



SILVER OAK UNIVERSITY

Silver Oak College of Nursing

Bachelor of Science (Nursing)

Course Name: Applied Anatomy & Applied Physiology

Course Code: 1060323101

Semester: 1st

Prerequisite:

The prerequisites may include a background in biology, human anatomy, or physiology and also require completion of introductory science courses or specific coursework in related subjects.

Course Objective:

1. To assist student to recall and further acquire the knowledge of the normal structure and functions of human body
2. To identify alteration in anatomical structure and function with emphasis on clinical application to practice nursing.
3. To develop a better understanding of the relationship between the structure of the body and its function
4. To provide valuable insights into the design and development of medical devices and rehabilitation programs

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
6	0	0	6	6

SECTION-A APPLIED ANATOMY

Content:

Unit No.	Contents	Teaching Hours	Weightage %
1	<p>Introduction to anatomical terms and organization of the human body Introduction to anatomical terms relative to position- anterior, ventral, Posterior dorsal, superior, inferior, median, lateral, proximal, distal, superficial, deep, prone, supine, palmar and plantar Anatomical planes (axial/transverse/ horizontal, sagittal /vertical plane and coronal/frontal/oblique plane) Movements (flexion, extension, abduction, adduction, medial rotation, lateral rotation, inversion, eversion, supination, pronation, plantar flexion, dorsal flexion and circumduction Cell structure, Cell division Tissue-definition, types, characteristics, classification, location Membrane, glands- classification and structure Identify major surface and bony landmarks in each body</p>	8	13

	region, Organization of human body Hyaline, fibro cartilage, elastic cartilage Features of skeletal, smooth and cardiac muscle Application and implication in nursing		
2	The Respiratory system Structure of the organs of respiration Muscles of respiration Application and implication in nursing	6	10
3	The Digestive system Structure of alimentary canal and accessory organs of digestion Application and implications in nursing	6	10
4	The Circulatory and lymphatic system Structure of blood components, blood vessels-Arterial and Venous system Position of heart relative to the associated structures Chambers of heart, layers of heart Heart valves, coronary arteries Nerve and blood supply to heart Lymphatic tissue Veins used for IV injections Application and implication in nursing	6	10
5	The Endocrine system Structure of Hypothalamus, Pineal Gland, Pituitary gland, Thyroid, Parathyroid, Thymus, Pancreas and Adrenal glands	4	7
6	The Sensory organs Structure of skin, eye, ear, nose and tongue Application and implications in nursing	4	7
7	The Musculoskeletal system The Skeletal System Anatomical positions Bones- Types, structure, growth and ossification Axial and Appendicular skeleton Joints- classification, major joints and structure Application and implications in nursing The Muscular System Types and structure of Muscles Muscle groups-muscles of the head, neck, thorax, abdomen, pelvis, upper limb and lower limbs Principal muscles- deltoid, biceps, triceps, respiratory, abdominal, pelvic floor, pelvic floor muscles, gluteal muscles and vastus lateralis Major muscles involves in nursing procedures	10	17
8	The Renal System Structure of kidney, ureters, bladder, urethra Application and implication in nursing	5	8
9	The Reproductive System Structure of male reproductive organs	5	8

	Structure of female reproductive organs Structure of breast		
10	The Nervous system Review Structure of neurons CNS, ANS and PNS (Central, autonomic and peripheral) Structure of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves, functional areas of cerebral cortex Ventricular system, formation, circulation, and drainage Application and implication in nursing	6	10

Course Outcome:

Sr. No.	CO statement	Unit No
CO - 1	Discuss anatomical terms and anatomical structures	1
CO - 2	Describe the structure of Respiratory and Digestive system and its application in nursing	2,3
CO - 3	Explain the structure of Circulatory, Lymphatic, Endocrine and Sensory organs and its application in nursing	4,5,6
CO - 4	Describe the structure of Musculoskeletal and Renal system and its application in nursing	7,8
CO - 5	Explain the structure of Reproductive and Nervous system and its application in nursing	9,10

CO-PO-PSO Matrix

Co. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO-1	3	3	2	1	-	2	3	3	3	2	3	2
CO-2	2	3	3	1	-	2	3	3	3	3	2	2
CO-3	2	3	3	1	-	2	3	3	3	3	2	2
CO-4	2	3	3	1	-	2	3	3	3	3	2	2
CO-5	2	3	3	1	-	2	3	3	3	3	2	2

SECTION-B APPLIED PHYSIOLOGY

Content:

Unit No.	Contents	Teaching Hours	Weightage %
1	<p>General Physiology-Basic concepts Cell physiology including transportation across cell membrane Body fluid compartments, Distribution of total body fluid, intracellular and extracellular compartments, major electrolytes and maintenance of homeostasis Cell cycle Tissue- formation, repair Membranes and glands- functions Application and implication in nursing</p>	4	7
2	<p>Respiratory system Functions of respiratory organs Physiology of respiration Pulmonary circulation-functional features Pulmonary ventilation, Exchange of gases Carriage of oxygen and Carbon- dioxide, Exchange of gases in tissue Regulation of respiration Hypoxia, cyanosis, dyspnea, periodic breathing Respiratory changes during exercise Application and implication in nursing</p>	6	10
3	<p>Digestive system Functions of the organs of digestive tract Saliva-composition, regulation of secretion and functions of saliva Composition and function of gastric juice, mechanism and regulation of gastric secretion Composition of pancreatic juice, function, regulation of pancreatic secretion Functions of liver, gall bladder and pancreas Composition of bile and function Secretion and Function of small and large intestine Movements of alimentary tract Digestion in mouth, stomach, small intestine, large intestine, Absorption of food Application and implication in nursing</p>	8	13
4	<p>Circulatory and lymphatic system Functions of heart, conduction system, cardiac cycle, Stroke volume and cardiac output Blood pressure and Pulse Circulation- principles, factors influencing blood pressure, pulse Coronary circulation, Pulmonary and systemic circulation Heart rate-regulation of heart rate, Normal value and variations</p>	6	10

	Cardiovascular homeostasis in exercise and posture Application and implication in nursing		
5	Blood Blood-Functions, Physical characteristics, Components Formation of blood cells Erythropoiesis, Functions of RBC, RBC life cycle WBC- types, functions Platelets-Function and production of platelets Clotting mechanism of blood, clotting time, bleeding time, PTT Hemostasis –role of vasoconstriction, platelet plug formation in hemostasis, coagulation factors, intrinsic and extrinsic path ways of coagulation Blood groups and types Functions of reticuloendothelial system, Immunity Application in nursing	5	8
6	The endocrine system Functions and hormones of Pineal Gland, Pituitary gland, Thyroid, Parathyroid, Thymus, Pancreas and Adrenal glands. Other hormones Alterations in disease Application and implication in nursing	5	8
7	The sensory Organs Functions of skin Vision, hearing, taste and smell Errors of refraction, aging changes Application and implications in nursing	4	7
8	Musculo-skeletal system Bones- Functions, movements of bone s of axial and appendicular skeleton, Bone healing Joints and joint movements Alteration of joint disease Properties and Functions of skeletal muscles – mechanism of muscle contraction Structure and properties of cardiac muscles and smooth muscles Application and implication in nursing	6	10
9	Renal system Functions of kidney in maintaining homeostasis GFR Functions of ureters, bladder and urethra Micturition Regulation of renal function Application and implication in nursing	4	7
10	The Reproductive System Female reproductive system- Menstrual cycle, function and hormones of ovary, oogenesis, fertilization, implantation, Functions of breast Male reproductive system- Spermatogenesis, hormones and its functions, semen	4	7

	Application and implication in providing nursing care		
11	Nervous system Overview of nervous system Review of types, structure and functions of neurons Nerve impulse Review functions of Brain-Medulla, Pons, Cerebrum, Cerebellum Sensory and Motor Nervous system Peripheral Nervous system & Autonomic Nervous system Limbic system and higher mental Functions-Hippocampus, Thalamus, Hypothalamus Vestibular apparatus Functions of cranial nerves Autonomic functions Physiology of Pain-somatic, visceral and referred Reflexes CSF formation, composition, circulation of CSF, blood brain barrier and blood CSF barrier Application and implication in nursing	8	13

Course Outcome:

Sr. No.	CO statement	Unit No
CO - 1	Describe the general physiology of basic human body and its application in nursing	1
CO - 2	Explain the physiology and mechanism of Respiratory and Digestive system and its implication in nursing	2,3
CO - 3	Illustrate the physiology and mechanism of Circulatory, Lymphatic and Blood and its implication in nursing	4,5
CO - 4	Describe the physiology and mechanism of Endocrine, Sensory and Musculoskeletal system and its implication in nursing	6,7,8
CO - 5	Illustrate the physiology and mechanism of Renal, Reproductive and Nervous System its implication in nursing	9,10,11

Teaching & Learning Methodology: -

1. Lecture cum discussion
2. Models
3. Video slides
4. Demonstration

Books Recommended

1. Nachiket Shankar, Mario Vaz; "Textbook of Applied Anatomy and Applied Physiology"; Elsevier Publication
2. Ross & Wilson; "Applied Anatomy and Applied Physiology"; Elsevier Publication

3. Vipin Vageriya ; “Applied Anatomy and Applied Physiology”; Emmess Publication
4. Khurana I ; “Textbook of Applied Anatomy and Applied Physiology”; CBS Publishers
5. B D Chaurasia; “Applied Anatomy & Physiology for BSc Nursing Students”; CBS Publishers

List of Open-Source Software/learning website:

1. www.bookinfoopro.com
2. https://books.google.com/books/about/Applied_Physiology.html?id=IqvEEAAAQBAJ
3. https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_notes/nursing_students/ln_human_anat_final.pdf

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CO-3	2	3	3	1	-	2	3	3	3	3	2	3
CO-4	2	3	3	1	-	2	3	3	3	3	2	3
CO-5	2	3	3	1	-	2	3	3	3	3	2	3