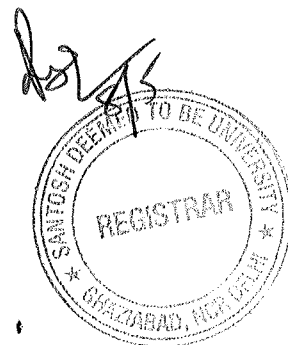


**SANTOSH**  
Deemed to be University



# Curriculum for M.Sc. Medical Anatomy



# SANTOSH DEEMED TO BE UNIVERSITY

## CURRICULUM FRAMEWORK

### M.Sc Medical Anatomy Course

Sr. No.		
1	Objectives of PG Education	<ul style="list-style-type: none"><li>• At the end of the course, the students shall be able to</li><li>• <b>1. Knowledge</b><ol style="list-style-type: none"><li>1. Describe gross anatomy of entire body including upper limb, lower limb, thorax, abdomen, pelvis, perineum, head and neck, brain and spinal cord.</li><li>2. Explain the normal disposition of gross structure, and their interrelationship in the human body. She/He should be able to analyze the integrated functions of organs systems and locate the site of gross lesions according to deficits encountered.</li><li>3. Describe the process of gametogenesis, fertilization, implantation and placenta formation in early human embryonic development along with its variation and applied anatomy.</li><li>4. Demonstrate knowledge about the sequential development of organs and systems along with its clinical anatomy, recognize critical stages of development and effects of common teratogens, genetic mutations and environmental hazards. She/He should be able to explain developmental basis of variations and congenital anomalies.</li><li>5. Explain the principles of light, transmission and scanning, compound, electron, fluorescent and virtual microscopy.</li><li>6. Describe the microscopic structure of various tissues &amp; organs and correlate structure with functions as a prerequisite for understanding the altered state in various disease processes.</li><li>7. Describe knowledge about cell and its components, cell cycle, cellular differentiation and proliferation.</li><li>8. Describe structure, number, classification, abnormalities and syndromes related to human chromosomes.</li><li>9. Describe important procedures in cytogenetics and molecular genetics with its application.</li></ol></li></ul>

		<ol style="list-style-type: none"> <li>10. Demonstrate knowledge about single gene pattern inheritance, intermediate pattern and multiple alleles, mutations, non-mendelian inheritance, mitochondrial inheritance, genome imprinting and parental disomy.</li> <li>11. Demonstrate knowledge about reproduction genetics, assisted reproduction, prenatal diagnosis, genetic counseling and ethics in genetics.</li> <li>12. Explain principles of gene therapy and its applied knowledge.</li> <li>13. Describe immune system and cell types involved in defense mechanisms of the body. Also explain gross features, cytoarchitecture, functions, development and histogenesis of various primary and secondary lymphoid organs in the body.</li> <li>14. Demonstrate knowledge about common techniques employed in cellular immunology and histo compatibility testing.</li> <li>15. Demonstrate applications of knowledge of structure &amp; development of tissue organ system to comprehend deviations from normal.</li> <li>16. Demonstrate knowledge about recent advances in medical sciences which facilitate comprehension of structure function correlations and applications in clinical problem solving.</li> <li>17. Demonstrate knowledge about surface marking of all regions of the body.</li> <li>18. Demonstrate knowledge about outline of comparative anatomy of whole body and basic human evolution</li> <li>19. Demonstrate knowledge about identification of human bones, determination of sex, age, and height for medico legal application of anatomy</li> </ol> <ul style="list-style-type: none"> <li>• <b>2. Skills</b></li> </ul> <p>At the end of the course the student should be able to:</p> <ol style="list-style-type: none"> <li>1. Identify, locate and demonstrate surface marking of clinically important structures in the cadaver and correlate it with living anatomy.</li> <li>2. Acquire mastery in dissection skills, embalming, tissue preparation, and staining and museum preparation.</li> <li>3. Locate and identify clinically relevant structures in dissected cadavers.</li> <li>4. Locate and identify cells &amp; tissues under the microscope.</li> <li>5. Identify important structures visualized by imaging techniques, specifically radiographs, computerized tomography (CT) scans, MRI and ultrasonography.</li> <li>6. Demonstrate various movements at the important joints and actions of various groups of muscles in the human body.</li> <li>7. Demonstrate anatomical basis of common clinical procedures expected to be performed by a basic medical doctor.</li> </ol>
--	--	---

8. Demonstrate different methods of teaching-learning and make presentations of the subject topics and research outputs

**Specific practice based competencies:**

**1. Gross anatomy:**

- 1.1 Procurement, Embalming and Preservation of human cadavers
- 1.2 Preparation of tanks for preserving bodies
- 1.3 Dissection of cadaver
- 1.4 Window dissection of important regions
- 1.5 Preparation of specimens for museum with display a) soft parts b) models c) charts
- 1.6 Preparation and preservation of human bones / skeleton as assigned by the faculty

**2. Histology:**

- 2.1 Preparation of common fixatives embalming fluid 10% formalin, Bouin's fluid etc
- 2.2 Making paraffin blocks and section cutting and mounting
- 2.3 Preparation of staining set for H and E staining and staining paraffin sections with the stain
- 2.4 Making celloidin, araldite, gelatin blocks and their section cutting
- 2.5 Processing hard tissues, decalcification of bones, block making and sectioning, preparation of ground sections of calcified bones.
- 2.6 Frozen section cutting on freezing microtome and cryostat
- 2.7 Honing and Stropping of microtome knives, including sharpening by automatic knife sharpener
- 2.8 Histology file in which LM and EM pictures of all the organs and tissues of the body should be drawn and a small description of salient features written

**3. Histochemical Methods:**

- 3.1 Practical classes for staining of glycogen, mucopolysaccharides, alkaline phosphatase acid phosphatase, and calcium

**4. Cytogenetics:**

- 4.1 Knowledge about preparation of media, different solutions, stains etc.
- 4.2 Preparation of buccal smear for sex chromatin Human chromosome preparation from peripheral blood and karyotyping.
- 4.3 Banding techniques ( G and C)
- 4.4 Making of Pedigree charts for study of patterns of inheritance.
- 4.5 Chromosomal Analysis.

		<p><b>5. Neuroanatomy:</b></p> <p>5.1 Dissection of brain and spinal cord for teaching and learning purpose</p> <p>5.2 Preparation of brain and spinal cord macroscopic and microscopic sections and identification of different parts in them.</p> <p>5.3 Discussions on clinical problems related to neurological disorders and anatomical explanation for the same.</p>
2	Generic Graduate Attributes	<p><b>Scholarly Attitude :</b></p> <ul style="list-style-type: none"> <li>• Acquire competencies in gross and surface anatomy, Neuroanatomy, embryology, genetics, histology, radiological anatomy, applied aspects and recent advances of the above mentioned branches of anatomy to teach medical students.</li> <li>• Acquire mastery in dissection skills, embalming, tissue preparation, staining and museum preparation.</li> <li>• Acquire skills in teaching, research methodology, epidemiology &amp; basic information technology.</li> <li>• Acquire knowledge in the basic aspects of Biostatistics and research methodology.</li> <li>• Has knowledge to plan the protocol of a thesis, carry out review of literature, execution of research project and preparation of report.</li> <li>• Has ability to use computer applications Microsoft office (Microsoft word, excel, power point), Internet, Searching scientific databases (e.g. PubMed, Medline, Cochrane reviews).</li> <li>• Acquire skills in paper &amp; poster preparation, writing research papers and Thesis.</li> </ul> <p><b>Research Aptitude :</b></p> <ul style="list-style-type: none"> <li>• Making presentations of the subject topics and research outputs.</li> <li>• Demonstrate the ability to identify applied implications of the knowledge of anatomy and discuss information relevant to the problem, using consultation, texts, archival literature and electronic media.</li> <li>• Demonstrate the ability to correlate the clinical conditions to</li> </ul>

		<p>the anatomical/ embryological/hereditary factors.</p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to evaluate scientific/clinical information and critically analyze conflicting data and hypothesis.</li> <li>• Develop honest work ethics and empathetic behavior with students and colleagues.</li> <li>• Acquire capacity of not letting his/her personal beliefs, prejudices, and limitations come in the way of duty.</li> <li>• Acquire attitude and communication skills to interact with colleagues, teachers and students.</li> <li>• Practicing different methods of teaching-learning.</li> </ul> <p><b>Exemplary Leadership:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate self-awareness and personal development in routine conduct. (Self awareness)</li> <li>• Communicate effectively with peers, students and teachers in various teaching learning activities. (Communication)</li> <li>• Demonstrate a. Due respect in handling human body parts &amp; cadavers during dissection. (Ethics &amp; Professionalism) b. Humane touch while demonstrating living surface marking in subject/patient. (Ethics &amp; Professionalism)</li> <li>• Acquire capacity of not letting his/her personal beliefs, prejudices and limitations come in the way of duty.</li> <li>• Appreciate the issues of equity and social accountability while exposing students to early clinical exposure. (Equity and social accountability).</li> </ul>
3	Desired Learning Outcomes of Degree	<p><b>Element of Critical thinking</b></p> <ol style="list-style-type: none"> <li>1. Demonstrate the ability to identify applied implications of the knowledge of anatomy and discuss information relevant to the problem, using consultation, texts, archival literature and electronic media.</li> <li>2. Demonstrate the ability to correlate the clinical conditions to the anatomical/ embryological/hereditary factors.</li> <li>3. Demonstrate the ability to evaluate scientific/clinical information and critically analyze conflicting data and</li> </ol>

		<p>hypothesis.</p> <p><b>Dynamic Professionalism</b></p> <ol style="list-style-type: none"> <li>1. Develop honest work ethics and empathetic behavior with students and colleagues.</li> <li>2. Acquire capacity of not letting his/her personal beliefs, prejudices, and limitations come in the way of duty.</li> <li>3. Acquire attitude and communication skills to interact with colleagues, teachers and students.</li> </ol>
4	Proportion of knowledge / Skill / Soft Skill in Curriculum	<p><b>Effective Communication Skills</b></p> <ol style="list-style-type: none"> <li>1. Practicing different methods of teaching-learning.</li> <li>2. Making presentations of the subject topics and research outputs</li> </ol>
5	Curriculum and Employability	<p><b>Global Competencies :</b></p> <ol style="list-style-type: none"> <li>1. Skilled and employed to be a globally competent teacher, researcher and anatomist.</li> </ol>



**SANTOSH**  
Deemed to be University



---

**M.Sc. MEDICAL ANATOMY  
SEMESTER - 1 SYLLABUS**

**Hours dedicated for every week: 6 (Theory: 4 Practical: 2)**

<p><b>Course Objective ( Teaching Objectives)</b></p>	<ul style="list-style-type: none"><li>• To teach basic Anatomical concepts related to General Anatomy, General histology, General Embryology and Musculoskeletal system.</li></ul>
<p><b>Course Outcomes ( learning Objectives)</b></p>	<ul style="list-style-type: none"><li>• To understand the basic anatomical concepts of General Anatomy</li><li>• To understand the basic anatomical concepts of General Histology</li><li>• To understand the basic anatomical concepts of General Embryology</li></ul>



<b>Unit no.</b>	<b>Theory Topics</b>	<b>Hours allotted No. of-- hrs</b>																
<b>1.</b>	<p><b>General Anatomy</b></p> <table border="1"> <thead> <tr> <th data-bbox="217 562 464 636"><b>Name of the Subunit</b></th> <th data-bbox="464 562 1273 636"><b>Topics covered under each subunit</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="217 636 464 734">Terminology</td> <td data-bbox="464 636 1273 734">General anatomy includes introduction to anatomy, Terminology related to anatomy, Different anatomical planes and subdivisions</td> </tr> <tr> <td data-bbox="217 734 464 833">Bone</td> <td data-bbox="464 734 1273 833">Skeleton system with classification, types of bone, features of long bone, ossification, blood supply</td> </tr> <tr> <td data-bbox="217 833 464 969">Joints</td> <td data-bbox="464 833 1273 969">General classification with examples, structure of typical synovial joints, Classification of synovial joint with examples, Fibrous joints, Cartilaginous joints, Nomenclature</td> </tr> <tr> <td data-bbox="217 969 464 1106">Muscles</td> <td data-bbox="464 969 1273 1106">General features of muscles, classification with examples, types of skeletal muscles, Structures associated with muscle, Cardiac muscle and Smooth muscle, Functions, Naming of muscles</td> </tr> <tr> <td data-bbox="217 1106 464 1211">Cardiovascularsystem</td> <td data-bbox="464 1106 1273 1211">Types of circulations, Classification of blood vessels, Anastomosis, Collateral circulation, End arteries, Vasa vasorum</td> </tr> <tr> <td data-bbox="217 1211 464 1348">Nervous System</td> <td data-bbox="464 1211 1273 1348">Subdivisions of nervous system, Spinal cord and spinal segments, nerve fibers and myelination, Autonomic nervous system</td> </tr> <tr> <td data-bbox="217 1348 464 1476">IntegumentarySystem</td> <td data-bbox="464 1348 1273 1476">Introduction to skin and fascia, Skin components and layers, types of skin, Fascia, Appendages of skin, Functions</td> </tr> </tbody> </table>	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	Terminology	General anatomy includes introduction to anatomy, Terminology related to anatomy, Different anatomical planes and subdivisions	Bone	Skeleton system with classification, types of bone, features of long bone, ossification, blood supply	Joints	General classification with examples, structure of typical synovial joints, Classification of synovial joint with examples, Fibrous joints, Cartilaginous joints, Nomenclature	Muscles	General features of muscles, classification with examples, types of skeletal muscles, Structures associated with muscle, Cardiac muscle and Smooth muscle, Functions, Naming of muscles	Cardiovascularsystem	Types of circulations, Classification of blood vessels, Anastomosis, Collateral circulation, End arteries, Vasa vasorum	Nervous System	Subdivisions of nervous system, Spinal cord and spinal segments, nerve fibers and myelination, Autonomic nervous system	IntegumentarySystem	Introduction to skin and fascia, Skin components and layers, types of skin, Fascia, Appendages of skin, Functions	<b>7 hrs</b>
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>																	
Terminology	General anatomy includes introduction to anatomy, Terminology related to anatomy, Different anatomical planes and subdivisions																	
Bone	Skeleton system with classification, types of bone, features of long bone, ossification, blood supply																	
Joints	General classification with examples, structure of typical synovial joints, Classification of synovial joint with examples, Fibrous joints, Cartilaginous joints, Nomenclature																	
Muscles	General features of muscles, classification with examples, types of skeletal muscles, Structures associated with muscle, Cardiac muscle and Smooth muscle, Functions, Naming of muscles																	
Cardiovascularsystem	Types of circulations, Classification of blood vessels, Anastomosis, Collateral circulation, End arteries, Vasa vasorum																	
Nervous System	Subdivisions of nervous system, Spinal cord and spinal segments, nerve fibers and myelination, Autonomic nervous system																	
IntegumentarySystem	Introduction to skin and fascia, Skin components and layers, types of skin, Fascia, Appendages of skin, Functions																	
<b>2.</b>	<p><b>General Histology</b></p> <table border="1"> <thead> <tr> <th data-bbox="217 1525 464 1615"><b>Name of the Subunit</b></th> <th data-bbox="464 1525 1273 1615"><b>Topics covered under each subunit</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="217 1615 464 1798">Epithelium and glandular tissue</td> <td data-bbox="464 1615 1273 1798">Classification of epithelia, Simple epithelium and types, Stratified epithelium and types, Goblet cells, Transitional epithelium, Basement membrane, Surface projections and junctions, Classification of glandular tissue with suitable examples</td> </tr> <tr> <td data-bbox="217 1798 464 1935">Connectivetissue</td> <td data-bbox="464 1798 1273 1935">Components of connective tissue, Fibres, Ground substance, Cells of connective tissue, Loose connective tissue, Dense connective tissue, Adipose tissue</td> </tr> </tbody> </table>	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	Epithelium and glandular tissue	Classification of epithelia, Simple epithelium and types, Stratified epithelium and types, Goblet cells, Transitional epithelium, Basement membrane, Surface projections and junctions, Classification of glandular tissue with suitable examples	Connectivetissue	Components of connective tissue, Fibres, Ground substance, Cells of connective tissue, Loose connective tissue, Dense connective tissue, Adipose tissue	<b>6 hrs</b>										
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>																	
Epithelium and glandular tissue	Classification of epithelia, Simple epithelium and types, Stratified epithelium and types, Goblet cells, Transitional epithelium, Basement membrane, Surface projections and junctions, Classification of glandular tissue with suitable examples																	
Connectivetissue	Components of connective tissue, Fibres, Ground substance, Cells of connective tissue, Loose connective tissue, Dense connective tissue, Adipose tissue																	

	Skeletal system	Classification of cartilage with examples, Composition of Cartilage and bone, Cells of bone, Bone matrix, Microscopic anatomy of bones	
	Muscular system	Microscopic structure of skeletal muscle, cardiac muscle and smooth muscle, Differences between the muscle structures	
	Cardiovascular system and nervous system	Microscopic structure of Medium sized artery, Elastic artery, Vein, Structure of neuron, neuroglia, peripheral nerve, Ganglia	
	Lymphoid system	Cells of lymphoid system, Lymphatic vessels, Microscopic structure of lymphnode, thymus, spleen and tonsil	
<b>3.</b>	<b>Unit:3 General Embryology:</b>		
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	Introduction to Embryology and cell cycles	Basic terminology, Stages of human development, Cell Cycle, Cell division – Mitosis and Meiosis, related abnormalities	
	Gametogenesis	Primordial germ cells, Spermatogenesis, Spermogenesis, Oogenesis	
	Female reproductive Cycles	Ovarian cycle, Structure of Ovum, Changes in Menstrual cycle, Strata of endometrium	
	Fertilization	Definition, Stages of fertilization, Effects of fertilization	
	First week of development	Cleavage division, blastocyst, Implantation, Normal and abnormal sites of implantation and related applied embryology	
	Second week of development	Formation of 2 germ layers, Yolk sac, Chorion and amnion	
	Third week of development	Gastrulation, Notochord, Neurulation, Folding of embryo	
	Placenta	Fetal membranes, Chorionic villi, Placenta formation, functions of placenta, Umbilical cord	
			<b>7 hrs</b>
	<b>Total</b>		<b>60 hrs</b>

<b>Unit no.</b>	<b>Practical Topics</b>	<b>Hours allotted No. of---hrs</b>
1.	General Anatomy <ul style="list-style-type: none"> <li>• Bone</li> <li>• Joints</li> </ul>	10 hr
2.	<b>General Histology</b> <ul style="list-style-type: none"> <li>• Epithelium</li> <li>• Connective tissue</li> <li>• Cartilage and Bone</li> <li>• Muscular tissue</li> <li>• Vascular tissue</li> <li>• Skin and fascia</li> <li>• Lymphoid Tissue</li> <li>• Nervous tissue</li> </ul>	10 hrs
3.	<b>General Embryology</b> <ul style="list-style-type: none"> <li>• Gametes and Gametogenesis</li> <li>• Cleavage and blastulation</li> <li>• Implantation and Abnormal sites of Implantation</li> <li>• Formation and derivatives of three germ layers</li> <li>• Notochord formation and Neurulation</li> <li>• Folding of embryo</li> <li>• Placenta</li> </ul>	10 hrs
	<b>Total</b>	<b>30 hrs</b>

**Reference Books:**

1. B D Chaurasia Vol-1,2 and 3
2. Vishram Singh Vol-1,2,and 3
3. General Anatomy- B.D.Chaurasia
4. General Histology – Krishna Garg
5. General Embryology – Inderbir Singh



## M.Sc. MEDICAL ANATOMY SEMESTER - 2 SYLLABUS

Hours dedicated for every week: 6 (Theory: 4 Practical: 2)

<p><b>CourseObjective</b> ( Teaching Objectives)</p>	<ul style="list-style-type: none"><li>• To teach basic Anatomical concepts related to upper limb and thorax and related embryology</li></ul>
<p><b>Course Outcomes</b> ( learning Objectives)</p>	<ul style="list-style-type: none"><li>• Muscles of Pectoral region, muscles of arm, Axilla, spaces of axilla, Cubital fossa , muscles of forearm, intrinsic muscles of palm, flexor and extensor retinacula, carpal tunnel and syndrome, Brachial plexus and related nerves</li><li>• Upper limb skeleton :Clavicle, Scapula, Humerus, Shoulder joint, Elbow joint, Radius, Ulna,</li><li>• Radioulnar joints, Wrist joint, Bones of hand</li><li>• Muscles of thoracic cage Intercostal space, Intercostal muscles, respiratory movement so to understand the basic anatomical concepts of Respiratory system</li><li>• Respiratory System</li><li>• Sagittal section of HFN</li><li>• Larynx and Trachea</li><li>• Lung</li><li>• Bones of thorax</li><li>• Structures in Mediastinum</li><li>• Paranasal Air Sinuses</li><li>• Cardiovascular System</li><li>• Exterior of heart</li><li>• Interior of heart</li><li>• Major vessels related to heart</li></ul>

<b>Unit no.</b>	<b>Practical Topics</b>	<b>Hours allotted No. of--hrs</b>
<b>1.</b>	<b>Respiratory System</b> <ul style="list-style-type: none"> <li>• Sagittal section of HFN</li> <li>• Larynx and Trachea</li> <li>• Lung</li> <li>• Bones of thorax</li> <li>• Structures in Mediastinum</li> <li>• Paranasal Air Sinuses</li> </ul>	<b>15 hrs</b>
<b>2.</b>	<b>Cardiovascular System</b> <ul style="list-style-type: none"> <li>• Exterior of heart</li> <li>• Interior of heart</li> <li>• Major vessels related to heart</li> </ul>	<b>15 hrs</b>
	<b>Total</b>	<b>30 hrs</b>

**Reference Books:**

1. B D Chaurasia Vol-1,2 and 3
2. Vishram Singh Vol-1,2,and 3
3. NeuroAnatomy- Inderbir Singh

## **SYLLABUS FOR THIRD SEMESTER HEAD AND NECK**

<b>Unit no.</b>	<b>Theory Topics</b>	<b>Hours allotted No. of--hrs</b>														
	<table border="1" style="width: 100%;"> <thead> <tr> <th><b>Name of the Subunit</b></th> <th><b>Topics covered under each subunit</b></th> </tr> </thead> <tbody> <tr> <td>Nose and Nasal Cavities</td> <td>General anatomy of Nose, Nasal Septum, Lateral wall of the Nose</td> </tr> <tr> <td>Larynx</td> <td>Gross features of larynx, Cartilages of larynx, Muscles of larynx, Blood and Nerve supply of larynx</td> </tr> <tr> <td>Trachea</td> <td>Trachea features, Tracheobronchial tree</td> </tr> <tr> <td>Tongue</td> <td>Gross features, Divisions, Muscles of tongue, Blood Supply, Nerve Supply in detail.</td> </tr> <tr> <td>Soft Palate</td> <td>Gross features, Muscles of soft palate, Blood and nerve supply of soft palate</td> </tr> <tr> <td>Pharynx</td> <td>Gross features, Subdivisions, Features of Naso pharynx, Features of Oropharynx, Features of Laryngo Pharynx, Muscles of Pharynx, Blood and Nerve Supply.</td> </tr> </tbody> </table>	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	Nose and Nasal Cavities	General anatomy of Nose, Nasal Septum, Lateral wall of the Nose	Larynx	Gross features of larynx, Cartilages of larynx, Muscles of larynx, Blood and Nerve supply of larynx	Trachea	Trachea features, Tracheobronchial tree	Tongue	Gross features, Divisions, Muscles of tongue, Blood Supply, Nerve Supply in detail.	Soft Palate	Gross features, Muscles of soft palate, Blood and nerve supply of soft palate	Pharynx	Gross features, Subdivisions, Features of Naso pharynx, Features of Oropharynx, Features of Laryngo Pharynx, Muscles of Pharynx, Blood and Nerve Supply.	<b>12 hrs</b>
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>															
Nose and Nasal Cavities	General anatomy of Nose, Nasal Septum, Lateral wall of the Nose															
Larynx	Gross features of larynx, Cartilages of larynx, Muscles of larynx, Blood and Nerve supply of larynx															
Trachea	Trachea features, Tracheobronchial tree															
Tongue	Gross features, Divisions, Muscles of tongue, Blood Supply, Nerve Supply in detail.															
Soft Palate	Gross features, Muscles of soft palate, Blood and nerve supply of soft palate															
Pharynx	Gross features, Subdivisions, Features of Naso pharynx, Features of Oropharynx, Features of Laryngo Pharynx, Muscles of Pharynx, Blood and Nerve Supply.															

Thyroid Gland and Parathyroids	Gross features of thyroid gland, coverings, Surfaces and relations, blood supply, Applied anatomy and Parathyroids
Pituitary Gland	Gross features, Parts and divisions, Relations, Composition, Blood supply and Functions

### SYLLABUS FOR IVTH SEMESTER

**Hours dedicated for every week: 6 (Theory: 4 Practical: 2)**

<b>Course Objective ( Teaching Objectives)</b>	<ul style="list-style-type: none"> <li>To teach basic Anatomical concepts related to Abdomen and Lower limb</li> </ul>
<b>Course Outcomes ( learning Objectives)</b>	<ul style="list-style-type: none"> <li>To teach basic Anatomical concepts related to Abdomen and Lower limb</li> </ul>

<b>Gastrointestinal System:</b>		<b>16 hrs</b>
<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	

	3.1 Tongue	Gross features, Divisions, Muscles of tongue, Blood Supply, Nerve Supply in detail.		
	3.2 Soft Palate	Gross features, Muscles of soft palate, Blood and nerve supply of soft palate		
	3.3 Pharynx	Gross features, Subdivisions, Features of Naso pharynx, Features of Oropharynx, Features of Laryngo Pharynx, Muscles of Pharynx, Blood and Nerve Supply.		
	3.4 Peritoneum	Divisions, Peritoneal reflections, Peritoneal Folds, Lesser Sac		
	3.5 Oesophagus and Stomach	Oesophageal -divisions, Muscles, Constrictions, Blood and nerve supply. Stomach – Gross features, Surfaces and relations, Interior, Blood and Nerve Supply		
	3.6 Small Intestine	Duodenum- Features, divisions, Interior, relations, Blood and nerve supply, General features of Jejunum and Ileum, Differences between each part of small intestine.		
	3.7 Large intestine	Features, divisions, Cecum in detail, Appendix in detail, Blood supply, Differences between small and large intestine.		
	3.8 Rectum and Anal Canal	Rectum – Features, Interior, Folds, Blood supply and Nerve supply, Anal canal – Features, Muscles, Interior, Clinical Anatomy.		
	3.9 Liver and Extra hepatic biliary apparatus (EHBA)	Liver – gross features, Segments, lobes, Surfaces and relations, Porta hepatis, Blood supply, EHBA – Gall bladder, Cystic duct, Bile ducts		
	3.10 Pancreas	Gross features, Surfaces and relations, Blood supply and Applied anatomy		
	3.11 Spleen	Gross features, Surfaces and relations, Blood supply and Applied anatomy		
	3.12 Abdominal Aorta	Features, Branches and relations		
	<b>Genitourinary system:</b>			
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>		
	4.1 Kidney	Gross features, Surfaces and relations, Interior, Blood supply, Applied Anatomy		
	4.2 Ureter and Urinary Bladder	Ureter - Gross features, Extensions and divisions, Constrictions, Blood supply, Applied Anatomy, Urinary Bladder - Gross features, Surfaces and relations, Interior, Blood supply, Applied Anatomy		
	4.3 Male reproductive system	Testis – Gross features, Surfaces and coverings, Relations, Interior, Blood supply, Applied Anatomy, Epididymis, Vas deferens, Prostrate, and External genitalia of Male.		
	4.4 Female Reproductive System	Uterus – Gross features, Surfaces and relations, Supports of uterus, Interior and Blood supply. Ovaries – Surfaces, relations, Blood supply, Fallopian tubes –		<b>10 hrs</b>

		parts, relations, blood supply	
	4.5 Urethra	Male And Female urethra – Extension, parts, relations, interior, applied.	
	<b>Unit:5 Endocrine System:</b>		
	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	5.1 Thyroid Gland and Parathyroids	Gross features of thyroid gland, coverings, Surfaces and relations, blood supply, Applied anatomy and Parathyroids	<b>3 hrs</b>
	5.2 Pituitary Gland	Gross features, Parts and divisions, Relations, Composition, Blood supply and Functions	
	5.3 Suprarenal Gland	Gross features, Coverings, Relations, Blood supply	

## SYLLABUS FOR VTH SEMESTER

### NEUROANATOMY

	<b>Name of the Subunit</b>	<b>Topics covered under each subunit</b>	
	6.1 Meninges and Dural Venous Sinuses	Meninges, Dural folds, Dural venous sinuses- Classification, Cavernous sinus in detail	<b>13 hrs</b>
	6.2 Spinal Cord	External features, Parts and divisions, Section of spinal cord showing ascending and descending tracts, Spinal nerves, Blood supply	
	6.3 Brain Stem	External features of medulla, Pons and Midbrain, Fourth ventricle	
	6.4 Cerebellum	Gross features, Lobes and fissures, surfaces and relations, Blood supply and Applied Anatomy	
	6.5 Cerebrum	Sulci and Gyri, Functional areas of brain, White matter of the brain, Lateral ventricle, Third ventricle, Blood supply of brain	
	6.6 Cranial nerves	Cranial nerves – I-XII, Facial nerve in detail, Hypoglossal nerve in detail, Trigeminal nerve in detail.	
	<b>Total</b>		





<b>M. Sc. Medical Students</b>		
<b>Syllabus for Vth Semester</b>		
	No. of Hours	
<b>I. Research Methodology:</b>	Theor y	Practic al
<b>Scientific Methods of Research :</b> Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research , Research Methods versus Methodology, Different Steps in Writing Report, Technique of Interpretation, Precaution in interpretation, Significance of Report Writing, Layout of the Research Report	5	—
<b>Research Designs:</b> Prospective, retrospective, Observational Studies: Descriptive, explanatory, and exploratory, Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, Cohort Studies, Case Control Studies, Cross sectional studies, Intervention studies, Panel Studies.	5	—
<b>Sampling Designs :</b> Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs (Probability sampling and non probability sampling), How to Select a Random Sample?, Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	4	0
<b>Measurement in research:</b> Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling Meaning of Scaling, Scale Classification Bases, Important Scaling Techniques, Scale Construction Techniques, Possible sources of error in measurement, Tests of sound measurement	5	5
<b>Methods of Data Collection:</b> Types of data, Collection of Primary Data, Observation Method, Interview Method, Collection of Primary Data	3	0
<b>Ethics and Ethical practice in research and plagiarism</b>	1	
<b>Sampling Fundamentals :</b> Need and importance for Sampling, Central Limit Theorem, Sampling Theory, Concept of Standard Error, Estimation, Estimating the Population Mean Estimating Population Proportion, Sample Size and its Determination, Determination of Sample Size through the Approach Based on Precision Rate and Confidence Level.	5	2
<b>II. Biostatistics</b>		

<b>Data Presentation</b> : Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, one way scatter plots, Box plots, two way scatter plots, line graphs	3	3
<b>Measures of Central Tendency and Dispersion</b> : Mean, Median, Mode Range, Inter quartile range, variance and Standard Deviation, Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	3	3
<b>Testing of Hypotheses:</b> Definition, Basic Concepts, Procedure for Hypothesis Testing, Normal distribution, data transformation Important Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples, Hypothesis Testing of Proportions, Hypothesis Testing for Difference between Proportions, Testing the Equality of Variances of Two Normal Populations.	6	6
<b>Chi-square Test:</b> Chi-square as a Non-parametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	2	2
<b>Measures of Relationship:</b> Need and meaning, Correlation and Simple Regression Analysis	2	2
<b>Analysis of Variance and Covariance:</b> Analysis of Variance (ANOVA): Concept and technique of ANOVA, One-way ANOVA, Two-way ANOVA, ANOVA in Latin-Square Design Analysis of Co-variance (ANOCOVA), ANOCOVA Technique.	4	4
<b>Nonparametric or Distribution-free Tests:</b> Important Nonparametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test Kruskal Walli's test, Friedman's test, and Spearman Correlation test.	3	3
<b>Vital Health Statistics:</b> Measurement of Population: rate, crude rate, specific rate, <i>Measurement of fertility:</i> specific fertility rate, Total fertility rate, <i>Reproduction rate,</i> Gross Reproduction Rate, Net Reproduction Rate, Measures related to mortality: Crude Death Rate (CDR) , Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	4	3
<b>Computer Application</b> Use of Computer in data analysis and research, Use of Software and Statistical package.	0	2
<b>Total hours</b>	55	35

**SYLLABUS FOR VI SEMESTER  
RECENT ADVANCEMENTS IN ANATOMY  
CYTOGENETICS**

- **Anatomy relevant to common surgical conditions and related procedures**
- **Collection, maintenance and application of stem cells, cryobanking and principles of organ donation from recently dead bodies.**
- **Exposure to the following is desirable:**
- **Training in Medical Audit,**
- **Management, Health Economics,**
- **Health Information System, exposure to human behavior studies, knowledge of pharmaco – economics and introduction to non- linear mathematics.**