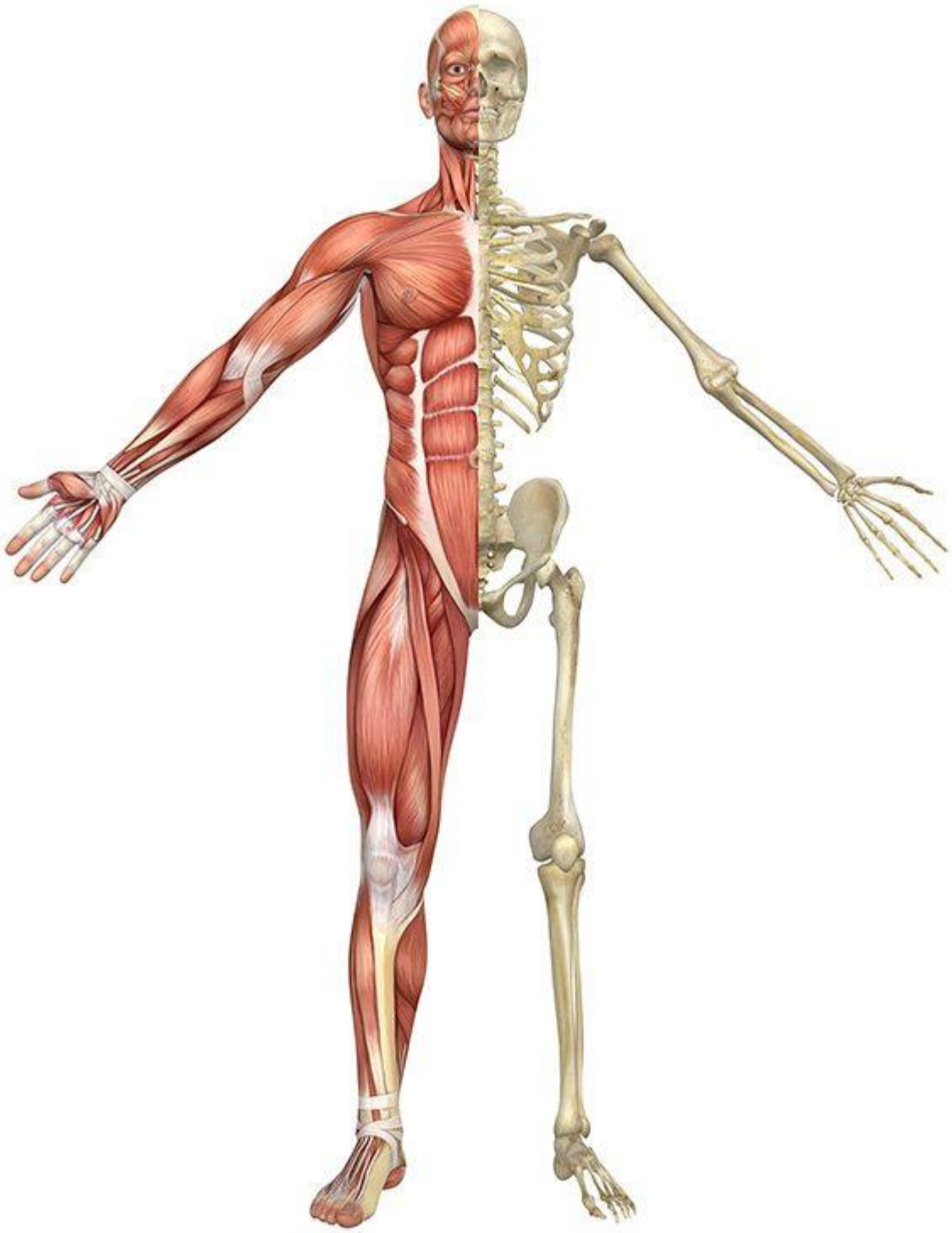
# STUDY GUIDE FIRST YEAR ANATOMY



Dedicated to students of first year MBBS

AFMDC

# TABLE OF CONTENTS

# ANATOMY DEPARTMENT AT A GLANCE

The department of Anatomy is the largest pre-clinical department and occupies a separate block adjacent to college entrance. The anatomy department has a fully equipped, well ventilated, air conditioned and spacious Dissection Hall with mortuary plants for storage of cadavers. The histology laboratory is unmatched and equipped with latest tools for microscope tissue preparation and high quality binocular microscope for self-study including Bihead microscope for teaching purposes which can also be attached to monitor or LED TV through state of the art camera mounted on the microscope. The Histology laboratory has a vast collection of microscopic slides of human and animal tissues for study purposes. Students have free access to them. The department also has state-of-the-art Anatomy museum with over 100 important models of the human body. Models range from the various human development stages to life-size human torsos, disc torsos, skeletons, enhanced models of organs of special senses and functional models of various organs and systems of the body. There is also a bone bank for the students from where bones can be borrowed for study at home. There is one lecture hall and two tutorial rooms in the department. Offices of the faculty are provided with computers, air conditioner, modern furniture and display boards for the important notices .There is one main notice board of the department where important notices are displayed for information of students. Different charts from gross anatomy, histology and embryology are displayed on the walls of the histology laboratory, dissection hall, museum and area in front of the offices.

The department of anatomy conducts lectures, dissection, practicals, tutorials and small group discussions to teach gross anatomy, histology and embryology. Moreover, sub-stages and stages are arranged for the assessment of the students in Gross Anatomy. Term tests and monthly tests are arranged to assess the students in histology, general anatomy and embryology.

# DEPARTMENTAL TEAM OF ANATOMY-AFMDC

| Positions | Name |
|---|---|
| **Head of department** | Prof. Dr.Quddus-ur-Rehman |
| **Professor of Anatomy** | Prof.Dr.Usman Latif |
| **Assistant Professor** | Dr. M. Adeel Alam Shah |
| **Demonstrators** | Dr.Faiqa |
| | Dr. Ayesha Khalid |
| | Dr. Iqra Manzoor |
| | Dr. Fizza Khalid |
| | Dr. Ayesha Zahoor |
| | Dr.Aqsa Shafi |
| **Computer Operator** | Mr. Muhammad Farooq |
| **Lab attendants** | Mr. Adnan |
| | Mr. Ahsan |
| **Dissection hall attendant** | Mr. Shahbaz |
| **Curator of museum** | Mr. Rafique |

# TIME LINE FOR SYLABUS COMPLETION

## GHANTT CHART of FIRST YEAR LECTURES (Embryology)

| Topic | Dec | Jan | Feb | March | April | May | June | July | Aug | SEP |
|---|---|---|---|---|---|---|---|---|---|---|
| 1st week development | | | | | | | | | | |
| 2nd week development | | | | | | | | | | |
| 3rd week development | | | | | | | | | | |
| Development of muscles | | | | | | | | | | |
| Development of skeletal system | | | | | | | | | | |
| Embryonic period | | | | | | | | | | |
| Fetal period | | | | | | | | | | |
| Placenta and membranes | | | | | | | | | | |
| Teratology | | | | | | | | | | |
| Development of skin and appendages | | | | | | | | | | |

**Winter break** **Mid session exam** **Summer vacations Sendupexam**

# TIME LINE FOR SYLABUS COMPLETION

## GHANTT CHART OF FIRST YEAR LECTURES (Histology)

| Topic | Dec | Jan | Feb | March | April | May | June | July | Aug | SEP |
|---|---|---|---|---|---|---|---|---|---|---|
| General Concepts of Histology | | | | | | | | | | |
| Routine Histological Techniques | | | | | | | | | | |
| Cell | | | | | | | | | | |
| Epithelium | | | | | | | | | | |
| Connective Tissue | | | | | | | | | | |
| cartilage | | | | | | | | | | |
| Bone | | | | | | | | | | |
| Muscles | | | | | | | | | | |
| Nervous system | | | | | | | | | | |
| Lymphoid Organs | | | | | | | | | | |
| CVS | | | | | | | | | | |
| Integumentory system | | | | | | | | | | |
| mammary gland | | | | | | | | | | |
| respiratory system | | | | | | | | | | |

**Winter break** **Mid session exam** **Summer vacations** **Sendupexam**

# TIME LINE for SYLABUS COMPLETION

## GHANTT CHART of FIRST YEAR LECTURES (G. Anatomy)

| Topic | Dec | Jan | Feb | March | April | May | June | July | Aug | SEP |
|---|---|---|---|---|---|---|---|---|---|---|
| Introduction | | | | | | | | | | |
| Skeletal System Bone & Cartilage | | | | | | | | | | |
| Skin and fascia | | | | | | | | | | |
| Muscles | | | | | | | | | | |
| joints | | | | | | | | | | |
| Circulatory system | | | | | | | | | | |
| Blood vessels | | | | | | | | | | |
| Lymphatic system | | | | | | | | | | |
| Nervous system | | | | | | | | | | |

**Winter break** **Mid session exam** **Summer vacations** **Sendupexam**

# GHANTT CHART of FIRST YEAR for UPPER LIMB

| Topic | Dec | Jan | Feb | March | April | May | June | July | Aug | SEP |
|---|---|---|---|---|---|---|---|---|---|---|
| Bones of Pectoral Girdle & Arm | | | | | | | | | | |
| Pectoral Region | | | | | | | | | | |
| Axilla | | | | | | | | | | |
| Scapular Region | | | | | | | | | | |
| Back | | | | | | | | | | |
| Arm | | | | | | | | | | |
| Joint of Upper Limb | | | | | | | | | | |
| Bones of Forearm | | | | | | | | | | |
| Bones of Wrist & Hand | | | | | | | | | | |
| Anterior Forearm | | | | | | | | | | |
| Hand | | | | | | | | | | |
| Dorsal Aspect of Forearm & Hand | | | | | | | | | | |
| Cutaneous Nerves, Dermatomes, Superficial Veins & Lymphatic Drainage of upper limb | | | | | | | | | | |
| Joints of Forearm & Hand | | | | | | | | | | |
| Hand & Wrist Joint | | | | | | | | | | |
| Surface Anatomy & Nerve Injuries of Upper Limb | | | | | | | | | | |
| Radiological Anatomy of Upper Limb | | | | | | | | | | |

**Winter break** **Mid session exam** **Summer vacations** **Sendupexam**

# GHANTT CHART of FIRST YEAR for LOWER LIMB

| Topic | Dec | Jan | Feb | March | April | May | June | July | Aug | SEP |
|---|---|---|---|---|---|---|---|---|---|---|
| Bones of Pelvis Girdle & Thigh | | | | | | | | | | |
| Anterior Compartment of Thigh | | | | | | | | | | |
| Medial Compartment of Thigh | | | | | | | | | | |
| Gluteal region | | | | | | | | | | |
| Hip Joint | | | | | | | | | | |
| Back of Thigh | | | | | | | | | | |
| Knee Joint | | | | | | | | | | |
| Popliteal fossa | | | | | | | | | | |
| Bones of Leg | | | | | | | | | | |
| Leg | | | | | | | | | | |
| Sole of foot | | | | | | | | | | |
| Bones & joints of foot | | | | | | | | | | |
| Surface Anatomy & Radiological Anatomy | | | | | | | | | | |
| Gait cycle, Arches of foot | | | | | | | | | | |
| Lymphatic of lower limb, cutaneous Nerves & Dermatomes | | | | | | | | | | |

**Winter break** **Mid session exam** **Summer vacations** **Sendupexam**

# GHANTT CHART of FIRST YEAR for THORAX

| Topic | Dec | Jan | Feb | March | April | May | June | July | Aug | SEP |
|---|---|---|---|---|---|---|---|---|---|---|
| Introduction | | | | | | | | | | |
| Diaphragm | | | | | | | | | | |
| Bones of Thorax | | | | | | | | | | |
| Joints of Thorax | | | | | | | | | | |
| Muscles of Respiration | | | | | | | | | | |
| Intercostal Spaces | | | | | | | | | | |
| Azygos & Hemiazygos veins | | | | | | | | | | |
| Thoracic cavity and pleura | | | | | | | | | | |
| Lungs | | | | | | | | | | |
| Mediastinum | | | | | | | | | | |
| Pericardium, External anatomy, fibrous skeleton of Heart | | | | | | | | | | |
| Heart | | | | | | | | | | |
| Chamber, Muscles & Valves | | | | | | | | | | |
| Bloody supply of the heart | | | | | | | | | | |
| Venous & Lymphatic Drainages & Nerve Supply of Heart | | | | | | | | | | |
| Aorta, Superior vena cava and pulmonary trunk | | | | | | | | | | |
| Trachea and Esophagus +thoracic duct | | | | | | | | | | |
| Surface marking, / Radiological anatomy of the thorax. | | | | | | | | | | |

**Winter break** **Mid session exam** **Summer vacations** **Sendupexam**

# Timetable

| Day | 08:00<br>08:45 | 08:45<br>09:30 | 09:30<br>10:15 | 10:15<br>11:15 | 11:15- 13:00 | 13:15<br>15:00 |
|---|---|---|---|---|---|---|
| Monday | | | Lec<br>Anatomy | | dissection | Practical<br>histology |
| Tuesday | | | Lec<br>Anatomy | | dissection | Tutorial |
| Wednesday | Lec<br>Anatomy | | | Tutorial | dissection | Practical<br>histology |
| Thursday | | Lec<br>Anatomy | | | 11:45-13:00<br>dissection | Practical<br>histology |
| Friday | 08:00<br>08:45 | 08:45<br>09:30 | | 10:15<br>11:45 | 11:45 -13:00 | |
| | | Lec<br>Anatomy | | tutorial | dissection | |

| Topic | Subtopic | Learning Objectives (At the end of the Lecture the students of 1st Year MBBS will be able to |
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| **Introduction** | History of Anatomy Introduction to various branches of anatomy | Describe the Brief History of Anatomy |
| | | Enlist various Branches of Anatomy |
| | | Define various Branches of Anatomy |
| | Anatomical Nomenclature | Define various anatomical terms |
| | | Explain different Anatomical terms & sectional planes of the body |
| **Skeletal System Bone & Cartilage** | Axial Skeleton Different bones of human body | Classify the skeletal system |
| | | Describe different bones of Axial skeleton |
| | Appendicular skeleton | Describe different bones of Appendicular skeleton |
| | Functions of bone Classification on the basis of development, region and function | Classify bones on the basis of evolution, function, development, region & miscellaneous |
| | | Explain the functions of bones |
| | General concepts of ossification of bones Parts of young bone | Discuss the general concepts of ossification & growth of bones |
| | | Name parts of young bone |
| | Blood Supply of long bones Anatomical factors in bone injury (clinical) | Describe the blood supply of bones |
| | | Relate Anatomical factors to bone injury |
| | Classification of cartilage | Classify cartilage |
| | Classification of bones based on structure, gross appearance & location | Classify bones on the basis shape, size, structure, gross appearances location |
| | Blood supply of long bones, short & irregular bones of skull | Describe the blood supply of long bones, short bones & irregular bones of skull |
| | Gross appearance of long, short & irregular bones | Describe general features of bones of human body |
| | Intra – membranous & intra-cartilaginous methods of ossification, growth & remodeling of bones | Explain methods of ossification & growth & remodeling of bones |
| | Effects of age | Outline the affects of age on bones |

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| | of bones Clinical anatomy of facture, oseteoporosis, rickets & osteomalacia, sternal puncture, avascular necrosis, radiological appearance of bones, cartilage & fractures | Apply anatomical knowledge for fractures, rickets, osteoporosis, osteomalacia, sternal puncture,<br>avascular necrosis |
| | | Interpret radiological appearance of bones, cartilage & fractures |
| **Skin and Fascia** | Structural & functional anatomy of the skin Layers of skin with description of its cellular constituents | Name different types of skin & its components |
| | | Describe cellular constituents of skin. |
| | Skin creases & lines Skin appendages | Explain skin creases & lines & their significance |
| | | Enumerate appendages (hair, nail errector pili muscles, sebaceous & sweat glands) of skin |
| | | Give formations of skin appendages. |
| | Structure & location of superficial & deep fascia | Describe the structure & function of superficial & deep fascia including retinaculae & septae |
| | Clinical anatomy of skin creases & burns discoloration of skin | Give clinical significance of skin creases |
| | | Interpret clinical anatomy of burns |
| | | Give clinical significance of skin discoloration(Jaundice, cyanosis, anemia) |
| **Muscles** | Classification of muscle based on structure, function & appearance | Classify muscles on the basis of structure, function & appearance |
| | Gross feature & function of intramuscular septa Blood & nerve supply of muscles | Describe general principles of blood & nerve supply of muscles |
| | | Explain gross features & functions of inter muscular septa |
| | Anatomy of the neuro-muscular junction | Describe the anatomy of Neuro-Muscular Junction |
| | Anatomy of muscle with reference to sprain, spasm and injury | Explain sprain, spasm trophic degeneration & regeneration of changes |
| | | Explain the mechanism of sprain & spasm |
| | Functions of synovial | Explain the Functions of synovial structures related to muscles (tendon sheaths & bursae) |

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| | structures related to muscles (tendon sheaths & barsae) Fibrous structures occurring in skeletal muscles | Describe different forms of fibrous structures occurring in muscles (Aponeurosis, tendon, raphae) |
| **Joints** | Classification of joints based on structure, shape of articular surfaces & movements | Classify joints based on structure, shape of articular surfaces & movements |
| | Structure & movements of synovial joints Classification of synovial joints | Discuss the characteristics, types & movement of synovial joints |
| | Structure, function & classification of fibrous & cartilaginous joints | Discuss the characteristics, types & movement of fibrous & cartilaginous joints |
| | Factors for stability of joints, dislocation of joints | Enlist & explain the factors responsible for the stability of joints |
| | | Describe & analyze different clinical scenarios resulting into dislocation of joints |
| | Blood & nerve supply of joints | Explain general principles of blood & nerve supply of joints |
| **Circulatory System** | Classification of circulatory system & portal venous system with its advantages & disadvantages | Give classification of circulatory system (Cardiovascular & lymphatic) |
| | | Discuss portal venous system with its advantages & disadvantages |
| **Blood vessels** | Classification of blood vessels Function of arteries, veins & capillaries with description of their various types | Explain classification & structures of different types of blood vessels |
| | | Give functions of arteries, veins & capillaries with their types |
| | Clinical anatomy of arteriosclerosis & varicose veins | Analyze of arteriosclerosis & varicose veins on the basis of clinical knowledge of Anatomy |
| | Classification of anastomoses with examples & clinical | Define & classify anastomoses with examples |
| | | Summarize the clinical significance of anastomoses |

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| **Lymphatic System** | Description of the components & functions of lymphatic system Its role in the spread of infection & malignancy | Discuss components of lymphatic system |
| | | Explain function of lymphatic system & its role in the infection & malignancy |
| **Nervous System** | General features of nervous system with structure & function of the neurons & neuralgia. | Name different components of Nervous system (Neuron, ganglion, Nuclei, Nerve, tract,<br>neuroglia) |
| | | Enlist their functions |
| | Classification of nervous system based on location, embryological origin & functional aspects. | Classify different types of Nervous system (Somatic & Autonomic) & based on location,<br>development & functional aspects |
| | Somatic nervous system their morphology & function (CNS & PNS) formation of a typical spinal nerve & distribution | Enumerate different parts of somatic nervous system, their morphology & function (CNS & PNS) |
| | | Discuss the formation & distribution of a typical spinal nerve |
| | Anatomical aspects of ANS, with differentiating feature of sympathetic & parasympathetic nervous system. | Enumerate & describe different parts of ANS and their functions |
| | | Distinguish between parasympathetic & sympathetic nervous system |
| | Reflex, reflex arc & referred pain, Nerve plexus formation, dermatome & their clinical importance | Discuss nerve plexus formation, define dermatome, give the clinical significance of dermatome & nerve plexus |
| | | Define reflex, reflex arc & referred pain |

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| **Histology & its Method** | Preparation of Tissue for | Enlist the steps for tissue preparation for Microscopic examination |

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| **of Study** | Microscopic Examination, Light Microscopy, Phase Contrast Microscopy & Differential Interference Microscopy Tissue Stains & Preparation | Define different types of Microscopy (Light Microscope) & discuss phase contrast Microscope differential interference Microscopy |
| | Polarizing Microscopy, Conofocal Microscopy, Fluorescence Microscopy, Electron Microcopy | Discuss Polarizing, conofocal, Fluorescence & Electron Microscopy |
| **The Cytoplasm** | Cellular Differentiation, Cell Ecology | Explain cellular differentiation & cell ecology |
| | Cell Components | Enumerate & discuss structure & function of different components of cells |
| | The Cytoskeleton | Explain cytoskeleton of cells |
| **The Cell Nucleus** | Cell Division | Explain cell division, cell cycle & apotopsis |
| | The Cell Cycle, Apotopsis | |
| **Epithelial Tissue** | The forms & Characteristics of Epithelial Cells Specializations of the Cell Surface | Explain forms & characteristics of epithelial cells |
| | Types of Epithelia | Enlist & explain specializations of cell surface (Intercellular junctions, microglia, cilia, stereocilia Basal striations) |
| | General Biology of Epithelia Tissues | Classify & describe different types of epithelia with examples |
| **Connective Tissue** | Cells of the Connective Tissue | Classify & discuss different types of C.T. proper with examples |
| | Fibers, Ground Substances | |
| | Type of Connective Tissue | Explain the structures of connective tissue cells, fibers & ground substance |
| **Adipose Tissue** | Unilocular Adipose Tissue. Multiocular Adipose Tissue | Compare & contrast unilocular & Multiocular adipose tissue |

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| **Cartilage** | Hyaline Cartilage | Compare & contrast different types of cartilages |
| | Elastic Cartilage | Discuss the histological features of hyaline fibro & elastic cartilages with examples |
| | Fibro Cartilage. Intervertebral Discs | |
| **Muscle Tissue** | Skeletal Muscle | Classify & describe light & electron Microscopic structures of Muscles (smooth comparative cardiac & skeletal) |
| | Cardiac Muscle | Explain comparative regeneration of Muscles tissue |
| | Smooth Muscle Regeneration of Muscle Tissue | Define fibrosis & discuss the function of satellite cells & pericytes |
| **Bone** | Bone Cells Bone Matrix | Enlist & explain the structure & function of bone cells & bone matrix |
| | Periosteum & Endosterum | Explain the histological features & functions of periosteum & endosteum |
| | Type of Bone | Classify bones from histological point of view & describe their microscopic structure. |
| | Histogenesis Bone Growth & Remodeling | Discuss the histogenesis of bone (Intra membranous & Intra cartilaginous) |
| | Internal Role of Bone Tissue Joints | |
| **The Circulatory System** | Blood Vessels with Diameters above a certain Size Vasa Vasorum | Classify & discuss different sub division of vascular system |
| | Innervations of Arterioles | |
| | Medium (Muscular) Arteries Large Elastic Arteries | Describe the microscopic structures of different types of blood vessels. |
| | Arterial Degenerative Alterations | Explain innervations of arterioles |
| | Carotid Bodies Carotid Sinuses | Explain histological features of carotid bodies & carotid sinuses. |
| | Arteriovenous Anastomoses Veins | Explain arteriovenous anastomoses & its significance |
| | Heart | Explain & illustrate histological features of heart |
| | Lymphatic Vascular System | Give histological features of lymphatic vascular system |

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| **The Immune System & Lymphoid Organs** | Organ Transplantation Thymus | Discuss & Illustrate Microscopic structure of lymphoid organs (lymph node, spleen, tonsils, thymus Mucosa associated lymphoid tissue) & give their functions |
| | Lymph Nodes | |
| | Spleen | |
| | Mucosa-Associated Lymphoid Tissue | Explain organs transplantation & the role of lymphoid tissue. |
| | Tonsils | |
| **Skin** | Epidermis | Discuss the Microscopic structure of Skin & its appendages |
| | Immunologic Activity in the Skin Dermis | |
| | Subcutaneous Tissue Vessels & Skin Sensorial Receptors | Explain the Immunological activity in the dermis of the skin. |
| | Hairs Nails | Illustrate & explain subcutaneous tissue vessels & skin sensorial. |
| | Glands of the Skin | |
| **Respiratory System** | Nasal Cavity / Para-nasal Sinuses / Nasopharynx | Give Histological features of Nasal cavity / Para-nasal air Sinuses & Nasopharynx |
| | Larynx / Trachea | Discuss & Illustrate Histological features of Larynx & trachea |
| | Bronchial Tree / Pleura / Lungs | Explain & Illustrate Microscopic structure of Bronchial tree, Pleura, Lung. |
| | | Give changes in their structures correlating to their functions |
| **Nervous Tissue** | Structure of Neuron | Classify & discuss the structure of Neuron, Neuroglial cells & Nerve fiber |
| | Neuroglial Cells (Cell Body, Dendrites, Axons, Synaptic Communication, Glial Cells & Neuronal Activity) | |
| | Nerve Fibers (Nerves, Ganglia, Degeneration & Regeneration of Nerve Tissue) | Explain degeneration & regeneration of Nerve Tissue |

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| | Mammary Gland | Discuss the Microscopic anatomy of Mammary gland in different functional stage |
| **Terms** | Apoptosis, hypertrophy, atrophy, Metablasia hyperplasia, Anaplasia, Neoplasia, Necrosis. | Define Apoptosis, hypertrophy, atrophy, Metaplasia hyperplasia, Anaplasia, Neoplasia, Necrosis. |
| | | Elaborate these terms with examples |

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| **Introduction** | Introduction of Microscope | Identify the parts of Light Microscope |
| | | Operate light microscope & Focus the slides |
| | Artifacts | Identify artifacts in the slides |
| **Cell** | Cell Membrane / Organelles | Identify different cells of body & their Organelles |
| | Cell Nucleus | Identify Nuclei of different cells & their locations |
| **Epithelium** | Simple epithelium | Identify various types of epithelia. Draw & label various types of epithelia |
| | Compound epithelium | |
| | Glands | Identify various types of glands. Draw & label various types of glands |
| **Connective Tissue** | Loose Connective Tissue | Identify various types of connective tissue, loose & dense C.T. |
| | Cells of C.T. & Matrix | |
| | Dense Connective Tissue (Tendon / Ligament) | Draw & label loose & dense C.T. |
| **Cartilage** | Cartilage I (Hyaline / Fibro / Elastic) | Identify various types of cartilages |
| | Cartilage I (Hyaline / Fibro / Elastic) | Draw & label Hyaline, fibro & elastic cartilages |
| **Histology of Bone** | Bone (Compact & Spongy) | Identify, draw & label compact spongy bone. |

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| | Bone (Compact & Spongy) | |
| **Muscles** | Muscle (Smooth / Skeletal / Cardiac) | Identify, draw & label skeletal, smooth & cardiac muscles |
| **Blood Vessels** | Blood vessels I (Artery / Vein / Capillary) | Identify different types of arteries. Draw & label different types of arteries |
| | | Identify, draw & label veins & capillaries & sinusoids |
| | Blood vessels II (Aorta / Lymph Vessels / Sinusoids) | Identify, draw & label lymph vessels |
| **Nervous System** | (Peripheral nerve) | Identify, draw & label peripheral Nerve, sympathetic ganglion & Dorsal root ganglion |
| | Autonomic Ganglion – (Sympathetic Ganglion) | |
| | (Dorsal Root Ganglion) | |
| **Lymphoid Organs** | Thymus | Identify, draw & label thymus, lymph node, spleen, tonsils & Peyer's patches. |
| | Lymph Node | |
| | Spleen | |
| | Tonsil & Peyer's Patches | |
| **Respiratory System** | Trachea / Bronchi | Identify, draw & label trachea bronchi & lungs. |
| | Lungs | |
| **Integumentary System** | Skin I (Thin Skin) | Identify, draw & label thick and thin skin.<br>Identify, draw & label Hair follicle & hair |
| | Skin II (Thick skin & Hair Follicle) | |
| | Human Hair | |
| **Mammary Gland** | Mammary Gland, Lactating / Non-Lactating | Identify, draw & label lactating & non-lactating breast under light microscope |

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| **Introduction** | Introduction to embryology | Outline the topics to be covered in Embryology |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Terminology | Define various terms related to embryology |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Introduction to Gametogenesis Mitotic Division | Explain the process of cell division Mitosis |
| | | Define and explain basic concepts related to gametogenesis |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Meiotic Division Numerical & Structural Abnormalities | Explain the process of Meiosis or reduction division |
| | | Discuss Numerical & structural abnormalities of chromosomes & related syndromes |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Gametogenesis** | Oogenesis Spermatogenesis | Explain the processes of spermatogenesis & Oogenesis |
| | | Demarcate major differences between the spermatogenesis & Oogenesis |
| | | Define & Explain the mechanism of formation of abnormal gametes |
| | Spermatogenesis Abnormal gametes | Explain & interpret the results of semen analysis |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Ovarian Cycle Corpus Luteum | Explain ovarian & uterine cycles |
| | | Explain the formation of corpus luteum & corpus albicans |
| | Oocyte Transport Corpus Albicans | Discuss an ovulatory cycles & their significance |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Fertilization & Implantation** | Steps and phases of fertilization Clinical correlates | Rephrase the steps & phases of fertilization |
| | | Explain assisted reproductive techniques, (IVF, ICSI, ZIFT, GIFT, Cloning, artificial insemination surrogate mothers) |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Cleavage Blastocyst Formation Abnormal Zygote | Explain cleavage, Morula & Blastocyst formation |
| | | Explain the formation & fate of abnormal zygotes |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Site of implantation Changes during implantation Abnormal implantation sites | Discuss sites of implantation, process of implantation & abnormal implantation sites (Ectopic / Pregnancy) |
| | | (Observe, Engage & Participate in the discussion during SGD) |

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| | Blastocysts formation Bilaminar germ disc | Explain different changes during the formation of bilaminar germ disc |
| **2nd week of Development** | 8th – 12th day of development | Explain & illustrate 2nd week development with diagrams from 8th day to 13th day |
| | | Explain the basis of pregnancy test in 2nd week. |
| | 13th day of development, Abnormal blastocyst | (Observe, Engage & Participate in the discussion during SGD) |
| **3rd week of Development** | Gastrulation | Explain Gastrulation (Trilaminar Germ disc) |
| | | Discuss changes which are taking place during 3rd week of development |
| | | Explain formation of Notochord & allantois, Neurulation & early development of CVS,<br>start of somite formation, development of Primodium of intra embryonic coelom |
| | Formation of Notochord | Explain teratogenecity associated with gastrulation, formation of sacroscocygeal teratoma,<br>Sirenmelia, Situs inversus abnormal growth of trophoblast & Allantoic cysts |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Embryonic Period** | Derivatives of ectodermal germ layers | Enlist the derivatives of ectoderm, endoderm & mesoderm |
| | Derivatives of mesodermal and endodermal germ layers | (Observe, Engage & Participate in the discussion during SGD) |
| | Patterning of anteroposterior Axis External appearance during the 4th to 8th week | Explain highlights or salient changes taking place in the embryo during 4th to 8th week of development |
| | | Discuss methods of estimation of Gestational & Embryonic age |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Birth defects | Explain Teratogenicity & factors responsible for birth defects |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Fetal Period** | Development of Fetus Birth Clinical Correlates | Explain the changes taking place during the development of fetus (9th week to birth) |
| | | Explain the process of parturition |
| | | Discuss clinical correlates related to fetal development (IUGR, Post maturity |

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| | | Syndrome) |
| | Abnormal fetal growth Prenatal diagnosis | Discuss factors leading to IUGR |
| | | Discuss & Explain procedures for assessing fetal status & viability of fetus |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Fetal Membranes & Placenta** | Introduction to fetal membranes Amnion & umbilical cord Changes in trophoblast | Define & Explain fetal structures (Amnion, chorion, Yolk sac, Allantois & Umbilical cord) |
| | | Discuss changes in trophoblast & formation of chorion frondosum & Decidua Basalis |
| | | Discuss umbilical cord length variation & amniotic bands & their clinical significance |
| | Changes in trophoblast Chorion Frondosum Decidua Basalis | Discuss structure of Placenta, Full term placenta, Placental circulation |
| | | Discuss functions of Placenta |
| | | Explain abnormalities of Placenta & its clinical relevance |
| | Structure of Placenta Full term placenta Circulation & function of placenta Placental changes at the end of pregnancy, Amniotic Fluid | Discuss the formation, circulation, amount & Composition of Amniotic fluid |
| | | Explain the functions of Amniotic fluid |
| | Fetal membranes in twins | Summarize causes & effects of oligo & polyhydramnios |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Twins** | Monozygotic & Dizygotic Twins | Explain the basis for multiple pregnancy |
| | | Distinguish between monozyogtic & Dizygotic twins |
| | | Compare & contrast fetal membranes in mono & dizygotic twins |
| | | Explain the mechanism of twin transfusion syndrome & conjoined twins |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Congenital Malformations** | Types of abnormalities Incidence, environmental factors, Chromosomal abnormalities | Discuss types, incidence, environmental genetic & Multifactorial inheritance in the Genesis of birth defects |
| | | Discuss chromosomal abnormalities & Gene Mutations (Klinefelter Syndrome, Turner's Syndrome, Down syndrome) |

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| | Genetic abnormalities | (Observe, Engage & Participate in the discussion during SGD) |
| **Genetics** | Basic principles of genetics and structure, function & relationship of genes &DNA | Discuss basic principles of genetics. |
| | | Describe structure & function of Genes & DNA |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Teratogenicity** | Male-mediated Teratogenesis | Explain Teratogenicity in Males |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Prevention of birth defects | Discuss various principles to prevent birth defects |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| | Fetal Therapy | Explain the procedure of Fetal Therapy |
| | | (Observe, Engage & Participate in the discussion during SGD) |
| **Muscular System** | Development of the Musculoskeletal system | Discuss basic knowledge in understanding the development of three types of Muscles |
| | Striated skeletal Musculature / Molecular Regulation of Muscle Development / Patterning of Muscle / Derivatives of Precursor Muscle Cells | Explain the development of skeletal, cardiac & smooth Muscles |
| | | Explain Concepts of epimere, hypomere (Hypaxial Epaxial) division of somites |
| | Head, Limb Musculature | Discuss congenital Anomalies related to Muscular system |
| | Development of Cardiac, Smooth & Striated Skeletal Muscle | (Observe, Engage & Participate in the discussion during SGD) |
| **Skeletal System** | Development of skull | Explain the development of skull, limbs vertebral column |
| | Development limbs | |

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| | Development of vertebral column | Discuss congenital anomalies related to skeletal development |
| | Congenital anomalies of skeletal system | (Observe, Engage & Participate in the discussion during SGD) |
| **Development of Skin & Appendages** | Development of skin + congenital anomalies | Explain development of skin & its appendages |
| | | Discuss congenital anomalies of skin & its appendages |
| | Development of skin appendages + congenital anomalies | (Observe, Engage & Participate in the discussion during SGD) |
| | Development of breast + its congenital anomalies | Explain development of mammary gland & congenital anomalies |
| | | (Observe, Engage & Participate in the discussion during SGD) |

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| **Bones of Pectoral Girdle & Arm** | Clavicle | Discuss the bones of pectoral Girdle & arm |
| | Scapula | Outline the general & special features of these bones |
| | Scapula/ Humerus | Explain their common fractures & displacement of their fragments & factors causing these fractures |
| | Humerus | Identify various structures on dissected specimen & models |
| **Pectoral Region** | Surface landmarks, Superficial Fascia, Deep Fascia, Muscles, Nerves & Vessels of Pectoral Region | Explain muscles attachments, their actions, nerve supply & effects of paralysis of these muscles. |
| | | Describe the course, relation & branches of pectoral nerves & vessels |
| | | Explain the extent, attachments & importance of superficial & deep fascia of pectoral region & Clavipectoral Fascia |
| | Breast/ Mammary Gland+ Clinical Anatomy | Explain structure relations, blood supply lymphatic drainage, nerve supply, function & clinical aspects. |
| | | Identify various structures on dissected specimen & models |
| **Axilla** | Boundaries & Vessels of Axilla+ | Define & explain boundaries & contents of Axilla |

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| | Clinical Anatomy | Outline extent, course & branches of vessels of Axilla |
| | Brachial Plexus+ Clinical Anatomy | Explain the extent, locations, formation & variation of Brachial Plexus & branches different clinical conditions related to it. |
| | | Identify various structures on dissected specimen & models |
| **Scapular Region** | Surface Landmark, Muscle of the Scapular Region/Anatomoses around Scapula+ Clinical Anatomy + Intramuscular spaces + Axillary Nerve | Explain attachments, actions nerve supply of muscles of scapular region |
| | | Identify the effects of paralysis of these muscles |
| | | Discuss formation & importance of anatomoses around scapula & its clinical importance |
| | | Explain boundaries & contents of Intramuscular spaces near scapula. |
| | | Explain the course relation & branches of Axillary nerve & its injury & effects of injury |
| | | Identify various structures on dissected specimen & models |
| **Back** | Surface Landmarks, Skin and fasciae of the back Muscles Connecting the upper limb with the vertebral column Triangles of Petit & Auscultation | Discuss surface landmarks on back |
| | | Enlist the muscles of back |
| | | Discuss attachments, actions & nerve supply of muscles connecting upper limb with vertebral column |
| | | Explain the boundaries, contents & importance of Triangles of Petit & Auscultation |
| | | Identify various structures on dissected specimen & models |
| **Arm** | Surface land marks, Anterior aspect of arm (muscles nerves and vessels of arm) | Discuss landmark of Arm. Explain attachment, actions & nerve supply of Arm. |
| | | Outline, course, relations & branches of vessels & Nerves of Arm |
| | Surface land marks, Anterior aspect | Analyze the effects of Muscle paralysis of arm |

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| | of arm (muscles nerves and vessels of arm) + Clinical Anatomy | Analyze the mechanism & effects of injuries to nerve & vessels of arms & Clinical tests to diagnose them. |
| | Back of the arm(muscle, nerve and vessels)+ Clinical Anatomy | Explain the boundaries, contents of cubital fossa |
| | | Explain the formation & importance of Anatomoses around elbow joint. |
| | Cubital fossa and anastomosis around elbow joint | Identify various structures on dissected specimen & models |
| **Joint of Upper Limb** | Shoulder joint+ Clinical Anatomy | Explain the structure of joints |
| | | Explain movements of these joints & muscles causing them |
| | Sternoclavicular and AC joint | Give nerve supply blood supply of these joints |
| | Elbow joint+ Clinical Anatomy | Explain clinical conditions related to them. |
| | | Identify various structures on dissected specimen & models |
| **Bones of Forearm** | Radius + fractures of radius | Discuss the bones of Forearm |
| | | Outline the general & special features of these bones |
| | Ulna + fractures of ulna | Explain their common fractures & displacement of their fragments & factors causing these fractures |
| | | Identify various structures on dissected specimen & models |
| **Bones of Wrist & Hand** | Carpal bones, metacarpal bones, phalanges, sesamoid bones of upper limb | Discuss the bones of Wrist & hand |
| | | Outline the general & special features of these bones |
| | | Explain their common fractures & displacement of their fragments & factors causing these fractures |
| | | Identify various structures on dissected specimen & models |
| **Anterior Forearm** | Superficial muscles of front of forearm + clinical Anatomy | Explain attachments, nerve supply & actions of superficial & deep muscles of anterior forearm & the effects of their paralysis |
| | | Discuss the course, relation & branches of nerve & vessels of anterior compartment of forearm |
| | Deep flexor muscles and vessels of forearm+ clinical Anatomy | Explain nerve & vessel injuries of anterior compartment of forearm |
| | | Explain mechanism & effects of these injuries & clinical tests to diagnose them. |

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| | Nerves of forearm and clinical anatomy | Identify various structures on dissected specimen & models |
| **Hand** | Palmar aspect of wrist and hand, intrinsic muscles of hand, spaces of the hand+ clinical anatomy | Explain attachment, nerve supply & actions of intrinsic muscles of hand. |
| | | Summarize spaces of hand & their clinical importance. |
| | | Explain attachment of flexor Retinaculum & structures passing deep & superficial to it. |
| | | Identify various structures on dissected specimen & models |
| **Dorsal Aspect of Forearm & Hand** | Back and lateral aspect of forearm and hand, nerves and vessels of hand+ clinical anatomy | Explain attachment, nerve supply & actions of muscles of back of forearm & extensor retinaculum. |
| | | Explain mechanism, effects & diagnosis of paralysis of muscles of back of forearm |
| | | Explain course, branches & relations of nerves & vessels of hand & their mechanism of injury, effects & clinical diagnosis |
| | | Identify various structures on dissected specimen & models |
| **Cutaneous Nerves, Dermatomes, Superficial Veins & Lymphatic Drainage of upper limb** | Cutaneous Nerves, Dermatomes , Superficial Veins & Lymphatic Drainage of upper limb | Recognize important superficial veins of upper limb & their clinical importance |
| | | Explain the course of superficial veins of upper limb |
| | | Explain the lymphatic drainage of upper limb & axillary lymph nodes |
| | | Discuss cutaneous nerves & dermatomes of upper limb |
| | | Identify various structures on dissected specimen & models |
| **Joints of Forearm & Hand** | Radioulnar joints, small joints of hand including their dislocations | Explain structure, movements & mechanism of Joints of Hand & forearm. |
| | | Discuss their dislocations. |
| | | Identify various structures on dissected specimen & models |
| **Hand & Wrist Joint** | synovial sheaths of the flexor tendons, radial and ulnar bursae,wrist joint including its dislocation | Discuss structures, movement & mechanism of wrist joint & its dislocation. |
| | | Explain synovial sheaths of flexor tendons & radial & ulnar bursae. |
| | | Identify various structures on dissected specimen & models |
| **Surface Anatomy & Nerve** | Surface anatomy of upper limb, | Explain the surface anatomy of upper limb. |

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| **Injuries of Upper Limb** | injuries of nerves(ulnar, median, radial, thoracodorsal nerves, axillary, musculocutaneous, long thoracic and brachial plexus) | Discuss nerve injuries, mechanism, effects & their diagnosis. |
| | | Identify various structures on dissected specimen & models |
| **Radiological Anatomy of Upper Limb** | Radiological anatomy of upper limb (including CT, MRI and skiagrams). | Interpret normal Skaigrams, CT scan & MRI of upper limb |
| | | Identify various structures on dissected specimen & models |

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| **Bones of Pelvis Girdle & Thigh** | Hip bone | Explain general & special features of Hip bone & Femur |
| | Hip bone | Outline attachments of Muscles & ligaments on the bones |
| | Femur | Give common fractures of bones, displacement of their fragments & factors causing it. |
| | | Identify various structures on dissected specimen & models |
| **Anterior Compartment of Thigh** | Front of thigh superficial fascia ( superficial inguinal lymph nodes, cutaneous nerves, sephanous opening, great sephanous vein, petallar plexus) fascia lata | Explain superficial & deep fascia of thigh |
| | | Explain superficial veins & cutaneous nerves of Anterior aspect of thigh & superficial injured lymph nodes |
| | Deep dissection of front of thigh ( inguinal | Discuss Femoral sheath, Femoral triangle, Femoral canal their formation & their contents. |
| | | Explain factors leading to femoral Hernia. |

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| | ligament, femoral sheath, femoral canal, femoral triangle and its contents, femoral hernia) | Explain attachment, Nerve supply & actions of muscles of Anterior aspect of thigh |
| | Muscles of anterior compartment of thigh | Outline course, branches & relations of Nerve & vessels of Anterior thigh |
| | Nerves and vessels of front of thigh(femoral artery femoral nerve femoral vein), lumbar plexus+ clinical aspects | Explain anatomical relevance to important clinical conditions |
| | | Give formation of lumbar Plexus |
| | | Identify various structures on dissected specimen & models |
| **Medial Compartment of Thigh** | Muscles of adductor compartment, Adductor canal and its contents + clinical aspects | Explain attachments, Nerve supply & actions of Adductor Muscles |
| | | Discuss boundaries & contents of adductor canal & give its clinical relevance. |
| | | Discuss course, relations & branches of obturator nerve & artery and medial circumflex femoral artery. |
| | obturator nerve and artery and medial circumflex femoral artery+ clinical aspects | Discuss the injuries to obturator nerve & artery and its effects and clinical diagnosis. |
| | | Identify various structures on dissected specimen & models |
| **Hip Joint** | Hip joint+ clinical aspects | Explain structure & movements of Hip joint |
| | | Discuss Nerve supply & blood supply of Hip joint |
| | | Explain clinical conditions involving Hip joint. Discuss its dislocations. |
| | | Identify various structures on dissected specimen & models |
| **Back of Thigh** | Back of thigh and its clinical aspects | Explain attachments, Nerve supply & actions of Hamstring Muscles. |
| | | Discuss Anatomoses of thigh |
| | | Explain blood supply & nerve supply of back of thigh |
| | | Identify various structures on dissected specimen & models |

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| **Knee Joint** | Knee joint+ clinical aspects | Explain structure & movements of Hip joint |
| | | Discuss Nerve supply & blood supply of Hip joint |
| | | Explain clinical conditions involving Hip joint. Discuss its dislocations. |
| | | Identify various structures on dissected specimen & models |
| **Popliteal fossa** | Popliteal fossa and its clinical aspects | Explain boundaries & contents of Popliteal Fossa |
| | | Discuss relations, branches of Nerves & vessels of popliteal Fossa |
| | | Explain clinical conditions related to popliteal Fossa |
| | | Identify various structures on dissected specimen & models |
| **Bones of Leg** | Tibia | Explain general & special features of Tibia & Fibula. |
| | | Outline attachments of Muscles & ligaments on the bones |
| | Fibula | Give common fractures of bones, displacement of their fragments & factors causing it. |
| | | Identify various structures on dissected specimen & models |
| **Leg** | Front of leg+ clinical aspects+ Lateral side of leg+ clinical aspects | Explain attachments, Nerve supply & actions of muscles of anterior lateral & posterior compartments of leg |
| | | Explain course relations & branches of Nerve & vessels of anterior lateral & posterior compartment of leg |
| | Medial side of leg+ clinical aspects Dorsum of foot+ clinical aspects | Give clinical relevance of Muscles, Nerves & vessels of legs |
| | Back of leg+ Clinical Aspects | Identify various structures on dissected specimen & models |
| **Sole of foot** | Sole of foot+ Clinical Aspects | Explain different layers of sole of foot |
| | | Explain attachments, actions & nerve supply of muscles of sole of foot |
| | | Explain Retinacula of ankle & structures passing deep to them |
| | | Discuss course, relations & branches of nerve & vessels of sole of foot |
| | | Identify various structures on dissected specimen & models |
| **Bones & joints of foot** | Tarsal+ Metatarsal Bones + Phalanges | Explain general & special features of Tarsal, Metatarsal & Phalanges |
| | | Explain fractures bones of foot |
| | | Explain articulated foot & individual bones |
| | All joints of foot+ clinical aspects / Ankle Joint | Explain structures & movements of ankle joint & its dislocations |
| | | Explain structures movements & dislocation of joints of foot |

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| | | Identify various structures on dissected specimen & models |
| **Surface Anatomy & Radiological Anatomy** | Surface markings | Explain surface marking of lower limbs |
| | Radiographs | Explain X-ray, CT scan & MRI of lower limb |
| | | Identify various structures on dissected specimen & models |
| **Gait cycle, Arches of foot** | Gait cycle, Arches of foot | Explain gait cycle & its components |
| | | Discuss arches of foot & their clinical significance |
| | | Identify various structures on dissected specimen & models |
| **Lymphatic of lower limb, cutaneous Nerves & Dermatomes** | Lymphatic of lower limb, cutaneous Nerves & Dermatomes | Explain course & relations of superficial veins of lower limbs & its clinical importance. |
| | | Discuss the mechanism by which the blood is pumped from lower limb & anatomical factors Which predispose to development of varicose veins. |
| | | Explain lymphatic drainage of lower limb & its clinical importance |
| | | Discuss cutaneous innervation of lower limb & dermatome & give its clinical significance. |
| | | Identify various structures on dissected specimen & models |

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| **Introduction** | Introduction, skeleton of thorax, inlet and outlet of thorax , surface land marks of thorax, | Recall introductory features of bony skeleton of thorax |
| | | Explain the boundaries of thoracic inlet & outlets & structures passing through them |
| | | Identify Surface land marks of thorax |
| | | Identify various structures on dissected specimen & models |
| **Diaphragm** | Diaphragm and its openings + clinical | Discuss attachment nerve supply & actions of Diaphragm |

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| | Anatomy | Enlist Diaphragmatic Openings & structures passing through them |
| | | Interpret injury to diaphragm & its nerve supply & its effect on respiration |
| | | Discuss clinical relevance of diaphragmatic conditions |
| | | Identify various structures on dissected specimen & models |
| **Bones of Thorax** | Bones of thorax (Ribs, Thoracic Vertebra, costal cartilages, sternum) | Discuss anatomy of the bony thorax & joints of thorax & mechanism of respiration |
| **Joints of Thorax** | Joints of thorax(Manubrio-sternal, Costo-vertebral, Costo-transverse, Costo-chondral, chondro-sternal, Interchondral and Intervertebral joints) | Discuss the role of muscles of respiration in Respiratory |
| | | Explain attachment, movement, nerve supply & actions of respiratory muscles |
| **Muscles of Respiration** | Intervertebral discs, Resp. movements & muscles of respiration. | Identify various structures on dissected specimen & models |
| **Intercostal Spaces** | Wall of thorax (coverings of thoracic wall, Anatomy of intercostal space including nerves, muscles and vessels), Internal thoracic arteries, | Explain attachments action & nerve supply of intercostal muscles |
| | | Outline course relation & branches of intercostal nerves & vessels |
| | | Explain the basic concepts of procedures of thoracocentesis, thoracostosmy & thoracotomy |
| | | Identify various structures on dissected specimen & model |
| **Azygos & Hemiazygos veins** | Azygos, Hemiazygos and accessory hemiazygos veins, Thoracic sympathetic trunk | Explain the formation, tributaries & drainage of Azygos, Hemiazygos & accessory hemiazygos veins |
| | | Discuss the importance of azygos & hemiazygos system of veins |
| | | Explain the anatomy of thoracic sympathetic trunk |
| | | Identify various structures on dissected specimen & models |
| **Thoracic cavity and pleura** | Thoracic cavity and pleurae, Pulmonary pleura (parietal pleura and its parts, pulmonary ligament, Recesses of pleura, Nerve supply, blood supply and lymphatic drainage of pleura) | Outline parts of pleura, recesses of Pleura, Nerve supply blood supply & lymphatic drainage of pleura |
| | | Interpret clinical conditions related to pleura |

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| | | Identify various structures on dissected specimen & models |
| **Lungs** | Lungs (fissures and lobes, differences b/w the lungs, Root of the lungs, Arterial supply, venous drainage, lymphatic drainage and nerve supply of the lungs, Bronchial tree and broncho-pulmonary segments) | Explain comparative anatomy of right & left lungs & lung roots |
| | | Discuss blood supply nerve supply & lymphatic drainage of lungs |
| | | Explain Bronchial tree & broncho-pulmonary segments |
| | | Identify various structures on dissected specimen & models |
| **Mediastinum** | Mediastinum (boundaries, divisions and detail of each division) | Discuss boundaries, divisions & contents of Mediastinum |
| | | Relate anatomical facts to clinical conditions of mediastinum |
| | | Identify various structures on dissected specimen & models |
| **Pericardium, External anatomy, fibrous skeleton of Heart** | Pericardium, Heart, External anatomy, Fibrous skeleton, | Explain layers of pericardium |
| | | Discuss nerve supply lymphatic drainage & blood supply of pericardium |
| | | Explain & Illustrate external anatomy of Heart |
| | | Discuss Fibrous skeleton of Heart |
| | | Identify various structures on dissected specimen & models |
| **Heart** | Musculature of the heart, Right atrium, Right AV valve, Right ventricle, | Explain & Illustrate musculature of Heart, chambers, valves of Heart & septa |
| **Chamber, Muscles & Valves** | Interventricular septum, Left atrium, Mitral valve, Left ventricle, Semilunar valves, Conducting system of the heart | Explain conducting system of Heart & its clinical relevance |
| | | Identify various structures on dissected specimen & models |
| **Bloody supply of the heart** | Blood supply of the heart, Cardiac dominance, Collateral circulation, | Explain blood supply of Heart & cardiac dominance |
| | | Summarize importance of collateral circulation |

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| | | Interpret effects of blockage of coronary arteries |
| | | Explain coronary artery bypass graft |
| | | Identify various structures on dissected specimen & models |
| **Venous & Lymphatic Drainages & Nerve Supply of Heart** | Veins, Lymphatic drainage and nerve supply of the heart, Fetal circulation, | Explain venous drainage, lymphatic drainage & nerve supply of Heart |
| | | Discuss fetal circulation & changes in CVS occurring after birth |
| | | Identify various structures on dissected specimen & models |
| **Aorta, Superior vena cava and pulmonary trunk** | Aorta, Superior vena cava and pulmonary trunk | Discuss course, relation & branches of Aorta, Superior vena cava & blood supply nerve supply & lymphatic drainage of Pulmonary trunk. |
| | | Correlate Anatomical factors to common clinical conditions |
| | | Identify various structures on dissected specimen & models |
| **Trachea and Esophagus +thoracic duct** | Trachea and Esophagus +thoracic duct | Explain course, relation of trachea & Esophagus |
| | | Discuss course, relation & area of drainage and tributaries of thoracic duct |
| | | Identify various structures on dissected specimen & models |
| **Surface marking, / Radiological anatomy of the thorax.** | Surface marking, / Radiological anatomy of the thorax. | Mark the important thoracic viscera & Pleural reflections on the surface of the body |
| | | Interpret normal skiagram, CT scan, MRI & other diagnostic techniques.<br>Identify various structures on dissected specimen & models |

## Recommended Books

1. Gray‟s Anatomy by Prof. Susan Standring, 39th edition (as reference book).
2. Clinical anatomy for medical students by Richard Snell.
3. Clinically oriented anatomy by Keith Moore.
4. Clinical anatomy by R. J. Last (latest edition).
5. Cunningham‟s Manual of Practical Anatomy by G J Romanes. Latest edition Vol. I, II and III.
6. The developing human, Clinically Oriented Embryology by Keith Moore. (Latest edition).
7. Embryology by Langmann (Latest edition).
8. Wheaters, Functional Histology by Young and Heath (Latest edition)
9. Histology. A Text and Atlas by Ross & Romrell (Latest edition).
10. Medical histology by Prof. Laiq Hussain.
11. Histology by Janquero (Latest edition)
12. Barr‟s the Human Nervous system: anatomical view point (Latest edition).
13. Neuroanatomy by Richard S. Snell (Latest edition).
14. Netter‟s Atlas of Gross anatomy (Latest edition).
15. Mariano De Fiore atlas of Histology (Latest edition).
16. Digital atlas of microscopic anatomy by Khalid Khan

# TABLE OF SPECIFICATIONS FOR ANATOMY

## THEORY PAPER FIRST PROFESSIONAL

| CONTENTS | | SEQs | MCQs |
|---|---|---|---|
| 1. | Terms, Skeletal system, Joints, Muscles, Circulatory system, Nervous system, Skin and Fascia and Diagnostic techniques(General Anatomy) | 01 in reference to upper and lower limb | 06 |
| 2. | Cell, Epithelium, Connective tissue, Muscular tissue, Nervous tissue, Skin, Mammary gland, Lymphoid organs, Vascular system, Respiratory system(Histology) | 01 | 09 |
| 3. | Mitosis, Meiosis, Gametogenesis, Fertilization, 1st ,2nd 3rd week Developments, Embryonic period, Fetal period, Fetal membranes and Placenta, Multiple pregnancy, Teratology, Development of Muscular system, Skeletal system and limbs, development of Skin & appendages and Mammary gland (Embryology) | 02 | 09 |
| 4. | Upper limb | 02 | 07 |
| 5. | Lower limb | 02 | 07 |
| 6. | Thorax | 01 | 07 |
| **TOTAL ITEMS** | | **09 SEQs** | **45 MCQs** |
| **TOTAL MARKS** | | **45 Marks** | **45 Marks** |

***25% of MCQs and SEQs should be clinically oriented or problem- based.***

***10%** marks are allocated for 'Internal Assessment'*

**Total marks for theory paper:** SEQ+ MCQ + Internal Assessment = 45 +45+10=***100 Marks***

## ORAL AND PRACTICAL EXAMINATION FIRST PROFESSIONAL

Oral and practical examination carries 100 marks.

| EXAMINATION COMPONENT | | MARKS |
|---|---|---|
| A | **Internal Assessment** | 10 |
| B | **Viva voce**<br>Upper limb=10 Marks<br>Lower limb=10 Marks<br>Thorax=10 Marks<br>Surface marking=4 Marks<br>Embryology=12 Marks | 46 |
| C | **OSPE (Gross Anatomy and embryology)**<br>a) Upper limb 06 Marks<br>b) Lower limb 06 Marks<br>c) Thorax 04 Marks<br>d) Radiological Anatomy 02 Marks<br>e) Embryology 06<br>**Histology**<br>10 slides 10 Marks<br>0.5 mark for identification<br>0.25 marks each for two points of identification | 24<br><br>10<br>Total= 24+10=34 |
| D | **Practical** | 10 |

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| | Long slide : 10 Marks<br>a) Identification: 1 Mark<br>b) Drawing : 1 Mark<br>c) Labeling : 1 Mark<br>d) Interactive viva long slide : 7 | Grand total for OSPE and practical= 24+10+10= 44 marks |

# Thank You