# 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.	Objectives	Contents										
& Hrs.	Objectives	Mus	st know 60%		Desir	able to know 3	0% Nice t	o know 10%				
I (2 hours)	At the end of unit students are able to <b>Knowledge:</b> Know the functions of sell, tissue, membranes, glands, tissue formation, and repair. <b>Skill :</b> Differentiate the alterations in the body functions	<ul> <li>Introduction:</li> <li>Physiology of cell, tissu</li> <li>Tissue-formation, repair</li> <li>Membranes &amp; glands -</li> </ul>	<ul> <li>Applications and implications in nursing.</li> <li>Physiology of cell, tissues membranes and glands</li> <li>Tissue-formation, repair</li> <li>Membranes &amp; glands – functions(1hr)</li> </ul>									
Unit:1 Int	troduction											
Course out	come	Program outcome										
Students wi	ill 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: Defin	ne cell. Explain the Physiology of cell.	3	3	3	2	3	3	2				
CO2: Recal	ll tissue. Describe about the types of tissues.	. 3	3	3	2	3	3	2				
CO3: Recal membranes	ll membranes .Describe about the types of s.	3	3	3	2	3	3	3				

CO4: Defin apparatus	ne glands. Describe the functions of Golgi	3	3	1	3	2	3	3	2
CO5: Diffe	erentiate the alterations in the body functions	5. 3	3		3	2	2	2	3
						I		I	
II (3 hrs)	<ul> <li>At the end of unit students are able to</li> <li>Knowledge: Know bone formation and growth functions and movements of bones joins and healing of bones.</li> <li>Skill: Differentiate the alterations in joint movements.</li> <li>Attitude: Contribute in improving the quality of nursing practice.</li> </ul>	<ul> <li>Bone form:</li> <li>Bones - Fu and append</li> </ul>	ation & growt nctions and mo licular skeletor	h ovements of bor n, bone healing	nes of axial (1 hour)	<ul> <li>Application</li> <li>implication</li> <li>Hr)</li> <li>Join move</li> </ul>	ons and ons in nursing. (1 ts and joint rement.	Alterations in hour)	disease. (1
UNIT II S	keletal system:								
Cours	e outcome	Program outcom	ne						
		Clinician/Nurse educator	Professional	Comm	unicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
		PO1	PO2	PO3		PO4	PO5	PO6	PO7
Student wi CO1: Defi growth.	ill be able to ne Bone. Explain Bone formation &	3	3	3		3	3	3	3
CO2: Enur	merate the classification of bones. Describe	3	3	3		3	3	3	3

ligaments of	shoulder joint							
CO3: Recall skeletal syste	Bone. Describe six main functions of the m	3	3	3	3	3	3	3
CO4: Draw a and illustrate	suitable picture of right shoulder girdle it.	3	3	3	3	3	3	3
CO5: Catego	rize the types of bones and joints	3	3	3	3	3	3	3
CO6: Differe	entiate the alterations in joint movements	3	3	3	3	3	3	3
CO7: Explain and joint mov	n Applications and implications Joints vement in nursing	3	3	3	3	3	3	3
UNIT III <b>M</b> u	iscular System	I		1		I		
III (2 hours)	At the end of unit students are able to <b>Knowledge:</b> Understand the types and f muscles and its importance in maintaining <b>Skill:</b> Identify the alterations in the func- muscles. <b>Attitude:</b> Contribute in improving the q- nursing practice.	functions of ng body. tioning of uality of	Muscular System: • Applications and nursing. (1 hour)	• A	Alterations in d	isease (1 hour)		
Course c	outcome	Program outcon	ne					
		Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team	Lifelong learner	Critical thinker	Researcher

					ar	nd system				
		PO1	PO2	PO3	Pe	04	PO5		PO6	PO7
Student will be able to		3	3	3	3		3		3	3
CO1: Define Muscle. Iden	tify the types of muscle.									
CO2: Identify the alteration muscles.	ns in the functioning of	3	3	3	3		3		3	3
CO3: Recall Muscle. Expla and its importance in main	ain functions of muscles taining body.	3	3	3	3		3		3	3
CO4: Determine the factor quality of nursing practice.	s help in improving the	3	3	3	3		3		3	3
UNIT IV Nervous System	:									
IV (6 hours)	At the end of unit student <b>Knowledge:</b> Understands neuralgia and neurons, br cranial and spinal nerves. <b>Attitude:</b> Identify the act	s are able to s the functions of ain, spines code, ions of reflexes.	<ul> <li>Functions of Neurous System:</li> <li>Functions of Neurous.</li> <li>Stimulus &amp; nervous definitions and the finitions and the finitions and the finitions of bractions of bractions of bractions, cranial and nerve (1 hr)</li> <li>Cerebrospinal fluction (1 hr)</li> </ul>	uralgia & ve-impulse mechanism in, spinal spinal uid- rculation nour)	• Applicat implicat Reflex a and refle function visceral, Autonor biofeed	tions and tions in nursi arc, Reflex ad exes Autono is- Pain: som , and referred mic learning back(2Hr)	ng. ction mic latic, d and	Alteration	ns' in diseas	e(1 hour)

Course outcome	Program outcom	ne				Critical thinker       PO6       3       3       3       3       3	
	Clinician/Nurse educator	Professional	Communic	ator Leader and member of the health care team and systen	l Lifelong f learner	Critical thinker	Researcher
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
Student will be able to 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 lea	rning and biofeedback.	3	3		3	3	3	3	1
UNIT V: Circulatory system	::	1	1					I	
V (8 hours)	At the end of unit stude Knowledge: Understan composition, blood gro coagulation. Skill: Perform blood g percentage, ECG. Attitude: Improve qua Cardiac unit.	ents are able to nd blood formatic bups and blood rouping, hemoglo lity of care in IC	on, obin U and	Circulator Blood compu- blood Hemo Synth Variat estima Funct: Conducticula Control BP an	y system: formation, osition, blood groups coagulation (2 hours globin: Structure, esis and breakdown, ion of molecules, ition (2 hours) ions of Heart, action, Cardiac cycle ation Principles, ol, factors influencin d Pulse. (2 hrs)	e Appli implia (1 hou ) g	cations and cations in nursing ir)	Alteratio (1 hour)	ns in disease
Course outcome		Program outcom Clinician/Nurse educator	e Professio	onal	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 ty Describe blood coagulation.	/pe of blood disorder.	3	3		3	3	3	3	1
CO2: Illustrate structure of he synthesis and breakdown of he	moglobin. Describe the emoglobin	3	3		3	3	3	3	3

CO3: Recall nerve impulse. D of & nerve-impulse.	escribe the mechanism	3	3	3	3	3	3	1
CO4: Enlist the function of he circulation of heart.	art. Review the	3	3	3	3	3	3	3
CO5: Recall Cardiac cycle. Ez cycle.	xplain the Cardiac	3	3	3	3	3	3	3
CO6: Explain about coronary	circulation.	3	3	3	3	3	3	1
CO7: Recall Blood Pressure. I term blood pressure maintenar	Describe about long nce.	3	3	3	3	3	3	3
CO8: Define ECG. Describe t	he ECG	3	3	3	3	3	3	3
CO9: Explain circulatory syst implication in nursing practice	em application and e.	3	3	3	3	3	3	3
CO10: Identify circulatory sys disease.	stem alterations of	3	3	3	3	3	3	3
UNIT VI: Respiratory Syste	m							
VI (6 hours)	At the end of unit stude <b>Knowledge:</b> Acquire le regarding functions of Describe pulmonary ve mechanism of respirati <b>Skill:</b> Provide care for	ents are able to mowledge respiratory organs entilation, on. the patients with	<ul> <li>Respiratory Syste</li> <li>Functions of n organs. Physic respiration (1)</li> <li>Pulmonary very Volume, Meet respiration (1)</li> </ul>	em: respiratory ology of hour) entilation, hanics of hour)	• Applications a implications in (1 hour)	nd 1 nursing.	Alterations in a (1 hour)	lisease

	ventilator support. Attitude: Incorporate t nursing practice.	this knowledge in	Gaseous exc lungs, Carria & carbon-di Exchange of tissues, Regu respiration.	hange in lige of oxygen oxide, gases in llation of 2 hours)				
Course outcome		Program outcom	e					
		Clinician/Nurse educator	Professional	Communicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
		PO1	PO2	РОЗ	PO4	PO5	PO6	PO7
Student will be able to		3	3	3	3	3	3	3
CO1: Enumerate the respirator Physiology of respiration.	y organs. Describe the							
CO2: Define Pulmonary ventil pulmonary ventilation.	ation. Describe	3	3	3	3	3	3	3
CO3: Describe the mechanism	of respiration.	3	3	3	2	3	3	3
CO4: Describe Gaseous excha	nge in lungs.	3	3	3	2	3	3	3
CO5: Describe Exchange of ga	ases in tissues.	3	3	3	3	3	3	3
CO6: Describe Exchange of ga	ases in tissues.	3	3	3	3	3	3	3

CO7: Explain Regulation of respirat	ion.	3	3		3	2	3		3	3
CO9: Explain respiratory system apping implication in nursing practice.	plication and	3	3		3	3	3		3	3
UNITVII: Digestive System:					1					<u> </u>
VII (6 hours)	At the end of un Knowledge: Ac functions of org Attitude: Incorj nursing practice	it students are abl equire knowledge ans of digestive s porate this knowle	e to regarding ystem. edge in	<ul> <li>Funce diges Mov alima Dige stom intes intes</li> <li>Abso Funce bladde (1 horigonal data)</li> </ul>	System: tions of organs of stive tract. ements of entary tract, stion in mouth, ach small tines, Large tines (2 hour) orption of food. tions of liver, gall der and pancreas bur)	• Applications implications nursing. (1 h Metabolism carbohydrate protein and t hour)	s and in lour) of es fat (1	Alte (1 ho	rations in dise our)	ase
Course outcome		Clinician/Nurse educator	Professio	nal	Communicator	Leader and member of the health care team	Lifelong learner	<b>7</b>	Critical thinker	Researcher
		PO1	PO2		PO3	PO4	PO5		PO6	PO7
Student will be able to CO1: Enumerate organs of Digestiv Describe Functions of organs of dig	e system. estive tract.	3	3		2	2	3		3	3

CO2: Describe Movement	s of alimentary tract.	3	3	2		2	3	3	3
CO3: Enlist the function o Digestion in mouth.	f mouth. Describe	3	3	2		2	3	3	3
CO4: Enlist the function o Digestion in small intestin	f stomach. Describe es.	3	3	3		3	3	3	3
CO5: Enumerate the funct Describe the stages of pan	ion of pancreatic juice. creatic secretion.	3	3	3		3	3	3	3
CO6: Define bile. Explain functions of bile.	in detail about the	3	3	2		2	3	3	3
CO7: Discriminate liver bi	ile and gallbladder bile.	3	3	2		2	3	3	3
CO8: Define Carbohydrate carbohydrate.	e .Describe metabolism of	3	3	3		2	3	3	3
CO9: Describe respiratory disease.	system alterations of	3	3	2		2	3	3	3
UNITVIII Excretory Syst	em:		1						
VIII (4 hours)	At the end of unit students <b>Knowledge: Understand</b> kidneys, ureters, urinary bl urethra. Describe the mech formation of urine. <b>Skill:</b> Perform effective nu dialysis unit.	are able to the functions of adder and anism of ursing care in	<ul> <li>Excretory System:</li> <li>Functions of kid ureters urinary urethra</li> <li>Composition of Mechanism of u formation (2 hrs)</li> <li>Functions of sk Regulation of b temperature. File</li> </ul>	Ineys, bladder & `urine. rrine s) in ody uid and	<ul> <li>Applic nursin</li> <li>Buffer (1 hot</li> </ul>	eations and im g. system ır)	Ins and implications in		in disease

		electrolyte ba (1 hours)	lance.					
Course outcome	Program outcom	ie						
	Clinician/Nurse educator	Professional	Communic	cator	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 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 s <b>Knowledge:</b> Unde ear, nose and tonge <b>Attitude :</b> Incorpo practice	students are able to erstand the functions of skin, eye, ue. orate this knowledge in nursing		Sensory Organs: • Functions of skin, e and nose tongue. (1 hour)	• ye, ear,	• Applications and implications in nursing. (1 hour)		Alternations in disease	
Course outcome	I	Program outcom	ne	I					
		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 Endocrine systen functions of Pituitary	n. Describe the	3	3	3	2	3	3	3	
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 implication in nursing practice	m application and	3	3	3	3	3	3	3	
CO5: Describe Endocrine syst disease.	em alterations of	3	3	3	3	3	3	3	

UNIT X <b>The Reprodu</b>	ictive System:								
At the end of unit students are able to         X         Knowledge: Acquire knowledge		<ul><li>Endocrine System:</li><li>Functions of Pituitary,</li></ul>		• Applications and implications in nursing (1 hour)		ons Alterati (1 hour	Alterations in disease (1 hour)		
(4 hours)	Attitude: Contribute in imp quality of care of patients.	crine glands. roving Placenta and ovarie & Testes (2 hours)		mus, yroid renal, aries ırs)					
Course outcome		Program out	come						
		Clinician/Nu educator	rrse Professional	Сог	nmunicator	Leader and member of the health care team and system	Lifelong learner	Critical thinker	Researcher
		PO1	PO2	PO	3	PO4	PO5	PO6	PO7
Student will be able to CO1: Define Mitosis. I oogenesis.	Describe spermatogenesis	3	3	3		2	3	3	1
CO2: Enumerate femal the function of breast	le reproductive organ. Explain	3	3	3		3	3	3	1
CO3: Define menstrua cycle	l cycle. Explain the menstrual	3	3	3		3	3	3	3
CO4: Enumerate the fut the embryology.	inctions of Placenta. Describe	3	3	3		3	3	3	3
CO5: Enumerate the re Male function in repro-	productive organ. Explain duction.	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 Sy	vstem:								
XII (5 hours)	At the end of unit students <b>Knowledge:</b> Understand th of antigens, antibodies, and and Describe the circulation <b>Attitude:</b> Contribute in im- quality of care of patients.	are able to Lym e functions l cytokines n of lymph. proving	circulation of lymp Immunity Formation cells and B cells Ty Immune response (1 Antigens, Cytokines Antibodies. (1 hr)	h (1 hour) n of T- pes of hr) s	Applicati implicati Function system (1 hour)	ions and ions in nursing is of lymphatic	Alte (1 h	erations in disease our)	,
Course outcome	I	Program outcon	ne		1				
		Clinician/Nurse educator	Professional	Comm	unicator	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
	3	3	3	3	3	3	3
CO5: Identify Types of Immune response. Explain Cytokines Antibodies							
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

Торіс	Splited hours	Total hours
Introduction	1	
<ul> <li>Blood :</li> <li>Hb%</li> <li>Total Count</li> <li>Differential Count</li> <li>BT, CT</li> <li>Blood Group</li> <li>RBC</li> </ul>	1 1 1 1 1 1 1 1 1	7 hours

#### **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.