION
Duration: 02 weeks

ANATOMY

Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
	By the end of the module students will be able to:			
General Anatomy				
Introduction to anatomical terms and planes	Comprehend basic terminology and planes of the sections to facilitate further knowledge	<p>Knowledge Define different disciplines of Anatomy Identify terms of position in relation to anatomical position:</p> <ul style="list-style-type: none"> • Anterior /Posterior • Ventral /Dorsal • Superior /Inferior • Caudal / Rostral / Cranial • Medial /Lateral • Proximal /Distal • Palmar /plantar • Superficial/Deep • Supine /Prone <p>Identify the following anatomical planes with the help of diagrams.</p> <ul style="list-style-type: none"> • Coronal • Sagittal • Horizontal • Parasagittal <p>Identify the various techniques to study anatomy in the living such as Plain radiographs</p> <p>Skill: Identify type of section on a model Demonstrate normal anatomical position in a SP</p>	<ul style="list-style-type: none"> • Lectures • SGD 	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ/ OPSE/ Structured viva
	Appraise the movements occurring at different	<p>Knowledge Identify the terms of movements with general reference to</p>	<ul style="list-style-type: none"> • Lectures • SGD 	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • OPSE/ Structured

	types of movements occurring at different joints of the body .	<p>the axis and planes inwhich they occur</p> <ul style="list-style-type: none"> • Flexion /Extension • Abduction /Adduction • Lateral rotation / Medialrotation • Pronation /Supination • Plantar flexion / Dorsal flexion • Circumduction • Eversion /Inversion <p>Skill: Demonstrate these movements in a subject</p>		viva
Osteology	Summarize the general features of bones.	<ul style="list-style-type: none"> • Identify the axial and appendicular parts of a human skeleton. • Classify bones according to their development and shape giving examples of each type especially from head and neck (wherever possible). • Describe the process of both types of ossification • Describe blood supply of the long & diploic bones 		
Myology	Appraise the general features of muscles	<p>Classify muscles into three basic types</p> <p>Correlate skeletal muscles according to their shape, Muscle fibre types and functions with examples of each type</p>		
Arthrology	Anatomize the general Features of joints Classify joints According to their structure with examples of each type especially from head and neck	<p>Describe the general structure of a synovial joint</p> <p>Discuss anatomy of joints with reference to dislocation, sprain, and inflammation</p> <p>Describe Hilton's law</p>		

Nervous system I	Correlate the general anatomical structure of different parts of nervous system, with its functional significance	Appraise general concept of nervous system Nervous Tissue Receptors Nerve fiber Neuroglia Identify the parts of the nervous system contributing in formation of central and peripheral nervous system Describe the formation, course and distribution of a typical spinal nerve	LGIS	MCQs/ SEQs/ SAQs/ OSPE/ VIVA VOCE
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BDS YEAR I

BLOCK I

MODULE II

CELL STRUCTURE & FUNCTION

Duration: 03 weeks

Integration of Disciplines in Module II

ANATOMY				
Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
	By the end of the module students will be able to:			

BDS Curriculum Year-I (2023)

Gametogenesis	Elaborate the development of germ cell	<ul style="list-style-type: none"> • Revisit cell division, mitosis & meiosis • Describe the events of spermatogenesis • Describe the events of spermiogenesis • Describe the relation of ovarian cycle with maturation of follicles. • Describe the stages of follicular maturation <ul style="list-style-type: none"> -Primary -Preantral -Secondary -Preovulatory. • Describe the process of ovulation and correlate its timing with ovarian cycle. • Define fertilization • State normal site of fertilization • Describe the results of fertilization • Enlist the factors affecting fertilization • Enumerate the changes that occur in spermatozoa before fertilization • Explain the factors affecting penetration of sperm through the zona pellucida for formation of Pro-nuclei. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva
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First week of Development	Appraise the events of first week of development of the embryo	<ul style="list-style-type: none"> • Appraise the implantation and its normal site • Describe the changes in uterus at time of implantation. • Explain the process of cleavage • Explain the formation of morula and blastula • Describe the formation of inner and outer cell mass within the blastocyst cavity • Appraise abnormal sites for implantation (ectopic pregnancy) and its clinical significance. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva
Second week of development	Appraise the events of second week of development of the embryo	<ul style="list-style-type: none"> • Discuss the formation of bilaminar embryonic disc from embryoblast. • Describe early differentiation of trophoblast • Explain the formation of amniotic cavity • Explain the formation of chorion, secondary yolk sac and chorionic plate. • Explain the establishment of uteroplacental circulation. • Appraise 2nd week as week of twos. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva
Third week of development	Appraise the events of third week of development of the embryo	<ul style="list-style-type: none"> • Define gastrulation (formation of three germ layers) • Discuss the development, significance and fate of primitive streak • Describe the development of notochordal process, notochord canal, prechordal plate and cloacal membrane • Compare the topographic arrangement and derivatives 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva

		<p>of three components of intraembryonic Mesoderm (Paraxial, Intermediate and Lateral Plate Mesoderm)</p> <ul style="list-style-type: none"> • Describe early development of CVS. • Describe differentiation of trophoblast during third week and formation of primary, secondary and tertiary chorionic villi • Enumerate the parts of placenta • Explain formation and fate of allantois. 		
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HISTOLOGY

Cell	Appraise the light microscopic structure of the cells	<p>Knowledge</p> <ul style="list-style-type: none"> • Introduction to histology, microscope • Differentiate between acidophilic and basophilia. • Enumerate different cell organelles and identify staining reaction of each. • Illustrate shapes of different cells with example • Enumerate different components of the cytoskeleton. • Correlate the structure of different type of intercellular junctions with their functions. <p>Skills</p> <ul style="list-style-type: none"> • Focus the prepared slide at different magnifications. • Draw the labeled diagram of cells having various shapes. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva
Epithelium	Appraise the light microscopic	<p>Knowledge</p> <ul style="list-style-type: none"> • Define epithelium • Compare surface Epithelium with examples of each type. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/

	structure of epithelial tissue	<ul style="list-style-type: none"> • Classify glandular epithelium with examples of each type. • Compare the ultrastructure of microvilli, stereocilia and cilia and correlate with their roles in various cellular functions • Classify glands according to their morphology, secretory products and mode of secretion with examples of each type <p>Skills</p> <ul style="list-style-type: none"> • Identify different types of epithelia under light microscope and enlist at least two identification points for each type. • Draw labelled diagrams of each type of epithelium. • Compare and contrast between the histological structure of serous and mucous secreting cells. • Draw labelled diagram of mucous and serous acini 		Structured viva
Connective tissue	Appraise the light microscopic structure of connective tissue	<p>Knowledge</p> <ul style="list-style-type: none"> • Define connective tissue and list three basic components of connective tissue. • List different types of cells and fibers in the connective tissue. • Compare various types of connective tissue with example of each type. • Summarize a brief account of histological features of different types of connective tissue. <p>Skills</p> <ul style="list-style-type: none"> • Identify the slides of loose 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva

		<p>connective tissue, dense regular, dense irregular and adipose connective tissue under light microscope and list at least two identification points of each type.</p> <ul style="list-style-type: none"> • Draw labelled diagrams showing light microscopic structure of loose connective tissue, dense regular, irregular and adipose connective tissue 		
Muscle		<p>Knowledge</p> <ul style="list-style-type: none"> • Differentiate the microscopic features skeletal, smooth and cardiac muscle while correlating with their functions. • Explain the histological differences of different types of muscles. <p>Skills</p> <ul style="list-style-type: none"> • Identify microscopic sections of different types of muscle under light microscope and list at least two identification points of each type • Draw labelled diagrams showing light microscopic structure of different types of muscles. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva
Bone	Appraise the light microscopic structure of bone	<p>Knowledge</p> <ul style="list-style-type: none"> • Compare microscopic structure of compact and cancellous bone. • Correlate the process of bone remodeling with tooth bracing and adjustment. <p>Skills</p> <ul style="list-style-type: none"> • Identify the slides of cancellous and compact bone under light microscope 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ/OPSE/Structured viva

		<p>and list at least two identification points of each type.</p> <ul style="list-style-type: none">• Draw labelled diagrams showing light microscopic structure of cancellous and compact bones.		
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BDS YEAR I

BLOCK I

MODULE III

HAEMATOLOGY & IMMUNOLOGY

Duration: 03 weeks

BDS Curriculum Year-I (2020)

Integration of Disciplines in Module III

ANATOMY				
Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
By the end of the module students will be able to:				
Week 6- 8		Hematology & Immunology		
GENERAL EMBRYOLOGY				
Embryonic period (3-8wks)	Appraise the early weeks of development of embryo	<ul style="list-style-type: none"> • Define neurulation. • Describe process of formation of neural plate, neural tube and neural crest cells. • List derivatives of: <ul style="list-style-type: none"> - Surface ectoderm - Neurectoderm - Neural crest - Intraembryonic mesoderm (paraxial, intermediate, lateral plate) - Endoderm • Describe early differentiation of somites • Describe the development of intraembryonic coelom. • Describe the folding of the embryo in the median plane and correlate it with its consequences • Describe the folding of the embryo in the horizontal plane and correlate it with its consequences • Describe relocation of connecting stalk to the anterior abdominal wall and its differentiation into umbilical cord. <p>Skills</p>	Lectures/ SGD	<ul style="list-style-type: none"> ▪ MCQ ▪ SEQ ▪ Viva /OSPE

		<ul style="list-style-type: none"> Identify the structures related to general development on given models of general embryology 		
Histology				
Lymphoid system	Appraise histological structure of different components of lymphoid system	<p>Knowledge</p> <ul style="list-style-type: none"> Enumerate different types of lymphoid cells and identify their distribution in the body Describe the histological features and cells of the lymphoid system Describe the histological features of tonsils, thymus, lymph node and spleen. <p>Skills</p> <ul style="list-style-type: none"> Identify histological sections of tonsils, thymus, lymph node and spleen. under light microscope and list at least two identification points of each. 	Lectures/ SGD	<ul style="list-style-type: none"> MCQ SEQ Viva /OSPE
GROSS ANATOMY				
Neurovasculature of limbs	Correlate anatomy of nerves and vessels of limbs with common clinical presentations.	<p>Knowledge</p> <ul style="list-style-type: none"> Outline the formations, divisions and branches of the brachial plexus Outline the area of supply of axillary, radial, ulnar, median and sciatic nerves. Trace the route of main arteries and veins of upper and lower limbs. Analyze the clinical importance of vessels present in the cubital fossa. Identify veins commonly used for cannulation Elucidate the clinical significance of brachial and radial artery with reference to pulse and BP monitoring. 	Lectures/ SGD	<ul style="list-style-type: none"> MCQ SEQ Viva /OSPE

		<ul style="list-style-type: none"> • Enumerate arteries forming trochanteric and cruciate anastomoses and describe their importance. • Discuss superficial and deep venous drainage of the lower limb. • Define the importance of great saphenous vein in CABG. • Discuss the anatomical basis of varicose veins. Define aneurysm. <p>Skills</p> <p>Surface marking</p> <ul style="list-style-type: none"> • Mark the following vessels on a subject Ulnar and radial artery • Cephalic and basilic vein • Identify main arteries and veins supplying the upper and lower limb on a model. • Examine pulses of upper and lower limb in a subject. 		
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BDS YEAR I

BLOCK I

MODULE IV

CVS

Duration: 05 weeks

BDS Curriculum Year

Integration of Disciplines in Module IV

ANATOMY				
Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
	By the end of the module students will be able to:			
GENERAL ANATOMY				
Circulatory system	Summarize the general anatomical features of circulatory system	<ul style="list-style-type: none"> • Justify general plan of systemic, portal and lymphatic circulatory system. • Compare blood vessels according to their size and functions with examples of each type. • Describe various types of anastomoses with example and their clinical significance 	LGIS/ SGD	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ ▪ Structured viva ▪ OSPE
GROSS ANATOMY				

<p>Heart and coronary circulation</p>	<p>Correlate anatomical knowledge of heart and coronary circulation with relevant clinical conditions</p>	<p>Knowledge</p> <ul style="list-style-type: none"> • Describe anatomical position, borders, surfaces and external features of heart. • Outline the main internal features of various chambers of heart • Describe the arterial supply, venous drainage and nerve supply of heart. • Define dominance of heart • Define angina pectoris 	<p>LGIS/ SGD</p>	<ul style="list-style-type: none"> ▪ MCQ ▪ SAQ/SEQ ▪ Structured viva ▪ OSPE
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		<p>and myocardial infarction, and explain their anatomical basis in case of coronary artery disease.</p> <ul style="list-style-type: none"> • Explain anatomical basis of cardiac referred pain in case of ischemic heart disease • Define angioplasty, angiography <p>Skills</p> <ul style="list-style-type: none"> • Locate sites of auscultation of various heart sounds on chest wall of a subject • Identify features of heart on a model. 		
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BDS YEAR I

BLOCK II

MODULE V

RESPIRATORY SYSTEM

Duration: 02 weeks

BDS Curriculum Year

ANATOMY

Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
By the end of the module students will be able to:				
GROSS ANATOMY				
Thorax	Appraise the gross	<ul style="list-style-type: none"> • Describe the formation of thoracic apertures. • Trace the course of vagus nerve in thorax Skill • Identify cardiophrenic angle, hilar shadow and aortic knuckle on chest x ray. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/ SEQ ▪ Viva ▪ OSPE
	Correlate structural with clinical anatomy of diaphragm.	<ul style="list-style-type: none"> • Identify parts of diaphragm • List the apertures in diaphragm with their levels and structures passing through each • Analyze presentation of phrenic nerve lesions with anatomical reasoning • Justify anatomical basis of referred shoulder tip pain 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/ SEQ ▪ Viva ▪ OSPE
Mediastinum	Recognize divisions of mediastinum and their relations of clinical relevance	<ul style="list-style-type: none"> • Define mediastinum. • Enumerate the divisions of mediastinum. • Enlist the structures contained in different mediastina. 		
Lungs	Appraise the anatomy of lungs and relevant clinical conditions	<ul style="list-style-type: none"> • Identify the borders, surfaces, and hilar apertures. 		

BDS YEAR I

BLOCK II

MODULE VI

ENDOCRINOLOGY & METABOLISM

Duration: 04 weeks

BDS Curriculum

ANATOMY

Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
	By the end of the module students will be able to:			

GENERAL EMBRYOLOGY

Development of skull	Comprehend the embryological basis behind the development of skull, correlate them with various relevant clinical presentations	<ul style="list-style-type: none"> • Identify the sources of skull • Classify Skull on embryological basis • Describe the events in development of cartilaginous and membranous neurocranium and viscerocranium • Outline features of a newborn skull. Identify the fontanelles with reference to their location, closing time and clinical significance • Explain the embryological basis of microcephaly and various types of craniosynostosis 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
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Gross (Head)

Skull	Elucidate the topographic anatomy of skull	<ul style="list-style-type: none"> • Appreciate the general plan of studying skull from different views. • Identify important bony landmarks on the bones as viewed from lateral, superior, inferior, anterior and posterior views. • List structures traversing the foramina in these bones • Identify the bones forming the boundaries 		
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		of orbit, nasal cavity, oral cavity, temporal, infratemporal fossa & pterygopalatine fossa on the given bone. (detail to be done with relevant topics)		
Scalp	Correlate the structure and neurovascular supply of scalp with anatomical basis of relevant clinical conditions.	Appraise extent of scalp on model Enumerate layers of scalp in a sequential order Correlate gross features of each layer with anatomical basis of black eye, profuse bleeding, gaping wound, spread of scalp infection and shape of hematoma		
Temporal & infratemporal region	Correlate the location, boundaries, and contents of temporal and Infratemporal fossa with relevant clinical conditions	<ul style="list-style-type: none"> • Identify the location, boundaries, contents and communications of temporal and infratemporal fossa on a given model and skull. • Describe the course and distribution of mandibular nerve from origin to distribution • Tabulate the attachments, actions and nerve supply of muscles of mastication. • Trace location, various routes and distribution of otic ganglion • Justify role of lateral pterygoid as a peripheral heart on anatomical basis of pterygoid venous plexus • Elucidate importance of pterygoid venous plexus in case of intracranial spread of infection to cavernous sinus. • Trace origin and distribution of superficial temporal, first and 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		second parts of maxillary artery		
Pterygopalatine fossa	Describe the anatomy of Pterygopalatine fossa in relation with surrounding structures	<ul style="list-style-type: none"> • Identify the location of pterygopalatine fossa on skull • Enumerate the contents and communications • Describe the distribution of third part of maxillary artery, nerve and pterygopalatine ganglion • Justify the role of pterygopalatine ganglion in hay fever/allergies 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Nose and paranasal sinuses	Correlate the gross anatomy of Nose and paranasal sinuses with relevant clinical conditions	<ul style="list-style-type: none"> • Describe the skeletal framework of different walls of nose • Describe the features, vascular supply, nerve supply and openings in lateral wall of nose • Describe the features, vascular supply, nerve supply of medial wall of nose • Highlight the significance of little's area in a case of epistaxis • Trace the location and drainage of paranasal sinuses in skull and on radiograph 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Hard and soft Palate	Correlate the gross anatomy of hard and soft palate with their relevant clinical conditions	<ul style="list-style-type: none"> • Discuss the bony framework of hard palate. • Identify the gross features of hard palate and soft palate. • Identify muscles of soft palate on the model • Describe the 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<p>attachments, nerve supply and actions of muscles of soft palate</p> <ul style="list-style-type: none"> • Describe blood supply and nerve supply of soft palate • Identify the main muscles forming the palatoglossal and palatopharyngeal Arches 		
Mandible	Elucidate the topographic anatomy of mandible	<ul style="list-style-type: none"> • Identify parts of mandible • Describe ramus and body of mandible with respect to its bony features and attachments. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Submandibular region	Correlate the anatomy of Submandibular region with its clinical significance	<ul style="list-style-type: none"> • Revisit boundaries of submandibular triangle • Describe the parts, relations, neurovascular of submandibular gland. • Trace the routes of submandibular ganglion • Describe the distribution of submandibular ganglion • Correlate the anatomy of submandibular fascial space with Ludwig's angina 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
TMJ	Correlate the Gross anatomical features of temporomandibular joint with clinical significance	<ul style="list-style-type: none"> • Identify the type of TMJ. • Identify the articular surfaces of TMJ on a given model or dry bones. • Explain the attachments of capsule. • Name the ligaments of TMJ. • Describe the attachments and relations of ligaments of TMJ. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<ul style="list-style-type: none"> • Describe the type and shape of articular disc. • Justify the presence of two joint cavities and types of movements occurring in each. • Describe the movements of jaw at TMJ with special reference to axis and muscles producing them. • Describe the clinical signs of anterior dislocation of TMJ and explain the steps of its reduction. 		
Oral cavity	Correlate the gross anatomy of oral cavity and tongue with anatomical basis of relevant clinical conditions	<ul style="list-style-type: none"> • Name different boundaries of oral cavity. • Describe blood and nerve supply and lymphatic drainage of oral cavity. • Identify the location of inferior alveolar nerve block • Describe the salient features of floor of mouth. • Discuss the attachments, actions, nerve supply and relations of suprahyoid muscles • Identify parts of tongue • Identify the gross features of dorsal and ventral surfaces of tongue • Name the intrinsic and extrinsic muscles of tongue. • Describe attachments, actions and nerve 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<p>supply of muscles of tongue</p> <ul style="list-style-type: none"> • Describe the motor, general and special sensory innervation of tongue 		
Pharynx	Correlate the gross anatomy of pharynx with relevant clinical conditions	<ul style="list-style-type: none"> • Differentiate extent, anatomical features, vascular supply, nerve supply of three parts of pharynx on anatomical basis • List muscles of pharynx 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

BDS YEAR I

BLOCK II

MODULE VII

CRANIOFACIAL

Duration: 04 weeks

BDS Curriculum

ANATOMY

Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
	By the end of the module students will be able to:			
Gross Anatomy (Neck)				
Cervical vertebrae		<ul style="list-style-type: none"> • Differentiate typical and atypical cervical vertebrae Give distinguishing features of each cervical vertebra. • Enumerate structures passing through foramina • Outline ligamentous attachments on cervical vertebrae 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Joints of neck	Correlate the gross anatomical features of joints of neck with their clinical significance	<ul style="list-style-type: none"> • Name the typical and atypical intervertebral joints of neck. • Identify the types of atlanto- occipital and atlanto-axial joints. • Describe the movements of these joints with muscles producing them 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Face	Correlate the gross anatomy of face with anatomical basis of relevant clinical	<ul style="list-style-type: none"> • Outline the characteristic features of facial skin. • Elucidate the 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

	conditions	cutaneous innervation of face <ul style="list-style-type: none">• Group facial muscles according to the orifices they are guarding		
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		<ul style="list-style-type: none"> • Describe the nerve supply of muscles of facial expressions. • Describe the course of arteries, veins, lymphatics and nerves of the face with the help of model. • Correlate gross features of face with anatomical basis of danger area, trigeminal neuralgia, Bell's palsy. <p>Skills</p> <ul style="list-style-type: none"> • Identify muscles of facial expressions Illustrate the cutaneous innervation of face 		
Mandibular and maxillary branches of Trigeminal nerve	Correlate the anatomy of mandibular and maxillary divisions of Trigeminal nerve with their lesions	<ul style="list-style-type: none"> • Describe the pathway of mandibular nerve from nucleus to target organs • Describe the pathway of maxillary nerve from nucleus to target organs. • Describe the lesion of nerves with special reference to infections of molar teeth. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Facial nerve	Correlate the anatomy of facial nerve with its lesions	<ul style="list-style-type: none"> • Revisit the course and distribution of facial nerve • Revisit the relationship of facial nerve with pterygopalatine and submandibular ganglia • Revisit the effects of lesion of facial nerve at 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<p>different levels</p> <ul style="list-style-type: none"> • Differentiate anatomical basis of clinical presentation of UMN and LMN lesion of facial nerve. 		
Parotid region	<p>Correlate the anatomy of parotid region with its clinical significance</p>	<ul style="list-style-type: none"> • Trace the pathway of autonomic supply of parotid gland. • Enumerate structures embedded in parotid gland in a sequential order. • Analyze anatomical basis of clinical presentation of mumps. • Correlate the extra cranial course of facial nerve with Bell's palsy. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Deep cervical Fascia	<ul style="list-style-type: none"> • Anatomize the four layers of deep cervical fascia in detail. • Correlate the topography of cervical fascial spaces to mediastinal and contralateral spread of infection. 	<ul style="list-style-type: none"> • Enumerate the layers of deep cervical fascia. • Trace the attachments of investing, pre-tracheal, carotid sheath and prevertebral layers of fascia. • Identify various modifications and neck spaces formed by fascial attachments. • Comprehend the clinical importance of neck spaces in spread of infection 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Prevertebral region and root of the neck	<p>Describe skin, superficial fascia, and cutaneous nerves of the prevertebral region along with the action and nerve supply of muscles present here</p>	<ul style="list-style-type: none"> • Enumerate the prevertebral muscles • Describe origin, insertion, action and nerve supply of prevertebral muscles • Identify the boundaries of pyramidal space. • Describe the peculiar arrangement of prevertebral fascia in 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<p>prevertebral region and justify formation of axillary sheath around axillary artery and brachial plexus but not axillary vein.</p> <ul style="list-style-type: none"> Anatomize the relations of key muscle of root of neck (scalenus anterior) Describe the parts and branches of subclavian artery. 		
Back of the neck	Link the anatomical location and contents of triangles present at the back of neck with their clinical significance	<ul style="list-style-type: none"> Enumerate the muscles of back of neck. Identify the boundaries and contents of suboccipital triangle. Describe the course and relations of 3rd and 4th parts of vertebral arteries. 	<ul style="list-style-type: none"> Lectures SGD 	<ul style="list-style-type: none"> MCQ/SEQ Viva OSPE
Muscles of the neck	Describe the origin, insertion, movements, and nerve supply of the muscles present in neck	<ul style="list-style-type: none"> Describe the muscles of neck (sternocleidomastoid, trapezius and infrahyoid muscles) along with their nerve supply with the help of models. Enlist the features of Torticollis 	<ul style="list-style-type: none"> Lectures SGD 	<ul style="list-style-type: none"> MCQ/SEQ Viva OSPE
Triangles of neck	Link the anatomical location of triangles of neck and their contents with their clinical significance	<ul style="list-style-type: none"> Tabulate the attachments, nerve supply, actions of superficial and deep muscles of neck (sternocleidomastoid, suprahyoid, infrahyoid, sub occipital, prevertebral muscles,). Identify boundaries and contents of triangles of neck on model Describe the origin, course and distribution 	<ul style="list-style-type: none"> Lectures SGD 	<ul style="list-style-type: none"> MCQ/SEQ Viva OSPE

		of nerves of neck (cervical plexus, Ansa cervicalis, Common carotid artery, Internal jugular vein, subclavian vessels)		
Vessels of neck	Correlate the anatomy of each vessel with its area of supply and drainage	<ul style="list-style-type: none"> • Enumerate the main vessels in neck. • Describe the course and branches of <ul style="list-style-type: none"> -External carotid artery -Subclavian artery -External jugular vein -Internal jugular vein 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Nerves of neck	Correlate the anatomy and distribution of cranial nerves with lesions associated with their injuries	<ul style="list-style-type: none"> • Enumerate the main cranial nerves supplying in neck • Trace the distribution of cranial nerves • Enumerate branches of each of the above nerve and identify their area of supply. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Viscera of neck	Correlate the anatomy of viscera's present in neck with their relevant clinical significance	<ul style="list-style-type: none"> • Appraise the relations of trachea and esophagus in neck region with the help of dissection • Describe the structures involved in cricothyroidotomy and Tracheostomy with the help of dissection 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Thyroid and parathyroid	Correlate the gross anatomy of thyroid and parathyroid glands with relevant clinical conditions	<ul style="list-style-type: none"> • Identify gross features of thyroid and parathyroid glands on models. • Describe capsule, relations and blood supply of thyroid and parathyroid gland • Justify anatomical basis of movement of thyroid gland during deglutition 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<ul style="list-style-type: none"> • Discuss surgical precautions in thyroid surgery while ligating vessels and enucleation 		
Larynx	Correlate the gross anatomy of larynx with relevant clinical conditions	<ul style="list-style-type: none"> • Describe laryngeal wall in detail with emphasis on cartilages, ligaments, muscles, vascular supply and nerve supply. • Analyze mechanism of abduction and adduction of vocal cords • Distinguish clinical presentations of injury to external, internal and • recurrent laryngeal nerves 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Lymphatic drainage of the head and neck	Appraise the lymphatic drainage of neck with understanding of relevant clinical conditions on anatomical basis	<ul style="list-style-type: none"> • Enlist the groups of lymph nodes of neck. • Describe their location and areas of drainage • Appraise the formation of jugular lymph trunk • Correlate the clinical importance of lymphatic drainage of head and neck 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Orbit	Correlate the anatomy of orbital contents with relevant clinical significance	<ul style="list-style-type: none"> • Describe the skeletal framework of bony orbit and its communications • List the contents of orbit • Identify the parts of eyeball on a model • Tabulate the attachments, nerve supply and actions of extraocular muscles • Justify the movements of extraocular muscles based on their attachments • Trace the course and 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

		<p>distribution of III, IV and VI Cranial Nerves</p> <ul style="list-style-type: none"> • Justify the peculiar Position of eyeball in case of lesion of III, IV and VI Cranial Nerves • Trace the route and distribution of ciliary ganglion. • Describe the course and distribution of ophthalmic nerve • Describe the nerve supply of Lacrimal gland 		
Lacrimal apparatus	Correlate the anatomy of lacrimal apparatus with relevant clinical significance	<ul style="list-style-type: none"> • Enumerate the structures forming lacrimal apparatus • Describe the nerve supply of lacrimal apparatus • Correlate the anatomical structures of lacrimal apparatus with the features of blocked Lacrimal duct 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE
Ear	Correlate the gross anatomy of ear with relevant clinical conditions	<ul style="list-style-type: none"> • Describe the gross anatomical features, boundaries, structures and contents of middle ear cavity. • Describe the structures forming the walls of middle ear cavity on the given model. • Highlight the importance of infection in middle ear cavity in relation to its communications. • Trace the pathway and distribution of facial nerve within petrous part of temporal bone. 	<ul style="list-style-type: none"> ▪ Lectures ▪ SGD 	<ul style="list-style-type: none"> ▪ MCQ/SEQ ▪ Viva ▪ OSPE

BDS YEAR I

BLOCK III

MODULE VIII

NEUROSCIENCES & NUTRITION

Duration: 06 weeks

BDS Curriculum

Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
By the end of the module students will be able to:				
GROSS ANATOMY				
Nervous system-I	Correlate the general anatomical structure of different parts of nervous system, with its functional significance	Appraise general concept of nervous system. <ul style="list-style-type: none"> • Nervous Tissue • Receptors • Nerve fiber • Neuroglia Identify the parts of the nervous system contributing information of central and peripheral nervous system Describe the formation, course and distribution of a typical spinal nerve	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Nervous system-II	Appraise the basic organization of the main structures that form nervous system	<ul style="list-style-type: none"> • Define the grey matter, white matter, ganglion, nucleus and nerve. • Appraise a three-dimensional appreciation of the parts of the brain and their relative positions to one another • Outline the anatomical organization of autonomic nervous system 		
Embryology				
CNS	Comprehend the embryological basis behind formation of different components of nervous system and correlate them with various relevant clinical presentations	<ul style="list-style-type: none"> • Explain the development of spinal cord. • Describe the positional changes of the cord. • Explain the causes of neural tube defects • Enlist various variants of spina bifida. • Explain the process of development of various variants of spina bifida 		

		<ul style="list-style-type: none"> Summarize primary and secondary brain vesicles with their derivatives Discuss birth defects associated with defective development of neural tube 		
Gross Neuroanatomy				
Anatomy of cranial cavity	Appraise the gross features of cranial cavity and the structures contained within it to understand the anatomical basis of clinical conditions related to them.	<ul style="list-style-type: none"> Describe and demonstrate the boundaries and gross features of cranial fossae. Enlist and demonstrate foramina along with structures passing through them in anterior, middle and posterior cranial fossae. Recognize and demonstrate the important sutures, fontanelle and impressions on the interior of cranial vault. 	LGIS/ SGD	<ul style="list-style-type: none"> MCQ SAQ/SEQ Structured Viva
Gross Anatomy of Spinal cord	Correlate the position and functions of the main nervous pathways and nerve cell groups in the spinal cord, with associated segmental injuries and diseases.	<ul style="list-style-type: none"> Explain the gross appearance and the nerve cell groups in the anterior, posterior and lateral gray columns of spinal cord Enumerate and illustrate the arrangements of ascending and descending tracts (white matter) in spinal cord at various levels. Explain the given clinical conditions related to ascending and descending tracts of spinal cord. Trace following pathways of superficial and deep sensations indicating the location of first, second and third order neurons. Pain and temperature pathways Light touch and pressure 	LGIS/ SGD	<ul style="list-style-type: none"> MCQ SAQ/SEQ Structured Viva

		<p>pathways</p> <ul style="list-style-type: none"> • Discriminative touch, vibratory sense and conscious muscle joint sense. • -Muscle joint sense pathways to the cerebellum • Posterior spinocerebellar tract • Anterior spinocerebellar tract • Trace following pathways of voluntary movements indicating the location of first, second and third order neurons. • Cortico spinal tracts 		
Gross anatomy of the brainstem	<p>Appraise the anatomy of brainstem to assess the signs and symptoms presented by the patient</p> <p>in identifying the exact location of a structural lesion.</p>	<ul style="list-style-type: none"> • Describe the gross appearance and internal structure of the medulla oblongata. • Illustrate the cross sections of medulla oblongata at different levels. • Apply the knowledge of neuroanatomy to explain the following clinical conditions: <ul style="list-style-type: none"> - Arnold-chiari malformation - Medial medullary syndrome - Lateral medullary syndrome - Wallenberg syndrome • Describe the gross features and internal structure of pons. • Illustrate cross section of pons at different levels showing major structures at each level. • Analyze the anatomical 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

structures involved in
pontine hemorrhage and

BDS Curriculum Year-1 (2023)

		<p>infarction of pons.</p> <ul style="list-style-type: none"> • Describe the gross appearance, internal structure of mid brain. • Illustrate cross section of midbrain at the levels of superior colliculus and inferior colliculus showing major structures at each level. • Justify the lesions of midbrain structures by the blockage of cerebral aqueduct. • Identify the gross features of medulla, midbrain and pons on a given model. 		
Gross anatomy of cerebellum and its connections	<p>Outline the structure, function and connections of the cerebellum with the remainder of the central nervous system to understand the anatomical basis of cerebellar dysfunctions.</p>	<ul style="list-style-type: none"> • Briefly demonstrate the gross features and phylogenetic divisions of cerebellum. • Enumerate afferent and efferent fibers of superior, middle and inferior cerebellar peduncles. • List intracerebellar nuclei and types of fibers constituting white matter of cerebellum and. • List disturbances of voluntary movements, reflexes, ocular movements, speech, posture and gait resulting due to lesions of cerebellum. <p>Demonstrate different parts of cerebellum on given model.</p>	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

Gross anatomy of cerebrum	Appraise the structure, function and connections of the cerebrum with the remainder of the central nervous system to understand the	<ul style="list-style-type: none">• Describe the topographic anatomy of diencephalon and demonstrate its gross features on a given model.• Enlist main sulci and gyri of cerebral hemispheres and describe the extent of each	LGIS/ SGD	<ul style="list-style-type: none">• MCQ• SAQ/SEQ• Structured Viva
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BDS Curriculum Year-I (2023)

	<p>anatomical basis of associated clinical conditions</p>	<p>of them.</p> <ul style="list-style-type: none"> • Explain the divisions of cerebral lobes on superolateral, medial and inferior surfaces of cerebral hemispheres. • Enumerate fibers making up the white matter of cerebral hemispheres and describe each of them (Summarize parts, relations & fibers forming Internal capsule). • Mark main sulci and gyri on lobes of cerebral hemispheres. • Identify commissural, projection and association fibers on brain prosected specimen • Describe and demonstrate the cortical functional areas in different lobes of cerebral hemispheres. • Enumerate types of aphasia and describe the lesions of speech areas responsible for producing aphasia. • Explain the effects of lesion in the primary and secondary visual cortex. • Illustrate the lateral and medial views of cerebral hemispheres showing motor and sensory areas. 		
<p>Gross anatomy of reticular formation and limbic system</p>	<p>Correlate the structure and function of the reticular formation and parts of the limbic system with associated clinical conditions.</p>	<ul style="list-style-type: none"> • Outline the general arrangement and functions of reticular formation. • Enumerate components of limbic system and explain hippocampal formation with reference to its afferent and efferent connections. • Identify different components of limbic system on given model. 	<p>LGIS/ SGD</p>	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

Gross anatomy of basal nuclei	Recognize the location, connections and functions of basal nuclei to explain its common relevant diseases	<ul style="list-style-type: none"> • List terminology commonly used to describe the basal nuclei. • Outline Parkinson disease regarding etiology, characteristics signs and symptoms, types and treatment • identify different components of basal ganglia on given model/specimen 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Gross anatomy of cranial nerves	Appraise the location and connections of motor and sensory nuclei of the cranial nerves to identify the correct site of relevant cranial nerve lesions.	<ul style="list-style-type: none"> • Enumerate the cranial nerves and classify them into sensory, motor and mixed nerves. • Describe the nuclei and intracranial course of all cranial nerves. • Apply the knowledge of neuroanatomy to explain the clinical conditions regarding the lesions of various cranial nerves. • Identify different cranial nerves on given model/specimen 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Gross anatomy of thalamus, hypothalamus and their connections	Appraise the structure, function and connections of the thalamus and Hypothalamus with the remainder of the central nervous system to understand the anatomical basis of associated clinical conditions.	<ul style="list-style-type: none"> • Describe the divisions, nuclei and connections of thalamus. • Summarize the connections of hypothalamus with the pituitary gland. • Enlist the functions of main hypothalamic nuclei. 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Gross anatomy of Meninges and dural venous	Appraise the arrangement of the meninges of brain and spinal cord to identify	<ul style="list-style-type: none"> • Define meninges of brain and describe the Dural reflections in brain. • Explain the meninges of spinal cord 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

	different types of			
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BDS Curriculum Year-1 (2023)

<p>sinuses of brain and spinal cord</p>	<p>cerebral hemorrhages.</p>	<ul style="list-style-type: none"> • Enumerate the nerves and blood vessels supplying the meninges. • Differentiate among different varieties of intracranial hemorrhages. • Demonstrate the supratentorial and Infratentorial compartments of tentorium cerebelli in a prosected specimen. • Define and enumerate paired and unpaired Dural venous sinuses along with their attachments. • Describe the location, important relations, communications of cavernous sinus and enumerate • structures passing through it. 		
<p>Gross anatomy of ventricular system, CSF, Blood brain barriers</p>	<p>Appraise the anatomical organization of ventricular system, CSF, Blood brain & blood-CSF barriers to explain the relevant clinical scenarios</p>	<ul style="list-style-type: none"> • Describe the anatomical organization of ventricular system and boundaries of third ventricle and choroidal plexus of each ventricle. • Define arachnoid villous and outline the role of arachnoid villi in absorption of CSF. • Outline the formation of different barriers of brain. • Summarize the floor of fourth ventricle. 	<p>LGIS/ SGD</p>	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

Gross anatomy of ventricular system, CSF, Blood brain barriers	Appraise the anatomical organization of ventricular system, CSF, Blood brain & blood-CSF barriers to explain the relevant clinical scenarios	<ul style="list-style-type: none"> • Describe the anatomical organization of ventricular system and boundaries of third ventricle and choroidal plexus of each ventricle. • Define arachnoid villous and outline the role of arachnoid villi in absorption of CSF. • Outline the formation of different barriers of brain. • Summarize the floor of 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
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BDS Curriculum Year-I (2023)

		fourth ventricle.		
Blood supply of the brain and spinal cord	Outline the blood supply of the brain and spinal cord	<ul style="list-style-type: none"> • Recognize the blood supply of different parts of brain and spinal cord. • Outline the formation and importance of veins of brain. • Enumerate the vessels taking part in formation of circle of Willis with its importance. • Relate the interruption of cerebral circulation of cerebral artery syndromes due to anterior, middle and posterior cerebral artery occlusion. • Illustrate circle of Willis. 	LGIS/ SGD	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

Neurosciences

Topic/ Theme	Learning outcomes	Learning Objectives/Contents	Instructional strategies	Assessment tool
Sensory receptors & receptor Potential	Interpret the physiological mechanisms controlling the functions of sensory system.	<ul style="list-style-type: none"> • Classify the various types of sensory receptors. • Explain the sensory stimuli and differential sensitivity of receptors. • Explain the sensory transduction into nerve impulses. • Describe the local electrical currents at nerve endings—receptor potentials, adaptation of receptors • Classify the nerve fibers that transmit different types of signals on the physiological basis. • Describe the transmission of signals of different intensity in nerve tract (spatial and temporal summation) 	LGIS	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Sensory tracts and cortex	Explain the dorsal column medial lemniscal system	<ul style="list-style-type: none"> • Identify the sensations carried by different sensory 	LGIS	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ

	and anterolateral pathways	<p>tracts</p> <ul style="list-style-type: none"> • Differentiate between different sensory tracts • Describe the somatosensory cortex and somatosensory association areas • Explain the various thermal sensations, thermal receptors and their excitation and transmission of thermal signals in the nervous system 		<ul style="list-style-type: none"> • Structured Viva
Brain analgesia system	Correlate the pathophysiological basis of pain pathways to their clinical significance	<ul style="list-style-type: none"> ☐ Classify the different types of pain. ☐ Compare and contrast the perception and transmission of the different types of pain. ☐ Explain the pain suppression system in the brain and spinal cord. ☐ Describe the brain's opiate system—endorphins and enkephalins. ☐ Describe the clinical abnormalities of pain and other somatic sensations ☐ Explain pathophysiological significance of referred and visceral pain 	LGIS	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Motor system / Spindle / stretch reflex	Interpret the physiological mechanisms controlling the functions of motor system and higher mental functions.	<ul style="list-style-type: none"> • Relate the organization of grey and white matter in spinal cord to the pathophysiology of various spinal cord injuries. • Explain the role of proprioceptors (muscle spindles and Golgi tendon organs) in motor movements • Explain stretc. reflex • Describe the flexor reflex and the crossed extensor reflex. 	LGIS	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva

		<ul style="list-style-type: none"> ☒ Explain the reciprocal inhibition and reciprocal innervation. ☒ Identify the reflexes of posture and locomotion in the spinal cord. 		
	Correlate functions and abnormalities of basal ganglia and cerebellum	<ul style="list-style-type: none"> • Explain physiological anatomy or cerebellum and basal ganglia • Explain significance of basal ganglia and cerebellum in motor control 	LGIS	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Hypothalamus	Correlate physiological anatomy with disorders of hypothalamus	Explain functions of hypothalamic nuclei	LGIS	<ul style="list-style-type: none"> • MCQ • SAQ/SEQ • Structured Viva
Practicals/SGDs:				
<ol style="list-style-type: none"> 1. Examine the 1ST – 6TH Cranial nerves on an SP 2. Examine the 7th – 12th Cranial nerves on an SP 				

BDS YEAR I

BLOCK III

MODULE IX

DIGESTIVE SYSTEM

Duration: 02 weeks

BDS Curriculum

ANATOMY

Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
By the end of the module students will be able to:				
7-8 week			Digestive system and Metabolism	

HISTOLOGY

GIT (lip, Tongue, esophagus, and salivary glands)	<p>Appraise the light microscopic structure of lip and tongue, with special emphasis on Papillae of tongue and taste buds.</p> <p>Appraise the light microscopic structure of major salivary glands</p>	<p>Knowledge</p> <ul style="list-style-type: none"> Explain the histological structure of lip. Describe the microscopic structure of tongue, with special reference to epithelium on its two surfaces, types of lingual papillae and taste buds with their location and structure Describe the Histological features of parotid, submandibular and sublingual glands with reference to their type, parenchyma, stroma and duct system. Describe the histological structure of esophagus. <p>Skills</p> <ul style="list-style-type: none"> Identify microscopic sections of lip, tongue, submandibular, sublingual and parotid glands and esophagus under light microscope and enlist at least two identification points of each. Draw labelled diagrams showing light microscopic structure of lip, tongue, submandibular, sublingual and parotid glands 	LGIS / SGD	MCQ/SAQ/ OSPE/ structured viva
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Gross (GIT)

GIT		<ul style="list-style-type: none">• Identify abdominal lines and planes dividing the abdomen into its quadrants.• Enlist the structures in each quadrant• Outline of gross features of stomach, small intestine, colon rectum and anal canal.• Enlist the blood vessels that supply gut.• Describe the formation and distribution of portal vein.		
Hepatobiliary system		<ul style="list-style-type: none">• Describe location, lobes, coverings and ligaments of liver.• Describe dual blood supply of the liver.• Learn the components of the biliary apparatus and trace the drainage of bile from liver to duodenum.	LGIS / SGD	MCQ/SAQ/ OSPE/ structured viva

BDS YEAR I

BLOCK III

MODULE X

RENEAL SYSTEM

Duration: 02 weeks

BDS Curriculum Year

ANATOMY				
Topic/ Theme	Learning Outcomes	Learning Objectives / Contents	Instructional Strategy	Assessment Tool
	By the end of the module students will be able to:			
Gross Anatomy				
Renal system	Comprehend the topographical anatomy of renal system.	<ul style="list-style-type: none"> • Describe the gross features of kidney, relations, and its coverings Skill • Identify the impressions of surrounding structures on both kidneys in the given model 	LGIS/ SGD	MCQ/SAQ/ structured viva / OSPE

Learning Resources

GROSS ANATOMY	
Text Books	Reference Books
Clinically oriented Anatomy By Keith L Moore (8 th Edition)	LAST's Anatomy Regional & Applied (12 th Edition)
Clinical Anatomy for medical students By Richard S. Snell (10 th Edition)	Gray's Anatomy By Henry Gray's (41 st Edition)
Cunningham's manual of practical anatomy 15 th Edition Vol-1 (Upper limb & Lower limb) Vol-2 (Abdomen & Thorax) Vol-3 (Head & Neck, Brain) (Only For BDS) Photocopy of "General Introduction" from Cunningham's manual Vol-I (Page 1-19) (Only For BDS)	Atlas of Anatomy By Netter (7 th Edition)/ Atlas of Anatomy By Grant's
Sketch book Gross	
Clinical Neuroanatomy By Richard S. Snell (8 th Edition) only for BDS	Atlas of Anatomy By Netter (6 th Edition)/ Atlas of Anatomy By Grant's
	Museum Atlas
HISTOLOGY	
Text Books	Reference Books
Basic Histology By Luiz carlos Junqueira (14 th Edition)	Medical Histology by Prof. Laiq Hussain (6 th edition)
Di-fiore's Atlas of Histology (13 th Edition)	
Manual of Histology Vol - I Manual of Histology Vol - II (for BDS only) By Prof Dr Tassaduq Hussain Shaikh/ Contextual Journal of Histology	
GENERAL ANATOMY	
Text Books	Reference Books
General Anatomy by Prof Laiq Hussain (5 th edition)	General Anatomy By Dr Tassaduq Hussain Shaikh(16 th Edition)
	General Anatomy By Prof Dr Ghulam Ahmed (7 th Edition)
EMBRYOLOGY	
Text Books	Reference Books
Langman's Medical Embryology(14 th Edition)	Netter's Embryology Atlas
The Developing Human By Keith L-Moore (11 th Edition)	

- All books are available at College Bookshop (CMH LMC & IOD).

Other Learning Resources

Hands-on activities	Students will be involved in practical session and hands-on activities to enhance learning.
Lab, Museum and Dissection Hall	Utilize the lab to relate knowledge to specimens and models available.
Videos	Animated videos of developmental histology, simulated patients etc. to clear the concepts of the students shown during interactive lecture sessions.
Computer lab/CDs/DVDs/Internet resources	To increase the knowledge, students should utilize the available internet resources and CDs/DVDs in main IT lab/personal laptops.
Self-study	Self-study is incorporated to help the student in managing individual tasks/assignments. Student will search for information through available resources.

Cadavers and Specimens in Anatomy Department

Sr. No	Subject (items in Dissection Hall)	Description
1	Mortuary	Full Cadavers
		Torso
2	Specimens in jars	Brain
		Head & Neck
		Upper Limb
		Lower Limb
		Thorax
		Abdomen/Pelvis
		Embryology
3	Specimens in tanks	Upper Limb
		Lower Limb
4	Specimens in buckets	Lungs
		Heart

Sr. No	Subject (items in Dissection Hall)	Description
		Liver
		Cut vertebral column
		Foot
		Spleen
		Spine
		Abdominal wall
		Thoracic wall
		Abdomen
		Intestine
		Kidney
		Head and Neck
		Abdomen
		Pelvis
		Female pelvis
		Thorax

List of Study Models in Anatomy Museum

Sr. No.	Item Names
1	Head & neck
2	Brain / spinal cord
3	Lower limb
4	Upper limb
5	Thorax
6	Abdomen
7	Pelvis & perineum
8	General Embryology
9	Special Embryology
10	Histology

Sr. No.	Item Names
11	Whole Skeletal
12	Skull
13	Lower limb joints
14	Upper limb joints
15	Vertebral column
16	Whole pelvis
17	Torso

Histological Slides, Equipment and Facilities in Histology Lab

Sr. No.	Items
1	Local & imported slides of General and Special histology
2	Slides of Embryology
3	Slides of Neuroanatomy
4	Binocular microscopes
5	Multi-head teaching microscope
6	Tissue processor
7	Microtome (rotary)
8	Embedding station
9	Operation room
10	Refrigerator (large)
11	Computer with internet facility
12	Stools

Summative Assessment Methods and Policies

Internal Assessment

- Weightage of internal assessment shall be 20%, each for theory and practical, in BDS Professional Examination.
- The Internal Assessment shall comprise of monthly test / assignments / class presentation / send-ups /class tests / OSPE etc.
- The Internal Assessment record shall be kept in the respective department of the College / Institute and after approval of Principal, a summary as per university registration number shall be furnished to the Controller of Examinations, at least two weeks before the commencement of final examination.
- The result of all the class tests / tools which contribute towards IA will be displayed to the students during an academic year.
- The same internal assessment shall be counted both for annual and supplementary examinations. The students who are relegated, however, can improve the internal assessment during subsequent year
- Internal assessment tools of any subject may be changed after the approval of respective FBS.

Annual Examination

- The weightage of Annual Examination shall be 80%, each for theory and practical, in BDS.
- The examination comprises of a theory paper and practical/clinical examinations as per PMC regulations and the Table of Specifications (TOS) of the University.
- The gap between two consecutive theory papers shall not be more than two days.
- The Theory Paper shall be of 3-hours duration, held under the arrangements of the university. It shall have two parts: MCQs and SEQs for the year 2022. It may be changed after the approval of Academic Council.

Internal Examiner

He/she shall be Professor and Head of department who has been involved in teaching of the class being examined for at least six months. Second preference shall be Associate/Assistant Professor who is involved in teaching of the class and posted there for one year. Third preference shall be a recognized Professor of the subject.

External Examiner

He/she shall be a Professor/Associate Professor of a recognized Medical/Dental College or at least an Assistant Professor with three years teaching experience in the relevant subject.

Conflict of Interest

No person shall serve as an examiner whose close relative (wife, husband, son, daughter, adopted son, adopted daughter, grand-son, grand-daughter, brother, sister, niece /nephew, son and daughter-in-law brother and sister- in-law, parental and maternal uncle and aunt etc) is appearing in the examination. All examiners likely to serve as an examiner shall render a certificate in compliance to this para.

Paper Setting

- Each College / Institute shall forward a set of two question papers as per TOS along with the key for each subject to the Controller of Examinations, at least three months in advance of the annual examination. The question paper as a whole / a question without a comprehensive key shall not be considered towards final paper setting.
- The set of question papers shall be prepared by the respective Head of department and furnished to Controller of Examinations through Head of Institution (HoI).
- The Controller of Examinations shall approve the faculty for the final paper setting having fair representation of each college / institute.

Paper Assessment

- The Controller of Examinations shall approve the faculty for the theory paper marking, to be undertaken in the manner as deemed appropriate.
- The Examination Directorate shall coordinate directly with the faculty, earmarked for the paper marking.
- A student who scores 85% and above marks in any subject shall qualify for distinction in that particular subject.
- A fraction in aggregate marks of a subject shall be rounded off to whole number. If it is less than 0.5 then it will be rounded off to the previous whole number while 0.5 or more will be rounded off to the next whole number.

Practical Examinations

- The Controller of Examinations shall approve the faculty to serve as the internal & external examiners.
- The number of external and internal examiners shall be equal.
- One external & internal examiner each shall be marked for a group of 100 students.
- Candidates may be divided into groups practical examinations and be standardized by incorporating OSPE stations.
- Practical examination shall be held after the theory examination of the subject but in special cases, it may be held before the theory examination with the approval of the Controller of Examinations. For the purpose of practical/clinical examination, the candidates may be divided into subgroups by the examiners.

- The assessment of the practical examination duly signed by internal & external examiner shall be furnished to the Controller of Examinations within one week of the conclusion of examination.

Pass Marks

- Pass marks for all subjects shall be 50 % in theory and practical, separately.
- No grace marks shall be allowed to any student in any examination.

Declaration of Result

Every effort shall be made to declare the result of each examination within one month of the last practical examination or earlier.

Promotion

No student shall be promoted to the higher classes unless he/she passes all the subjects of the previous class

Re-totaling

Any student may apply to the Controller of Examinations on a prescribed form along with the specified fee.

Supplementary Examination

The interval between a supplementary examination and the previous professional examination shall not be more than two months. There shall be no special supplementary examination.

Academic Audit

The Vice Chancellor may get any academic matter deliberated in the manner as deemed appropriate.

Issue of Academic Transcript/Detailed Marks Sheet

A student desirous of obtaining Academic Transcript / Detailed Mark Sheet may apply to Controller of Examinations along with the prescribed fee for each original copy.

Withdrawal/Failure

Any student who fails to clear the first Professional in BDS or first in four chances, availed or un-availed, shall be expelled as per PMC policy and shall not be eligible for fresh admission as a fresh candidate in either BDS.

Curriculum Map Anatomy

By the end 1st Year of dental Academic Year, students should be able to co-relate normal anatomical structures of human body with emphasis on Head & Neck and Brain Regions along with their clinical significance at macroscopic microscopic and developmental level.

