

SATHYABAMA COLLEGE OF PHYSIOTHERAPY

1.1.3 - Total number of courses having focus on employability/ entrepreneurship/ skill development offered by the University during the year 2023-2024

1.1.3.1 - Number of courses having focus on employability/ entrepreneurship/ skill development during the year -

SEMESTER I

S. No	Course type	Course Code	Course title	Page no
		Theory		
1	Theory	SPTB1101	Anatomy- I	3
2	Theory	SPTB1102	Physiology- I	10
3	Theory	SPTB1103	Sociology	13
4	Theory	SPTB1104	Foundation to Physiotherapeutic modalities and Applied Physics,	18
5	Theory	SPTB1105	First Aid (NE)	18
6	Theory	SPTB1106	Basic computer Application (NE)	20
		Practical/viva		
7	Practical	SPTB1101P	Anatomy Practical- I	-
8	Practical	SPTB1102P	Physiology Practical- I	-

III SEMESTER

S. No	Course Type	Course Code	Course title	Page no
1	Theory	SPTB3101	Microbiology and Pathology	22
2	Theory	SPTB3102	Exercise therapy- I	25
3	Theory	SPTB3103	Electrotherapy- I	28
4	Theory	SPTB3104	Biomechanics- I	31
5	Theory	SPTB3105	Nutrition, Balance Diet & Nutritional Disorders (NE)	34
		Practical/viva		
6	Practical	SPTB3102P	Exercise therapy Practical- I	-
7	Practical	SPTB3103P	Electrotherapy Practical- I	-.

SPTB1101	ANATOMY -1	L	T	P	EL	Credits	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 I - 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 II - 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 - protagonists, 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.

UNITIII - 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 gridle 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 IV -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 Willis. 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 V - 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.
- vii. **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.

Max hrs – 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, 3Ed, 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 -I	L	T	P	EL	Credits	marks
		45	15	60	0	6	75

Course Objective

- 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 I - General physiology

20 hrs

- a. **General Physiology** - Cell: Morphology. Organelles: their structure and functions, Transport Mechanisms across the cell membrane, Body fluids: Distribution, composition.
- b. **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.
- c. **Skin** - Structure, Functions, Blood flow, Temperature regulation

UNIT II- Special Senses

25 hrs

Vision: Introduction: Functional anatomy of eye ball. Functions of cornea, iris, pupil, aqueous tumour – glaucoma, lens – cataract, vitreous tumour, 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 III - 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 IV - 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 V - 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 hrs = 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 Edi,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	marks
		45	15	0	0	4	75

Course Objective:

- 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 II – 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 II - 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 IV- 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 V- 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 hrs = 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	marks
		45	15	0	0	4	75

Course objective:

- 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 I

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 II - 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 III - 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.

- a. 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.

- b. Potentiometer, moving coil ammeter, transistor, voltmeter, transformer – principle, construction, working, uses; Shock-electrical and earth; causes, effects, management, precautions.
- c. 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 IV – 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 V - 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 hours = 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	marks
		15	0	0	0	1	50

FIRST AID

Course Objective

- 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 II - 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 III - 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 IV - 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 V- 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 hours = 15hrs

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. Ataullah Jagirdar
- 2 First Aid and Emergency Management by Surabhi Arya

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

Course Objective

- 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 I - 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 II - 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 III - 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 IV - 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 V - 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 hours = 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

SEMESTER III

SPTB3101	MICROBIOLOGY AND PATHOLOGY	L	T	P	EL	Credits	marks
		45	15	0	0	4	75

- The objective of this course is that after completion the students will be able to understand about the knowledge of pathology, microbiology including immunity, virology, antiseptics, and allergy..
- To know in detail about the diseases.

PATHOLOGY

UNIT I – Introduction

10 hrs

Disease, concepts of disease, classifications of lesions- Bacterial, viral, and parasitic infections a general outline. Cell injury, necrosis, and gangrene. Inflammation, healing and repair, Degeneration.

Haemorrhage, shock, thrombosis, embolism. Tuberculosis, typhoid. Deficiency diseases.

Tumours: Aetiology & spread. Common tumour. Blood: Anaemia, Heart and blood vessels, Common congenital anomalies, Rheumatic & coronary heart diseases.

UNIT II – Diseases

10 hrs

Respiratory system: Pneumonia, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma.

Bone and joints: Autoimmune disease, Septic arthritis, Osteomyelitis. Skin: Leprosy.

Urinary system.

Central nervous system: CNS infections, vascular disorders.

Rheumatoid Arthritis.

Scleroderma and Psoriasis.

Diseases of muscle including Poliomyelitis, Myopathies.

Volkman's ischemia.

MICROBIOLOGY

UNIT III – Introduction

10 hrs

Introduction and history of microbiology.

General lectures on micro-organisms:

- Classification.
- Shape and arrangement.
- Special characteristics – spores, capsules, enzymes, motility, reproduction.

UNIT IV- Infection

- Disinfection and antiseptics.
- Sterilisation and asepsis.

- c. Antibacterial agents – fundamental aspect. Susceptibility test
- d. Infection – source of infection.
 - i. portals of entry.
 - ii. Spread of infection.

UNIT V- Immunity and prevention

15 hrs

- a. Immunity – natural and acquired, non-specific immunity.
- b. Allergy and hypersensitivity.
- c. Outline of common pathogenic bacteria and the diseases produced by them.

Treatment and prevention.

- d. Respiratory tract infections.
- e. Meningitis.
- f. Enteric infections.
- g. Anaerobic infections
- h. Urinary tract infections.
- i. Leprosy, tuberculosis, and miscellaneous infections.
- j. Wound infections.
- k. Sexually transmitted diseases.
- l. Hospital acquired infections.
- m. Pathogenic Yeasts and fungi.
- n. Virology -Virus infections, with special mention of
- b) Hepatitis, Poliomyelitis & Rabies.

Max hours = 60 hrs

Course outcome:

On completion of the course, student will be able to

- CO1: Asses the disease and changes in structure and function of cells during disease condition gained, hemorrhage, shock and various blood vessel occlusive disease gained.
- CO2: Determine the importance of nutrition, function of nutrition and its deficiency diseases gained,
- CO3: Explain Pathogenesis and pathological changes of disease in various body system is understood properly.
- CO4: Summarize the mechanism of autoimmune diseases
- CO5: Elaborate about the various microorganism, its classification and structure gained, various method of sterilization and its importance gained.
- CO6: Evaluate infectious diseases gained, To Know about immunity, types, and its importance

Text /Reference books:

1. Harsh Mohan, Text book of Pathology, Jaypee brothers, 7th edition-2015.
2. SatishGupte, The Short text book of Medical Microbiology by, Jaypee Brothers,2nd Ed, 2004.
3. Ananthanarayanan & Jayaram Paniker, Text book of Micro biology, Orien Longman, 9th Ed, 2013.
4. Kumar, Essentials of Microbiology, JP, 1st Ed, 2014.
5. Datta, Textbook of Pathology, JP, 2nd Ed, 2004.

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

SPTB3102	EXERCISE THERAPY – I	L	T	P	EL	Credits	marks
		45	15	60	3	6	75

Course Objective:

- The objectives of this course are that after hours of lectures, demonstrations, practical and clinics the student will be able to list the indications and contra – indications of various types of exercise therapy,
- Demonstrate the different techniques, and describe their effects.

UNIT I – Introduction

10 hrs

The aims of Exercise Therapy- The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment

UNIT II - Methods Of Testing

30 hrs

a. Functional tests

b. Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine, goniometer-parts, types, principles, uses, Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints Tests for neuromuscular efficiency

i. Electrical tests

ii. Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine.

iii. Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf

iv. Static power Test

v. Dynamic power Test

vi. Endurance test

vii. Speed test Tests for Co-ordination

e. Tests for sensation

f. Pulmonary Function tests

g. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length h. Measurement of the angle of Pelvic Inclination

UNIT III - Passive Movements

30 hrs

Causes of immobility, Classification of Passive movements, specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements. Active Movements Definition of strength, power & work, endurance, muscle actions.

Physiology of muscle performance:

Structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fiber type, motor unit, force gradation. Causes of decreased muscle performance. Physiologic adaptation to training: Strength & Power, Endurance.

Types of active movements Free Exercise:

Classification, principles, techniques, indications, contraindications, effects and uses Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses

UNIT IV - Resisted Exercise

30 hrs

Definition, principles, indications, contraindications, precautions & techniques, effects and uses Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open Chain and Closed-Chain exercise. Specific exercise regimens

i. Isotonic: de Lormes, Oxford, MacQueen, Circuit weight training

ii. Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle

iii. Isometrics Isokinetic regimens

a) Relaxation

Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson's, Mitchell's, additional methods

UNIT V - Massage

20 hrs

- a. History and Classification of Massage Technique, Principles, Indications and Contraindications Technique of Massage
- b. Classify, define, and describe: - effleurage, stroking, kneading, petrissage, deep friction, percussions, vibration and shaking etc. Preparation of patient: Effects, uses, indications and contraindications of the above manipulation.
- c. Massage manipulations-principles effects/merits/demerits -skills on extremities / scalp / spine/ abdomen / face.
- d. Therapeutic and physiological changes in Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism.

Max hours = 120 hrs

Course Outcome:

On completion of the course, student will be able to

- CO1 Classify fundamentals of muscle and joint function and their measurements
- CO2 Summarize the active movements of each joint
- CO3 Demonstrates the passive movements of each joint
- CO4 Illustrates practical knowledge on passive movement, resisted exercise and muscle grading,
- CO5 Classify, and describe active movements and passive movements. describe therapeutic massage
- C06 Explain principle of exercise applications. Describe methods of testing – goniometry, manual muscle testing, Anthropometric Measurements, Measurement of Limb Length, and functional tests.

Text /Reference books:

- 1) Dena Gardiner, Principles of Exercise therapy, Bell and Hymes, 4th Ed, 1981.
- 2) Massage, manipulation & traction- Sydney Litch
- 3) Carolyn Kisner, Therapeutic Exercise, Jaypee Brothers, 6th Ed, 2012
- 4) Margeret Hollis, Practical Exercise therapy, ELBS, 4 Ed, 2004
- 5) Kendell, manual Muscle Testing,ELBS, 2Ed, 1997
- 6) Sebastian, Principles of Manual Therapy, Jaypee Brothers, 2 nd Ed, 201

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

SPTB3103	ELECTROTHERAPY – I	L	T	P	EL	Credits	marks
		45	15	60	O	6	75

Course Objectives:

- The objective of this course is that after completion of lectures, demonstration, practical and clinical the student will be able to list the indications and contra – indications of various types of electrotherapies,
- Demonstrate the different techniques, and describe their effects.

UNIT I - INTRODUCTION**10 hrs**

- a. Introduction to Electrotherapy – Definition and types, Therapeutic uses. Instrumentation, Importance of currents in treatment, Equipment demonstration.
- b. Shock-Electrical and earth: causes, effects, management, precautions, Safety measures in Electrotherapy Department.

UNIT II - LOW FREQUENCY CURRENTS**30 hrs**

- a. Basics of Low Frequency stimulating currents
- b. Bio-electricity – electrical charge within body.
- c. Types of low frequency currents used in therapeutics
- d. Direct current – Galvanic current
- e. Interrupted DC
- f. Faradic current
- g. Surged Faradic current
- h. Pathophysiology of nerve lesion – Principles of selection of modes for assessment of nerve muscle function.

All types of therapeutic currents must be taught under the following sequence

- a. Definition: Production (Brief) – wave forms – duration
- b. Indication & contra indications
- c. Physiological effects
- d. Therapeutic effects
- e. Technique of application

Iontophoresis

- a. Theory
- b. Physiological effect and uses of various iontophoresis
- c. Effects of various ions.
- d. Techniques of iontophoresis for pain relief, reduction of oedema, wound healing, and hyperhidrosis.

Transcutaneous electrical nerve stimulation (TENS)

- a. Physiology of pain, pain modulation Gate control theory.
- b. TENS – Definition, Production, Types, Therapeutic and physiological effects, Indication & Contraindication, Technique of application.

UNIT III- MEDIUM FREQUENCY CURRENTS

30 hrs

- a. Interferential current
- b. Russian current
- c. Di dynamic current
- d. Sinusoidal current

All types of medium frequency currents must be taught under the following sequence.

- a. Definition: Production (Brief) – wave forms – duration
- b. Indication & contra indications
- c. Physiological effects
- d. Therapeutic effects
- e. Technique of application

UNIT IV - ELECTROMYOGRAPHY, NERVE CONDUCTION & BIO – FEEDBACK TESTING, ELECTRO-DIAGNOSTIC TESTING LIKE FG TEST, SD CURVE.

20 hrs

- a. Principles
- b. Instrumentation
- c. Application and uses.

UNIT V TRACTION

30 hrs

- a. Types
- b. Indications and contraindications
- c. Physiological and therapeutic effects
- d. Principles and application of traction

External Compressive Devices

- a. Types
- b. Indications and contraindications.
- c. Physiological and therapeutic effects
- d. Principles and application of traction.

Max hours = 120 hrs

Course outcome:

On completion of the course, student will be able to

- CO1: Classify types of therapeutic currents and its physiological, therapeutic effects gained.
- CO2: Determine about pain and pain modulation mechanism gained.
- CO3: Explain neuromuscular dysfunction by electro-diagnostic test is known.
- CO4: Categorize different types of low and medium frequency currents.
- CO5: Illustrate indication, contraindication, method of application gained. Knowledge about Traction, its indication, contraindication, method of application gained.
- CO6: Evaluate external compression device, indication, contraindication, method of application gained. Practical application of electrotherapy modalities for various conditions gained.

Text /Reference books:

1. Clayton's Electrotherapy – Therapy and practice – Angela Forster, All India Traveler Book seller. 9th Ed, 2012.
2. John Low and Anee Reed, Electrotherapy Explained –, Butterworth Heinmann Pub. 4th Ed, 2003
3. Edward Bellis Clayton, Nigel Palastanga, Claytons Electrotherapy: Theory and practice, 9th Ed, 1985
4. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
5. Basanta Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.
- 1) Tim Watson Electrotherapy evidence-based practice, Churchill Livingstone, 12th Ed, 2008.
- 2) Valma, J. Robertson, Electrotherapy explained, Butterworth, Heinmann, Elsevier, 4th Ed, 2014.

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

SPTB3104	BIOMECHANICS – I	L	T	P	EL	Credits	marks
		45	15	0	0	4	75

Course Objective:

- The objectives of this course is that after lectures and demonstrations the student will be able to demonstrate an understanding of the principles of Biomechanics and Kinesiology and their application in the health and disease pertaining to muscles and joints of upper limb.

UNIT I **BASIC CONCEPTS IN BIOMECHANICS: KINEMATICS AND KINETICS** 15 hrs

- a. Types of Motion
- b. Location of Motion
- c. Direction of Motion
- d. Magnitude of Motion
- e. Definition of Forces
- f. Force of Gravity
- g. Reaction forces
- h. Equilibrium
- i. Objects in Motion
- j. Force of friction
- k. Concurrent force systems
- l. Parallel force system,
- m. Work
- n. Moment arm of force
- o. Force components
- p. Equilibrium of levers

UNIT II **JOINT STRUCTURE AND FUNCTION** 10 hrs

- a. Joint design
- b. Materials used in human joints
- c. General properties of connective tissues
- d. Human joint design
- e. Joint function
- f. Joint motion
- g. General effects of disease, injury, and immobilization.

UNIT III MUSCLE STRUCTURE AND FUNCTION 10 hrs

- a. Mobility and stability functions of muscles
- b. Elements of muscle structure
- c. Muscle function
- d. Effects of immobilization, injury, and aging.

UNIT IV BIOMECHANICS OF THE THORAX AND CHEST WALL 15 hrs

- a. General structure and function
- b. Rib cage and the muscles associated with the rib cage
- c. Ventilatory motions: its coordination and integration
- d. Developmental aspects of structure and function
- e. Changes in normal structure and function in relation to pregnancy, scoliosis, and COPD

THE TEMPOROMANDIBULAR JOINT - General features, structure, function, and dysfunction

UNIT V THE VERTEBRAL COLUMN 10 hrs

- a. Describe the general structure and function of the vertebral column, describe factors affecting stability and mobility.
- b. Regional structure and function of cervical, dorsal, lumbar, and sacral vertebrae. Motions of the vertebral column. Lumbar-pelvic rhythm. Rotation of the vertebrae in each region.
- c. Movements of the ribs during rotation.
- d. Describe the muscles of the vertebral column, flexors, extensor, rotators, and lateral flexors Describe the effects of injury, developmental deficits, defects in vertebrae Forces acting on the vertebral column during specific motions.

Max hours = 60 hrs

Courser Outcomes:

On completion of the course, student will be able to

CO1: Illustrate basic concepts in Biomechanics, classify joints

CO2: Classify joint structures & its functions.

CO3: Apply biomechanics of movements at joints related to planes and axis, classify muscle and describe muscle structures & its functions Discuss biomechanics of muscle related to force production.

CO4: summarize Biomechanics of the Thorax and Chest wall,
CO5: Interpret Biomechanics of The Temporal mandibular Joint,
CO6: Explain Biomechanics of vertebral column

Text /Reference books:

1. Joint structure and function – Cynthia Norkin, 7th edition
2. Textbook of Biomechanics by Subrata Pal
3. Kinesiology and Biomechanics by Bhartendu Kumar

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

SPTB3105	NUTRITION, BALANCE DIET & NUTRITIONAL DISORDERS.	L	T	P	EL	Credits	marks
		15	0	0	0	1	50

Course Objective:

- The objectives of this course are that after lectures the student will be able to demonstrate a general understanding of the diet and nutrition to be prescribed during practice.

UNIT I – introduction

3 hrs

Importance of nutrition Calorific values, Respiratory quotient – Definition, and its significance Energy requirement of a person - Basal metabolic rate. Definition, Normal values, factor affecting BMR Special dynamic action of food.

Physical activities - Energy expenditure for various activities. Calculation of energy requirement of a person

UNIT II- Balanced diet

3 hrs

Recommended dietary allowances Role of carbohydrates in diet: Digestible carbohydrates and dietary fibres

Role of lipids in diet Role of proteins in diet: Quality of proteins – Biological value, net protein utilization,

Nutritional aspects of proteins essential and non- essential amino acids. Nitrogen balance

UNIT III- Nutrition and Health

3 hrs

Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition program. Maternal nutrition and education

UNIT IV - Food and Nutrition:

3 hrs

Assessment – Nutritional and Energy requirements.

UNIT V- Nutritional Disorders

3 hrs

Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples Nutritional anaemias: Iron deficiency anaemia, Folic acid, Vit. B 12 deficiency anaemia – including pernicious anaemia.

Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise, and medications.

Max hours = 15 hrs

COURSE OUTCOME

On completion of the course, student will be able to

CO1: Interpret about nutrition.

CO2: Assess basic concepts in Nutrition

CO3: Determine basic concepts in diet

CO4: Summarize nutrition and health

CO4: Evaluate nutrition and energy requirements

CO5: Explain the nutritional deficiency.

Text /Reference books:

- 1) Nutrition and Dietetics by Shubhangini A Joshi
- 2) All About Nutrition: Diet preparation tools with basic understanding by Mr. Hitesh Andel
- 3) Textbook of Nutrition and Dietetics by Ranjana Mahna & Seema Puri Kumud Khanna, Sharda Gupta, Santosh Jain Passi, Rama Set