



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE

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School of Physiotherapy

1.1.3 Courses Focus towards Employability, Entrepreneurship / Skill Development in 2022 -2023

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SPTB1101	ANATOMY -1	L	T	P	EL	Credits	Total Marks
		45	15	60	3	6	75

COURSE OBJECTIVES

- To demonstrate knowledge in human anatomy as in necessary for the study and practice of physiotherapy.
- To understand specialized subject areas and skills included for their study.
- To comprehend and react in oral and written forms to the Anatomical content.
- To enhance communication, and apply Anatomical skills in clinical postings.

UNIT 1 INTRODUCTION

10 Hrs.

- a. **Introduction - Define Anatomy and mention its subdivisions, Name regions, cavities, and system of the body, Define anatomical position and anatomical terms.**
- b. Cell- Define a cell, Mention the shape, size and parts of a cell, Name and mention the functions of organelles. Name the inclusion bodies, Define chromosomes and genes, Review mitosis and meiosis. Mention the main events, but stages not necessary.
- c. Tissues- Classify tissues, Classify, and mention the microscopic structure of types of tissues such as epithelial, connective, muscular, and nervous tissues. Give examples for each type of tissue.

UNIT 2 INTRODUCTION TO OSTEOLOGY & MYOLOGY

30 Hrs.

- a. **Introduction to Bones (Osteology)**- Define skeleton, Mention the subdivisions of skeleton. Name the bones in each subdivision. Know the number of bones in each subdivision and total number of bones, Classify the bones and give examples, Enumerate the common surface features of the bones, Define ossification. Explain the types of ossification and give examples. Define ossification centre. Explain the growth of a long bone in length and width, Indicate blood supply and nerve supply of a bone. When regional anatomy is taught- Identify the name and correctly orientate the bone, identify surfaces, borders and all other surface features, Mark and indicate the muscle and ligaments attachments on the bone.
- b. **Introduction to Joints (Syndesmology / Arthology)**- Define a joint or articulation, Classify the joints and gives examples for each type. Define each type of joint, Mention the basic features of a synovial joint, Define the axis and movements possible in a synovial joint, define range of movement and limiting factors, Indicate the blood supply and nerve supply in general, define stability of a joint, Demonstrate common movements. When regional anatomy is taught: Mention the type, the articular surfaces, ligaments, and movements, axis of the movements, chief muscles producing the movements, limiting factors, nerve supply and blood supply of all individual joints. Mention the factors for stability. Articulate the factors for stability, Indicate applied anatomy for all joints.
- c. **Introduction to Muscles (Skeletal Muscle) (Myology)**- Define a skeletal muscle, define fasciae, tendon, and aponeurosis, Classify the skeletal muscles by shape etc., and give examples, Define origin, insertion, muscle work (contractions), type of muscle work, range of muscle work; group actions - antagonists, synergists and fixators: shunt and spurt muscles; types of levers with examples. When the regional anatomy is taught: Mention the position, origin, insertion, nerve supply and actions of the skeletal muscles. (For the skeletal muscles of soft Palate, Pharynx and larynx, position, action and nerve supply may be sufficient), Indicate the groups of muscles by position and action, group action and nerve supply of group of muscles, indicate segmental innervations of muscles, Predict the result of paralysis of individual and group of muscles.

UNIT 3 UPPER Extremity

30 Hrs.

- a. Pectoral regions; Outline the features of pectoral region, Name, identify and correctly orientate the sternum, Clavicle, scapula, and humerus, Outline the main features of the bones of shoulder girdle, Identify the parts, borders, and surfaces of sternum. Mention its other features, Identify the ends, surfaces curvatures and other features of clavicle, Identify the borders, angles, surfaces, processes, fossae, and other features of scapula, Locate, and identify the muscles of pectoral region. Mention their origin, insertion, nerve supply and action.
- b. Scapular region; Comprehend the main features of the muscles in the scapular region, State the layered arrangements of the muscles of the back, Name and identify the muscles of scapular region. Mention their origin, insertion, nerve supply and actions, Demonstrate the bony land marks of scapula, humerus, and clavicle.
- c. Axilla: Mention and identify the boundaries and contents of axilla. Name the branches of axillary artery. Name and identify the cords and branches of brachial plexus and mention their root value. Illustrate the formation of brachial plexus.
- d. Shoulder Girdle: Comprehend the main features of the joints of the shoulder girdle and state their functions. Name the joints of shoulder girdle. Identify the articular surfaces and name the ligaments and movements of sternoclavicular and acromioclavicular joints. Mention the types of joints. Demonstrate and name the movements of scapula. Mention the chief muscles producing these movements. Correlate movements of scapula. Assign functional roles to the articular disc and costo clavicular ligament.
- e. Shoulder joint: Mention the type, articular surfaces and ligaments of the shoulder joint., Define and demonstrate the movements of shoulder joint, Name and identify the chief muscles producing these movements. Analyse these movements and mention their limiting factors, Mention the blood supply and nerve supply of this joint, Analyse the association of movements of scapula and movements of shoulder joints, Mention the limiting factors and the factors for its stability.
- f. Upper arm: Name and identify the muscles at the front and back of the upper arm, Name and identify the ends, borders, surfaces, and features of the humerus. Identify the head, anatomical neck, tubercles, surgical neck, bicipital groove, condyle, capitulum, trochlea, epicondyles, radial, coronoid and olecranon fossae, Mention the origin, insertion, nerve supply and actions of the muscles present front and back of the upper arm, Indicate the course, relations, and distribution of radial and Musculo-cutaneous nerves.
- g. Elbow Joint: Mention the type, articular surfaces, and ligaments of elbow joints, Define, and demonstrate the movements. Name the chief muscles producing these movements, Mention the factors for stability and limiting factors, Indicate the applied anatomy, Mention the blood supply, and nerve supply, Explain the carrying angle.
- h. Forearm: Mention the bones of forearm, identify the ends, borders, surfaces and features of radius and ulna. Identify the head, neck, tuberosity, and styloid process of radius, Identify the coronoid process, olecranon process, trochlear notch, tuberosity, head, styloid process of ulna, radial notch of ulna and ulnar notch of radius,
- i. Wrist: Name and identify the carpal bones, metacarpal bones and phalanges in an articulated hand, Mention the position, origin, insertion, nerve supply and action of these muscles, Indicate the course, relations, and distribution of median, ulnar and radial nerves, Mention the type, articular surfaces and ligaments of radioulnar joints. Define the movements of supination and pronation. Mention the axis and muscles producing these movements. Analyse these movements and apply it to the functional role in routine day to day actions, Mention the position and distribution of radial and ulnar arteries and ulnar, median, and radial nerves, Name and locate the carpal bones. Mention the type, articular surface, and ligaments of wrist joint. Define and demonstrate the movements and mention the muscle producing them. Mention its blood supply and nerve supply, Predict the result of paralysis of muscles of the forearm, Mention the functional implications of prehension in the structure of hand, Indicate

- the arrangements of tendons of the digits, retinacula, fibrous flexor sheaths and synovial sheaths.
- j. Hand: Evaluate the hinge type of interphalangeal joints, ellipsoid type of Metacarpophalangeal joints and saddle type of carpometacarpal joint. Name and identify the small muscles of the hand. Mention their position, origin, insertion, nerve supply and action. Mention the types of bones formed and ligaments of the joints of the hand. Define the movements and the muscles producing these movements. Predict the result of paralysis of the various types of grips. Demonstrate the types of grips.
 - k. Nerves of Upper limb: Comprehend and apply the knowledge of the position and distribution of upper limb nerves. Mention the root values of the nerves. Identify the nerves and mention the position, course, relations, and distribution of nerves of upper limb. Predict the result of injury to these nerves.
 - l. Blood Vessels of Upper Limb: Comprehend and apply the knowledge of the position and distribution of blood vessels and lymph nodes. Trace the main arteries and veins. Indicate their position name the main branches of tributaries. Name and locates the lymph nodes.
 - m. Cutaneous Nerves of Upper Limb: Name the cutaneous nerves and illustrates the areas of their distribution. Illustrate the dermatomes.

UNIT 4 NEUROANATOMY, HEAD, NECK, AND SPECIAL SENSES

30 Hrs.

- a. Neuro Anatomy- Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory, and urogenital system, Cranial nerves, Peripheral nervous system.
- b. Head and Neck: Musculoskeletal and Neurovascular features. Identify the anterior and posterior triangles of neck. Name the subdivisions. List the contents: State the main features of the skull and the facial skeleton. Identify the large skull bones and their parts. Identify the cranial fossae and hypophyseal fossa. Identify and name the main muscle of the face. Mention their nerve supply and action,
- c. Identify the general features of a typical cervical vertebra, atlas, axis and seventh cervical vertebra. Identify the erector spinae, sternomastoid, scalene muscles and geniohyoid. Mention their attachments, actions, and nerve supply. Demonstrate the action of sternocleidomastoid. Mention the type, articular surface, ligaments, movements and muscles producing these movements, at the Atlanto-occipital and Atlanto-axial joints. Demonstrate these movements and the movements of the cervical part of vertebral column.
- d. Identify the subclavian, vertebral, and carotid arteries. Mention the position and extent of these arteries. Identify the components of the Circle of Wills. Mention the distribution of internal and external carotid and vertebral arteries. Predict the sequelae of occlusion of these arteries Define the modes of distribution of pre and postganglionic efferent neurons in sympathetic and para sympathetic nervous system. Name the cranial nerves containing para sympathetic fibres and mention their distribution. Distinguish between sympathetic and para sympathetic systems in relation to their functions.
- e. Temporomandibular joint: State the type, articular surfaces, ligaments, possible movements, muscles performing the movements and nerve supply of the Temporomandibular joint. Palpate and identify the joint and its articular surfaces. Identify and name the muscles of mastication. Mention their actions and nerve supply.
- f. Mouth: State the main features of the mouth cavity, tongue, palate, salivary glands, teeth, and gums. Mention the sensory and motor innervations of the tongue. Identify the salivary glands. Demonstrate movements of the tongue and palate. Test and produce the swallowing (gag) reflex. Predict the sequelae of lesions of the VII and XII cranial nerves.

- g. Pharynx: State the position and extent of the pharynx. State the three subdivision and the features of each subdivision. Name the muscles of pharynx and their action. Mention the sensory and motor innervation of the pharynx.
- h. Larynx and Trachea: Identify the hyoid and state its parts. Identify the larynx and name its parts. State the boundaries of laryngeal inlet and glottis. Identify the vocal and vestibular folds. State the movements of the laryngeal cartilages. Name the laryngeal muscles. Mention their attachments, actions, and nerve supply. Define the position, extent, and gross structure of the trachea. State the mechanics of phonation and speech, production of sound voice and speech
- i. Eye: State the position of the lacrimal apparatus, the functional implications of structure of the eye and the lacrimal apparatus. Name and illustrate the coat, their subdivisions, the refractive media, the chambers of the eye and the optic nerve. Mention the structure of retina and optic pathway. Know the basic understanding of the light and accommodation reflex. (Omitting the pathways). Mention the distribution of the three divisions of trigeminal (V) nerve. Name and state the nerve supply and simple actions of the extraocular muscles. Predict the results of lesions of III, IV, and VI cranial nerves.
- j. Nose: Name the bony components of the nose. Mention the parts and boundaries of the nose. State the main features of the nasal cavity. Name and identify the para nasal air sinuses and locates their openings.
- k. Ear: State the basic structural plan of the organs of hearing and equilibrium. Mention the three subdivisions of the ear. Mention the nerve endings for hearing and equilibrium

UNIT 5 SYSTEMS

20 Hrs.

- a. **Endocrine system**: List the endocrine organs and mention their positions. Mention the hormones produced by each endocrine organ.
- b. **Digestive System**: List the parts of the digestive system. Mention the boundaries and features of mouth. Classify teeth. Mention position, extend, subdivisions, communications, internal features and muscles of pharynx. Name the tonsils and define faces. Identify the internal features of the mouth and the pharynx on the specimen.
 - i. Oesophagus: State the position, course, and extent of oesophagus. Identify oesophagus on the specimen. State its basic nerve supply.
 - ii. Stomach: Mention the position, gross structure of the stomach. Identify the stomach, its borders, surfaces, and its subdivisions. Enumerate the immediate relations of the stomach. State the basic nerve supply of the stomach.
 - iii. Intestine: Name the subdivisions of the intestine and mention their position. Mention the differences between small and large intestine. Name the arteries arising from abdominal aorta. Name the organ supplied by these branches. Name the positions of the principal autonomic visceral nerve plexuses in the abdomen and pelvis, and state the organs supplied by them.
 - iv. Liver: Mention the position and gross features of the liver and biliary system.
 - v. Pancreas: Name the position and subdivisions of the pancreas.
 - vi. Salivary Glands: Name the major salivary glands. Indicate their positions. Mention the site of openings of their ducts.
- c. Genito-Urinary System: Comprehend the basic functional implications and the basic structure of the kidney and ureter. Mention the position, size, and shape of the kidney. Name the immediate relations of the kidney. Indicate the cortex, medulla, pyramids, sinus, calyces, and pelvises of urethra in macro section of kidney. Illustrate the structure of a nephron. Identify the urethra and indicates the position

of the ureter.

- i. Bladder And Urethra: State the anatomy of the bladder and urethra, Mention the position, shape, size, and surfaces of the bladder, Indicate the immediate relations of the bladder, Mention the basic innervations of the bladder, Name and identify the subdivisions of the male urethra, Mention the position, extent, and immediate relations of the male urethra, Locate and identify the female urethra, Mention the position, extent, and immediate relations of the female urethra, Name the sphincter of the urethra.
- ii. Male reproductive system: List and locate the parts of the male reproductive system. State the anatomy and functional considerations of the testis, male accessory organs of reproduction and external organs. Mention the position of the inguinal canal. Name the component structure and parts of the penis.
- iii. Female reproductive system: List and locate the parts of the female reproductive system. State the anatomy and functional considerations of ovary, uterine tubes, uterus, vagina, and female external genitalia. Mention the basic features of parts of the female external genitalia. Enumerate the factors responsible for the maintenance of the position of the uterus and anatomy of its prolapse. Mention the position, extent, and gross structure of the female breast. Name the common internal and external iliac arteries.

Max. 120 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Summarize the structural and functional importance of cell and different types of tissues.
- CO2** - Interpret the different type of classification and general features of bone, joints, muscular Tissues and nerves.
- CO3** - Articulate the structural and functional importance of bone, muscles, joints, upper extremity long and short nerves.
- CO4** - Categorize spaces in upper limb including applied aspect, Knowledge of greater vessels, muscles, and structural and functional importance of different viscera in head and neck region.
- CO5** - Sketch of visual, auditory and taste pathways, including applied aspect,
- CO6** - Apply knowledge of Cardiovascular system, Nervous system, endocrine system, digestive system.

TEXT / REFERENCE BOOKS

- 1) Chaurasia, Human Anatomy - Vol I, Vol II, Vol III, 7th Edition, CBS, 2016.
- 2) Text Book of Anatomy, Vishram Singh – Vol I, VOL II, VOL III, 3rd Edition, CBS, 2018.
- 3) Nigle Palastanga, Anatomy and human movement, Butterworth Heinmann pub. 4th Ed, 2007.
- 4) Cunningham's Manual of Practical anatomy (for practical classes only) Vol. 1, 2 and 3. Romanes, Oxford university press, 3 Ed, 2006.
- 5) Gray's Anatomy, William Bannister, Churchill Living Stone pub, 3 Ed, 2007.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB1102	PHYSIOLOGY -1	L	T	P	EL	Credits	Total Marks
		45	15	60	0	6	75

COURSE OBJECTIVES

- The Objective of this Course is to identify, reflect On, evaluate and achieve conceptual understanding and knowledge of Human Physiology.
- This helps in understanding applied Physiology.

UNIT 1 GENERAL PHYSIOLOGY

20 Hrs.

- General Physiology - Cell: Morphology. Organelles: their structure and functions, Transport Mechanisms across the cell membrane, Body fluids: Distribution, composition.
- Blood - Introduction: Composition and functions of blood. Plasma: Composition, formation, functions. Plasma proteins. RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-endothelial system (in brief) Haemoglobin – structure, function and derivatives Anaemia (in detail), types of Jaundice. Blood indices, PCV, ESR. WBC: Classification. Morphology, functions, count, its variation of each. Immunity Platelets: Morphology, functions, count, its variations Haemostatic mechanisms: Blood coagulation–factors, mechanisms. Their disorders. Anticoagulants. Blood Groups: Landsteiner's law. Types, significance, determination, Erythroblastosis fetalis. Blood Transfusion: Cross matching. Indications and complications. Lymph: Composition, formation, circulation, and functions.
- Skin - Structure, Functions, Blood flow, Temperature regulation.

UNIT 2 NERVOUS SYSTEM

30 Hrs.

Structure of a neuron, Classification of nerve fibers, Properties of nerve fibers, Receptors & Synapse & synaptic transmission, Reflexes & properties of reflexes, Spinal cord and its pathway, Spinal tracts and its functions, Physiology of pain, Brainstem, thalamus, basal ganglia, Cerebrum; cerebral cortex, Proprioceptors, Posture & equilibrium, Vestibular apparatus, EEG, CSF, Autonomic nervous system.

UNIT 3 MUSCULAR SYSTEM

30 Hrs.

Classification of muscles, Structure of a skeletal muscle, Properties of a skeletal muscle, Neuromuscular junction & excitation contraction coupling, Changes during muscle contraction, Single muscle twitch, quantum & wave summation, Tetany, myasthenia gravis, All or none law, Types of muscle contraction, Muscle fatigue, Muscle action potential, EMG – overview, Aerobic & anaerobic view, Endurance & muscle strength, Age related changes in muscle, Age related changes in physical work capacity.

UNIT 4 CARDIOVASCULAR SYSTEM

20 Hrs.

Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organization of CVS, Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties of Conducting system, Cardiac muscle – structure & properties, Cardiac cycle, Heart sounds, ECG; arrhythmia, Cardiac output, Factors regulating the action of heart, Heart rate, Cardiac Output, Arterial, Arterial blood pressure & its regulation, Blood Pressure, Regional Circulation, Coronary circulation, Cerebral circulation, Haemorrhage, Circulatory shock, Cardiovascular adjustments during exercise, Cardiovascular changes during exercise.

UNIT 5 DIGESTIVE SYSTEM

20 Hrs.

Introduction: Physiology, anatomy, and nerve supply of alimentary canal. Enteric nervous system, Salivary Secretion: Saliva: Composition. Functions, Regulation. Mastication (in brief), Swallowing: Definition. Different stages. Function, Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation, Peptic ulcer. Gastric motility. Gastric emptying. Vomiting, Pancreatic Secretion: Composition, production, function. Regulation, Liver: Functions of liver. Bile secretion: Composition, functions, and regulation. Gall bladder: Functions, Intestine: Succus entericus: Composition, function, and regulation of secretion. Intestinal motility and its function and regulation, Mechanism of Defecation.

Max. 120 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Classify structural and functional importance of cell, muscle, and skin.
- CO2** - Interpret different type and function of blood cells.
- CO3** - Categorize parts and functions of excretory system, endocrine system.
- CO4** - Sketch different parts and functions of Nervous system,
- CO5** - Explain different parts and functions of cardiovascular system,
- CO6** - Determine different parts and functions of musculoskeletal system. Also, able to know the normative ranges in each system.

TEXT / REFERENCE BOOKS

1. John E.Hall, Arthur C.Guyton, Text Book of Physiology, Saunders, 12th Edition, 2010
2. S.S.Randhawa, Medical BioChemistry, PV Books, 1 Ed, 2013
3. Chatterjee, Human Physiology, Central book agency, 4th edition, 1958
4. L. Prakasam Reddy, Concise Medical Physiology, JP Brothers, 3rd Ed, 1999
5. Shetty nandhini, Biochemistry for Physiotherapist and AHS, JP bros, 1 Ed, 2008
6. Sembulingam, Essentials of Physiology, JP Medical Ltd, 6th Ed, 2013
7. Sujith Kumar Chaudhri, Concise medical physiology, New Central Book Agency, 6th Ed, 2011
8. U. Sathyanarayana, Essentials of Biochemistry, Book and Allied (P) Ltd, Kolkata, 1999
9. Ganong's review of medical physiology kim .E. Barrett 25th edition.
10. DM. Vasudevan Textbook of biochemistry for medical student's 7th edition.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB1103	SOCIOLOGY	L	T	P	EI	Credits	Total Marks
		45	15	0	0	4	75

COURSE OBJECTIVES

- The Objective of this course is that after completion of lectures the students will be aware of the social issues and its effect on community, family.
- To Develop a holistic outlook towards the structure of society and community resources.

UNIT 1 INTRODUCTION

10 Hrs.

Meaning- Definition and scope of sociology, Its relation to Anthropology, Psychology, Social Psychology, Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods, Importance of its study with special reference to Health Care Professionals, Social Factors in Health and disease situations, Meaning of social factors, Role of social factors in health and illness.

UNIT 2 SOCIALIZATION

20 Hrs.

Meaning and nature of socialization, Primary, Secondary and Anticipatory socialization. Agencies of socialization, Social Groups: Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup. Family: The family, meaning and definitions. Functions of types of family, Changing family patterns, Influence of family on the individual's health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to Physiotherapy. Community: Rural community: Meaning and features –Health hazards of rurality, health hazards to tribal community. Urban community: Meaning and features- Health hazards of urbanities.

UNIT 3 CULTURE AND HEALTH

10 Hrs.

Concept of Health, Concept of Culture, Culture and Health, Culture and Health Disorders Social change: Meaning of social changes, Factors of social changes, Human adaptation and social change, Social change and stress, Social change and deviance, Social change and health program, The role of social planning in the improvement of health and rehabilitation.

UNIT 4 SOCIAL PROBLEMS OF DISABLED

10 Hrs.

Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems. Population explosion, Poverty and unemployment, Beggar, Juvenile delinquency, Prostitution, Alcoholism, Problems of women in employment, Geriatric problems, Problems of underprivileged.

UNIT 5 SOCIAL SECURITY

10 Hrs.

Social security and social legislation in relation to the disabled, Meaning of Social Work, The role of a Medical Social Worker.

Max. 60 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Summarize sociology.
- CO2 - Interpret sociological factors in health and diseases.
- CO3 - Categorize socialization, and discuss the influence of family and community on health.
- CO4 - Explain relationship between culture and health.
- CO5 - Analyze social problems of disabled.
- CO6 - Apply knowledge of social security.

TEXT / REFERENCE BOOKS

1. Textbook of Sociology for Physiotherapy Students by Neeraja KP ,2015
2. Textbook Of Sociology (For Physiotherapy And Bmlt Students) As Per The Syllabus Prescribed By Mlt Council Of India By Neelam Kumari And Madhu Sharma , 2016
3. A Textbook of Sociology by James Quayle Dealey& Lester Frank Ward,2010

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB1104	FOUNDATION TO PHYSIOTHERAPEUTIC MODALITIES AND APPLIED PHYSICS	L	T	P	EL	Credits	Total Marks
		45	15	0	0	4	75

COURSE OBJECTIVES

- To understand and describe the Various electrical components like diodes, triodes, rheostat, capacitor, potentiometer, switches, plugs, fuse, voltmeter, ammeter.
- To discuss the Clinical Orientation for the physiotherapy department, exercise therapy lab and electrotherapy therapy and Identification of therapeutic equipment and modalities.

UNIT 1 INTRODUCTION: FOUNDATION TO PHYSIOTHERAPY

12 Hrs.

Trends of Health Care Delivery, National Trends and resources, Local trends and resources, Components of Physiotherapy Profession: History of Medical Therapeutics, History of Physiotherapy, Overview of Health Science Professions Role and Scope of Physiotherapy Health Care: Needs versus Demands, Physiotherapist as 'Educator', Typical Job settings, Common problems, and solutions Orientation to physiotherapy department: Clinical Orientation to the physiotherapy department, lab orientation: exercise therapy, electro.

UNIT 2 MEDICAL MECHANICS

12 Hrs.

Basic mechanic of movement forces. Force– definition, resolution and component of forces, kinetics, kinematics, concurrent force system, parallel force system, momentum of the force, motion, types of motion, , pendulum, energy, work and power, speed, velocity, acceleration, stress and strain, Introduction to therapeutic equipment, Mechanical principle applied in human body, Gravity- centre of gravity, line of gravity, base of support, equilibrium, stability and friction, axes and planes, anatomical movements, degrees of freedom, angle of pull, springs and levers, pulley system, torque, friction, and inertia, Fluid Mechanics, Physical properties of water, Archimedes principles of hydromechanics, thermodynamics, centre of buoyancy, scales of temperature, specific heat & modes of energy transfer, latent heat therapy.

UNIT 3 MEDICAL ELECTRONICS

12 Hrs.

Introduction to medical electronics - Basic types of currents: AC and DC, types of currents used in therapeutics, instrumentation, importance of currents in treatment, equipment demonstration, Static electricity- Production of electric charge, characteristic of charged body, characteristic of line of forces, potential energy and factors affecting, potential difference and electromotive force, capacitance of capacitor, distribution of charge on a conductor, effect of dielectric, Current electricity- Units of electricity, farad, Volt, Ampere, Coulomb, Watt.

- Resistance: in series and parallel; Ohm's law and its application to DC and AC currents; AC & DC generator; Condensers- definition, principle, types, construction, working, uses; Thermionic valves – definition, types, principles, construction, working, uses; Types of rectification; Metal valve rectifiers- definition, construction, working, uses; Fuse: principle, construction, working and application; Choke coil- principle, construction, working and uses.
- Potentiometer, moving coil ammeter, transistor, voltmeter, transformer – principle, construction, working, uses; Shock-electrical and earth; causes, effects, management, precautions.
- Light: Electromagnetic waves and electromagnetic spectrum, Laws governing electromagnetic radiation, Interference & interference of light, emission and absorption spectrum, Laws of Reflection, Refraction, Absorption, Attenuation, Cosine law, Inverse square law, Grothus law, LASER, ultraviolet radiation, infrared radiation – principle and types.

UNIT 4 MAGNETISM

12 Hrs.

Definition, properties of magnet, magnetic field and magnetic forces, magnetic effects of an electric field, Magnetic effect of electric current – electro magnets, electromagnetic induction - production, self & mutual induction, laws of electromagnetic induction, magnetic flux, inductive reactance, eddy currents. Sound. - Wave motion in sound, Infrasonic, Normal hearing band, Characteristics of sound waves and their velocities, Ultrasonics', Reflection, Refraction and Attenuation of Sound waves, Interference of sound waves.

UNIT 5 ELECTRICAL MODALITIES

12 Hrs.

High Frequency Modalities - Shortwave diathermy, Microwave diathermy, Ultrasound therapy Medium Frequency Modalities - Interferential therapy Low Frequency Modalities - Transcutaneous electrical nerve stimulation, Electrical stimulation Thermal Agents - Paraffin wax bath, Hydro-collator packs, Contrast bath, Cryotherapy.

Max. 60 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Examine health care delivery system and the role of physiotherapy in health care profession.
- CO2** - Acquiring the general ethical code, skills in physiotherapy technique.
- CO3** - Explain the discipline of the department.
- CO4** - Apply the principle and application of concept of basic medical mechanics and medical electronics and relate the mechanical basis of joint with muscle structure and function.
- CO5** - Relate the action of electro physical agents with various tissues.
- CO6** - Develop appropriate skills and application of the basic principles and the components involved in the functioning of various therapeutic modality / equipment.

TEXT / REFERENCE BOOKS

1. R. S. Khandpur. Handbook of Biomedical Instrumentation: 3rd edition, India: McGraw-Hill Education, 1987.
2. Val Robertson, Alex Ward, John Low, Ann Reed, Electrotherapy explained- Principle and Practice, 4th edition, Elsevier: 2006.
3. Dena Gardiner, The Principles of Exercise Therapy, 4th edition, CBS: 2005.
4. Carolyn Kisner, Therapeutic Exercise: Foundations and Techniques, 7th edition, F.A.Davis copyright: 2018.
5. Michelle H. Cameron, Physical agents in Rehabilitation, 4th edition, Elsevier, 2003
6. Angela Forster; Nigel Palastanga; E Bellis Clayton Clayton's Electrotherapy: theory & practice 8th edition, New Delhi: CBS: 2005.
7. Ashish Kakkad, Fundamentals of Electrotherapy and Biomedical Physics 1st edition, Jaypee Brothers Medical Publishers.
8. Ajay Bahl, Sharad Ranga, Rajnish Sharma, Basic of Biomechanics, 1st edition, Jaypee Brothers Medical Publishers
9. Kim Jones, Karen Barker. Human Movement Explained, 1st edition, Elsevier Health Sciences

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB1105	FIRST AID	L	T	P	EL	Credits	Total Marks
		15	0	0	0	1	50

COURSE OBJECTIVES

- After completion of the lecture hours students will be able to Define first aid and describe first aid emergencies.
- Describe respiratory emergencies and community emergencies.

UNIT 1 INTRODUCTION

3 Hrs.

Definition of first aid. Importance of first aid, Golden rules of first aid, Scope, and concept of emergency, first aid emergencies, Burns & Scalds: Causes, Degrees of burns, First aid treatment, General treatment, Poisoning: Classification (irritants, acid, alkali, narcotics), Signs and symptoms. First aid treatment, General treatment. Trauma due to foreign body intrusion: Eye, ear, nose, throat, stomach and lungs, Bites: First aid, signs, symptoms, and treatment, Dog bite: rabies, Snake bite: neurotoxin, bleeding diathesis.

UNIT 2 SKELETAL INJURIES

3 Hrs.

Definition: Types of fractures of various parts of the body. Causes, Signs and Symptoms, Rules of treatment, Transportation of patient with fracture and spinal cord injuries. First aid measures in dislocation of joints, Treatment of muscle injuries, Respiratory emergencies, Asphyxia: Aetiology, Signs & Symptoms, rules of treatment, Drowning: Definition and management, Artificial respiration: Types and techniques.

UNIT 3 WOUNDS AND HAEMORRHAGE

3 Hrs.

Broad outline of Anatomy and Physiology of the circulatory system, Wounds: Classification, management, Haemorrhages: Classification, signs and symptoms, rules for treatment of haemorrhage, Treatment of haemorrhage from special areas (Scalp, mouth, nose, ear, palm and various veins). Internal haemorrhages: Visible and concealed.

UNIT 4 SHOCK AND UNCONSCIOUSNESS

4 Hrs.

Definition: Types of shock, Common causes of shock, signs, and symptoms of shock (assessment of established shock). General and special treatment of established shock. Transportation of the injured, Methods of transportation: Single helper, Hand seat, Stretcher, Wheeled transport (ambulance), Precautions taken: Blanket lift, Air and Sea travel, Community emergencies, Role of first aider (immediate and late) in fires, explosions, floods, earthquakes, Community resources, Police Assistance, Voluntary agencies (local, National, International). Ambulance services (Functions).

UNIT 5 BASIC LIFE SUPPORT – AHA GUIDELINES

2 Hrs.

Chain of survival-Ensure personal safety- Check the patient for a response- Assess for signs of life.

Max. 15 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Illustrate first aid and describe first aid emergencies.
- CO2 - Infer respiratory emergencies and community emergencies.
- CO3 - Explain first aid for Skeletal injuries, Wounds and Hemorrhage.
- CO4 - Analyze shock and unconsciousness.
- CO5 - Determine and demonstrate transportation of the injured.
- CO6 - Elaborate and apply Basic Life Support.

TEXT / REFERENCE BOOKS

1. Physiotherapy, Health, First Aid and Kinesiology in Physical Education by Dr. Md. Ataulah Jagirdar
2. First Aid and Emergency Management by Surabhi Arya.

SPTB1106	BASIC COMPUTER APPLICATIONS	L	T	P	EL	Credits	Total Marks
		15	0	0	0	1	50

COURSE OBJECTIVES

- After completion of the lecture hours students will be able to have knowledge about basics of computer applications.
- Application of computer knowledge in Telerehabilitation, Advanced therapeutic intervention.

UNIT 1 INTRODUCTION TO COMPUTERS

3 Hrs.

Generations of Computers - Data representation - Classifications of Computers- Computer Peripherals - Input and Output devices - Central Processor Unit (CPU) - Architecture of a digital computer - Memory unit ALU – Control, Unit-Data Processing Systems & Stages.

UNIT 2 INTRODUCTION TO WINDOWS

3 Hrs.

Operating System-Basic functions-DOS and basic DOS commands- The windows (all versions) and start menu-windows features –Windows Accessories-Windows Desktop

UNIT 3 INTRODUCTION TO PROGRAMMING

3 Hrs.

MS word & Excel: Introduction to Programming Languages - Data processing techniques -Modes of data processing Flowcharting techniques- Features of MS-WORD Creation of new documents & formatting text-working with table. Introduction to Excel-Opening a Worksheet Formatting and editing cells-Entering & editing formulas-Creation of various types of charts.

UNIT 4 INTRODUCTION TO COMPUTER NETWORKS & MULTIMEDIA

3 Hrs.

Computer Networks-Different Types-Local Area & Wide Area Networks-Types of WANS-Internets and Intranet-Web Page& Browser-URI-Search Engines and Emails. Definition & types of Multimedia-Hardware Requirements-Multimedia learning advantages Computer Aided Teaching-Other applications of Multimedia.

UNIT 5 INTRODUCTION TO POWER POINT-DIFFERENT PRESENTATIONS

3 Hrs.

Slide Views-Working with Access-Creation of Database-different data types-Primary -Secondary Keys-Creation of tables & queries. Accessing Physio-therapy related websites and downloading documents and information, citing references from web sites. Preparing essays, summaries of Physio & Occupational therapy topics. Introduction to Statistical Packages-Features & Types of Statistical software Basics of Hospital Management System-Use for patient care.

Max. 15 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Acquire knowledge about basics of computer applications.
- CO2** - Apply Word Processing software.
- CO3** - Explain about Spread sheet, Database creation.
- CO4** - Illustrate PowerPoint Presentations.
- CO5** - Develop and demonstrate skills in internet accessibility and download the relevant Subject Matter files/documents.
- CO6** - Apply the use of Internet services for Research and Documentation.

TEXT / REFERENCE BOOKS

1. Basic Computer Knowledge Paperback – December 29, 2016 by John Monyjok Maluth a New Approach to Basic Computer.
2. Computer fundamentals – 6th edition, Pradeep k Sinha, 2004
3. Computers made easy, Jonathan Brook , 2010

SPTB2101	ANATOMY -II	L	T	P	EL	Credits	Total Marks
		45	15	60	0	6	75

COURSE OBJECTIVES

- The objective of this course is that after completion of lectures, demonstrations and practical the student will be able to demonstrate knowledge in human anatomy.
- Apply the knowledge in the practice of Physiotherapy.

UNIT 1 OSTEOLOGY & MYOLOGY OF LOWER EXTREMITY

30 Hrs.

Lower Extremity- Name, identify and orientate hip bone, femur, tibia, fibula and patella, Identify the components and features of hip bones. Identify the ends, borders, surfaces, head, neck, trochanters, condyles and epicondyles of femur and the features of the tibia and fibula, Identify and mention the origin, insertion, nerve supply and action of the muscles in the front of thigh, Mention the boundaries and contents of femoral triangle and subsartorial canal, Indicate the position, course, and distribution of femoral nerve, Indicate the course and main branches of femoral artery and mention the blood supply of neck of femur, Indicate the position of femoral vein.

- a. Medial side of Thigh: Name and identify the muscles of the medial side of thigh. Mention their origin, insertion, nerve supply and action. Indicate the course, relations, and distribution of obturator nerve.
- b. Back of Thigh: Identify and mention the position, origin, insertion, nerve supply and action of the hamstring muscles. Indicate the position, course, relation, and distribution of sciatic nerve.
- c. Gluteal region: Identify and mention the position, origin, insertion, nerve supply and action of the muscle. Name and mention the position and course of the nerves found there and names of the arteries present in the Gluteal region.
- d. Hip Joints: Mention the type, articular surface and ligaments. Define the movements and name the chief muscles producing the movements. Mention the blood supply, nerve supply, factors for stability and limiting factors. Indicate applied anatomy.
- e. Knee Joints: Mention the type, articular surfaces, and ligaments. Define the movements and name the chief muscles responsible for the movements. Analyse the movements. Know the blood supply and nerve supply, indicate applied anatomy, define locking and unlocking of the joints.
- f. Popliteal fossa: Indicate the boundaries and contents. Mention the position and branches of tibia and common peroneal nerves.
- g. Front of Leg and Dorsum of Foot: Name and identify the tarsal bones, metatarsal bones, and phalanges in an articulated foot. Name and identify the muscles. Mention the position, origin, insertion, nerve supply and actions of the muscles. Position and distribution of deep peroneal nerve. Indicate the position and attachments of extensor retinacula. Mention and identify the features of the tibia and fibula.
- h. Lateral Side of Leg: Name and identify the muscles. Mention the position, origin, insertion, nerve supply and action of the muscles. State the position, course, and distribution of superficial peroneal nerve, State the position and attachment of peroneal retinacula,
- i. Back of Leg and Sole of Foot: Name and identify the features of the bones of the foot. Name and identify the muscles of back of leg. Mention the position, arrangement, origin, insertion, nerve supply and action of the muscles. State the position, course, and distribution of tibial artery. State the position and distribution of posterior tibial artery. Mention the position and attachment of flexor retinaculum, Mention the arrangement, origin, insertion, nerve supply and action of muscles of foot, Indicate the types, formation and factors for the maintenance of the arches of foot, Mention the type, articular surface, ligaments, movements of chief muscles for the movement, axis of movements and applied anatomy of tibiofibular joints, ankle joints, subtalar joints, MP joint and I.P. joints, Palpate and identify the tendons around the ankle and dorsum of foot.
- j. Nerves: Indicate the position, formation, and branches of lumbar and sacral plexuses, Mention

the root values of the nerves, Mention the position, course, relation, and distribution of the nerves, Predict the result of injury to the nerves, Illustrate cutaneous innervation of dermatomes.

- k. Blood vessels: Indicate the position of arteries and their main branches. Indicate the position of veins and their main tributaries. Indicate the position of lymph nodes.

UNIT 2 TRUNK & THORAX

30 Hrs.

- a. **Vertebral Column**: State the basic osteology of vertebral column. Identify the parts of a typical vertebra. Identify and state the main features of typical vertebra in each group of vertebrae. Identify a typical vertebra. State the form, structure, and movements of joints of vertebral column. Mention the movements and the muscles producing them, Identify the intervertebral disc and mention its parts, State the formation and ligaments of the intervertebral joints, Name and identify the curvatures of the vertebral column and indicate the deformities, State the contents of vertebral canal.
- b. **Thorax**: State the main features of the bones and joints of thoracic cage. Mention the boundaries, State the parts and features of sternum, Define true, false, and floating ribs. Mention the parts and features of typical rib. Know the main features of a typical rib, Mention the type and formation of the joints between rib and vertebrae, between costal cartilage and sternum and between costal cartilages, Mention the type and formation of the joints between the parts of sternum. Indicate the importance of sternal angle, Analyse pump handle and bucket handle movements of ribs, Palpate bony land marks such as jugular notch, sternal angle, xiphisternum and spines of thoracic vertebrae, Define inter costal space and list the contents. Mention the course and branches of typical intercostal nerve. Name the muscles of thorax. Mention the origin, insertion, nerve supply and action of intercostal muscles and diaphragm, Name the structure passing through the diaphragm and mention the orifices in the diaphragm, Define the boundaries and subdivision of the mediastinum and list the contents. Identify the contents, State the features of thoracic parts of sympathetic trunk.

UNIT 3 ABDOMEN

25 Hrs.

Mention the main features of lumbar vertebrae, sacrum, and coccyx, Mention the formation and subdivisions of the bony pelvis. List the features of the female bony pelvis and their roles. Mention the type, articular surfaces, ligaments, and movements of the joints of pelvis, define abdominal cavity, List the layers of anterior abdominal wall. Name and mention the origin, insertion, nerve supply and action of the muscles and the features of these muscles, Explain the formation of rectus sheath and list its contents. Define inguinal canal and know its position, extent, formation, and contents. Indicate its clinical importance. Define inguinal hernia, Name and identify the muscles of posterior abdominal wall, Give their origin, insertion, and action. List the organs on the posterior abdominal wall. Name the blood vessels on the posterior wall, Mention the position and formation of lumbar plexus. Name its branches, State the anatomy of lumbar region. Understand the disposition of muscles of the back in layers. Mention the arrangement of lumbar fascia. Identify the muscles in region. Understand the lumbar routes to abdomen. Identify and mention the attachments and actions of the large muscles of back. (at least the ones ending capitis), Distinguish abdominal cavity and peritoneal cavity, Mention the features of lumbar part of sympathetic trunk and other sympathetic ganglia, Mention the branches and distribution of the abdominal aorta and iliac arteries, State the inferior vena cava and iliac veins and mention their tributaries.

UNIT 4 PELVIS

15 Hrs.

State the main features of subdivisions, boundaries, walls and floor of pelvis, Mention the features of the pubic symphysis and sacroiliac joints, Distinguish and mention the major difference between the male and female.

Identify the muscles of the pelvic floor and mention their attachments, actions, and nerve supply. Mention the structure of the urogenital diaphragm.

UNIT 5 SYSTEMS

20 Hrs.

- a. **Cardio - Vascular System: Comprehend the external and internal features of the structure of the heart and their implications.** Mention the position of the heart. Identify and name the chambers, surfaces and borders of the heart. Identify the venae cavae, pulmonary trunk and aorta. Mention the internal features of the heart chambers. State the basic features of blood supply and nerve supply of the heart. State the basic arrangement of the pericardium. Identify the coronary arteries and coronary sinus. Name the parts of the conducting system of the heart. Mention the position and general distribution of major arteries and veins. Name their main branches. Name the types of arteries and veins. Give examples and indicate the basic microscopic structure of types of blood vessels.
- b. **Lymphatic System: Comprehend the general and regional arrangements of the lymphatic system. Name the lymphatic organs and mention their location.** Illustrate the basic structural features of lymphatic vessel, lymphatic, thymus, spleen, and tonsils. Assign functional roles to the lymphatic system. State the position and immediate relation of the spleen.
- c. **Respiratory System: List the parts of the respiratory system, Comprehend the functional anatomy of the parts of the respiratory system, Mention the basic features of innervations of bronchi and lungs, State the position, extent, gross and microscopic structure of the parietal pleura, Comprehend the arrangements of pleura.** Mention the parts and position of the parietal pleura, Name the recesses of pleura, Identify the trachea and bronchi, Identify the right lung and left lung, Name the components of the hilum of lung, Name the broncho pulmonary segments, Illustrate the main features of the microscopic structure of the lung, Identify the borders and surfaces of the lung on the specimen.

Max. 120 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Classify musculatures of Lower extremity.
- CO2** - Demonstrate bones and joints of Lower extremity.
- CO3** - Elaborate about Endocrine glands.
- CO4** - Interpret various components and contents of abdomen.
- CO5** - Summarize various components and contents of Pelvis.
- CO6** - Demonstrate respiratory system.

TEXT / REFERENCE BOOKS

1. Chaurasia, Human Anatomy - VOL I, VOL II, VOL III, 7 th Edition, CBS, 2016.
2. Text Book of Anatomy, Vishram Singh – VOL I, VOL II, VOL III, 3rd Edition, CBS, 2018.
3. Nigle Palastanga, Anatomy and human movement, Butterworth Heinmann pub. 4th Ed, 2007.
4. Cunningham's Manual of Practical anatomy (for practical classes only) Vol. 1, 2 and 3.
5. Romanes, Oxford university press, 3Ed, 2006.
6. Gray's Anatomy, William Bannister, Churchill Living Stone pub, 3 Ed, 2007

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB2102	PHYSIOLOGY -II	L	T	P	EL	Credits	Total Marks
		45	15	60	3	6	75

COURSE OBJECTIVES

- The Objective of this course after completion of lectures, demonstrations Lab practical's the student will be able to demonstrate an understanding of elementary human physiology dealing with cell, skin, muscle, blood and other important systems of the body.
- Apply the knowledge to the Physiotherapy practice.

UNIT 1 SPECIAL SENSES

25 Hrs.

Vision: Introduction: Functional anatomy of eye ball. Functions of cornea, iris, pupil, aqueous humour – glaucoma, lens – cataract, vitreous humour, rods and cones. Photopic vision. Scotopic vision. Visual Pathway and the effects of lesions. Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism. Visual Reflexes: Accommodation, Pupillary and Light. Visual acuity and Visual field. Light adaptation. Dark adaptation. Colour vision – colour blindness. Nyctalopia. Audition: Physiological anatomy of the ear. Functions of external ear, middle ear and inner ear. Structure of Cochlea and organ of Corti. Auditory pathway. Types of Deafness. Tests for hearing. Audiometry. Taste: Taste buds. Primary tastes. Gustatory pathway. Smell: Olfactory membrane. Olfactory pathway. Vestibular Apparatus: Crista ampullaris and macula. Functions. Disorders.

UNIT 2 ENDOCRINE SYSTEM

30 Hrs.

Major endocrine glands. Hormone: classification, mechanism of action. Functions of hormones
Introduction: Major endocrine glands. Hormone: classification, mechanism of action. Functions of hormones b. Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development: hormonal and other influences. c. Pituitary-Hypothalamic Relationship. Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxoedema, Cretinism, Grave's disease Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism. Calcium metabolism and its regulation. Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, and Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adrenogenital syndrome. Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline. Disorders: Pheochromocytoma. Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus. Calcitriol, Thymus and Pineal gland (very brief). Local Hormones. (Briefly).

UNIT 3 RESPIRATION

25 Hrs.

Overview of respiratory tract, Defence mechanism in respiratory tree, Mucociliary transport, Mechanics of respiration, Pulmonary circulation, Lung volumes & pulmonary function tests, Transport of blood gases, Acid – base balance, Artificial ventilation, Neural & chemical regulation of respiration, Hypoxia & its types, Effects of exercise on respiratory system, Acclimatization High altitude and respiration, Decompression sickness.

UNIT 4 RENAL SYSTEM

20 Hrs.

Introduction: Physiological anatomy. Nephrons – cortical and juxtamedullary. Juxta-glomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys. Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and

factors affecting. Renal clearance. Inulin clearance. Creatinine clearance. Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose. Tubular Secretion: Secretion of H⁺ and K⁺. PAH clearance. Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics. Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder. g. Acid-Base balance (very brief) Artificial Kidney: Principle of haemodialysis. Skin and temperature regulation.

UNIT 5 REPRODUCTIVE SYSTEM

20 Hrs.

Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation. Disorder **Male Reproductive System:** Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen. Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones: oestrogen and progesterone-action. Regulation of secretion, Menstrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods.

Max. 120 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Demonstrate an understanding of elementary human physiology.
- CO2** - Know the function of cardiovascular, musculoskeletal and nervous systems.
- CO3** - To Understand the carbohydrate, protein, and lipid metabolism.
- CO4** - Sketch different parts and functions of reproductive system,
- CO5** - Detail knowledge of central nervous system, peripheral nervous, supporting tissues and autonomic nervous system, Brief knowledge of pathway of vision, auditor, and taste.
- CO6** - Interpret bio chemistry of different type of digestion.

TEXT / REFERENCE BOOKS

1. John E.Hall, Arthur C.Guyton, Text Book of Physiology, Saunders, 12th Edition, 2010
2. S.S.Randhawa, Medical BioChemistry, PV Books, 1 Ed, 2013
3. Chatterjee, Human Physiology, Central book agency, 4th edition, 1958.
4. L. Prakasam Reddy, Concise Medical Physiology, JP Brothers, 3rd Ed, 1999
5. Shetty nandhini, Biochemistry for Physiotherapist and AHS, JP bros, 1 Ed, 2008
6. Sembulingam, Essentials of Physiology, JP Medical Ltd, 6th Ed, 2013
7. Sujith Kumar Chaudhri, Concise medical physiology, New Central Book Agency, 6th Ed, 2011

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB2103	PSYCHOLOGY	L	T	P	EL	Credits	Total Marks
		45	15	0	0	4	75

COURSE OBJECTIVES

- To know various behavioral patterns of individuals.
- Learn about theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication, and interaction skills appropriate to various age groups.

UNIT 1 INTRODUCTION TO PSYCHOLOGY

10 Hrs.

Schools: Structuralism, functionalism, behaviourism, Psychoanalysis. Methods: Introspection, observation, inventory and experimental method. Branches: pure psychology and applied psychology and physiotherapy.

Growth and Development: Life span: Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age). Heredity and environment: role of heredity and environment in physical and psychological development, "Nature v/s Nurture controversy".

UNIT 2 SENSATION

10 Hrs.

Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium, and visceral sense. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants). Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (experience and context). Illusion and hallucination: different types. Motivation cycle (need, drive, incentive, reward), Classification of motives. Abraham Maslow's theory of need hierarchy.

UNIT 3 EMOTIONS

10 Hrs.

Frustration: sources of frustration. Conflict: types of conflict. Management of frustration and conflict. Three levels of analysis of emotion (physiological level, subjective state, and overt behaviour), Theories of emotion, Stress, and management of stress.

Intelligence: Theories of intelligence, Distribution of intelligence & Assessment of intelligence

Thinking: Reasoning: deductive and inductive reasoning, Problem solving: rules in problem solving (algorithm and heuristic) & Creative thinking: steps in creative thinking, traits of creative people

UNIT 4 LEARNING

15 Hrs.

Learning: Factors effecting learning, Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory, the effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.

Personality: Approaches to personality: type & trait, behaviouristic, psychoanalytic, and humanistic approach. Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques. Défense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.

UNIT 5 SOCIAL PSYCHOLOGY

Leadership: Different types of leaders. Different theoretical approaches to leadership. Attitude: development of attitude. Change of attitude. Clinical Psychology: Models of training, abnormal behavior assessment, clinical judgment, psychotherapy, self-management methods, physiotherapist patient

interaction, aggression, self-imaging, stress management, assertive training, Group therapy, Body awareness, Pediatric, child and geriatric clinical psychology.

Max. 60 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to.

- CO1** - Classify psychology of attention, perception, and motivation.
- CO2** - Categories causes and management of frustration and conflict.
- CO3** - Document about intelligence, thinking and learning.
- CO4** - Summarize personality and methods to assess personality.
- CO5** - Demonstrate social psychology and clinical psychology
- CO6** - Explain importance of psychology in Physiotherapy management of patients.

TEXT / REFERENCE BOOKS

1. General Psychology S.K. Mangal
2. Foundations and applications of Indian psychology by Matthijs Cornelissen, Girishwar Misra
3. Psychology For Physiotherapists by Ramalingam Thangamant

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB2104	ETHICS AND ORIENTATION TO PHYSIOTHERAPY PRACTICE	L	T	P	EL	Credits	Total Marks
		45	15	0	0	4	75

COURSE OBJECTIVES

- The objective of this course is that after completion of lectures, demonstration, practical's and clinicals, the student shall be able to demonstrate and understand the principles of first aid.
- demonstrate skill in giving first aid treatment in emergencies that may be met in the community and in his/her practice as therapist.

UNIT 1 PROFESSIONAL ETHICS AND LEGAL ISSUES

10 Hrs.

The implications and confirmation to the rules of professional conduct. Legal responsibility for their actions in the professional context and understanding liability and obligations in case of medico-legal action. A wider knowledge of ethics relating to current social and medical policy in the provision of health care.

UNIT 2 PROFESSIONAL BODIES

10 Hrs.

National and international professional bodies; Professional associations (IAP) and educational body. Difference between scientific association (Professional body) and statutory body. The role of international health agencies such as WHO and WCPT.

UNIT 3 ORGANIZATION

10 Hrs.

Financial issues including budget and income generation Principles of an organizational chart. Organization of a department: Planning, space, manpower, materials and basic requirements.

UNIT 4 COMMUNITY EMERGENCIES

15 Hrs.

Role of first aider (immediate and late) in fire, explosions, floods and earthquakes. Community Resources Police assistance, voluntary agencies (local, national, international) and ambulance services (functions)

UNIT 5 ORIENTATION AND INTRODUCTION TO PHYSIOTHERAPY

15 Hrs.

Acquire the geographical orientation of the various concerned sections of the college the clinical training areas. Get the overall idea about the graduate program & its scope in the professional Practice Learn the bed – side manners. General ethical code & discipline of the department Acquire the skill of History taking in general.

Max. 60 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Classify and apply Professional ethics and legal issues.
- CO2 - Analyze the role of professional bodies.
- CO3 - Evaluate the financial issues and application of budget to the organization.
- CO4 - Analyze the community emergencies and Evaluate emergency resources available through which they can save the life of the people.
- CO5 - Explain & understand the role of Ethics in Physiotherapy.
- CO6 - Demonstrate manners which have to be followed in their daily clinical routine.

TEXT / REFERENCE BOOKS

1. Donald L Gabard, Mike W Martin ,Physical Therapy Ethics, ISBN:9780803625013, 0803625014, Published:2011, Publisher:F.A. Davis Company
2. Hoon R.S, First aid to the injured, St.John Ambulance Association,10th Ed, 2014.
3. Gardner Ward & Peter J. Roylance, New Advanced First Aid, London Butter Worths, 3rd edition, 2001.
4. Raine Hardhins and Hunt Vaheirs,Urgencies and emergencies for Nurses, English Universities Press Ltd, 1965.
5. First Aid, American Red Cross, The Balckiston company, Philadephia, 1945.
6. Golqalla Asoi, A handbook of emergencies, Bombay sam and company,

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 75

Exam Duration: 3 Hrs.

Part A : 2 Questions from unit 1 to unit 5 each carrying 15 marks each

30 Marks

Part B : 5 Questions from unit 1 to unit 5 each carrying 5 marks each

25 Marks

Part C : 10 Questions from unit 1 to unit 5 each carrying 2 marks each

20 Marks

SPTB2105	ENGLISH FOR COMMUNICATION	L	T	P	EL	Credits	Total Marks
		15	0	0	0	1	50

COURSE OBJECTIVES

- Speak fluently, intelligibly, and appropriately to teachers, Colleagues, Doctors, Patients and friends at the college, Hospital, and hostel etc. about academic or (occupational) areas of interest.
- Develop flexibility in reading; improve speed and rate of comprehension while tackling textbooks or reference material.
- Write official letters to the warden, principal and other officials in the bank, post office etc. Write reports about patients care. Overcome the common errors in pronunciation and grammatical and idiomatic usage.

UNIT 1 SPOKEN COMMUNICATION

3 Hrs.

Learning to read the phonetic symbols, Stress, Intonation, Rhythm. Commonly mispronounced words, Correct pronunciation of important commonly used words in clinical practice, Note taking in lecture classes.

UNIT 2 VOCABULARY AND READING

3 Hrs.

Special features of English vocabulary, Common errors in choice of word, semi technical vocabulary, Collecting material from library on scientific topics, Comprehensive exercises.

UNIT 3 WRITING

3 Hrs.

Writing letters regarding permission, Leave, opening bank account, e Note making from lecture / reading material, writing reports on patient care, Summarizing scientific passages.

UNIT 4 GRAMMATICAL AND IDIOMATIC USAGE

3 Hrs.

Correction of errors, Types of interrogative sentences, Active – Passive voice, Tense, Principles of precision, Clarity, and specificity.

UNIT 5 METHODS OF TEACHING

3 Hrs.

Lecture, pair work, group activities, role plays, simulations, debates, quiz, exercises, and essay writing. Methods Of Evaluation Oral presentations, Panel Discussions, Summary/Essay writing, Comprehension exercises.

Max. 15 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 - Articulation of fluent English.
- CO2 - Illustrate the ability to communicate effectively with colleagues, doctors, patients etc.
- CO3 - Analyze comprehension skills and vocabulary enhancement.
- CO4 - Write various official letters.
- CO5 - Summarize scientific sessions.
- CO6 - Apply the grammatical and idiomatic usages, Well versed with various methods of teaching by involving in group activities, role plays etc. Gain knowledge about various methods of evaluation.

TEXT / REFERENCE BOOKS

1. Bhaskar, W.W.S. and Prabhu, N.S, English through reading, Macmillan & Co of India Ltd, 4 Ed, 1993
2. Gimson A.E., An introduction to the pronunciation of English, Wing King Tong Co Ltd.5 Ed,1995
3. Randolph and Green Baum, A University Grammar of English, Quick, Group (FE) Ltd.3Ed,1997
4. Thomson, A.J., And Martinel A.V.V - Practical English Grammar –,Oxford University press, Delhi,2003
5. Water F.V.A, Proficiency Course in English, Hodder and Stronghton Pub., London, 1994.
6. Tone Daniel, I.M., English Pronouncing Dictionary, Dent and sons Ltd. London. 2004.

SPTB2106	PHARMACOLOGY / BIOCHEMISTRY	L	T	P	EL	Credits	Total Marks
		15	0	0	0	1	50

COURSE OBJECTIVES

- The objective of this course is that after completion of lectures, clinicals, the student shall be able to understand the principles of pharmacology and biochemistry
- To understand the role of drug knowledge that may be met in the community and in his/her practice as therapist.

UNIT 1 INTRODUCTION

2 Hrs.

Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.

UNIT 2 CARDIOVASCULAR PHARMACOLOGY

5 Hrs.

Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors
Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators Antiarrhythmic Drugs used in the treatment of vascular disease and tissue ischemia Vascular Disease, Haemostasis Lipid-Lowering agents, Antithrombotic, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.

NEUROPHARMACOLOGY – Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines, antianxiety Drugs: Benzodiazepines, Other Anxiolytics, Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium d. Antipsychotic drugs

MOVEMENT DISORDERS Drugs used in Treatment of Parkinson's disease Antiepileptic Drugs Spasticity and Skeletal Muscle Relaxants Inflammatory/Immune Diseases - Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interacts with NSAIDs Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematous, Scleroderma, Demyelinating Disease

RESPIRATORY PHARMACOLOGY: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

DIGESTION AND METABOLISM - Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic

GERIATRICS - Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.

UNIT 3 CELL BIOLOGY

3 Hrs.

Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton. muscle Contraction -Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction.

UNIT 4 BIOCHEMISTRY OF CONNECTIVE TISSUE

3 Hrs.

Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans. Acid-Base balance - Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acid base balance, Acid base imbalance. Water balance – Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre. Electrolyte balance - Osmolarity. Distribution of electrolytes. Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF. Clinical Biochemistry - Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Liver function tests, Renal function tests.

UNIT 5 METABOLISM 2 Hrs.

Carbohydrate metabolism - Lipid metabolism - introduction to lipid metabolism, lipolysis Cholesterol metabolism: synthesis, degradation, cholesterol transport Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases) Hypocholesterolaemia agents.

Max. 60 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Illustrate structures & functions of cell in brief.
- CO2** - Explain biochemistry of connective tissues.
- CO3** - Interpret acid base balance.
- CO4** - Analyze nutrition, balance diet & nutritional disorders.
- CO5** - Explain Describe Nucleotide and Nucleic acid Chemistry. Discuss role of enzymes. Describe Carbohydrate Chemistry, Amino-acid Chemistry & Vitamins. Discuss Carbohydrate Metabolism, Lipid Metabolism, Amino acid and Protein Metabolism
- CO6** - Elaborate Pharmacological effects of commonly used drugs by patients referred for Physiotherapy, list their adverse reactions, precautions to be taken & contraindications, Formulation & route of administration. Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-versa

TEXT / REFERENCE BOOKS

1. Biochemistry-by-Dr. Satyanarayan
2. Text book of Biochemistry for Medical students by-Dr Vasudevan/ Shrikumar
3. Essential of Medical Pharmacology – Tripathi