

Subject No. 3
GENERAL HUMAN ANATOMY AND GENERAL HUMAN PHYSIOLOGY
SECTION 'B' - GENERAL HUMAN PHYSIOLOGY

Total Hours: 60

Theory Hours: 53

Lab Hours: 7

AIM:

- This course gives the students a broad understanding of human physiology and to apply the same in the clinical nursing practice.

OBJECTIVES:

At the end of course, the students are able to:

- The general function of the body as a whole.
- The general function of each systems of the body.
- The function of each microscopic structure of the body.

COURSE CONTENT:

Unit I – Introduction:

- Physiology of cell, tissues membranes and glands. Tissue-formation, repair. Membranes & glands – functions.
- Alterations in disease. Applications and implications in nursing.

Unit II - Skeletal System:

- Bone formation & growth. Bones – Functions and movements of bones of axial and appendicular skeleton, bone healing. Joints and joint movement.
- Alterations in disease. Applications and implications in nursing.

Unit III – Muscular System

- Muscle movements and muscle tone. Physiology of muscle contractions.
- Alterations in disease. Applications and implications in nursing.

Unit IV – Nervous System:

- Functions of Neuralgia & neurons. Stimulus & nerve-impulse -definitions and mechanism. Functions of brain, spinal cord, cranial and spinal nerve. Cerebrospinal fluid-Composition, circulation and function. Reflex arc, Reflex action and reflexes Autonomic functions. Pain: somatic, visceral, and referred Autonomic learning and biofeedback.

Unit V - Circulatory System:

- Blood formation, composition, blood groups, blood coagulation. Hemoglobin: Structure, Synthesis and breakdown, Variation of molecules, estimation. Functions of Heart, Conduction, Cardiac cycle, circulation Principles, Control, factors influencing BP and Pulse.

- Alternations in disease. Applications and implications in nursing.

Unit VI - The Respiratory system:

- Physiology of respiration. Functions of respiratory organs. Regulation of respiration. Pulmonary ventilation, Volume. Mechanics of respiration. Gaseous exchange in lungs. Carriage of oxygen & carbon-dioxide. Exchange of gases in tissues.
- Alternations in disease Applications and implications in nursing

Unit VII - The Digestive System:

- Functions of organs of digestive tract. Movements of alimentary tract. Digestion in mouth, stomach small intestines, Large intestines. Absorption of food. Functions of liver, gall bladder and pancreas. Metabolism of carbohydrates protein and fat.
- Alternations in disease Applications and implications in nursing.

Unit VIII - The excretory system:

- Functions of kidneys, ureters, urinary bladder & urethra. Composition of urine. Mechanism of urine formation. Functions of skin Regulation of body temperature. Fluid and electrolyte balance.
- Alternations in disease Applications and implications in nursing. Buffer system

Unit IX - The Sensory Organs:

- Functions of skin, eye, ear, and nose tongue. Alternations in disease Applications and implications in nursing.

Unit X - The Endocrine System:

- Functions of Pituitary, pineal body, thymus, Thyroid, parathyroid pancreas, Suprarenal, Placenta and ovaries & Testes. Alternations in disease Applications and implications in nursing.

Unit XI - The Reproductive System:

- Reproduction of cells - DNA, Mitosis, Meiosis, spermatogenesis, oogenesis. Functions of female reproductive organs, Functions of breast, Female sexual (menstrual) cycle. Introduction to embryology. Functions of male reproductive organs, Male function in reproduction. Male fertility system.
- Alternations in disease Applications and implications in nursing.

Unit XII - Lymphatic and Immunological System:

- Circulation of lymph.
- Immunity Formation of T-cells and B cells Types of Immune response. Antigens, Cytokines, Antibodies.
- Alternations in disease Applications and implications in nursing. Functions of lymphatic system

MENTAL HEALTH NURSING

Unit No. & Hrs.	Objectives	Contents						
		Must know 60%			Desirable to know 30%	Nice to know 10%		
I (2 hours)	At the end of unit students are able to Knowledge: Know the functions of cell, tissue, membranes, glands, tissue formation, and repair. Skill : Differentiate the alterations in the body functions	Introduction: <ul style="list-style-type: none"> • Physiology of cell, tissues membranes and glands • Tissue-formation, repair • Membranes & glands – functions(1hr) 			• Applications and implications in nursing.	Alterations in disease. (1 hour)		
Unit:1 Introduction								
Course outcome		Program outcome						
Students will be able to		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
CO1: Define cell. Explain the Physiology of cell.		3	3	3	2	3	3	2
CO2: Recall tissue. Describe about the types of tissues.		3	3	3	2	3	3	2
CO3: Recall membranes .Describe about the types of membranes.		3	3	3	2	3	3	3

CO4: Define glands. Describe the functions of Golgi apparatus		3	3	3	2	3	3	2
CO5: Differentiate the alterations in the body functions.		3	3	3	2	2	2	3
UNIT II Skeletal system:								
II (3 hrs)	At the end of unit students are able to Knowledge: Know bone formation and growth functions and movements of bones joints and healing of bones. Skill: Differentiate the alterations in joint movements. Attitude: Contribute in improving the quality of nursing practice.	Skeletal system: • Bone formation & growth • Bones - Functions and movements of bones of axial and appendicular skeleton, bone healing (1 hour) •			• Applications and implications in nursing. (1 Hr) • Joints and joint movement.		Alterations in disease. (1 hour)	
UNIT II Skeletal 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
Student will be able to CO1: Define Bone. Explain Bone formation & growth.		3	3	3	3	3	3	3
CO2: Enumerate the classification of bones. Describe		3	3	3	3	3	3	3

ligaments of shoulder joint									
CO3: Recall Bone. Describe six main functions of the skeletal system									
3	3	3	3	3	3	3	3		
CO4: Draw a suitable picture of right shoulder girdle and illustrate it.									
3	3	3	3	3	3	3	3		
CO5: Categorize the types of bones and joints									
3	3	3	3	3	3	3	3		
CO6: Differentiate the alterations in joint movements									
3	3	3	3	3	3	3	3		
CO7: Explain Applications and implications Joints and joint movement in nursing									
3	3	3	3	3	3	3	3		
UNIT III Muscular System									
III (2 hours)	At the end of unit students are able to Knowledge: Understand the types and functions of muscles and its importance in maintaining body. Skill: Identify the alterations in the functioning of muscles. Attitude: Contribute in improving the quality of nursing practice.		Muscular System: • Applications and implications in nursing. (1 hour)		• Alterations in disease (1 hour)				
Course outcome			Program outcome						
			Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team	Lifelong learner	Critical thinker	Researcher

				and system			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
Student will be able to CO1: Define Muscle. Identify the types of muscle.	3	3	3	3	3	3	3
CO2: Identify the alterations in the functioning of muscles.	3	3	3	3	3	3	3
CO3: Recall Muscle. Explain functions of muscles and its importance in maintaining body.	3	3	3	3	3	3	3
CO4: Determine the factors help in improving the quality of nursing practice.	3	3	3	3	3	3	3
UNIT IV Nervous System:							
IV (6 hours)	At the end of unit students are able to Knowledge: Understands the functions of neuralgia and neurons, brain, spines code, cranial and spinal nerves. Attitude: Identify the actions of reflexes.	Nervous System: <ul style="list-style-type: none"> • Functions of Neuralgia & neurons. • Stimulus & nerve-impulse -definitions and mechanism (1 hr) • Functions of brain, spinal cord, cranial and spinal nerve (1 hr) • Cerebrospinal fluid-Composition, circulation and function (1 hour) 	<ul style="list-style-type: none"> • Applications and implications in nursing. Reflex arc, Reflex action and reflexes Autonomic functions- Pain: somatic, visceral, and referred Autonomic learning and biofeedback(2Hr) 	Alterations' 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
Student will be able to		3	3	3	3	3	3	1
CO1: Define Neurons. Enumerate the function of neuralgia and Neurons.		3	3	3	3	3	3	1
CO2: Identify the actions of reflexes.		3	3	3	3	3	3	1
CO3: Recall nerve impulse. Describe the mechanism of & nerve-impulse.		3	3	3	3	3	3	1
CO4: Restate brain. Enlist Functions of brain. Describe cranial and spinal nerve.		3	3	3	3	3	3	3
CO5: Define Cerebrospinal fluid. Enumerate the function of brain. Describe the circulation of Cerebrospinal fluid.		3	3	3	3	3	3	1
CO6: Define Reflex .Describe Reflex arc and Reflex action.		3	3	3	3	3	3	1

CO7: Describe Autonomic learning and biofeedback.	3	3	3	3	3	3	1	
UNIT V: Circulatory system:								
V (8 hours)	At the end of unit students are able to Knowledge: Understand blood formation, composition, blood groups and blood coagulation. Skill: Perform blood grouping, hemoglobin percentage, ECG. Attitude: Improve quality of care in ICU and Cardiac unit.	Circulatory system: • Blood formation, composition, blood groups, blood coagulation (2 hours) • Hemoglobin: Structure, Synthesis and breakdown, Variation of molecules, estimation (2 hours) • Functions of Heart, Conduction, Cardiac cycle, circulation Principles, Control, factors influencing BP and Pulse. (2 hrs)	• Applications and implications in nursing. (1 hour)	Alterations 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
Student will be able to CO1: Define blood .classify type of blood disorder. Describe blood coagulation.		3	3	3	3	3	3	1
CO2: Illustrate structure of hemoglobin. Describe the synthesis and breakdown of hemoglobin		3	3	3	3	3	3	3

CO3: Recall nerve impulse. Describe the mechanism of & nerve-impulse.	3	3	3	3	3	3	1
CO4: Enlist the function of heart. Review the circulation of heart.	3	3	3	3	3	3	3
CO5: Recall Cardiac cycle. Explain the Cardiac cycle.	3	3	3	3	3	3	3
CO6: Explain about coronary circulation.	3	3	3	3	3	3	1
CO7: Recall Blood Pressure. Describe about long term blood pressure maintenance.	3	3	3	3	3	3	3
CO8: Define ECG. Describe the ECG	3	3	3	3	3	3	3
CO9: Explain circulatory system application and implication in nursing practice.	3	3	3	3	3	3	3
CO10: Identify circulatory system alterations of disease.	3	3	3	3	3	3	3

UNIT VI: Respiratory System

VI (6 hours)	At the end of unit students are able to Knowledge: Acquire knowledge regarding functions of respiratory organs. Describe pulmonary ventilation, mechanism of respiration. Skill: Provide care for the patients with	Respiratory System: <ul style="list-style-type: none"> • Functions of respiratory organs. Physiology of respiration (1 hour) • Pulmonary ventilation, Volume, Mechanics of respiration (1 hour) 	<ul style="list-style-type: none"> • Applications and implications in nursing. (1 hour) 	Alterations in disease (1 hour)
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	ventilator support. Attitude: Incorporate this knowledge in nursing practice.	<ul style="list-style-type: none"> Gaseous exchange in lungs, Carriage of oxygen & carbon-dioxide, Exchange of gases in tissues, Regulation of respiration. (2 hours) 						
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
Student will be able to		3	3	3	3	3	3	3
CO1: Enumerate the respiratory organs. Describe the Physiology of respiration.		3	3	3	3	3	3	3
CO2: Define Pulmonary ventilation. Describe pulmonary ventilation.		3	3	3	3	3	3	3
CO3: Describe the mechanism of respiration.		3	3	3	2	3	3	3
CO4: Describe Gaseous exchange in lungs.		3	3	3	2	3	3	3
CO5: Describe Exchange of gases in tissues.		3	3	3	3	3	3	3
CO6: Describe Exchange of gases in tissues.		3	3	3	3	3	3	3

CO7: Explain Regulation of respiration.	3	3	3	2	3	3	3	
CO9: Explain respiratory system application and implication in nursing practice.	3	3	3	3	3	3	3	
UNITVII: Digestive System:								
VII (6 hours)	At the end of unit students are able to Knowledge: Acquire knowledge regarding functions of organs of digestive system. Attitude: Incorporate this knowledge in nursing practice.	Digestive System: • Functions of organs of digestive tract. Movements of alimentary tract, Digestion in mouth, stomach small intestines, Large intestines (2 hour) • Absorption of food. Functions of liver, gall bladder and pancreas (1 hour)	• Applications and implications in nursing. (1 hour) Metabolism of carbohydrates protein and fat (1 hour)	Alterations 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
Student will be able to CO1: Enumerate organs of Digestive system. Describe Functions of organs of digestive tract.	3	3	2	2	3	3	3	

CO2: Describe Movements of alimentary tract.	3	3	2	2	3	3	3
CO3: Enlist the function of mouth. Describe Digestion in mouth.	3	3	2	2	3	3	3
CO4: Enlist the function of stomach. Describe Digestion in small intestines.	3	3	3	3	3	3	3
CO5: Enumerate the function of pancreatic juice. Describe the stages of pancreatic secretion.	3	3	3	3	3	3	3
CO6: Define bile. Explain in detail about the functions of bile.	3	3	2	2	3	3	3
CO7: Discriminate liver bile and gallbladder bile.	3	3	2	2	3	3	3
CO8: Define Carbohydrate .Describe metabolism of carbohydrate.	3	3	3	2	3	3	3
CO9: Describe respiratory system alterations of disease.	3	3	2	2	3	3	3

UNITVIII Excretory System:

VIII (4 hours)	<p>At the end of unit students are able to</p> <p>Knowledge: Understand the functions of kidneys, ureters, urinary bladder and urethra. Describe the mechanism of formation of urine.</p> <p>Skill: Perform effective nursing care in dialysis unit.</p>	<p>Excretory System:</p> <ul style="list-style-type: none"> • Functions of kidneys, ureters urinary bladder & urethra • Composition of urine. Mechanism of urine formation (2 hrs) • Functions of skin Regulation of body temperature. Fluid and 	<ul style="list-style-type: none"> • Applications and implications in nursing. • Buffer system (1 hour) 	Alterations in disease
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		electrolyte balance. (1 hours)						
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
Student will be able to		3	3	3	3	3	3	3
CO1: Define Excretory System. Describe the functions of kidneys		3	3	3	3	3	3	3
CO2: Enumerate function urinary bladder & urethra. Describe the mechanism of formation of urine.		3	3	3	3	3	3	3
CO3: Enlist the function of mouth. Describe Digestion in mouth.		3	3	3	3	3	3	3
CO4: Enlist the function of skin Explain the Fluid and electrolyte balance.		3	3	3	3	3	3	3
CO5: Explain Excretory system application and implication in nursing practice.		3	3	3	2	2	3	3
CO6: Describe Excretory system alterations of disease		3	3	3	2	2	3	3

UNITV IX Sensory Organs:								
IX (2 hours)	At the end of unit students are able to		Sensory Organs:		• Applications and implications in nursing. (1 hour)	Alternations in disease		
	Knowledge: Understand the functions of skin, eye, ear, nose and tongue. Attitude : Incorporate this knowledge in nursing practice		• Functions of skin, eye, ear, and nose tongue. (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
Student will be able to		3	3	3	2	3	3	3
CO1: Define Endocrine system. Describe the functions of Pituitary								
CO2: Enumerate the functions of thymus & Thyroid		3	3	3	3	3	3	3
CO3: Enumerate the functions of Placenta & Testes.		3	3	3	2	3	3	3
CO4: Explain Endocrine system application and implication in nursing practice.		3	3	3	3	3	3	3
CO5: Describe Endocrine system alterations of disease.		3	3	3	3	3	3	3

UNIT X The Reproductive System:								
X (4 hours)	At the end of unit students are able to Knowledge: Acquire knowledge regarding functions of endocrine glands. Attitude: Contribute in improving quality of care of patients.	Endocrine System: • Functions of Pituitary, pineal body, thymus, Thyroid, parathyroid pancreas, Suprarenal, Placenta and ovaries & Testes (2 hours)	• Applications and implications in nursing (1 hour)	Alterations 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
Student will be able to CO1: Define Mitosis. Describe spermatogenesis oogenesis.		3	3	3	2	3	3	1
CO2: Enumerate female reproductive organ. Explain the function of breast		3	3	3	3	3	3	1
CO3: Define menstrual cycle. Explain the menstrual cycle		3	3	3	3	3	3	3
CO4: Enumerate the functions of Placenta. Describe the embryology.		3	3	3	3	3	3	3
CO5: Enumerate the reproductive organ. Explain Male function in reproduction.		3	3	3	3	3	3	3

CO6: Explain reproductive system application and implication in nursing practice.	3	3	3	2	3	3	3	
CO7: Describe reproductive system alterations of disease.	3	3	3	2	3	3	3	
UNIT XI Lymphatic System:								
XII (5 hours)	At the end of unit students are able to Knowledge: Understand the functions of antigens, antibodies, and cytokines and Describe the circulation of lymph. Attitude: Contribute in improving quality of care of patients.	Lymphatic System: • Circulation of lymph (1 hour) • Immunity Formation of T-cells and B cells Types of Immune response (1hr) • Antigens, Cytokines Antibodies. (1 hr)	• Applications and implications in nursing Functions of lymphatic system (1 hour)	Alterations 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
Student will be able to CO1: Define lymph. Describe Circulation of lymph.	3	3	3	3	3	3	3	
CO2: Enumerate functions of antigens. Explain the cytokines CO3: Define T-cells. Discriminate T-cells and B cells	3	3	3	3	3	3	3	

CO4: Rewrite B-cells. Describe the formation of B-cell.	3	3	3	3	3	3	3
CO5: Identify Types of Immune response. Explain Cytokines Antibodies..	3	3	3	3	3	3	3
CO6: Explain Lymphatic system application and implication in nursing practice.	3	3	3	3	3	3	3
CO7: Describe Lymphatic system alterations of disease.	3	3	3	3	3	3	3

LAB HOURS: 07 HOURS

<i>Topic</i>	<i>Splited hours</i>	<i>Total hours</i>
Introduction	1	7 hours
Blood :	1	
• Hb%	1	
• Total Count	1	
• Differential Count	1	
• BT, CT	1	
• Blood Group	1	
• RBC	1	

TEACHING STRATEGY:

Total Hours: 60

Theory Hours: 53

Lab. Hours: 07

TEACHING METHODS:

- Lecture. Group Discussion. Demonstration ,Integrated teaching program and tutorial, Video assisted teaching

A.V. AIDS:

- Over head Projector. L.C.D, Computer Assisted learning. Black Board. Models & Specimens.

ASSIGNMENTS:**Theory:**

Sr. No	Assignments	No./Quantity	Marks Per Assignment	Total Marks
1	Journal	One	20	40
2	Home assignment	One	20	

- Students shall maintain a Journal of experiments performed in the lab.
- Marks of Theory and Practical Assignments shall be amalgamated as an Assignment is theory as there is no practical examination for the subject.
- 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.

