MBBS Course Curriculum, AIIMS Nagpur

Anatomy Syllabus- First MBBS

Objectives:

At the end of academic year of I-MBBS, each student should be able to:

- Describe and explore by dissection the topography, gross structure, relationship, vascular supply and innervation of major parts of human body.
- Correlate the knowledge of gross Anatomy in imaging, sections, functional and clinical aspects wherever relevant.
- Identify the microscopic structure and relevant ultra structural details of basic tissues and organs belonging to different systems of human body and apply this knowledge in correlation of functional and clinical aspects.
- Describe fundamental events in human development chronologically with an overview of their genetic regulation and identify embryonic basis of major developmental defects pertaining to different organs and systems.
- Outline the principles and methodology of genetic counselling by application of inheritance patterns, Karyotype (chromosomal constitution) and relevant genetic diagnostic tools.
- Realise uniqueness of biological specimen as learning resource and observance of respectful behaviour towards cadaver and its belongings.

For the purpose of Teaching-Learning and Assessment, the activities conducted are broadly divided in following heads:

1. Gross anatomy (including Clinical, Radiological, Sectional and Living Anatomy)
2. Microanatomy (Histology)
3. Embryology (with Elementary Genetics)
4. Neuroanatomy

Distribution of Anatomy Teaching/ Formative assessment in academic year: (in hours)

S No	Activity	Gen Anatomy	Gen Histology	Gen Embryology & Genetics	Gross Anatomy (+syst histo/embr)	Neuro anatomy	Total
1	Lecture	19	13	12 + 10	171	30	255
2	Demonstration	-	-	2	58	-	60
3	Practical/ Interactive	4	26	8	264	49	351
4	Periodic Assessments	1	1	2	7	1	12
						Total Hours	678

Detailed Syllabus:

1. Gross Anatomy:

A. General Anatomy

1. Introduction to nomenclature of human body parts, anatomical position, planes, organisation (organ, system, tissues etc), movements and related terminologies.
2. Bones: Introduction and terminologies in osteology, classification of bones with exemplification, growth and repair of bones.
3. Muscle: introduction, types and nomenclature of muscles, mechanism of muscle action, concept of lever.
4. Joints: Introduction, classification, structure, support & kinetics of synovial joint.
5. Blood vessels: general features of arteries, veins, capillaries, sinusoids, lymphatics, portal system, foetal circulation, vascular anostomoses.
6. Nervous system: Organisation (CNS, PNS, ANS), Neurons, Myelination, neuro muscular junction, ganglia, spinal segment, dermatome, myotome, structure of peripheral nerve & concept of limb plexuses.

B. Regional Anatomy

a. Extremities (Gross Anatomy with applied aspects)

1. Upper limb (superior extremity/ supex) :

Introduction: nomenclature of parts, functional aspects and intricacy of designing for prehensile function, concept of limb bud & its modifications, axial lines and dermatomes, venous and lymphatic drainage.

Bones: Clavicle, Scapula, Humerus, Radius, Ulna, carpals, Metacarpals, Articulated hand.

Pectoral region: skin, fasciae, muscles, nerves and vessels.

Mammary gland: topography, gross anatomy and clinical aspects.

Axilla: boundary, contents, axillary artery as key content, brachial plexus, axillary lymph nodes.

Scapular region (back): skin, muscles of back and shoulder region,

Arm: skin, fascie and muscles on front and back, spaces on back, vessels and nerves (Axillary, Radial. Musculocutaneous).

Shoulder joint (including girdle): structure, stability & supports, relations, movements, mechanism, applied aspects.

Cubital fossa: boundary, contents, applied aspects.

Fore arm: skin, fasciae, muscles, blood vessels & nerves (Median, posterior interosseous, ulnar) on front and back.

Elbow and radio ulnar joints: structure, supports, relations, movements, applied aspects.

Hand: skin of palm, palmar aponeurosis, superficial palmar arch, carpal tunnel, radial and ulnar bursae, median nerve, intrinsic musculature of hand, spaces of hand, deep palmar arch, ulnar nerve in hand, compartments of extensor retinaculum, dorsal digital expansion, applied aspects.

Wrist joint, First carpo-metacarpal joint (with thumb movements), overview of small joints of hand, their movements, functional and applied aspects of the hand.

Brachial plexus injuries and effects (Erb's and Klumpke's paralysis), peripheral nerve entrapment neuropathies (Osborne's canal, Guyen's canal) and injuries (crutch palsy, wrist drop), concept of Volkman's ischaemic contracture (VIC). Spaces of hand and surgical importance.

Cross sectional anatomy, living anatomy, and radiological anatomy of supex.

2. Lower limb (inferior extremity; infex):

Introduction: nomenclature of parts, functional aspects and adaptation for erect (plantigrade) posture and bipedal gait, concept of limb bud & its modifications, axial lines and dermatomes, venous and lymphatic drainage.

Bones: Hip bone, Femur, Tibia, Fibula, Patella, Calcaneus, Talus, Cuboid, Articulated foot.

Front of thigh: skin, fasciae, muscles, Femoral triangle (boundary, contents with inter-relationship), Femoral sheath, Femoral hernia, Femoral nerve and applied aspects.

Medial (adductor) compartment of thigh (muscles, vessels and obturator nerve), adductor canal (concept, boundary, contents, applied). Concept of tight fascial compartments (gas gangrene) and fasciotomy.

Gluteal region: Boundary, fasciae, cutaneous nerves, Gluteus maximus and muscles, vessels and nerves under its cover, applied aspects.

Hip joint: structure, supports, relations, movements, mechanism, applied aspects (arthroplasty, arthroscopy, dislocation, deformities, concept of avascular necrosis, bipedal gait, Trendelenberg's sign).

Back of thigh: Hamstring muscles, perforating arteries, Sciatic nerve.

Popliteal fossa: Boundary, contents & their interrelationship, functional & applied aspects.

Knee Joint: structure, supports, intra articular structures, relations, movements, concept of locking & unlocking, applied aspects (meniscal tear, arthroscopy, arthroplasty: total and partial knee replacement, deformities, bursae, anastomosis).

Leg: Front and peroneal compartments: skin, muscles, vessels and nerves (deep peroneal, superficial peroneal).

Back of leg: skin, fasciae, muscles (emphasis on soleus as a peripheral heart and calf region as a pump), vessels, tibial nerve, tarsal tunnel (flexor retinaculum), specific features and action of triceps surae.

Ankle joint: structure, supports, and, relations, movements, explanation of movements with justification for their nomenclature.

Dorsum of foot- dermatomes & cutaneous innervation; extensor retinaculae, extensor digitorum brevis, dorsalis pedis artery.

Sole: of skin, its dermatomes & innervation; muscular layers, plantar arterial arch, medial & lateral plantar nerves.

Small joints of foot (sub talar and talo-calcaneo-navicular); movements of inversion & eversion.

Arches of foot: components of each arch and supportive mechanism; comparison with arch bridge.

Applied aspects: Concept of centre of gravity & line of weight transmission at different joints; erect posture and bipedal gait; special designing of foot for weight bearing and locomotion (in contrast with hand); foot deformities (pes cavus, pes planus, club foot etc); rehabilitative approach (foot implants and appliances in amputations & paralysis.

b. Thorax

Bony wall, topography of inlet, intrinsic musculature of thorax including diaphragm, respiratory movements; intercostal space- typical and atypical; contents of intercostal spaces with their relevant details.

Bones: Ribs, sternum, thoracic vertebrae.

Mediastinum: Gross divisions, boundary and disposition of contents; superior vena cava, arch of aorta with its branches, thoracic duct, thymus, azygos system of veins, thoracic sympathetic chain, trachea and principal bronchi, clinical aspects of thoracic inlet & mediastinum

Pleura: parietal & visceral parts, reflections, relations, applied part.

Lungs: root & hilum, borders, surfaces, relations, broncho-pulmonary segments with applied anatomy

Pericardium: fibrous and serous, reflections from heart, sinuses; applied aspects.

Heart: external features: base, apex, borders, surfaces & landmarks; details of interior of right atrium and salient internal features of other chambers with inflow, outflow and valves, coronary circulation- arteries and veins with their specific locations, conducting system of heart- overview, applied anatomy of all the topics.

Cross sectional anatomy at various vertebral levels, living anatomy and radiology of thorax.

c. Head and neck

Bones: Skull introduction with study of skull in different views- Norma Verticalis, frontalis, lateralis, occipitalis, study of cranial cavity after removal of skull cap, norma basalis. Orbit, mandible, major bones of skull, cervical vertebrae.

Scalp: layers with applied aspects of each, vascular supply, innervation.

Face: vascular supply, innervation, muscles of face, facial artery and nerve, eyelid & lacrimal apparatus, with applied anatomy.

Side of Neck, cervical fascia, posterior triangle, sub occipital triangle.

Anterior triangle with details of boundary, contents & applied aspects of - digastric triangle, carotid triangle and other sub divisions.

Cranial cavity, dural folds, dural venous sinuses with details of cavernous sinus, pituitary gland.

Submandibular gland, thyroid gland, lymphatic drainage of neck with applied anatomy

Orbit: boundary and contents, extra ocular muscles, nerves & vessels with applied aspects.

Parotid-masseteric region, temporo mandibular joint, infra temporal fossa.

Oral cavity, tooth, lip, tongue, palatine tonsil.

Nasal cavity- septum, lateral wall with structure, vascular and nervous supply with clinical anatomy.

Para nasal sinuses with details of relationship & applied aspects of maxillary sinus.

Pharynx: wall & cavity with applied aspects.

Larynx: structure, interior, functional aspects with musculature

Ear: pinna, external auditory meatus, middle ear and gross structure of internal ear.

Eye ball and its gross internal structure.

Deep structures of neck: scaleno-vertebral triangle, subclavian artery, cervical sympathetic chain, joints of neck.

Cross sectional anatomy, living anatomy and radiology/imaging of region.

d. Abdomen and pelvis

Abdominal wall (anterior and posterior)- structural arrangement & muscles, Rectus sheath with its applied aspects, Inguinal region formation and relations, direct & indirect Inguinal hernia.

Scrotum & contents; Gross Anatomy of Testis.

Peritoneum & Peritoneal cavity.

Topography, relations, blood supply, lymphatic drainage, nervous supply & applied anatomy of abdominal viscera- stomach, duodenum, liver, extra hepatic biliary apparatus, spleen, small & large intestine, mesentery.

Kidney & ureters.

Supra renal glands, celiac ganglia, cysterna chyli & abdominal sympathetic system.

Aorta with its major branches & Inferior vena cava.

Portal vein, porta systemic anastomosis with applied aspects.

Pelvic cavity, wall and musculature, Pelvic floor and its mechanism

Pelvic organs- structure, relations, vascular supply, innervation and applied anatomy of Urinary bladder, Rectum & anal canal, Uterus with appandages, fallopian tubes & Ovary, Prostate, Vas deferens & seminal vesicle.

Perineum: bounadary, divisions, superficial & deep pouches with applied aspects.

External genitalia- male and females.

Bones: lumbar vertebrae, sacrum bony pelvis, pelvimetry.

Living & Radiological Anatomy of abdomen & pelvis.

II. Microanatomy (Histology)

1. Microscope and basic principles of microscopy
2. Staining principles and common stains used in routine microscopy
3. Micro anatomy of general tissues of the human body-
   - Epithelium: simple squamous, cuboidal & columnar epithelia, transitional, pseudo-stratified and compound epithelia, surface modification as cilia & microvilli & modification of epithelium as gland.
   - Connective tissue: constituents- fibres (collagen, elastic and reticular), cells and matrix, classification with examples- embryonic/mucoid tissue, loose areolar tissue, adipose tissue, reticular tissue, dense irregular and regular tissue (tendon).
   - Cartilage: features of cells & matrix as a sclerous tissue; types- Hyaline, elastic & fibrocartilage; articular cartilage.
   - Bone: features of cells & matrix contrasted with cartilage, methods of preparation (ground, decalcified, charred bone), types (compact/lamellar, cancellous/ trabecular), development of bone and bone repair/remodelling.
   - Muscular tissue: smooth, skeletal & cardiac muscles, structural correlation with function. Nervous tissue: basic structure & morphological types of neurons with example (pyramidal cells, Purkinje cell, neurons in ganglia as pseudo unipolar & multipolar cells), peripheral nerves (medullated & myelinated), special stained preparation (Osmic acid) for concept of myellination. Central myelinised tract (Optic nerve).
   - Vascular tissue: general concept of tunics of blood vessels, artery: muscular, elastic (aorta), veins (large & medium sized), arterioles & micro-circulatory bed- capillaries, sinusoids, lymphatics.
   - Lymphoid organs: concept of reticulo-endothelial system, structure of lymphocytes and mono nuclear phagocytic cells, different types of arrangement of lymphocytes- diffuse (lamina propria), aggregated (lymph node, spleen, tonsil) or lobular (thymus), lymphatic nodules & germinal centre, concept of GALT (Peyer's patch).
4. Systemic Histology:
   - Integument: structural elements of skin (epidermis & dermis), glabrous & hairy skin, eye lid, appandages of skin (hair, nail, sebaceous and sweat glands).
   - Respiratory system: trachea, epiglottis, extra pulmonary bronchus & lung.
   - Alimentary canal & digestive system: lip, tongue, salivary glands (serous, mucus & mixed), four layered concept of wall of GIT, alteration of mucosal layer with functional requirement exemplified in oesophagus, stomach (fundic/body, pyloric parts), duodenum, jejunum, ileum, colon and appendix. Liver, gall bladder, pancreas (exocrine & endocrine part).
   - Endocrine system: basic structure & organisation of cells and secretory units in gland), Hypophysis cerebri (Pituitary gland), Thyroid, Parathyroid, Supra Renal glands.
   - Male reproductive system: testis, epididymis, vas deferens, seminal vesicle, prostate & urethra (in Penis).

- Female reproductive system: Uterus, fallopian tube, ovary, cervix & vagina, mammary gland (passive, active & lactating), placenta (gestational tissue) & umbilical cord.
- Specific parts of Central and peripheral nervous system: cerebrum, cerebellum, spinal cord, spinal & autonomic ganglia.
- Special sense organs: eye- retina, cornea.

III. A. Embryology

- **General Embryology (Embryonic period 0-8 weeks of gestation)**

Basic & Pre-zygotal events: descriptive terms and periods in embryology, Gametogenesis (Oogenesis, spermatogenesis); structure, capacitation and activation of sperm; Growth of Graffian follicle, ovarian cycle, uterine cycle; principles and methods of Contraception.

First Week of Development

Definition, normal site and process of fertilisation, formation of zygote, cleavage division; formation of morula and blastocyst.

Second Week of Development

Differentiation of embryoblast and trophoblast; changes in the embryoblast, formation of bilaminar germ disc; cytotrophoblast, syncytiotrophoblast, extra embryonic mesoderm and extra embryonic coelom, amnion, amniotic cavity, chorion, yolk sac, connecting stalk, prochordal plate. Implantation; formation of decidua, types of implantation and abnormal sites of implantation.

Third Week of Development

Appearance of primitive streak and primitive node; formation of intraembroynic mesoderm resulting in trilaminar germ disc; gastrulation, formation of notochord, buccopharyngeal and cloacal membranes, paraxial, intermediate and lateral plate mesoderm, , secondary yolk sac, intraembryonic coelom and allantoic diverticulum; derivatives of three germ layers- ectoderm, mesoderm and endoderm.

Fourth week of Development

Formation of somites and their derivatives, neural tube, cephalocaudal folding, lateral foldings, body cavities (coelom).

- **Systemic Embryology**:

Development of Specific parts: development of face, palate, nasal cavity,; Development of Hypophysis; structure and modification of pharyngeal arches and pharyngeal pouches, external ear, pinna, middle ear, Thyroid, Parathyroid & Thymus; related anomalies. Basic steps in development of skull and meninges, fate of sense capsules (olfactory, otic and optic).

Cardio vascular system: pericardium, development of heart, chambers and septae of heart, fate of sinus venosus, aortic arches, development of major vessels of body- aorta & its branches, verterbral artery, superior & inferior vena cava, azygos system, portal vein & limb arteries).

Respiratory system: diaphragm, trachea, lungs & pleura.

Digestive system: peritoneum and peritoneal cavity, developmental of tongue, salivary glands, fore gut, mid gut & hind gut; basic concepts of gut rotation and fixation; Errors of gut rotation. Cloaca and its modification. Digestive glands: liver, gall bladder & pancreas. Meckel's diverticulum and remnants of vitello intestinal canal

Intermediate mesoderm, Urogenital system & genital ducts: urogenital ridge, Mesonephric system, development of testis and ovary, chronology of testicular descent & cryptorchitism; Mesonephric & paramesonephric duct system and their fate in both sexes; further development of cloaca, ureters, urinary bladder, stages in development of kidney with anomalies related to its structure, position and vascular pattern; male & female reproductive tract, urethra and external genitalia in both sexes with defects, mammary gland, supra renal gland.

Nervous system: CNS & special sensory organs, development of skull & meninges (in brief).

Musculo-skeletal system: formation of vertebral column, limbs, synovial joints.

- **Development from third month to birth** (Fetal period)

1. Maturation of tissues and organs and rapid growth of body.
2. Estimation of age.
3. Placenta: Formation of placenta and chorionic villi, decidua basalis; features, types and functions of placenta; placental circulation; placental barrier; abnormalities; Multiple pregnancy, twins and types of twins, Conjoint twins (monsters), foetal membranes, features of umbilical cord, concept of extra embryonic coelom in cord.
4. Concepts of stem cells, chorionic villi as gestation tissue/product of conception-trophoblast), blighted ovum and vesicular mole, choreo-carcinoma, invitro fertilisation (IVF), Ectopic gestation, Artificial reproductice techniques (ART), cloning & stem cells.
5. Maternal & Foetal membranes: Amnion, amniotic fluid – functions, expansions of amniotic cavity; decidua basalis, capsularis, parietalis with fate; obliteration of chorionic and uterine cavities; function of fused foetal membranes to dilate cervical canal.
6. Teratology**:** Genetical and environmental factors as causative factor for congenital malformations; Mode of actions of teratogens and critical periods.

III. B Human Genetics

Cell, cell division, mitosis and meiosis, nucleus, DNA, chromosomes, classification, karyotype, chromosomal aberrations (Klinefelter, Turner and Down's Syndrome), banding techniques & FISH (fluorescent in situ hybridization) for chromosomal identification, Prenatal diagnosis for congenital abnormalities, sex determination (clarifying genetic, gonadal & phenotypic sex & intersexuality).

Pedigree chart, chromosomal aberrations and their effects, recombinant DNA, mutations, genetic inheritance with patterns (autosomal, sex linked), overview of principles and methods of genetic counseling, inborn errors of metabolism.

IV. Neuroanatomy

Parts of nervous system, neuron, nerve terminals, myelination, degeneration and regeneration, neuroglia, myellination.

Meninges, ventricles, choroid plexus, CSF.

Spinal cord: external and internal features, arrangement of grey and white matter, neuronal lamination, funiculi and specific aspects of the tracts located in them (Motor and sensory pathways); blood supply and applied parts.

Internal architecure as seen in Sections of brain stem- Medulla oblongata, pons, Mid brain.

Structure, architecture & connections of cerebellum.

Structure, architecture & connections of nuclear groups of thalamus, hypothalamus and other parts of diencephalon- epithalamus & pineal, metathalamus with pathways concerned with lat & medial geniculate bodies.

Cerebrum: gross features, sulci, gyri, functional areas, deep nuclei (basal ganglia).

White matter (medullary centres) of brain with different types of fibre system, corpus callosum, internal capsule.

Salient features of reticular formation & limbic system.

Cranial nerves (I- XII) with nuclei, functional components, intra & extra cranial course & distribution; applied aspects.

Blood supply of brain, specific supply to major parts of brain, circle of Willis.

Apllied aspects of all parts of nervous system with clinical scenario.

Living anatomy, sectional study & Radiological imaging of brain & spinal cord.

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Semester Wise Distribution of I-MBBS Anatomy Course:

There will be Two semesters in an academic year of I MBBS

Semester I: 1st September to 28th February

Semester II: 1st March to 31st August

Semester Wise Teaching Schedule

Semester I:

1. General Anatomy

2. Regional Gross Anatomy:

- Upper limb (supex)
- Lower Limb (infex)
- Thorax
- Head, Neck & Face (excluding viscera and deeper structures)

6. General Histology & systemic histology of concerned parts of gross anatomy

7. General Embryology & systemic development of concerned parts of gross anatomy

8. Osteology, living and radiological anatomy of concerned regions.

Semester II:

1. Remaining Gross Anatomy of HNF- Viscera (Pharynx, Larynx, Middle ear); deeper structures.

2. Gross Anatomy of Abdomen, pelvis & perineum.

3. Neuroanatomy

4. Genetics

5. Systemic histology of concerned parts of gross anatomy

7. Systemic Embryology: development of concerned parts in gross anatomy.

8. **Osteology, living and radiological anatomy** of concerned regions.

List of Topics with teaching Methodology

1. General Anatomy

Sr No	Topic	Must know	T/L method	Duration	Assessment
GA01	Introduction to Anatomy	Scope of subject; broad divisions, Nomenclature of parts of human body, general plan of approach.	1 hour	Lecture	Viva voce
GA02	History & Advancements	Review of Historical aspects, areas of advancement, research potential, role in community service.	1 hour	Lecture	Viva voce
GA03	Terminologies	Anatomical position, planes, organization (organ, system, tissues etc), serous membranes, body cavities, terminologies related to movements.	2 hours	Lecture & group activity	Skills assessment
GA04	Skeletal system	Terminologies in Osteology; classification of bones with examples and specific features, significance of secondary bony markings & its application in medico-legal and anthropological	2 hour 2 hr	Lecture & Demo	Written Viva voce

		aspects; parts of long bone, epiphysis with types & example, vascular supply of long bone; laws of ossification, basics of fracture repair; Role and properties of Cartilage, gross types & their distribution with justification; Primary & secondary cartilages.			
GA05	Muscle	Introduction, types (morphological classification); nomenclature, parts of skeletal muscle, tendons, raphe & aponeuroses**,** mechanism of muscle action, concept of mechanical lever, types of muscle action (prime mover, synergistic, antagonistic and paradoxic actions), spurts and shunts.	2 hour 2 hour	Lecture & Demo	Written Viva voce
GA06	Joints	Introduction, classification, Types and examples of fibrous & cartilaginous joints. Synovial joints- structure, support, stability, nerve supply of joints, Hilton's law. Movements and mechanics/ kinetics of synovial joint, axis, planes and nomenclature of movements.	1 hour 1 hr 1 Hr	Lecture	Written Viva voce
GA07	Integument	Gross structure with functional correlation of skin & its appendages; Types of skin, distribution with regional adaptations, dermatomal patterns in body; dermatoglyphics, basics of skin incisions; cosmetic, medico-legal, evolutionary & applied aspects. Superficial fascia, function & regional modifications, distribution of subcutaneous fat. Deep fascia, modifications with function; Fasciae as representative of original mesenchyme (contouring & filling material)	1 hour + 1 hr	Lecture	Written Viva voce
GA08	Cardio vascular system and foetal circulation	General features of arteries, veins, major vessels of body with their location, capillaries, sinusoids, portal system, foetal circulation, vascular anastomoses; factors promoting venous return, peripheral hearts and fascial compartments	2 hr	Lecture	Written Viva voce
GA09	Lymphatics	Contrasting features of lymphatic system with blood vascular system; Lymph, named lymphatics, lymph flow, role of lymph nodes and their	2 hr	Lecture	Written Viva voce

		role in cancer metastasis, lymphoedema,			
GA10	Nervous System	Organisation (CNS, PNS, ANS), Types of Neurons, Myelination, neuro muscular junction; Ganglia; Concept of spinal segment, dermatome & myotome. Roots/ rami of spinal nerve; basic structure & distribution of peripheral nerve, reaction to injury; concept of plexuses for limbs.	1 hour + 1 hr	Lecture	Written Viva voce

Gen. Anatomy: Summary:

Total Heads	Lecture Hours	Demo & Interactive hours	Assessment hour/s	Assessment Method
10	19	4	1	Theory Test. Skills assessment (day to day basis).

2. Supex (Upper limb)

S.No	Topic	Sub Heads	T/L Hours	T/L method	Assessment method
UL01	Introduction	Nomenclature of parts, functional aspects and intricacy of designing for prehensile function, concept of limb bud & its modifications, axial lines and dermatomes, venous & lymphatic drainage.	2	Lecture	Written Viva
UL02	Regional Bone	Clavicle	1½	Demo	OSPE, Viva
UL03	Pectoral region	Skin, fasciae, muscles, nerves and vessels. Topography & relations of Mammary gland	1 +2	Lecture, dissection	Written Viva
UL04	Mammary gland:	Details of gross structure of Mammary gland, vascular supply, lymphatic drainage, clinical aspects.	2 + 2	Lecture, dissection	Written Viva
UL05	Regional Bone	Scapula	1½	Demo	OSPE. Viva
UL06	Regional Bone	Humerus	1½	Demo	OSPE. Viva
UL07	Axilla	Boundary, disposition of contents with axillary artery as key, axillary lymph nodes	1 + 2	Lecture, dissection	Written Viva
UL08	Brachial plexus	Introduction, components, intricate plan, branches, areas of distribution.	1+ 2	Lecture, dissection	Written Viva, OSPE
UL09	Back and shoulder region	skin, extrinsic muscles of back (attached to scapula), deltoid, rotator cuff assembly.	1+ 2	Lecture Dissection	Written Viva, OSPE
UL10	Arm	skin, fascia and muscles on front and back, inter-muscular spaces on back of arm, vessels and nerves (Axillary, Radial, Musculocutaneous Nn. & profunda brachii & Brachial artery).	1+ 2	Lecture Dissection	Written Viva, OSPE
UL11	Shoulder joint (including	Structure, stability & supports, relations, movements, mechanism, applied aspects. Salient features of Different girdle joints and	1+ 2	Lecture Dissection	Written Viva

	girdle)	their function.			
UL12	Regional Bone	Radius, Ulna,	1½	Demo	OSPE. Viva
UL13	Cubital fossa	Boundary, contents, applied aspects	1+ 2	Lecture Dissection	Written Viva, OSPE
UL14	Fore arm	Skin, fasciae, muscles, blood vessels & nerves (Median, posterior interosseous, ulnar) on front and back.	2 + 4	Lecture Dissection	Written Viva, OSPE
UL15	Elbow and radio ulnar joints	structure, supports, relations, movements, applied aspects	1+ 2	Lecture, dissection	Written Viva, OSPE
UL16	Regional Bones	Articulated hand, identifying major carpal and metacarpal bones	1½	Demo	OSPE. Viva
UL17	Hand	skin of palm, palmar aponeurosis, superficial palmar arch, carpal tunnel, radial and ulnar bursae, median nerve, intrinsic musculature of hand, spaces of hand, deep palmar arch, ulnar nerve in hand, compartments of extensor retinaculum, dorsal digital expansion, applied aspects.	2 + 4	Lecture, dissection	Written Viva, OSPE
UL18	Wrist & small joints of hand	Wrist joint, First carpo-metacarpal joint (with thumb movements), overview of small joints of hand, their movements, functional and applied aspects of the hand	1 + 2	Lecture, dissection	Written Viva, OSPE
UL19	Applied parts	Brachial plexus injuries and effects (Erb's and Klumpke's paralysis), peripheral nerve entrapment neuropathies (Carpal tunnel syndr., Osborne's canal, Guyen's canal) and injuries (crutch palsy, wrist drop), concept of Volkman's ischaemic contracture (VIC). Spaces of hand and surgical importance.	2	lecture	Written Viva,
UL20	Surface & living anatomy	Land marks, peripheral pulses, sites of venepuncture/ cut down, precise location/palpation of nerves, functional part of muscles & joints.	1½	Demo	Skills assessment, viva, OSPE
UL21	Sections & imaging	Sectional views and radiological anatomy	1½	Demo	Viva, OSPE

Supex Summarised Hours:

Total Heads	Lecture	Demo	Practical hours	Assessment hour/s	Assessment Method
21	19 hr	7 x 1½ = 10½ hr	28	1	Theory (written) Test. OSPE & Skills assessment (day to day basis).

3. Infex (Lower limb, abbreviation- LL)

S No (Code)	Topic	Sub Topics	T/L Hours	T/L Method	Assessment method
LL01	Introduction	Parts & Nomenclature, functional aspects and adaptation for erect (plantigrade) posture/ bipedal gait; concept of limb bud & its modifications, axial lines, dermatomes.	1 +	Lecture	Written Viva

		Fascial compartment & organisation of contents, outline of venous and lymphatic drainage, fascial overlapping & saphenous opening.	1		
LL02	Infex Bone	Hip bone,	1½	Demo	Viva, OSPE
LL03	Infex Bone	Femur	1½	Demo	Viva, OSPE
LL04	Front of thigh	Skin, fasciae, muscles, Femoral triangle (boundary, contents with inter-relationship), Femoral nerve and applied aspects.	1 + 2	Lect Dissection	Written Viva OSPE
LL05	Femoral Sheath	Femoral sheath, femoral canal and Femoral hernia	1 + 2	Lect Dissection	Written Viva
LL06	Medial (adductor) compartment of thigh	Muscles, vessels and obturator nerve, adductor canal (concept, boundary, contents, applied). Concept of tight fascial compartments (e.g. gas gangrene) and fasciotomy	1½ + 1½	Lect Dissection	Written Viva OSPE
LL07	Gluteal region	Boundary, fasciae, cutaneous nerves, Gluteus maximus and muscles, vessels and nerves under its cover, applied aspects.	1½ + 3 ½	Lect Dissection	Written Viva OSPE
LL08	Hip joint	structure, supports, relations, movements, mechanism, applied aspects (arthroplasty, arthroscopy, dislocation, deformities, concept of avascular necrosis, Trendelenburg's sign).	1½ + 2	Lect Dissection	Written Viva OSPE
LL09	Back of thigh	Hamstring muscles, perforating arteries, Sciatic nerve.	1 + 2	Lect Dissection	Written Viva
LL10	Infex Bone	Tibia & Patella	1½	Demo	
LL11	Popliteal fossa:	Boundary, contents & their interrelationship, functional & applied aspects.	1+ 2	Lect Dissection	Written Viva OSPE
LL12	Infex Bone	Fibula	1	Demo	
LL13	Knee Joint	structure, supports, intra articular structures, relations, movements, concept of locking & unlocking, applied aspects (meniscal tear, arthroscopy, arthroplasty: total and partial knee replacement, deformities, bursae, anastomosis).	2 + 2	Lect Dissection	Written Viva OSPE
LL14	Leg	Front and peroneal compartments: skin, muscles, vessels and nerves (deep peroneal, superficial peroneal).	1+ 2	Lect Dissection	Written Viva OSPE
LL15	Back of leg	skin, fasciae, muscles (emphasis on soleus as a peripheral heart and calf region as a pump), vessels, tibial nerve, tarsal tunnel (flexor retinaculum), specific features and action of triceps surae.	1+ 2	Lect Dissection	Written Viva OSPE
LL16	Infex bone	Articulated foot; details of calcaneus & talus, identification of individual tarsal & metatarsal bones.	1½	Demo	OSPE Viva
LL17	Ankle joint	structure, supports, and, relations, movements, concept of Plantar flexion & dorsiflexion as true flexion & extension	1+ 2	Lect Dissection	Written Viva OSPE

		movements.			
LL18	Dorsum of foot	dermatomes & cutaneous innervation; extensor retinaculae, extensor digitorum brevis, dorsalis pedis artery.	1 + 2	Lect Dissection	Written Viva OSPE
LL19	Sole	skin, its dermatomes & innervation; muscular layers, plantar arterial arch, medial & lateral plantar nerves.	2 + 4	Lect Dissection	Written Viva OSPE
LL20	Small joints of foot	Composite Sub-talar, talo-calcaneo-navicular and mid tarsal joints of foot and movements of inversion & eversion.	1 + 2	Lect Dissection	Written Viva
LL21	Arches of foot	Components of each arch and supportive mechanism; comparison with arched bridge.	1 + 2	Lect Dissection	Written Viva
LL22	Foot dynamics	Concept of centre of gravity & line of weight transmission at different joints; erect posture and bipedal gait; structural intricacy of foot for weight bearing and locomotion (contrast with hand); foot deformities (pes cavus, pes planus, club foot etc); general concept of rehabilitative approach (foot implants and appliances in amputations & paralysis)	1½	Lect	
LL23	Varicose veins	Details of veins of lower limb with clinical aspects of Varicose veins.	1½	Lect	
LL24	Surface & living anatomy	Land marks, sites of peripheral pulses, sites of venepuncture/ venesection points, precise location/palpation of nerves, functional part of muscles & joints, realization of locking /unlocking of knee (fixation/ loosening of patella with symmetrical & asymmetrical standing), anthropometric aspects for comparing lengths/ determining shortening.	1½	Demo	Skills assessment, viva, OSPE
LL25	Sections & imaging	Sectional views and radiological anatomy	1	Demo	Viva, OSPE

Infex: Summary:

Total Heads	Lecture Hours	Demo & Prac (Interactive) hours	Assessment hour/s	Assessment Method
25	23 ½	9 ½ + 33	1	Theory (written) Test. OSPE & Skills assessment (day to day basis).

4. Thorax

S.NoCode	Topic	Sub Topic	Duration Hrs	T/L method	Assessment Method
Th01	Thoracic wall	Introduction to Thoracic wall, Inlet of Thorax, basis of moldable & segmented thoracic wall; Typical intercostals	1 + 2	Lecture Dissection	Written Viva OSPE

		space & contents			
Th02	Osteology	Ribs & costal cartilages in general: typical ribs	1 hour	Demo	Viva OSPE
Th03	Intercostal space	Details of contents of i.c. space, distribution of intercostals nerves & vessels; mechanism of movements of thoracic wall, applied aspects	1 + 2	Lecture Dissection	Written Viva, OSPE
Th04	Osteology	Atypical ribs (1, 2, 11, 12)	1 hour	Demo	Viva, OSPE
Th05	Osteology	Thoracic vertebrae: typical & atypical	1 hour	Demo	Viva OSPE
Th06	Pleura	Disposition, pleural cavity & recesses; mediastinal relationship, innervation, blood supply, applied aspects	1 + 2	Lecture Dissection	Written Viva, OSPE
Th07	Osteology	Sternum	1 hr	Demo	Viva, OSPE
Th08	Lung external	Borders, surfaces, fissures lobes, relations, contents of lung root, branching & interrelation of bronchi & vessels, innervation	1 + 2	Lecture Dissection	Written Viva, OSPE
Th09	Systemic Embryology	Developmental aspects of tracheo-bronchial tree, lung, pleura & pericardial cavity.	1 hr	Lecture	Viva
Th10	Lung: internal	Broncho-pulmonary segments; applied aspects	1 + 2	Lecture Dissection	Written Viva, OSPE
Th11	Systemic Histology	Histology of trachea and Lung	1 hr + 2	Lecture Practical	Viva OSPE
Th12	Mediastinum	Definition, boundary & extent, divisions and arrangements of contents; ant. Mediastinum, Thymus.	1 + 2	Lecture Dissection	Written Viva, OSPE
Th13	Systemic Embryology	Initial Stages in development of heart, looping of heart, fate of tributaries of sinus venosus	1 hour	Lecture	Viva OSPE
Th14	Sup. Mediastinum	Arch of aorta; superior vena cava.	1 + 2	Lecture Dissection	Written Viva, OSPE
Th15	Pericardium & Middle mediastinum	Trachea & principal bronchi, phrenic & left recurrent laryngeal nerves, Fibrous and serous pericardium, sinuses of pericardium	1 + 2	Lecture Dissection	Written Viva, OSPE
Th16	Heart, Rt Atrium	External features of heart, borders, surfaces,	1 + 2 hr	Lecture Dissection	Written Viva, OSPE

		Details of interior of Right atrium			
Th17	Further Cardiac Development	Absorption of sinus venosus, limbic bands, atrial septation and development of atrial chambers.	1	Lecture	Viva OSPE
Th18	Heart internal	Cardiac chambers, inflow and outflow paths, valves & cardiac musculature	1 + 2 hr	Lecture Dissection	Written Viva, OSPE
Th19	Further Cardiac Development	Ventricular septation, development of right & left ventricles; developmental anomalies of heart.	1½	Lecture	Viva OSPE
Th20	Coronary circulation	Arterial supply and venous drainage of heart; clinical aspects of coronary arteries	1 + 2 hr	Lecture Dissection	Written Viva, OSPE
Th21	Development of CVS	Arterial arches and their fate, arch of aorta, anomalies.	1½	Lecture	Viva OSPE
Th22	Posterior mediastinum	Oesophagus, thoracic duct,	1 + 2 hr	Lecture Dissection	Written Viva, OSPE
Th23	Azygos vein	Azygos system of veins with its developmental aspects	1 + 1	Lecture Dissection	Viva
Th24	Syst Histo	Histology of oesophagus with 4 layered concept of GIT	1 hr + 2	Lecture Practical	Viva OSPE
Th25	Autonomic system	Thoracic sympathetic chain; descending thoracic aorta	1 + 1	Lecture Dissection	Viva
Th26	Living Anat	Surface and living anatomy of thorax	1	Demo	Viva OSPE
Th27	Imaging	Radiological & sectional anatomy of thorax	1	Demo	Viva OSPE
Th28	Models	Developmental part of CVS	1	Demo	Viva, OSPE

Thorax: Summary:

Total Heads	Lecture Hours	Demo hours	Practical Hrs/ Dissection	Assessment hour/s	Assessment Method
28	22	7	4 + 26	1	Theory Test. Skills assessment (day to day basis). OSPE, spotters.

5. Head, Neck, Face

S.NoCode	Topic	Sub Head	Duration (Hrs)	T/L method	Assessment method

HNF01	Overview	Introduction to the territory with evolutionary & developmental aspects, study plan	1	Lecture	-
HNF02	Norma	Skull as a whole with bones of calvaria, skull base & facial skeleton; Norma Verticalis	1	Demo	Viva, OSPE
HNF03	Scalp	Layers, vascular supply, innervations, applied aspects	1½ + 2	Lecture Dissection	Written Viva, OSPE
HNF04	Norma Frontalis	Landmarks & Features with specific attachments of muscles of face	1	Demo	Viva, OSPE
HNF05	Face	Development of face, palate	1	Lect	Wr, Vi, OSPE
HNF06	Face	Territory, intricacy (natural orifices modified by panniculus carnosus), modiolus, vascular supply, dangerous area, innervation, developmental correlation, applied aspects	1½ + 2	Lecture Dissection	Written Viva, OSPE
HNF07	Lacrimal assembly	Lacrimatory apparatus, eye lid	1½ + 2	Lecture Dissection	Written Viva
HNF08	Norma	Norma Occipitalis	1	Demo	Viva, OSPE
HNF09	Pharyngeal apparatus	Development of Pharyngeal arches and their fate	1	Lect	Wr, Vi, OSPE
HNF10	Side of Neck	Posterior triangle- boundary, subdivisions, disposition of deep cervical fascia, sternocleidomastoid muscle,	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF11	Side of Neck	Contents of occipital and supraclavicular part of posterior triangle, overview of cervical plexus and its main braches, accessory nerve.	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF12	Back of neck	Suboccipital triangle- boundary & contents; general disposition of intrinsic muscles of back in layers	1½ + 2	Lecture Dissection	Written Viva, OSPE
HNF13	Vertebrae	Cervical vertebrae: gen features of typical vertebra; costal elements; atypical vertebrae (C-1, C-2, C-7) with specific features	1½	Demo	OSPE, Viva
HNF14	Front of neck	Anterior triangle- boundary, gross subdivisions with contents, platysma, superficial veins, space of Burns, layers of deep	1½ +2	Lecture Dissection	Written Viva, OSPE

		cervical fascia; strap muscles & ansa cervicalis. Details of carotid triangle, branches of external carotid artery.			
HNF15	Parotid region	Parotid space & parotid gland with its topography, parts, facial disposition & relations, structures enclosed, innervations & applied part	1½ + 2	Lecture Dissection	Written Viva, OSPE
HNF16	Cranial cavity	Interior of Cranial Cavity and vertebral canal	1	Demo	Viva, OSPE
HNF17	Dura mater	Iinnervations and vascular supply; dural folds, applied parts, Dural venous sinuses-classification with location of each.	1½ + 2	Lect	Written Viva, OSPE
HNF18	Dural venous sinuses	Superior sagittal sinus; Cavernous sinus: topography, tributaries & connections, applied parts	1 + 2	Lecture Dissection	Written Viva
HNF19	Hypophysis cerebri	: gross and microscopic structure with applied aspects	1 + 2+ 2	Lect; diss., histo prac	Written Viva, OSPE
HNF20	Orbit:	Bony orbit: boundary, relation & communication, orbital fissures & contents, optic canal	1	Demo	Viva, OSPE
HNF21	Orbit	Extra ocular muscles with their actions, innervations & applied aspects	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF22	Orbit	Ciliary ganglion, nerves & vessels of orbit with applied aspects.	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF 23	Mandible	Parts, features, nerves in relation, attachments, developmental aspects, sex differences & ossification	1	Demo	Viva, OSPE
HNF24	Digastric triangle	Submandibular gland: topography, parts, coverings, relations, innervations & applied	1+ 2	Lecture Dissection	Written Viva, OSPE
HNF25	Pharyngeal apparatus	Development of Pharyngeal clefts & pouches and their fate	1	Lect	Wr, Vi, OSPE
HNF26	Salivary glands	Histology of salivary glands- serous, mucus & mixed	1 + 2	Lect Prac	Written Viva, OSPE
HNF27	Thyroid gland	topography, parts, coverings, relations, innervations & applied, developmental events, features of parathyroids.	1 ½ + 2	Lecture Dissection	Written Viva, OSPE

HNF28	Histology	Thyroid & Parathyroid glands	1 + 2	Lecture Histo Prac	Written Viva, OSPE
HNF29	Temporo Mandibular Joint:	structure, supports, relations, movements, inervation & applied aspects.	1 + 2	Lecture Dissection	Written Viva
HNF30	Infra temporal fossa	Boundary, contents, mandibular nerve, maxillary artery	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF31	Skull base	Norma basalis	1½	Demo	Viva, OSPE
HNF32	Nasal cavity, septum	Structural components- Medial wall (Septum) and roof with features, vascular supply, innervations & applied aspects (Little's area), developmental correlation	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF33	Hyoid & losse skull bones	Major bones for identification, parts and orientation: Hyoid, frontal, parietal, temporal, occipital & sphenoid.	1	Demo	Viva, OSPE
HNF34	Lateral wall of nose	features, meati & openings; vascular supply, innervations	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF35	Para nasal sinuses	General features, topography of individual sinuses with gross relationship; details of maxillary sinus with vascular supply, innervations, drainage & applied parts.	1+2	Lecture Dissection	Written. Viva
HNF36	Tongue	Gross anatomy, vascular supply including lymphatic drainage, innervations, developmental correlation & applied	1+2	Lecture Dissection	Written Viva, OSPE
HNF37	Histology	Microstructure of lip, tongue, ground tooth	1 + 2	Lect + Prac	
HNF38	Soft Palate	Structure, musculature, vascular supply & innervations.	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF 39	Palatine tonsil	Gross anatomy, relationship (tonsilar bed), vascular supply, ertebralns, developmental & micro structural correlation, applied	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF40	Pharynx	Gross structure, composition of wall & relations, musculature & structures joining between the constrictors, vessels and nerves	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF 41	Pharynx	Features of Interior of naso-pharynx, oropharynx &	1 + 2	Lecture Dissection	Written Viva, OSPE

		hypopharynx, applied apsects			
HNF 42	Larynx	Structure- membrano-cartilagenous frame; vascular supply & innervation	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF 43	Larynx	Laryngeal musculature acting at inlet & rima glotidis; function & applied aspects	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF 44	Ear	Pina, external meatus, tympanic membrane & auditory tube.	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF45	Middle ear	Boundary, contents, detailed features of walls, applied parts	1½ + 2	Lecture Dissection	Written Viva, OSPE
HNF46	Scaleno-vertebral triangle	Subclavian & ertebral artery, cervical sympathetic chain.	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF47	Joints of neck	Atlanto occipital & atlanto axial joints: main supports and movements, applied aspects.	1 + 2	Lecture Dissection	Written Viva, OSPE
HNF 48	Living Anatomy	Land marks, palpation of Major pulsations, parotid duct, testing of muscles, movements of eye ball & facial musces, tracing of main veins in neck, JVP, function of cranial nerves etc	1	Demo	Viva, OSPE Skills assessment.
HNF49	Imaging & sectional	Plane & special skiagrams, PNS, CT, MRI films, cross sections of neck.	1	Demo	Viva, OSPE
HNF50	Models	Developmental aspects of Face, palate, tongue, pharyngeal arches & pouches, ear, nose etc,	1	Demo	Viva, OSPE

HNF: Summary:

Total Heads	Lecture Hours	Demo hrs	Prac/dissection hours	Assessment hour/s	Assessment Method
50	42.5	13	70	1	Theory Test. Skills assessment (day to day basis), OSPE, spotters.

6. General Histology

SNo Code	Topic	Sub Head	T/L Hrs	T/L Method	Assessment method
GH1	Cell & Histological Procedures	Cell: microstructure & cell organelles, Tissue processing Procedure	1 +2	Lect Prac (group activity)	Written Viva, OSPE, Skills assessment
GH 2	Microscopy	Microscopy, parts, functions. Basics of staining and sectioning	1 +2	Lect Prac (group activity)	Written Viva, OSPE, Skills assessment
GH 3	Epithelium	Classification; simple & Stratified, features & functional correlation	1 +2	Lect Prac (group activity)	Written Viva, OSPE, Skills assessment
GH 4	Junctional complexes	Cell junctional complexes & basement membrane; surface modification (microvilli, cilia)	1 +2	Lect Prac (group activity)	Written Viva, OSPE, Skills assessment
GH 5	Glands	Epithelial modification for secretion; classification & examples of glands (structural/ functional)	1 +2	Lect Prac	Written Viva, OSPE,
GH 6	Connective tissue	Fibres (collagen, elastic, reticular), cells and matrix, classification - embryonic/mucoid tissue, loose areolar tissue, adipose tissue, reticular tissue, dense irregular and regular tissue (tendon).	1 +2	Lect Prac	Written Viva, OSPE
GH 7	Cartilage	features of cells & matrix types- Hyaline, elastic & fibrocartilage; articular cartilage.	1 +2	Lect Prac	Written Viva, OSPE
GH 8	Bone	Lamellar Bone LS & TS (Ground, decalcified); cancellous bone, developing bone	1 +2	Lect Prac	Written Viva, OSPE
GH 9	Muscle	Muscular tissue (cardiac, smooth & skeletal muscles)	1 +2	Lect Prac	Written Viva, OSPE
GH 10	Blood vessels	Large & small artery, vein & Micro vasculature (arteriole, venule, sinusoids, capillaries)	1 +2	Lect Prac	Written Viva, OSPE
GH 11	Nervous system	Nervous system (GA Review)- Peripheral nerve & myelination, Ganglia & central myelinised tract (optic nerve)	1 +2	Lect Prac	Written Viva, OSPE
GH 12	Lymphoid organs	Lymphoid organs- Lymph node; Thymus, Spleen; Tonsil & Peyer's Patch (GALT)	1 +2	Lect Prac	Written Viva, OSPE
GH 13	Skin	Skin: thick, thin (hairy); appandages (hair, nail, sweat and sebaceous glands)	1 +2	Lect Prac	Written Viva, OSPE

Gen. Histology: Summarised:

Total Heads	Lecture Hours	Demo & Interactive/ Prac hours	Assessment hour/s	Assessment Method

13	13	26	1	Skills assessment (day to day basis). OSPE, spotters

7. General Embryology

SNo Code	Topic	Must know	T/L Hrs	T/L Method	Method of Assessment
GE01	Introduction	Terms and periods used in embryology Gametogenesis Spermatogenesis, capacitation and activation of sperm Oogenesis, growth of Graafian follicle, ovarian cycle	2	Lecture	Written Viva, OSPE
GE02	First Week of Development	Definition and normal site and process of fertilization Formation of zygote, cleavage division, compaction Formation of morula and blastocyst Implantation – normal sites, abnormal sites Formation of decidua – placenta previa	3	Lecture	Written Viva, OSPE
GE 03	Second Week of Development	Differentiation of embryoblast and trophoblast Changes in the embryoblast, formation of bilaminar germ disc Cytotrophoblast, Syncytiotrophoblast Extra embryonic mesoderm and coelom, amnion, amniotic cavity, chorion, yolk sac, connecting stalk, prochordal plate	3	Lecture	Written Viva, OSPE
GE04	Third Week of Development	Gastrulation - appearance of primitive streak and primitive node Formation of intraembryonic mesoderm resulting in trilaminar germ disc, Formation of notochord, buccopharyngeal and cloacal membranes Paraxial, intermediate and lateral plate mesoderm Secondary yolk sac, intraembryonic coelom and allantoic diverticulum Derivatives of three germ layers: ectoderm, mesoderm and endoderm	2	Lecture	Written Viva, OSPE

GE05	Fourth week of Development	Formation of somites, Neural tube, Cephalocaudal folding, Lateral folding Body cavities (coelom) & serous membranes	2	Lecture	Written Viva, OSPE
GE06	Interaction Model / charts Based	Representative Models, charts for conceptualisation of General Embryology	2	Demo & group discussion	Viva, OSPE

General Embryology: Summary:

Total Heads	Lecture	Demo /Interactive	Assessment hour	Assessment Method
6	12 Hours	2 hours	1	Theory Test. OSPE/ spotters (day to day basis)

Genetics Topics

S No. Code	Topic	Sub topic	T/L hrs	T/L method	Assessment method
Genet1	Cytogenetics	Chromosomal Classification, Grouping	1 + 1	Lecture Prac./ interactive	Written Viva, OSPE
		Preparation & interpretation of Karyotype	1 + 1	Lecture Prac./ interactive	Written Viva, OSPE
		Chromosomal aberrations (numerical), examples	1 + 1	Lecture Prac./ interactive	Written Viva, OSPE
		Structural chromosomal anomalies	1 + 1	Lecture Prac./ interactive	Written Viva, OSPE
Genet2	Inheritance Patterns	Autosomal dominant & recessive patterns with example & Pedigree charts	1 + 2	Lecture Prac./ interactive	Written Viva, OSPE
		X linked dominant & recessive patterns with example & Pedigree charts	1 + 2	Lecture Prac./ interactive	Written Viva, OSPE
Genet3	DNA structure	Basic DNA structure, DNA balance during cell division, Mutations	1 ½	Lecture	Written Viva
Genet4	Genetics & development	Genetic Regulation of development (in general) and defects (overview)	1	Lecture	Written Viva
Genet5	Genetic counselling	Genetic diagnosis, Pre-natal testing, principles of counselling (overview)	1 ½	Lecture	Written Viva

Genetics: Summarised:

Total Heads	Lecture Hours	Demo /Interactive	Assessment hour	Assessment Method
5	10	8 hours	1	Theory Test; OSPE/ spotters (day to day basis)

8. Abdomen

S.No Code	Topic	Subheads	T/L Hrs	T/L method	Assessment method
ABD01	Introduction: Abdomen	Land marks, Planes & Divisions, 8 layered concepts of abdominal wall, abdominal & peritoneal cavities, Umbilicus, Langer's lines, cutaneous nerves and vessels.	1 hour	Lecture	Written Viva
		Hip bone- attachments of Iliac crest & Ischio pubic rami	1 hour	Demo	Viva, OSPE
		Landmarks of abdomen	2 hours	Dissection	Written Viva, OSPE
ABD02	Anterior abdominal wall	Muscles, fasciae & aponeuroses.	1 hour	Lecture	Wr, Vi, OSPE
			2 hours	Demo	Viva, OSPE
		Anterior abdominal wall	6 hours	Dissection	Wr, Vi, OSPE
ABD03	Rectus sheath	Structure, constituents at different levels, Traditional and recent views.	1 hour	Lecture	Wr, Vi, OSPE
		Rectus sheath	2 hours	Dissection	Viva, OSPE
ABD04	Inguinal region	Inguinal canal, mechanisms & inguinal hernia	2 hour	Lecture	Written Viva, OSPE
		Inguinal region	4 hours	Dissection	Viva, OSPE
ABD05	Male external genitalia, scrotum, testes, epididymis	Layers of scrotum, layers of testis, descent of testis, gross features of testis, contents of spermatic cord	1 hour	Lecture	Wr, Vi, OSPE
			1 hour	Demo	Viva, OSPE
		Histology of testis, Vas deferens and epididymis	1 hour	Lecture	Written Viva, OSPE
		Histology of testis, vas & epididymis	2 hours	practical	Viva, OSPE
		Development of male reproductive system	2 hours	Lecture	Written Viva, OSPE
		Scrotal layers and spermatic cord	2 hours	Dissection	Viva, OSPE
ABD06	Perineum-I	skin, boundary & subdivisions, perineal body, perineal membrane.	1 hour	Lecture	Written Viva, OSPE
		Sacrum and bony pelvis	2 hours	Demo	Viva, OSPE
		Pelvis-I penis	4 hours	Dissection	Viva, OSPE
ABD07	Perineum-II	Anal triangle, Ischiorectal fossa.	1 hour	Lecture	Wr, Vi, OSPE
		Bony Pelvis: salient features of inlet, cavity, outlet; pelvic musculature in situ	2 hours	Demo	Viva, OSPE
		Ishiorectal fossa	4 hours	Dissection	Viva, OSPE
ABD08	Perineum-III	Urogenital triangle, superficial & deep Perineal pouches, applied aspects	1 hour	Lecture	Written Viva, OSPE
		Sexual difference of Pelvis; Pelvimetry; salient anthropological indices	1 hour	Demo	Viva, OSPE
		Development of external genitalia- male and female	2 hours	Lecture	Written Viva, OSPE
		Pelvis-II	2 hours	Dissection	Viva, OSPE
ABD09	Peritoneum- I	Horizontal tracing (at various levels), vertical disposition, reflections, bare areas.	2 hours	Lecture	Written Viva, OSPE
		Abdominal cavity -I	2 hours	Dissection	Viva, OSPE

ABD10	Peritoneum- II	Peritoneal cavity; named fossae, named folds of peritoneum above/ below umbilicus, Peritoneal reflection and fossae in pelvis (both sexes)	2 hours	Lecture	Written Viva, OSPE
		Abdominal cavity -II	2 hours	Dissection	Viva, OSPE
ABD11	Oesophagus & Stomach	Position, peritoneal attachments, features, blood supply, clinical anatomy	1 hour	Lecture	Written Viva, OSPE
		Histology of oesophagus and Stomach	1 hour	Lecture	Written Viva, OSPE
		Histology of oesophagus and stomach	2 hours	Practical	Viva, OSPE
		Development of oesophagus and stomach	1 hour	Lecture	Written Viva, OSPE
		Stomach and lesser sac	4 hours	Dissection	Viva, OSPE
ABD12	Spleen, coeliac trunk & coeliac ganglion	Position, peritoneal attachments, blood supply , clinical anatomy of spleen Position of coeliac trunk and branches Distribution of coeliac ganglion	2 hours	Lecture	Written Viva, OSPE
		Coeliac trunk,spleen	4 hours	Dissection	Viva, OSPE
ABD13	Intestines with mesentery	Small & large intestine parts, position, relations, root of mesentery , superior and inferior mesenteric vessels	2 hours	Lecture	Written Viva, OSPE
		Small Intestine & Large intestine. Comparison & contrasting features.	1 hour	Demo	Viva, OSPE
		Histology of jejunum, Ileum &large intestine	1 hour	lecture	Written Viva, OSPE
		Histology of jejunum ,Ileum and large intestine	2 hours	Practical	Viva, OSPE
		Development of intestine with rotation of gut	2 hours	Lecture	Written Viva, OSPE
		Intestine, root of mesentery,SMA, IMA	4 hours	Dissection	Viva, OSPE
ABD14	Duodenum	Topography, relations, blood supply ,clinical anatomy of duodenum	1 hour	Lecture	Written Viva, OSPE
		Histology of duodenum	1/2 hour	Lecture	Written Viva, OSPE
		Histology of duodenum	1 ½ hours	Practical	Viva, OSPE
		Duodenum	2 hours	Dissection	Viva, OSPE
ABD15	Caecum & appendix	Topography, features, blood supply, mesentery and clinical anatomy	1 hour	Lecture	Written Viva, OSPE
		Histology of Appendix	½ hour	lecture	Written Viva, OSPE
		Histology of Appendix	1 ½ hours	Practical	Viva, OSPE
		Caecum ,Appendix	2 hours	Dissection	Viva, OSPE
ABD16	Pancreas	Topography, features, relations, blood supply , clinical anatomy	1 hour	Lecture	Written Viva, OSPE
		Histology of pancreas	½ hour	Lecture	
		Histology of Pancreas	1½ hours	Practical	Viva, OSPE
		Development of pancreas	1 hour	Lecture	Written Viva, OSPE
		Pancreas	2 hours	Dissection	Viva, OSPE

ABD17	Liver	Topography, peritoneal attachments, features, blood supply, clinical anatomy	1 hour	Lecture	Written Viva, OSPE
		Histology of liver	½ hour	lecture	Written Viva, OSPE
		Histology of liver	1½ hour	Practical	Viva, OSPE
		Development of liver	1 hour	lecture	Written Viva, OSPE
		Liver	4 hours	Dissection	Viva, OSPE
ABD18	Extra hepatic biliary apparatus	Features of Gall bladder, common bile duct, calot triangle, clinical anatomy	1 hour	Lecture	Written Viva, OSPE
		Histology of gall bladder	1/2 hour	Lecture	Written Viva, OSPE
		Histology of gall bladder	1½ hour	Practical	Viva, OSPE
		Calot's triangle	2 hour	Dissection	Viva, OSPE
ABD19	Portal venous system	Formation, Relations, tributaries of Portal vein, porta-caval anastomosis, applied anatomy	1 hour	lecture	Written Viva, OSPE
		Portal vein	2 hours	Dissection	Viva, OSPE
ABD20	Posterior abdominal	psoas major, quadratus lumborum & lumbar plexus	1 hour	Lecture	Written Viva, OSPE
		Lumber vertebrae	1 hour	Demo	Viva, OSPE
		Posterior abdominal wall	4 hours	Dissection	Viva, OSPE
ABD21	Abdominal diaphragm	Muscles forming it, its major and minor openings , applied anatomy	1 hour	Lecture	Written Viva, OSPE
		Development of Diaphragm	1 hour	Lecture	Written Viva, OSPE
		Diaphragm	2 hours	Dissection	Viva, OSPE
ABD22	Vessels of posterior abdominal wall	Inferior vena cava, abdominal aorta branches and tributaries	1 hour	Lecture	Written Viva, OSPE
		Abdominal aorta branches	2 hour	Dissection	Viva, OSPE
		Development of great vessels) aorta, IVC & portal vein)	2hours	Lecture	Written Viva, OSPE
ABD23	Kidney	Position, features, blood supply , clinical anatomy, fascial coverings	1 hour	Lecture	Written Viva, OSPE
		Histology of kidney	½ hour	Lecture	Written Viva, OSPE
		Histology of Kidney	1½ hour	Practical	Viva, OSPE
		Development of excretory system	1 hour	Lecture	Written Viva, OSPE
		Exposure of Kidney from back	4 hours	Dissection	Viva, OSPE
ABD24	Ureter; suprarenal glands	Gross features, constrictions, relations and applied aspects of ureter; gross anatomy of suprarenal gland	1Hour	Lecture	Written Viva, OSPE
		Histology of ureter and suprarenal	1 hour	Lecture	Written Viva, OSPE
		Histology of ureter and supra renal	2 hours	Practical	
		Development of supra renal	1 hour	Lecture	Written Viva, OSPE
		Exploring course and relationship of Ureter	2 hours	Dissection	Viva, OSPE
ABD25	Urinary bladder	Gross features , supports, peritoneal	1 hour	Lecture	Written

		attachments , clinical anatomy of urinary bladder			Viva, OSPE
		Histology of urinary bladder	½ hour	lecture	Viva, OSPE
		Histology of Urinary bladder	1½ hour	practical	Written Viva, OSPE
		Development of urinary bladder	1 hour	Lecture	Viva, OSPE
		Urinary bladder	2 hours	Dissection	Written Viva, OSPE
ABD26	Prostate gland and Male urethra	Features, lobes, coverings, clinical anatomy of prostate Parts of male urethra and details of prostatic urethra	2 hour	Lecture	Viva, OSPE
		Histology of prostate	½ hour	Lecture	Written Viva, OSPE
		Histology of prostate	1 ½ hrs	practical	Viva, OSPE
		Prostate in sagittal section	2 hours	Dissection	Viva, OSPE
ABD27	Female reproductive system	Features, supports, blood supply , clinical anatomy of Uterus, cervix.	1 hour	Lecture	Viva, OSPE
		Histology of uterus ,uterine tube,ovary	1 hour	Lecture	Written Viva, OSPE
		Histology of uterus , uterine tube,ovary	2 hour	practical	Viva, OSPE
		Development of female reproductive system-I	1 hour	Lecture	Written Viva, OSPE
		Uterus	2 hours	Dissection	Viva, OSPE
ABD28	Female reproductive system	Features, parts, clinical anatomy of fallopian tube Features, position, supports, blood supply and clinical anatomy of Ovary	1 hour	Lecture	Written Viva, OSPE
		Histology of mammary gland, placenta, umbilical cord	1 hour	Lecture	Written Viva, OSPE
		Histology of fallopian tube and Ovary, mammary gland, placenta, umbilical cord	2 hours	Practical	Viva, OSPE
		Development of female reproductive system-II	1 hour	Lecture	Written Viva, OSPE
		Ovary and uterine tube	2 hours	Dissection	Viva, OSPE
ABD29	Rectum & anal canal	Features, peritoneal attachments, blood supply and clinical anatomy	1 hour	Lecture	Written Viva, OSPE
ABD30	Male & female pelvis	Pelvic fascia, pelvic diaphragm, vessels	1 hour	Lecture	Written Viva, OSPE
		organs arrangement	1 hour	Demo	Viva, OSPE
		Sagittal section pelvis	4 hours	Dissection	Viva, OSPE
ABD31	Abdominal autonomic system	Ganglia and autonomic plexuses, referred pain,	1 hour	Lecture	Written Viva, OSPE
ABD32	Living/surface anatomy	All the organs of abdomen	2 hours	Demo	Viva, OSPE
ABD33	Radiological anatomy	Plain and contrast x ray , CT of abdomen	2 hours	Demo	Viva, OSPE
ABD34	Model discussion	Explanation of Salient developmental stages of organs and events with charts & models	2 hours	Demo	Viva, OSPE

ABD35	Assessment	Abdomen & pelvis part completion	Theory + pract.	3 hours	Written Viva, OSPE

Abdomen Summary

Total Heads	Lecture Hours	Demo hr	Prac/diss hours	Assessment hour/s	Assessment Method
35	64	18	81+ 22= 103	1 + 2	Theory Test. OSPE, spotters, viva.

9. Neuroanatomy

S.NoCode	Topic	Sub Head	Duration (Hrs)	T/L method	Assessment method
N01	Spinal cord- I	Meninges, External features, relation, gross sectional features, blood supply	1½ + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N02	Spinal cord- II	Gray matter, laminar concept, tracts in funiculi, applied part.	1½ + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N03	Medulla Oblongata	Sectional views of 3 levels of depicting internal structure.	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N04	Pons	Sectional views with contained Tracts and nuclei	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N05	Midbrain	Sectional views of (Tracts, pathways and nuclei)	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N06	Functional components	Organisation of basal & alar laminae in brain stem; functional correlation of Cr. N.	1 + 2	Lect. + Diss. (Interactive)	Written Viva
N07	4th ventricle	Topography, boundary, relations, recesses, tela choroidea	1 + 2	Lect. +Int Diss.	Written Viva, OSPE
N08	Cerebellum	Gross structure, deep nuclei, clinical aspects	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N09	Histology Cerebellum	Cerebellar cortex, micro-anatomical organisation, pathways & internal circuitry	1 + 1	Lect.+ Histo Practical	Written Viva, OSPE
N10	Cerebrum-I	External features, Lobes, fissures, sulci, gyri	1+ 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N11	Cerebrum-II	Functional areas, circle of Willis, Blood supply, applied aspects	1+ 2	Lect. + Diss. (Interactive)	Written Viva
N12	Histology of cerebrum	Structure of 6 layered Isocortex, typifying granular & agranular cortices	1 + 1	Lect+ Histo Pr.	Written Viva, OSPE
N13	Lateral ventricle	Topography, relationship (body, horns), concept of choroid fissure, choroid plexus.	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N14	White Fibres (Medullary centres)	Classification of fibres with examples & location, Corpus callosum	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N15	Internal	Topography, parts, fibres	1 + 2	Lect. + Diss.	Written

	capsule	(+corona radiate), blood supply, clinical aspects		(Interactive)	Viva, OSPE
N16	Basal nuclei	Nuclear groups, topography (corpus striatum), relations, pathways, applied part	1 + 2	Lect. + Diss. (Interactive)	Written Viva
N17	The thalamus	gross structure, nuclear groups, gross connections, clinical aspects	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N18	III ventricle & Epithalamus	Boundary, relations, recesses; overview of habenular nuclei & pineal gland.	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N19	Hypothalamus	Nuclear groups, function, gross connections and pathways	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N20	Cr Nn I	Highlight of Olfactory pathway with its Limbic connection	1 + 2	Lect. + Diss. (Interactive)	Written Viva, OSPE
N21	Cr Nn II	Visual pathway, Lateral geniculate body & applied	1 + 1	Lect. + Diss. (Interactive)	Written Viva, OSPE
N22	Cr Nn. III, IV, VI	Nuclei, intra & extra cranial course, distribution & applied	1 + 2	Lect. + Diss. (Interactive)	Written Viva
N 23	Cr Nn VII Facial nerve	Nuclei, intra & extra cranial course, distribution; lesions, Bell's palsy.	1 +1	Lect. + Diss. (Interactive)	Written Viva, OSPE
N24	Cr Nn VIII	Concerned Nuclei, vestibular & acoustic pathway	1 +1	Lect. + Diss. (Interactive)	Written Viva
N25	Cr Nn IX, XII	Nuclei, intra & extra cranial course, distribution & applied	1 +1	Lect. + Diss. (Interactive)	Written Viva, OSPE
N26	Cr Nn X, XI	Nuclei, intra-extra cranial course, distribution and applied	1 +1	Lect. + Diss. (Interactive)	Written Viva, OSPE
N27	Limbic & Reticular nuclei	Overview of Reticular formation & Limbic system	1 +1	Lect. + Diss. (Interactive)	Written Viva
N28	ANS	Overview of Autonomic Nervous system	1	Lecture	Written. Viva
N29	Development, CSF	brief about development, CSF circulation, cisterns, applied part	1+ 2	Lect. + Diss. (Interactive)	Written OSPE, Viva
N30	Brain sections	Sectional views, CT/MRI Image	1 hour	Demo	Viva, OSPE

Summary Neuro

Total Heads	Lecture Hours	Practical /Dissection (Interactive) hours	Assessment hour/s	Assessment Method
30	30	49	1 hr 30 min	Theory Test. OSPE, spotters.

Assessment:

Semester wise Formative (Part completion & periodic OSPE) & Summative (internal assessment) assessment:

Internal Assessment Plan Semester wise:

Semester	Held in	Name of Exam	Theory			Practical Marks	Eligibility criteria (Passing)
			Total Paper/s & Marks	Viva Marks	Total Theory Marks		
I	December End	1st Internal Assessment	1 40	10	50	50	-
II	April End	2nd Internal Assessment	1 40	10	50	50	-
	July	Pre Professional	2 80	20	100	100	-
		Internal Assessment Marks	160	40	200 (To be converted in 100)	200 (To be converted in 100)	Minimum 50 % in Th. Pr. separately.
Summative	August	Professional	2, 80	20	100	100	50 % (Th/Pr Separately)

Pattern of Internal Assessment Exams: 1st Term Exam (Held in December end).

Theory Pattern: 1 paper of 40 marks. Duration 2 and ½ hours

Q No	Question Type	Marks for each Q	Number of Q	**Total Marks (40)**
	Section (A)	(Objective MCQs, to be answered on MCR sheet)		
1	MCQs	0.5	16	8
	Section (B)	(Descriptive answers)		
2	Small Ans Qs	2	7	14
3	Short Notes	5	2	10
4	LAQ (Structured)	8	1	18

(B) Practical (including) Viva Marks scheme (1st Int Assessment Exam) scheme)

S.No	Head	Spotters/OSPE		Discussion		Total Marks
		Items	Marks	Item	Marks	
1	Histology	6	6	1 slide	4	10

2	Gross Anatomy	3 Supex	3	Supex	5	8
		3 Infex	3	Infex	5	8
		3 Thorax	3	Soft Parts (Thorax)	5	8
3	Embryology	2 Models	2	(Model based concept)	4	6
4	Living Anatomy	-	-	land marks & demo	5	5
5	Radiology	-	-	Plain/ special X rays	5	5
				Total Practical		**50**
6	**Viva**	Osteology		Limb / thorax bones	10	**10**

II Int. Assessment Exam: Practical & Viva (discussion) scheme:

S.No	Head	Practical (50 Marks)				Total Marks
		Spotting/ OSPE		Discussion		
		Items	Marks	Item	Marks	
1	Histology	6	6	1 slide	4	10
2	Gross Anatomy Soft Parts	H&N	5	Neuro	5	9
		Neuro	4	Abdomen	3	6
		Abdomen	2	Head Neck	5	9
3	Embryology	3 Models	3	(Model based concept)	3	6
4	Living Anat	1 spot	1	Points/ demo	4	5
5	Radiology	1 spot	1	X ray	4	5
					Total Practical	**50**
6	**Viva**	Osteology: Facial and Appendicular skeleton			10	**10**

Pre Professional Theory**:** Paper pattern & Weightage for Regional and other topics

Sr. No.	Paper I (40 marks) (Above diaphragm)	Weightage		Sr. No.	Paper II (40 marks) (Below diaphragm)	Weightage
1	Head and Neck	35 %		1	General Anatomy	8%
2	Neuroanatomy	15%		2	General Histology	8%
3	Upper limb	18%		3	General Embryology	9%
4	Thorax	17%		4	Elementary Genetics	5%
5	Respective Histology	8%		5	Abdomen and pelvis	35%
6	Respective Embryology	7%		6	Lower limb	20%
				7	Respective Histology	8%
				8	Respective Embryology	7%

Pre Prof. Practical & Viva: Scheme for Practical (100 marks) and Viva (20 marks)

EXERCISE		Part covered	Marks (**100**)
Objective (Spotters 40 M)	**Set- 1*** (15 Spotters)	Gross & Neuro Anatomy	**30**
	Set- 2‡ (10 Spotters)	8 Histology slides, 2 Embryology models	**10**
.			
Practical	Histology	2 slides	10

Comments (60M)			
	Gross Anatomy	(A) Soft parts above diaphragm;.	13
		(B) Neuroanatomy: brain sections, spinal cord	8
		(C) Soft parts below diaphragm	13
	Surface/ Living Anat.	Land marks/ demonstration	8
	Radiological Anatomy	Plain & Special Radiograms	8
.		Total Practical	**100**
.	.	.	**.**
Viva	Osteology	Axial skeleton	**8**
		Appendicular Skeleton	**6**
	Embryology, Genetics	Based on models/charts	**6**

Recommended Books in Anatomy :

A. Text Books

1. Gross Anatomy- Theory
   - Text Book of Anatomy- by Vishram Singh
   - Human Anatomy, Regional and applied- B D Chaurasia
   - Essentials of Human Anatomy- A.K. Datta

   Practical/Dissector
   - Cunningham's Manual of Practical Anatomy (Ed Rachel)
   - Thiemes Dissector
   - Atlas of Human Anatomy- F H Netter
   - Sobotta Atlas of Human anatomy
2. Clinical Anatomy
   - Clinical Anatomy by regions- Richard Snell
   - Clinically Oriented Anatomy- Keith Moore, Dalley, Agur
   - Mc Gregor's Synopsis of Surgical Anatomy
3. Neuroanatomy
   - Illustrated Text Book of Neuroanatomy by G P Pal
   - Inderbir Singh Text Book Neuroanatomy
   - Clinical Neuro Anatomy- Richard Snell
4. Histology (Theory)
   - Histology- Text & Atlas- Brijesh Kumar
   - Ham's Histology- D Cormack

   Histology (Practical)
   - Di Fiore's Atlas of Human Histology
5. Embryology
   - Langman's Medical Embryology (Ed. Sadler)
   - Inderbir Singh's Human Embryology (Ed. V Subhadra Devi)
   - Developing Human by Keith Moore, Persaud, Torchia.
6. Miscellaneous
   - General Anatomy- A.K. Datta
   - Osteology- I B Singh
   - Surface and Radiological Anatomy- A. Halim

B. Reference Books

- Gray's Anatomy for Students- (Ed. Ravindranath Veermani)
- R J Last's Anatomy, Regional & Applied (Ed. Chummy S. Sinnatamby)
- Core text of Neuro Anatomy M.B. Carpenter
- Human Embryology- Larsen

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Date: 30th September 2020