

**Subject No. 3**  
**GENERAL HUMAN ANATOMY AND GENERAL HUMAN PHYSIOLOGY**  
**SECTION 'A': GENERAL HUMAN ANATOMY**

Total Hours: 60

Theory Hours. : 60

**AIM:**

- The course is designed to assist students to acquire the knowledge of the normal structure of human body & functions and to ensure that the students to understand the alternation in anatomical structure and function in disease and practice of Nursing.

**OBJECTIVES:**

At the end of the course the students will be able to:

- Describe the general structure and functions of the body as a whole.
- Describe the general and microscopic structure and functions of each organ of the body.
- Explain the macroscopic and microscopic structure and functions of each organ in diseases as whole.
- Understand the effects of alterations in structures and functions of as whole.
- Apply the knowledge of anatomy and physiology in the practice of nursing.

**COURSE CONTENT:**

**Unit I – Introduction:**

- Describe the anatomical terms, Organization of human body Systems. Cell & Cell division (Tissues including glands). Regions. Cavities. Membranes. Applications and implications in Nursing. [Aging and Cells](#)

**Unit II - Skeletal System:**

- Axial and Appendicular Skeleton. Bone formation and growth, Description of bones. Joint – classification and structure. Alterations in disease. Applications and implications in nursing. ageing and bone tissue

**Unit III - Muscular System:**

- Types and structure of muscles. Muscle groups. Alteration in disease. Application and implications in nursing

**Unit IV - Nervous System:**

- Structure of neuralgia and neurons. Somatic nervous system – structure of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves. Autonomic nervous system – sympathetic, parasympathetic – structure and location.
- Alteration in disease, Application and implications in nursing.

**Unit V - The Sensory Organs:**

- Structure of skin, eye, ear, nose, tongue, (Auditory and olfactory apparatus). Alterations in disease

## Applications and implications in nursing

### **Unit VI - Circulatory and lymphatic system and Lymphatic system:**

- The Circulatory System: Blood - Microscopic structure. Structure of Heart. Structure of blood vessels - Arterial & Venous System. Circulation: systemic, pulmonary, coronary and portal.
- Lymphatic vessels and lymph. Lymphatic tissues- Thymus gland, Lymph nodes, Spleen, Lymphatic nodules, Alterations in disease. Applications and implications in nursing. Immunity

### **Unit VII – The Respiratory System:**

- Structure of the organs of respiration. Muscles of respiration: Intercostals and Diaphragm. Alterations in disease Applications and implications in nursing

### **Unit VIII- The Digestive System:**

- Structure of Alimentary tract and accessory organs of digestion. Alterations in disease. Applications and implications in nursing.

### **Unit IX - The Excretory System (Urinary):**

- Structure of organs of urinary System: Kidney, ureters, urinary bladder, urethra. Structure of skin. Alterations in disease. Applications and implications in nursing.

### **Unit X - The Endocrine System:**

- Structure of Pituitary, Pancreas thyroid, Parathyroid, thymus and adrenal glands. Alterations in disease. Applications and implications in nursing.

### **Unit XI - The Reproductive system including breast:**

- Structure of female reproductive organ. Structure of male reproductive organ. Structure of breast. Alterations in disease. Applications and implications in nursing.

<i>Unit No. with total hours</i>	<i>Objectives</i>	<i>Contents with distributed hours</i>		
		<i>Must know</i>	<i>Desirable to know</i>	<i>Nice to know</i>
I (5 hours)	At the end of unit students are able to <b>Knowledge:</b> Define anatomical terms and cell. Understand and describe cell division. <b>Skill:</b> Use this knowledge while providing nursing care in clinical settings. <b>Attitude:</b> Correlate with nursing practice.	<b>Introduction</b> <ul style="list-style-type: none"> <li>Describe the anatomical terms, Organization of human body Systems.</li> <li>Human cells structure</li> <li>Tissues-definition, types, characteristics, classification, location, function and formation</li> <li>Members and glands classification and structure. (3 hours.)</li> </ul>	<ul style="list-style-type: none"> <li>Alterations in disease.</li> <li>Applications and implications in Nursing</li> <li><b>Aging and Cells</b> (2 hours.)</li> </ul>	

### Unit I : Introduction

Course Outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Define anatomical terms and describe the organization of human body system.	3	3	2	2	2	2	1
CO-2: Define cell and illustrate cell division and outline the human cell structure.	3	3	3	2	2	2	2
CO-3: Define tissue and explain its types, characteristics, classification, location and formation	3	3	3	2	2	2	1

CO-4: Classify the membranes, glands and outline the structure of membranes and glands.	3	3	3	2	2	2	1
CO-5: Determine the relationship between aging and cells.	3	2	2	2	2	2	1
CO-6: Identify the alterations in disease correlated to cell, tissue, membranes and glands and application of it in clinical practice.	3	3	2	3	3	2	2

II (6 hours)	<p>At the end of unit students are able to</p> <p><b>Knowledge:</b> Understand and describe skeletal system.</p> <p><b>Skill:</b> Identify patient's condition and render comprehensive care.</p> <p><b>Attitude:</b> Contribute in improving the quality of nursing practice.</p>	<p><b>The Skeletal System</b></p> <ul style="list-style-type: none"> <li>• Bones – types, structure Axial and Appendicular Skeleton.</li> <li>• Bone formation and growth.</li> <li>• Description of bones</li> <li>• Joint – classification and structure (4 hours.)</li> </ul>	<ul style="list-style-type: none"> <li>• Alterations in disease</li> <li>• Applications and implications in Nursing, ageing and bone tissue. (2 hours.)</li> </ul>
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**Unit II - Skeletal System**

Course Outcome	Program Outcome						
	Clinician/ Nurse educator	Professional	Communicat or	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Classify bones	3	3	2	2	3	2	1

based on their shape and outline the structure of each type of bones.							
CO-2: Explain how the skeleton is divided into axial and appendicular divisions.	3	3	2	2	3	2	1
CO-3: Describe the steps of intra-membranous and endochondral ossification and explain the process involved in bone remodeling.	3	2	2	1	2	2	1
CO-4: Identify and determine the structure of 206 bones with diagram.	3	3	2	2	3	2	2
CO-5: Interpret the structural classifications of joints.	3	3	2	2	3	2	2
CO-6: Associate the effects of aging on bone tissue.	2	2	2	1	2	1	1
CO-7: Relate the alterations in disease related to bones and joint and application of it in clinical practice.	3	3	2	3	3	2	2
III (7 hours)	At the end of unit students are able to <b>Knowledge:</b> Understand and describe type and structure of muscles. <b>Skill:</b> Utilize this knowledge in rendering nursing care.			<b>The Muscular System</b> • Types and structure of muscles • Muscle groups.  (4 hours.)		Application and implications in nursing. (2 hours.)	• Alteration in disease (1 hour)

Unit III -The Muscular System							
Course outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Identify and describe the types of the muscles.	3	3	2	1	2	2	1
CO-2: Describe the relationship between bones and skeletal muscles in producing body movements.	3	3	2	2	2	2	1
CO-3: Explain the structure of muscles and muscle groups.	3	3	2	2	2	2	1
CO-4: Describe the movements of muscles.	3	2	2	2	2	2	1
CO-5: Discuss abnormal conditions related to muscles.	3	2	2	2	2	2	2
IV (6 hours)	At the end of unit students are able to <b>Knowledge:</b> Acquire the knowledge on central and peripheral nerves system (spinal cord, cerebrum, and cerebellum). <b>Skill:</b> Apply this knowledge in nursing practice. <b>Attitude:</b> Contribute in improving quality of nursing care.			<b>The Nervous System</b> <ul style="list-style-type: none"> <li>• Structure of neuroglia and neurons.</li> <li>• Somatic nervous system</li> <li>• Structure of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves.</li> <li>• Autonomic nervous system – sympathetic, parasympathetic – structure and location.</li> </ul>		<ul style="list-style-type: none"> <li>• Application and implications in nursing. (1 hour)</li> </ul>	<ul style="list-style-type: none"> <li>• Alteration in disease. (1 hour)</li> </ul>

		(4 hours.)		
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**Unit IV-The Nervous System**

Course Outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: List the structures of the nervous system and explain the structure neurons and neuroglia.	3	3	2	2	2	2	1
CO-2: Describe the organization of the nervous system.	3	3	2	2	3	2	1
CO-3: Describe the protective structures and the gross anatomical features of the spinal cord.	3	3	2	2	3	2	1
CO-4: Describe how spinal nerves are connected to the spinal cord.	3	3	2	2	3	2	1
CO-5: Describe the components, connective	3	3	2	2	3	2	1

tissue coverings, and branching of a spinal nerve.							
CO-6: Define plexus, and identify the distribution of nerves of the cervical, brachial, lumbar, and sacral plexuses.	3	3	2	2	2	2	1
CO-7: Identify the major parts of the brain and their structure and identify the cranial nerves by name, number, and type of each.	3	3	2	2	2	2	1
CO-8: Explain the structure and location autonomic nervous system : sympathetic and parasympathetic	3	3	2	2	2	2	1
CO-9: Relate the alterations in disease related to structure of nervous system and application of it in clinical practice.	3	3	2	3	3	2	2
V (6 hours)	At the end of unit students are able to <b>Knowledge:</b> Acquire the knowledge on different sensory organs and describe functions of each sensory organ. <b>Skill:</b> Assess the patient with sensory alteration. <b>Attitude:</b> Incorporate this knowledge in nursing practice.			<b>The Sensory Organ</b> • Structure of skin, eye, ear, nose, tongue, (Auditory and olfactory apparatus). (4 hours.)		• Applications and implications in nursing. (1 hour)	• Alteration in disease.  (1 hour)

Course Outcome		Program Outcome						
		Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Describe the structure and accessory structure of the skin.		3	3	2	2	3	2	1
CO-2: List and describe the accessory structures of the eye and the structural components of the eyeball with labeled diagram		3	3	2	2	3	2	1
CO-3: Describe the anatomy of the structures in the three main regions of the ear with labeled diagram		3	3	2	2	3	2	1
CO-4: Illustrate the anatomy of olfactory receptors (Nose).		3	3	2	3	3	2	1
CO-5: Contrast the anatomy of taste buds and papillae (Tongue).		3	3	2	2	3	2	1
CO-6: Relate the alterations in disease related to skin, eye, ear, nose and application of it in clinical practice.		3	3	2	3	3	2	2
VI (7 hours)	At the end of unit students are able to <b>Knowledge: Acquire</b> knowledge about structure of heart, blood vessel. Acquire knowledge and describe regarding types of circulation. Understand and explain the structure and function of lymphatic system. <b>Skill: Perform</b> nursing care effectively in cardiac unit. Identify lymph glands involvement in various disease conditions.	<b>The Circulatory System and Lymphatic System</b> <b>The Circulatory System</b>			<ul style="list-style-type: none"> <li>• Applications and implications in nursing</li> <li>• <b>Immunity</b></li> </ul>		<ul style="list-style-type: none"> <li>• Alteration in disease.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Blood - Microscopic structure,</li> <li>• Structure of Heart</li> <li>• Structure of blood vessels - Arterial &amp; Venous System.</li> <li>• Circulation: systemic, pulmonary, coronary. (3</li> </ul>			(2 hours.)		(1 hour)	

	<b>Attitude:</b> Incorporate knowledge in practice.	hours) <b>Lymphatic system</b> <ul style="list-style-type: none"> <li>Lymphatic vessels and lymph. Lymphatic tissues- Thymus gland, Lymph nodes, Spleen, Lymphatic nodules. (1 hour)</li> </ul>		
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**Unit VI: The Circulatory System and Lymphatic System**

Course Outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Explain microscopic structure of blood cells	3	3	2	2	2	2	1
CO-2: Describe the location of the heart, Describe the structure of the pericardium and the heart wall and discuss the external and internal anatomy of the chambers of the heart.	3	3	2	2	3	2	2
CO-3: Contrast the structure of arteries, arterioles, capillaries, venules, and veins and Outline the vessels through which the blood moves in its passage from the heart to the capillaries and back.	3	3	2	2	3	2	1

CO-4: Outline the flow of blood through the chambers of the heart and through the systemic and pulmonary circulations and discuss the coronary circulation.	3	3	2	3	3	2	1
CO-5: Explain the components of the lymphatic system; discuss the structure of the lymph, lymph vessels and lymph nodes and circulation of lymph.	3	3	2	2	3	2	1
CO-6: List down alteration in disease of cardiovascular system and lymphatic system and application of it in clinical practice.	3	3	2	3	3	2	2

VII (5 hours)	At the end of unit students are able to <b>Knowledge:</b> Acquire knowledge of different components of respiratory systems such as lungs, bronchus, and their functions. <b>Skill:</b> Render quality nursing care to patients with respiratory disorders.	<b>The Respiratory System</b> <ul style="list-style-type: none"> <li>Structure of the organs of respiration</li> <li>Muscles of respiration: Intercostals and Diaphragm. (3 hours)</li> </ul>	<ul style="list-style-type: none"> <li>Applications and implications in nursing. (1 hour)</li> </ul>	<ul style="list-style-type: none"> <li>Alteration in disease. (1 hour)</li> </ul>
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Unit VII The Respiratory System

Course outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Describe the anatomy of the nose, pharynx, larynx, trachea, bronchi, and lungs.	3	3	2	2	2	2	2
CO-2: Describe about the	3	3	2	1	2	2	1

muscles of respiration.								
CO-3: List down alteration in disease of upper and lower respiratory structures and its application in clinical practice.		3	3	2	3	3	2	2
VIII (06 hours)	At the end of unit students are able to <b>Knowledge:</b> Enlist organs participating in the process of digestion and describe their structures. <b>Skill :</b> Render quality nursing care to the patients with problem of digestive system	<b>The Digestive System</b> • Structure of Alimentary tract and accessory organs of digestion (4 hours)			• Applications and implications in nursing. (1 hour)	• Alterations in disease. (1 hour)		
<b>Unit VIII: The Digestive System</b>		Program Outcome						
		Clinician/ Nurse educator	Profession al	Communica tor	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Identify the organs of the digestive system (alimentary tract) and describe the structure of alimentary tract and the accessory organs of digestion.		3	3	2	3	3	2	2
CO-2: List down alteration in disease of alimentary tract and its application in clinical practice.		3	3	2	3	3	2	2
IX (4 hours)	At the end of unit students are able to <b>Knowledge:</b> Acquire knowledge regarding structure of kidney, ureters, urinary bladder, and urethra. <b>Skill:</b> Contribute as member of health team in providing nursing care to the	<b>The Excretory System</b> • Structure of organs of urinary system: kidney, ureters, urinary bladder, urethra. • Structure of skin. (2 hours)			• Applications and implications in nursing. • Alterations in disease			

	patients With excretory systems disorders. <b>Attitude:</b> Contribute in improving quality of care of patients in CKD.		(2 hours.)	
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### Unit IX The Excretory System

Course Outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Explain the structure of organs of urinary system: kidneys, ureters, urinary bladder and urethra.	3	3	2	3	3	2	2
CO-2: Identify the alternation of disease related to kidneys, ureters, urinary bladder and urethra, and its application in clinical practice.	3	3	2	3	3	2	2

X (4 hours)	At the end of unit students are able to <b>Knowledge:</b> Describe the structure of endocrine glands. <b>Skill:</b> Provides nursing care for patients with endocrine disorders. <b>Attitude:</b> Contribute in improving quality of care of patients.	<b>The Endocrine System</b> • Structure of Pituitary, Pancreas, Thyroid, Parathyroid, Thymus and adrenal glands. (2 hours.)	• Applications and implications in nursing. • Alterations in disease (2 hours.)
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### Unit X: The Endocrine System

Course Outcome	Program Outcome						
	Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Explain the structure of pituitary, pancreas, thyroid, parathyroid, thymus	3	3	2	2	3	2	1

and adrenal glands.								
CO-2: Identify the alternation of disease related to pituitary, pancreas, thyroid, parathyroid, thymus and adrenal glands and its application in clinical practice.		3	3	2	3	3	2	2
XI (4 hours)	At the end of unit students are able to <b>Knowledge:</b> Describe the structure of reproductive organs. <b>Skill:</b> Provide nursing care to the patients with disorders of reproductive system. <b>Attitude:</b> Contribute in improving quality of care of patients.	<b>The Reproductive System including breast</b> <ul style="list-style-type: none"> <li>• Structure of female reproductive organ.</li> <li>• Structure of male reproductive organ.</li> <li>• Structure of breast. (2 hours.)</li> </ul>			<ul style="list-style-type: none"> <li>• Applications and implications in nursing.</li> <li>• Alterations in disease (2 hours.)</li> </ul>			
<b>Unit XI: The Reproductive System including breast</b>								
<b>Course Outcome</b>		<b>Program Outcome</b>						
		Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO-1: Explain the structure of female reproductive organs and structure of breast.		3	3	2	2	3	2	1
CO-2: Describe the structure of male reproductive organs.		3	3	2	2	3	2	1
CO-3: Identify the alternation of disease related to female and male reproductive organs and its application in clinical practice.		3	3	2	3	3	2	2

**TEACHING STRATEGY:**

- Lecture -60 hours
- Total teaching hours -60 hours

**TEACHING METHODS:**

- Lecture, Group Discussion, Demonstration, Integrated teaching program and **Modified tutorial**

**A.V.AIDS:**

- Over head Projector, L.C.D, Computer Assisted learning
- Flip charts, Posters, Black Board, Models.

**ASSIGNMENTS: Theory:**

Theory:

Sr. No	Assignments	No./Quantity	Marks Per Assignment	Total Marks
1	Assignment Book	One- Minimum Ten assignments	20	40
2	Home assignment	One	20	

- While calculating Internal Assessment –Marks obtained in the assignments of General Human Anatomy and Physiology shall be amalgamated as one subject, ‘General Human Anatomy and Physiology.

**LIST OF RECOMMENDED BOOKS:**

- Chakravorthy N. Chakravorthy D. Fundamentals of Human Anatomy
- Chaurasia B.D, Human anatomy.
- Jackson seiles, Anatomy and physiology for nurses.
- April E. N., Anatomy pre-test
- Tortora, J. Gerard and Anagnostakos P Nicholas Principles of anatomy and physiology