

SI No	Objectives (Skills) (All skills to be performed independently)
1	Identify all the major structures, organs & viscera of the body
2	Demonstrate normal movements at various joints.
3	Demonstrate how to test the functioning of different muscles or muscle groups
4	Mark/draw the surface anatomy of all the major structures and organs of the body on a cadaver or a volunteer
5	Locate and palpate arterial pulsations, and identify structures against which arteries can be compressed to stop bleeding.
6	Locate ideal sites for venepuncture.
7	Locate the site for emergency tracheostomy.
8	Locate subcutaneous positions of large nerves.
9	Locate ideal sites for lumbar and sternal puncture, pericardial, intercostal and peritoneal tapping, and biopsies of liver, kidney and spleen.
10	Interpret the sectional anatomy of the human body
11	Identify normal anatomical structures, organs and viscera in Radiographs, Ultrasound images, Computerized Tomograms, Magnetic Resonance Images and the Endoscopic views.
12	Identify the organs and tissues in sections under the light microscope
13	Identify the critical stages in the embryonic development and interpret the effects of common teratogens, genetic mutations and environmental hazards on development
14	Identify and interpret normal karyograms, abnormal karyograms and clinical features of common genetic disorders.

Course Content

General Anatomy	Must know	Desirable to know
Brief history of anatomy as related to medicine, subdivisions of anatomy; cadaver, anatomical position, other positions used in clinical practice, terms of position, terms of movement, colours used in anatomical drawings.	✓	
Structures met with during dissection: skin, superficial fascia – including contents, deep fascia – including its modifications; muscles – parts, origin, insertion, tendon, aponeurosis, bursa, synovial sheath; ligament, artery, vein, lymphatics, lymph node, peripheral nerves.	✓	
General principles of embryology, gestation period, subdivisions, spermatogenesis, structure of sperm, oogenesis, structure of ovum, growth & rupture of the ovarian follicles. Sperm in the male and female genital tracts, activation & capacitation of sperms in the female genital tract.	✓	

Embryology	Must know	Desirable to know
First week of development Fertilization, formation of zygote, cleavage division, formation of morula & blastocyst, implantation, formation of decidua – its subdivisions. Types of implantation & abnormal sites of implantation. Anatomical basis of contraception.	✓	
Second week of development Differentiation of embryoblast & trophoblast, changes in the embryoblast – bilaminar germ disc, changes in trophoblast, formation of cytotrophoblast, syncytiotrophoblast, amniotic membrane, yolk sac, extra-embryonic mesoderm & extra-embryonic celom & connecting stalk, formation of chorion, amniotic cavity, primary yolk sac cavity, appearance of prochordal plate.	✓	
Third week of development Appearance of primitive streak & primitive node, formation of intraembryonic mesoderm resulting in trilaminar germ disc, formation of notochord, buccopharyngeal & cloacal membranes, pericardial bar, paraxial, intermediate & lateral plate mesoderm, secondary yolk sac, intraembryonic celom & allantoic diverticulum, derivatives of ectoderm, mesoderm & endoderm.	✓	
Third to tenth month of development Estimation of age, horizons of development. Maturation of tissues & organs & rapid growth of body.	✓	✓
Placenta Formation of placenta & chorionic villi, deciduas basalis, features & functions of placenta, placental circulation, abnormalities, placental barrier, types of placenta.	✓	
Umbilical cord Formation of umbilical cord, features of umbilical cord.	✓	
Amniotic cavity Amniotic cavity & membrane, amniotic fluid – functions, expansions of amniotic cavity & fusion with chorion, chorion leave with deciduas capsularis, deciduas capsularis with parietalis, obliteration of chorionic & uterine cavities, function of fused fetal membranes to dilate cervical canal.	✓	
Abnormalities, obliteration of chorionic & uterine cavities, abnormalities of chorion.	✓	
Embryological basis of twins.	✓	
Arrangement of fetal membranes.	✓	
Development of face, pharyngeal arches, clefts, pouches, & associated common congenital anomalies	✓	
Teratology Genetic & environmental factors as causative factors for congenital malformations. Mode of actions of teratogens & critical periods.	✓	✓
Postnatal growth & development Meaning of terms like growth, development, principles of growth & development, types of postnatal growth, periods of growth &		✓

Embryology	Must know	Desirable to know
development & factors influencing them. Assessment of growth & development.		
Milestones of development, growth & development during adolescence.	✓	

General Histology	Must know	Desirable to know
General Histology: Introduction including importance of studying histology in patient care, Epithelium, Surface specializations, Connective tissue - definition, cells, fibres, ground substance, Classification and features of different types of connective tissues, Cartilage, Bone, Muscle, Nerve tissue, General account of glands.	✓	
Basement membrane, Junctional complexes.	✓	

Integumentary System	Must know	Desirable to know
Skin and its appendages, superficial fascia, deep fascia, development and microscopic and applied anatomy.	✓	

Osteology	Must know	Desirable to know
Constituents of skeleton, types of bones, classification of bones with examples, names of bones, general features of different bones, colours used for marking origin and insertion of muscles, attachment of joint capsule, aponeurosis, ligaments, fascia, reflection of synovial membrane etc. of the body & their position, development & common congenital anomalies, microscopic anatomy of bone, common sites of fractures, general pattern of blood supply, ossification of bones of limbs for age determination and applied anatomy.	✓	
Process of the repair of bone.		✓

Muscular system	Must know	Desirable to know
Classification & identification of muscles of body, main attachments, nerve supply & action, microscopic anatomy, development of muscles and applied anatomy.	✓	
Mechanism of movement caused by muscle/muscles & various forces exerted by them, nerve terminations.		✓

Arthrology	Must know	Desirable to know

Arthrology	Must know	Desirable to know
Classification of joints, general features of different types of joints, detailed study of major joints of body & movements, a brief account of other joints. Applied anatomy of major joints.	✓	
Range of movement in major joints, microscopic anatomy of articular cartilage, maintenance of articular cartilage, blood supply.		✓

Cardiovascular system	Must know	Desirable to know
Position and parts of heart, names of blood vessels & their distribution in the body, normal development of heart, common congenital anomalies, microscopic anatomy of heart & blood vessels, gross anatomy of major blood vessels of the body, pericardium, pericardial cavity, concept of precordium and applied anatomy. Parts of conducting system of heart & its blood supply	✓ ✓	
Developmental anomalies, valvular defects & their effects.	✓	

Respiratory system	Must know	Desirable to know
Position, parts, relations, blood supply, lymphatic drainage, microscopic anatomy, normal development & congenital anomalies of various components of respiratory tract, thoracic cage, superficial and deep cardiac dullness, and movements of thorax during respiration, pleura, pleural cavity and applied anatomy.	✓	
Blood air barrier, cell population in the respiratory tract.		✓

Gastrointestinal system	Must know	Desirable to know
Position, parts, relations, blood supply, nerve supply, lymphatic drainage, normal development & congenital anomalies, microscopic anatomy, sphincters of the gastrointestinal system. Peritoneum, peritoneal cavity, fossae & folds and applied anatomy.	✓	
Sphincteric action & mechanism. Peptic ulcer, Peyer's patches, positions of appendix, marginal artery of Drummond.		✓

Genitourinary system	Must know	Desirable to know
Parts, position, relations, blood supply, nerve supply, lymphatic drainage, normal development & congenital anomalies, microscopic anatomy of Genito-urinary system. Normal sites of constrictions in the urinary passage. Prostate gland, Skene's tubules and applied anatomy.	✓	

Genitourinary system	Must know	Desirable to know
Anatomical basis of family planning measures.		✓

Endocrine system	Must know	Desirable to know
Organs, location, relations, blood supply, nerve supply, lymphatic drainage, microscopic anatomy & normal development & congenital anomalies and applied anatomy. Glandular system: Classification of glands, parts, location, relations, blood supply, nerve supply, lymphatic drainage, microscopic anatomy, normal development, congenital anomalies, applied anatomy of pituitary, pineal, lacrimal, salivary, thyroid, parathyroid, thymus, liver, pancreas, spleen & suprarenal glands.	✓ ✓	
Nervous system	Must know	Desirable to know
Parts of nervous system, meninges, neuroglia, cortex, functional cortical areas, basal ganglia, corpus striatum, white matter, ventricles, cerebellum, brain stem, motor & sensory pathways, cranial nerves, normal development, microscopic anatomy of neurons, motor & sensory cortex, blood supply and applied anatomy.	✓	
Reticular formation, Limbic system, Extrapyramidal system, correlation of microscopic anatomy with function, developmental anomalies, anatomical basis of common neurological disorder / syndromes, nerve terminals.		✓

Autonomic Nervous system	Must know	Desirable to know
Sympathetic, parasympathetic systems, cortical control, peripheral plexuses, common associated disorders and syndromes.	✓	

Special sensory organs	Must know	Desirable to know
Introduction to the eyeball and internal ear, gross anatomy of middle ear, nose & tongue and applied anatomy.	✓	
Lymphatic system	Must know	Desirable to know
Gross anatomy of major groups of lymph nodes of body & their drainage areas. Gross anatomy of major lymphatics, specially thoracic duct, jugular, subclavian and mediastinal lymph trunks. Microscopic anatomy of lymph nodes and applied anatomy.	✓	
Gross anatomy, development, blood supply and applied anatomy of thymus, spleen & palatine tonsil.	✓	

Medical Genetics	Must know	Desirable to know
Morphology of human chromosomes, amniocentesis and other methods to procure tissue/cells for the genetic study, karyogram, anomalies of chromosomes – structural and numerical, introduction to the common genetic disorders like – Mongolism, Meta female (Super female), Turner syndrome, Klinefelter syndrome.	✓	

Imaging Anatomy	Must know	Desirable to know
Identification of normal anatomical features in some commonly used skiagrams (plain & contrast), CT scan, ultrasound, MRI and Endoscopy.	✓	

Surface Anatomy	Must know	Desirable to know
Surface marking of those structures, organs and viscera of the body which are commonly affected in various disease processes.	✓	

Sectional Anatomy	Must know	Desirable to know
Gross / sagittal / coronal sections of thorax, abdomen, pelvis, limbs, head & neck and brain to understand interrelations of organs and interpret CTs & MRIs.	✓	

ADDITION SUGGESTED:

1. Knowledge of ultrastructure of the cell should be **included**
2. Basement membrane and junctional complexes should be in **must know**
3. Include cell and organelles, cell division under **must know**
4. Include cell surface modification, tissue processing, microtomy, staining, microscopy under **desirable to know**
5. Functional Microscopic anatomy of tonsil, thymus, lymph node and spleen should be **included**
6. Knowledge of attachments of all the muscles & fascia is **not** needed
7. Range of movements and blood supply of major joints should under '**must know**'
8. Details of microstructure and maintenance of cartilage can be under '**desirable to know**'
9. Muscles & joints of thorax and diaphragm should be under **must know**
10. Peyer's patches and marginal artery should be under **must know**
11. External & internal features of spinal cord with blood supply and meninges should be specified
12. Limbic system: parts, position and main connections should be included in **must know**
13. Fundamentals of Autonomic Nervous System should be under **must know**
14. Orbit, extraocular and intraocular muscles should be under **must know**
15. Sclerocorneal junction should be under **desirable to know**
16. Introduction to different imaging modalities, principles behind them and their importance should be included
17. Surface anatomy of structures examined during clinical physical examination should be included
18. Sectional anatomy of the body at important levels only should be included
19. Reticular formation, limbic system, extra pyramidal system, corelation of microscopic anatomy with function, developmental anomalies, anatomical basis of common neurological disorders/syndromes, nerve terminals should be in **must know**
20. Mendelian laws and basic principles of inheritance should be under **must know**
21. Basic knowledge of cytogenetics, cell culture and karyotyping should be **included**
22. Integumentary system: include applied anatomy of dermatomes under **desirable to know**
23. Delete ossification of bones from **must know** category
24. Include disorders of bone marrow & ossification under **desirable to know**

25. Delete mechanism of movements in muscular system
26. Include motor end plate, muscle spindle, prime movers, fixators, antagonists and synergists under **must know**
27. Delete valvular defects and their effects from Cardiovascular system
28. Include gradient of BP in different levels, arteriosclerosis, ischemia, infarction
29. Include Kartagener's syndrome and Hyaline membrane disease in Respiratory system
30. Include microscopic anatomy of peripheral nerve, motor and sensory ganglia and myelination in Nervous system
31. Lymphatic system: Include microscopic anatomy of thymus, spleen and palatine tonsil.
32. Development of face, pharyngeal arches and pouches
33. Histology of blood vessels to be included
34. GIT: Peyer's patches and positions of appendix to be included in **must know**
35. Nervous system: Diencephalon and visual pathway to be included.