



**COLLEGE OF
PHYSIOTHERAPY**

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Deverakaggalahalli, Kanakapura Road Ramanagaram Dt.

Karnataka - 562 112



1.1.3 Number of courses having focus on employability/ entrepreneurship/ skill development year wise during the academic year (2023-24)

Response - 77


Principal
College of Physiotherapy,
Dayananda Sagar University,
Bangalore, 560078

BPT-I YEAR

PROOF For
1.1.3

YEAR : I YEAR
 COURSE CODE : 22PT101(Theory) &
 22PT171 (Practical)
 TITLE OF THE COURSE: HUMAN ANATOMY

COURSE OBJECTIVES

The study of anatomy will include identification of all gross anatomical structures. Particular emphasis will be placed on description of bones, joints, muscles, brain, cardiopulmonary and nervous systems as these are related to the application of patients requiring physiotherapy.

COURSE OUTCOMES

The expected outcomes of this course is that after the prescribed hours of lectures, demonstrations and practical sessions the student will have an in-depth knowledge of human anatomy and will be able to identify bones, joints, muscles, brain, cardio pulmonary and nervous systems as needed for the study and practice in physiotherapy.

COURSE TITLE - Human Anatomy
 COURSE CODE - 22PT101

Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggregate	Practical		Th+Prac
								IA	Written exam	VV		IA	Final Exam	Final Exam
150	76	38	264	4	2	1	7	20	100	30	150	10	40	200

S.I No.	Topic		Theory hours	Practical hours
1.	General Introduction	- Must Know Histology-Cell, tissues of the body, epithelium, connective tissue, cartilage, bone, lymph, muscle, nerve, skin, bursa, ligaments etc. Osteology-Formation, function, growth and repair of bones, bone classification and types Joints-definition-classification, structure of fibrous, synovial, cartilaginous joints, blood supply and nerve supply of joints. Muscles - origin, insertion, types, nerve supply and actions	15	6

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		• Development of Musculoskeletal system. -Desirable to know • Axial skeleton • Differentiation, development of various systems (skin, blood vessels, lymphatic system, fascia) -Nice to know • General Embryology- Ovum, spermatozoa, fertilization • Foetal circulation		
2.	Systems of Human Body	- Must Know • Cardiovascular System –Anatomy of heart, Arteries, Capillaries, Veins, lymphatic system • Respiratory System - Anatomy of lungs, upper and lower respiratory tract including nose, larynx, trachea, bronchi, broncho-pulmonary segments, pleura and lungs • Sensory Organs -Desirable to know • Urogenital System –Anatomy of Urinary system, Urogenital Diaphragm. -Nice to know • Genetics • Digestive System–Anatomy of the gastro-intestinal tract.	15	8
3.	Upper Extremity	- Must Know • Outline the anatomical features, attachments, ossification and side determination of the bones of U/L: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges • Joints of upper limb: shoulder girdle, Shoulder joint, Elbow, Wrist and joints of hand • Fascia and Muscles of front and back of upper arm: origin, insertion, nerve supply and action • Muscles of front and back of forearm:	24	14

		origin, insertion, nerve supply and action • Muscles of hand: origin, insertion, nerve supply and action, arches of hand • Nerves of upper Extremity and their position course, relations & distribution • Blood vessels of upper Extremity and their position course, relations, distribution and main branches. • Lymphatic drainage of upper Extremity • Surface & Bony landmarks of upper extremity • Demonstration of muscles and movements of Upper extremity joints. • Palpation of peripheral arteries & nerves of upper extremity -Desirable to know • Radiographic appearance of Musculoskeletal system of Upper Extremity Nice to know • Applied anatomy of all structures of Upper Extremity		
4.	Thorax	- Must Know • Ribs: Parts & main features of typical rib & define true, false and floating ribs • Sternum: parts and anatomical features • Thoracic vertebrae: parts and anatomical features • Mediastinum – divisions and contents • Pericardium and Conduction system of heart • Joints of Thorax- Identify & explain in detail various joints: • Manubrio-sternal joint, Costo-Chondral joints, Chondro- sternal joints • Costo-vertebral joints, Costo-transverse joints • Intervertebral joints • Movements of vertebral column & Rib cage. • Intercostal space and its content and accessory muscles of respiration	14	6



		• Diaphragm- origin, insertion, structures passing through it. • Mention the course and branches of nerves, blood vessels and lymphatic drainage of thorax. -Desirable to know • Surface anatomy and radio-graphical appearance of structures of thorax -Nice to know • Applied anatomy of thorax		
5.	Head, Face and Neck	- Must Know • Bones of skull and mandible • Muscles & Vessels and nerve supply of neck • Facial muscles and its nerve supply and blood supply • Temporo-Mandibular (TM) joint, Cervical vertebrae & Skull. • Movement of TM joint -Desirable to know • Triangles of neck • Larynx, Pharynx • Gross anatomy and muscles of eyes, ears and tongue • Blood and nerve supply of eyes and ears • Salivary glands • Lateral wall of nose • Position, shape, size, function, blood supply and nerve supply of: Hypothalamus and pituitary glands, pineal glands, thyroid glands, parathyroid glands, thymus. -Nice to know • Surface and radiographic appearance of Head, Neck and Face. • Applied anatomy of Head, Neck and Face.	14	0
06.	Neuroanatomy	- Must Know • Central Nervous System • Peripheral Nervous System	18	8

		• Cranial nerves • Peripheral Nerves • Neuromuscular Junction • Sensory End Organs • Spinal Cord Segments & Areas • Brainstem • Cerebellum • Inferior colliculi & Superior colliculi • Thalamus • Corpus striatum • Cerebral hemispheres • Basal Ganglia • Internal Capsule • Thalamo-cortical radiations • Pyramidal systems & Extra-pyramidal systems • Sympathetic & Para-sympathetic system • Ventricles system • Meninges • Pons, medulla • Blood supply of the brain -Desirable to know • Epithalamus • Rhinencephalon • Diencephalon • Visual radiation • Auditory radiation • Neural tube • Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus, pituitary gland.		
7.	Trunk and Abdomen	- Must Know • Vertebral columns: Identify parts of typical (and atypical) vertebra and state the main features, attachments and ossification. • Intervertebral disc and mention its part. Myology- • Fascia and muscles of back / para vertebral muscles. • Fascia and muscles of post Abdominal Wall: origin, insertion, nerve supply and	16	8



		action. • Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum. • Fascia and muscles connecting U/L with vertebral column: origin, insertion, nerve supply, action. -Desirable to know • Surface Anatomy of all vertebrae • Mention the course and branches of nerves, blood vessels and also lymphatic drainage of trunk & abdomen. • Lumbar Plexus: Position, formation and branches. • Rectus sheath: formation and contents. • Contents of vertebral canal and abdomen • Large blood vessels of the gut: Location, size, shape, features, blood supply, nerve supply and functions of the following: Stomach, liver spleen, pancreas, kidney, urinary bladder, intestines, gall bladder. • Radiographic appearance of vertebrae • Position, shape, size, function, blood supply and nerve supply of the following glands: Adrenal glands, pancreatic islets. -Nice to know • Applied Anatomy of structures of trunk & abdomen.		
8.	Pelvis	- Must Know • Features of pubic symphysis and sacroiliac joints. • Muscles of pelvic floor, their attachments, action • Nerve supply, Lymphatic drainage and Blood vessels of the region with course, variations, distribution and main branches -Desirable to know • Demonstration of movements of pelvis • Sacral Plexus • Main features of subdivision, boundaries, walls & floor of pelvis.	10	6

		• Difference between male and female pelvis. • Anatomy, Blood and nerve supply and difference between male and female reproductive system. • Position, shape, size, function, blood supply and nerve supply of the following glands: ovaries and testes. -Nice to know: • Applied anatomy of lumbar plexus		
9.	Lower Extremity	- Must Know • Osteology - Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot • Myology- Origin, Insertion, Nerve Supply, Action of the following: • Fascia and muscles in anterior of thigh • Fascia and muscles of medial side of thigh • Fascia and muscles of posterior of thigh • Fascia and muscles of gluteal region • Fascia and muscles of lateral side of leg • Fascia and muscles of back of leg and sole of foot • Arches and skin of foot • Detailed explanation of joints of Lower extremity: Hip, joint, Knee joint, Ankle joint, joints of foot. • Surface & Bony landmarks of lower extremity • Demonstration of muscles and movements of lower extremity joints. • Identification and palpation the nerves of Lower extremity and mention their position course, relations and distribution • Indication and palpation the blood vessels of Lower extremity and mention their position, course, relation, distribution and main branches • Explain femoral triangle, femoral canal, inguinal canal and adductor canal and subsartorial canal • Popliteal fossa -Desirable to know	24	14



		• Radiographic appearance of musculoskeletal system of Lower extremity • Lymphatic drainage of Lower extremity -Nice to know • Applied Anatomy of structures of Lower extremity		
10.	SPT			38

Recommended Textbooks:

1. B.D Chaurasia's Human Anatomy – Regional And Applied; Volume I, Volume II and Volume III.
2. SINGH [Inderbir], Textbook of Anatomy with colour atlas: Introduction, Osteology, Upper Extremity, Lower Extremity. Vol I. JP Brothers, New Delhi 1996.
3. SINGH [Inderbir], Textbook of Anatomy with colour Atlas: Thorax and Abdomen. Vol II. JP Brothers, New Delhi 1996.
4. SINGH [Inderbir], Textbook of Anatomy with colour Atlas: Head and Neck Central Nervous System. Vol III. JP Brothers, New Delhi 1996.
5. SINGH [Inderbir], Human Osteology. JP Brothers, New Delhi 1990.

Reference Books:

1. SNELL [Richards], Clinical Anatomy for Medical students: Ed. 5. Little Brown and Company, Boston. 1995.
2. MOORIE [Kieth L], Clinically Oriented Anatomy. Ed. 3., Williams and Wilkins, Baltimore, 1992
3. DATTA [A.K], Essentials of human Anatomy: Thorax and Abdomen Ed. 2. Vol. I Current Book International, Calcutta 1994
4. DATTA [A.K], Essentials of human Anatomy: Head and Neck Ed 2. Vol. II, Current Book International, Calcutta 1995

YEAR : I YEAR
 COURSE CODE : 22PT102 (Theory)
 22PT171 (Practical)
 TITLE OF THE COURSE : HUMAN PHYSIOLOGY

COURSE OBJECTIVES

This course helps the student to understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular, musculoskeletal, nervous system and respiratory system.

COURSE OUTCOMES

The expected outcomes of this course is that after the prescribed hours of lectures, demonstrations, and lab and practical the student will be able to demonstrate an understanding of elementary human physiology.

COURSE TITLE – Human Physiology
COURSE CODE – 22PT102

Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggregate	Practical		Th+Prac
								IA	Written exam	VV		IA	Final Exam	Final Exam
150	76	38	264	4	2	1	7	20	100	30	150	10	40	200

S.I No.	Topic		Theory hours	Practical hours
1.	General Physiology	- Must Know - Cells & its organelles – structure & functions - Homeostasis, biofeedback mechanisms - Transport across cell membrane - Outline of membrane potential & action potential - Desirable to know - Body fluids: Distribution, composition. Tissue fluid – formation.	8	-
2.	Nerve Muscle Physiology	- Must Know Muscle- classification, structure, sarcomere &	14	6

YEAR : I YEAR
 COURSE CODE : 22PT102 (Theory)
 22PT171 (Practical)
 TITLE OF THE COURSE : HUMAN PHYSIOLOGY

COURSE OBJECTIVES

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COURSE OUTCOMES

The expected outcomes of this course is that after the prescribed hours of lectures, demonstrations, and lab and practical the student will be able to demonstrate an understanding of elementary human physiology.

COURSE TITLE - Human Physiology
 COURSE CODE - 22PT102

Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggregate	Practical		Th+Prac
								IA	Written exam	VV		IA	Final Exam	Final Exam
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1.	General Physiology	- Must Know - Cells & its organelles – structure & functions - Homeostasis, biofeedback mechanisms - Transport across cell membrane - Outline of membrane potential & action potential -Desirable to know - Body fluids; Distribution, composition. Tissue fluid – formation.	8	-
2.	Nerve Muscle Physiology	- Must Know Muscle- classification, structure, sarcomere &	14-	6

		its properties • Myoneural junction & transmission • Molecular basis of muscle contraction • Motor unit, EMG • Nerve - Structure, Properties & Classification of nerves • Propagation of nerve impulse, Resting : membrane potential. Action potential – ionic basis and properties. • Degeneration and regeneration of nerve • Neuromuscular junction – Structure • Neuromuscular transmission -Desirable to know • Applied aspects – Myasthenia Gravis, Rigor mortis • Length – Tension Relationship, Strength-Duration Curve • Reaction of degeneration • Muscle disorders -Nice to know • Fatigue • Load • Plasticity		
3.	Haematology	- Must Know • Composition and functions of blood • Red blood cell – morphology, formation, normal count, functions, physiological and pathological variation. • White blood cell- morphology, classification, properties, functions, physiological & pathological variation • Haemoglobin- basic chemistry, fate and functions. • Immunity- definition, classification, concept of antigen & antibody • Haemostasis- steps, role of platelets • Blood groups – A, B, O, AB and Rh system, Landsteiner's Law • Anaemia, ESR & PCV • Lymph: Composition, formation, circulations and functions	14	6

		-Desirable to know • Plasma proteins • Blood coagulation factors, Anticoagulants • Blood transfusion -Nice to know • Haemophilia • Thrombocytopenia • Edema		
4.	Cardiovascular System	- Must Know • Physiological anatomy and nerve supply of the heart and blood vessels. Organization of CVS. • General organization and properties of cardiac muscle • Origin and conduction of cardiac impulse • Cardiac cycle and heart sounds • Normal heart rate, bradycardia, tachycardia, normal ECG • Cardiac output- normal values, physiological variations, factors affecting cardiac output and regulation • Blood pressure- normal values, measurement, determinants, short term and long term. regulation • Pressure and volume changes during cardiac cycle • Regional circulation- Coronary, Muscular, Cerebral • Shock – Definition, Classification – causes and features. -Desirable to know • Pathophysiology of circulatory shock and oedema • Hypertension, hypotension -Nice to know • Cardiovascular changes during exercise.	14	6
5.	Respiratory System	- Must Know • General organization of respiratory system • Nerve supply and Functions of respiratory system • Mechanics of respiration- inspiratory &	14	6

		expiratory muscles, intrapleural pressure, lung & thoracic compliance, surfactant, lung volumes & capacities • Diffusion of gases • Transport of respiratory gases • Regulation of respiration • Outline of hypoxia- types & physiological changes • Acclimatization to high altitude. • Dead space, Ventilation/ perfusion ratio • Maximum breathing capacity & breathing reserve • Pulmonary function tests. -Desirable to know • Artificial respiration • Chest Expansion -Nice to know • Asphyxia, cyanosis (types and physiological changes) • Respiratory changes during exercise.		
6.	Digestive System	- Must Know • Physiological anatomy and nerve supply of alimentary canal. Enteric nervous system • General organization • Mastication and deglutition • Saliva – composition, functions & regulation of salivary secretion • Gastric secretion – composition, mechanism, phases of secretion, • Regulation and functions. • Outline of gastric emptying and peristalsis • Pancreatic secretion - composition, regulation & functions • Liver and Gallbladder – composition and functions of bile • Movements and functions of small and large intestine • Defecation reflex -Desirable to know • Jaundice • Peptic ulcer	12	6

		Constipation, diarrhoea		
7.	Renal Physiology	- Must Know - General introduction, structure and functions of kidney - Formation of urine- filtration, re-absorption and secretion, GFR – normal value and factors affecting - Physiology of micturition - Neurogenic bladder -Desirable to know - Renal circulation - Creatinine Clearance - Plasma clearance test - Acid-Base Balance -Nice to know - Artificial kidney – Principle of haemodialysis	10	6
8.	Body Temperature Regulation	- Must Know - Normal body temperature & its regulation - Skin-structure and functions -Desirable to know - Hypothermia, hyperthermia	6	6
9.	Endocrine System	- Must Know - Introduction - General organization of endocrine glands - Mechanism of hormone action - Releasing hormones from hypothalamus - Physiological actions, regulation & disorders of: ➤ Anterior & Posterior pituitary hormones ➤ Thyroid & Parathyroid Hormones ➤ Adrenal cortex & medulla ➤ Pancreatic hormones -Desirable to know Local Hormones. -Nice to know - Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. - Disorders: Myxedema, Cretinism, Grave's	12	6

		disease - Disorder: Diabetes mellitus. - Calcitriol, Thymus and Pineal gland. - Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adreno-genital syndrome.		
10.	Reproductive System	- Must Know - Functional anatomy of reproductive system - Puberty, changes in males and females, menarche, menopause - Spermatogenesis - stages and regulation, Physiological actions of testosterone, Semen - Menstrual cycle & Ovarian cycles – phases & hormonal regulation, ovulation - Physiology of pregnancy - Lactation – initiation, maintenance and control, - Functions of placenta -Desirable to know - Sex determination, Sex differentiation - Pregnancy tests - Contraception methods -Nice to know - Sex chromosomes - precocious and delayed puberty	12	-
11.	Central Nervous System	- Must Know - General organization of nervous system - Receptors – definition, classification and functions - Synapse-definition, physiological anatomy & synaptic transmission - Reflexes – classification, properties and functions - Spinal cord- ascending & descending tract and functions - Ascending tracts-sensations carried, pathways & functions - Descending tract - Origin, course & termination & functions - Pain sensation – types of pain, pathways for pain, referred pain, central analgesia system	18	6

		• Posture & equilibrium, Vestibular apparatus • Thalamus & Hypothalamus – its functions • Cerebellum – functions, effects of lesion • Basal ganglia – functions, effects of lesion, Parkinsonism • Muscle tone • Cerebral cortex – Gross anatomy, division & functions of each lobe • Autonomic nervous system – Organization & functions of parasympathetic & sympathetic system and functions • CSF – Composition, formation, circulation, functions & Blood brain barrier, Applied aspects • Differences between Upper Motor Neuron and Lower Motor Neuron lesions -Desirable to know • Synthesis of neurotransmitters • Limbic system and its functions -Nice to know • Effects of spinal transection • Decerebrate and decorticate rigidity • Thalamic syndrome • Ascending and descending reticular activating system • Speech, memory and learning		
12.	Special Senses	Vision Must Know • Vision – Structure of Eye ball, retina, refractory errors • Accommodation, visual pathway, Pupillary reflexes Desirable to know • Light and dark adaptation • Photochemistry of vision Ear Must Know • Functional anatomy of Ear, Cochlea • Functions of middle & inner ear Desirable to know • Auditory pathway	16	6

		• Audiometry Nice to know • Physics of sound • Theories of hearing		
		Taste & smell Must Know • Functional anatomy • Factors affecting taste and smell		
13.	Practical & Lecture demonstrations (L.Ds)	a) Clinical examination of arterial pulse. b) Determination of arterial blood pressure. c) Clinical examination of the cardiovascular system. d) Clinical examination of the respiratory system. e) Clinical examination of higher mental functions. f) Clinical examination of the sensory system. g) Clinical examination of motor system -I. h) Clinical examination of motor system -II i) Clinical examination of all cranial nerves.		22
14.	SPT			38

Recommended Textbooks:

1. Textbook of medical physiology – Guyton Arthur
2. Concise medical physiology – Chaudhuri.Sujit K.
3. Human Physiology – Chatterjee C.C.
4. Textbook of practical Physiology – Ranade.
5. Text of Physiology – A.K.Jain.
6. Basics of Medical physiology- Venkatesh D &Sudhakar H H
7. Manipal Manual of Physiology – Prof. C N Chandrashekar

Reference Books:

1. Review of Medical Physiology – Ganong William F.
2. Physiological basis of Medical practice – Best & Taylo



YEAR : I YEAR
COURSE CODE : 22PT103
TITLE OF THE COURSE : BIOCHEMISTRY

COURSE OBJECTIVES

This course provides the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies. It covers basic biochemical, cellular, biological and microbiological processes, basic chemical reactions in the prokaryotic and eukaryotic cells, the structure of biological molecules, introduction to the nutrients i.e. carbohydrates, fats, enzymes, nucleic acids and amino acids.

COURSE OUTCOMES

The student would know:

1. Various bio-molecules which are present in the body and functions
2. The formation and fate of these bio-molecules
3. Their normal levels in body fluids required for functioning and their abnormal levels to understand the disease process.

Hours		Evaluation pattern	
Tot	Lec	Written	Total

		IA	Final Exam	Final Exam
60	60	20	80	100

Unit I

S.I No.	Topic	Theory hours
1.	Nutrition - Must Know • Introduction, 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 - Desirable to know • Balanced diet Recommended dietary allowances • Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers Role of lipids in diet - Nice to know • 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 Nutritional disorders	7
2.	Carbohydrate Chemistry - Must Know • Definition, general classification with examples, Glycosidic bond • Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides.	3
3.	Lipid Chemistry - Must Know • Definition, general classification Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol - Nice to know • Essential fatty acids and their importance	3

		Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies	
4.	Amino-acid Chemistry	-Desirable to know Amino acid chemistry: Definition, Classification, Peptide bonds Peptides: Definition, Biologically important peptides Protein chemistry: Definition, Classification, Functions of proteins.	3
5.	Enzymes	- Must Know - Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. -Nice to know - Classification with examples, Factors affecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes)	3

Unit II

S.I No.	Topic	Theory hours
1.	Nucleotide and Nucleic acid Chemistry - Must Know - Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body. -Desirable to know - Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. -Nice to know - Structure and functions of tRNA, rRNA, mRNA.	2
2.	Digestion and Absorption - Must Know - General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. -Desirable to know	3

		Disorders of digestion and absorption - Lactose intolerance.	
3.	Carbohydrate Metabolism	- Must Know - Introduction, Glycolysis - Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation -Desirable to know - Glycogen metabolism - Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Cori cycle -Nice to know - Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.	5
4.	Lipid Metabolism	- Must Know - Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fatty acids, Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera's test -Desirable to know - Cholesterol metabolism: synthesis, degradation, cholesterol transport Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases)	5
5.	Amino acid and Protein Metabolism	- Must Know - Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle -Desirable to know - Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.	3
6	Vitamins	-Must Know Definition, classification according to solubility. -Desirable to know	7

		Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity	
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Unit III

S.I No.	Topic	Theory hours
1.	Mineral Metabolism -Desirable to know Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron in detail	2
2.	Cell Biology - Must Know - Introduction, Cell structure, Cell membrane structure and function, various types of absorption. - Intracellular organelles and their functions, briefly on cytoskeleton	2
3.	Muscle Contraction - Must Know Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction	2
4.	Biochemistry of Connective tissue - Must Know Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans	2
5.	Hormone Action - Desirable to know Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function	2
6.	Acid-Base balance - Must Know 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	2

7.	Water balance	Nice to know Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre.	1
8.	Electrolyte balance	Nice to know Osmolarity. Distribution of electrolytes Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF	1
9.	Clinical Biochemistry	Must Know - Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Desirable to know - Liver function tests, Renal function tests	2
			60

Recommended Textbooks:

- MURRAY [ROBERT KK], Harper's Bio Chemistry Ed 24, Prentice Hall. 1996, p925
RAMAKRISHNA [S], PRASANNA [KG], RAJAN [R], Text Book of Medical Biochemistry, Ed1, orient Langman, Bombay 1980.
- VASUDEVAN [DM] and SREE KUMARI [S], Text Book of Bio Chemistry for Medical students, Ed 1, Jaypee Brothers, New Delhi, 1995
- DAS [Debajyothi], Biochemistry, Ed. 7, Academic Publishers Calcutta, 1992
- PRASAD RM, RM's Physiotherapy Textbook Series, Textbook of Biochemistry for Bachelor of Physiotherapy First Edition, RM Publications, Mangalore. .

Reference Books:

- LEHNINGER [Albert] et.al., Principles of Biochemistry, Ed. 3, LBS Publishers, Delhi, 1993
- ORTEN [James M] and NEUHAUS [OHO.W]. Human Biochemistry, Ed. 9, Mosby, St.Louis,1975
- Strayer [LUBERT], Biochemistry, Ed. 4, WH, Freeman & Co., Ny.1995
- DEVLIN [Thomas M], Biochemistry with Clinical Correalation, Ed. 4, Willey Libs, NY 1997

YEAR : I YEAR
COURSE CODE : 22PT104 (Theory)
 22PT173 (Practical)
TITLE OF THE COURSE : KINESIOLOGY



COURSE OBJECTIVES

This course supplements the knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their applications in musculoskeletal function and dysfunction.

COURSE OUTCOMES

The expected outcomes of this course is that after the prescribed hours of lectures and demonstrations in addition to clinical the student will be able to demonstrate an understanding of the principles of biomechanics and kinesiology and their application in health and disease.

COURSE TITLE - Kinesiology
COURSE CODE - 22PT104

Hours	Hours per week	Evaluation pattern
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Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggregate	Practical		Th+Prac
								IA	Written exam	VV		IA	Final Exam	
152	38	38	228	4	1	1	6	20	100	30	150	10	40	200

COURSE CONTENTS			
Topic	Kinesiology	Hours of teaching learning	
		Theory	Practical
UNIT - I			
1	Section 1- Basic concepts of Biomechanics	12	1
	Must Know - Review of mechanics, including motion, forces, force systems, composition of forces, Force of Gravity ,Reaction forces,Equilibrium,Objects in Motion ,Force of friction, Concurrent force systems, Parallel force systems - Introduction to Biomechanics and terminology - Axis & planes with movements occurring at each joint - Levers, Pulleys,Moment Arm and Force - Newton's law of motion - Center of Gravity, Line of gravity, Stability and Equilibrium		
2	Section – II - Muscle Structure and function	8	2
	Must Know - Composition,,unit, structure, architecture of muscle - Classification of Muscles - Functions of muscles & factors affecting it - Group action of muscle		
	Nice to know- Effect of immobilization, injury & aging on muscle		
3	Section – III - Joint structure and function	10	2
	Must Know - Basic principles of Joint design and a human joint - Tissues present in human joint including fibrous tissue, bone, cartilage and connective tissue - Bio-physical properties of connective tissue [contractile &non-contractile], Elasticity /Plasticity- response to sudden/slow/ sustained loading- Stress		

	strain Curve, Creep, Hysteresis • Classification of joints		
	Desirable to Know • Effect of immobilization, injury & aging on joint		
4	Section – IV Anatomy and Biomechanics of the joints	70	15
	Must Know • Upper limb: Shoulder girdle, elbow, wrist and hand • Lower Limb: Hip complex, knee, ankle and foot • Vertebral Column: Cervical, Thoracic, thoracic cage, Lumbar and Sacroiliac spine		
	Nice to know • Pathomechanics of the joints		
UNIT - II			
5	Section- V Goniometry	6	3
	Must Know • Parts, types, principles and uses of a goniometry.		
	Desirable to know • Techniques for measurement of ROM of all peripheral joints		
	Nice to know • Techniques for measurement of spine ROM		
6	Section- VI Biomechanics of Thorax and Chest Wall	4	1
	Must Know • General structure and function Rib cage movements -Kinetics and Kinematics • The muscles associated with the rib cage		
7	Section-VII – Biomechanics of Vertebral Column	15	2
	Must Know • General structure and function • Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region • Muscles of the vertebral column • Ligaments of Vertebral Column		
	Nice to know • Pathomechanics of the vertebral column		
8	Section VIII- Temperomandible Joint	3	1



	Must Know • General features • structure and function		
UNIT - III			
9	Section IX- Analysis of Posture	8	3
	Must Know • Static and dynamic posture, • postural control, • kinetics and kinematics of posture • Ideal posture analysis of posture		
10	Section X- Analysis of Gait	8	4
	Must Know • General features of gait, • Gait initiation, kinematics and kinetics of gait, energy requirements. • kinematics and kinetics of gait		
	Desirable to know • Energy requirements • Kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running		
	Nice to know • Pathomechanics of abnormal gait patterns		
11	Section XI -Movement Analysis	3	2
	Must Know • Kinetics & Kinematics of various activities of daily living like supine to sitting, sitting to standing, walking and climbing up & down		
	Nice to know • Kinetics & Kinematics of running, jogging, pulling, pushing • Kinetics & Kinematics of lifting, overhead activities, squatting		
12	Section XII- Walking aids	5	2
	Must Know • Parallel bars, crutches, canes, walkers, etc. – types, parts and uses.		

13	SPT	38
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Recommended Textbooks :

1. Joint Structure and Function – A comprehensive Analysis, JP Bros Medical Publishers, NewDelhi.
2. Brunnstrom, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5th Ed 1996,1stIndian Ed 1998
3. Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997

YEAR : I YEAR
COURSECODE : 22PT105
TITLEOFTHECOURSE : PSYCHOLOGY



COURSEOBJECTIVES

This course will enable the student to understand specific psychological factors and effects in physical illness and thus help them to have a holistic approach in their dealings with patients during admission, rehabilitation and discharge.

COURSEOUTCOMES

The expected outcomes of this course is that after completion of lectures and demonstrations the students will be able to recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical-surgical patient/condition.

Hours		Evaluation pattern		
Tot	Lec	Written		Total
		IA	Final Exam	Final Exam

60	60	10	40	50
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Topic SlNo	Course content	Hours of teaching/ learning Theory
	Unit I	
	Must Know :	
1	Introduction to Psychology • Definition and nature of Psychology, Fields & subfields of psychology • Schools of thoughts- Structuralism, functionalism, Behaviorism, Gestalt, Psycho-analytic Theory	5
2	Developmental Psychology • Definition & its Theories • Physiological & Psychological changes during Infancy, Early & Late childhood, adolescent stage, Puberty, Adulthood & old age	5
3	Emotions - nature & relationship with autonomic nervous system • Theories of emotions - James Lange theory, Schachter Singer theory, Cannon Bard theory	6
	Desireable to know	
4	Attention & perception: Nature of attention & perception, Principle of grouping	2
5	Stress: Physiological and Psychological relation to health and sickness, Psychosomatic, Professional stress burnout	2
6	Psychological Reactions of a Patient: during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional overreactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope	2
	Unit II	
	Must Know :	
7	Motivation - Maslow's hierarchy of motives, Theories of motivation, Motivation cycle	6
	Conflict & Frustration – Types of conflicts, Common Defense mechanism, stress	
8	Intelligence : Theories, Distribution and Assessment	6
9	Thinking: Reasoning, Problem Solving, Creative Thinking	4
	Desirable to know	
10	Reactions to Loss: death and bereavement shock and disbelief, development of awareness, restitution, resolution, stages of acceptance as proposed by Kubler – Ross	2
	Unit III	

	Must Know	
11	Learning - Definition and theories, conditioning, Role of learning in human life Memory - Definition and nature, types of memory and forgetting cause Learning	8
12	Personality : Approaches to personality, Personality assessment and Defense Mechanisms. Abnormal Psychology - Difference between normal & Abnormal, Causes of abnormality	4
13	Social psychology : Leadership : Different types of leaders. Different theoretical approaches to leadership.	4
	Desirable to know	
14	Behavior Modifications : Application of various conditioning and learning principles to modify patient behaviours	2
	Nice to know	
15	Compliance : Nature, factors contributing to non-compliance, improving compliance	2

Recommended Textbooks:

1. Feldman.R.H(1996).UnderstandingPsychology.NewDelhi:TataMcGrawhill.
2. Morganetal. (2003).Introductionto Psychology.NewDelhi:TataMcGrawhill.
3. Leftn. Psychology.Boston:Alwin&BacotCompany.
4. Mangal,S.K(2002).AdvancedEducationalPsychology.NewDelhi
5. Atkinson(1996).Dictionary of Psychology.

YEAR : I YEAR

COURSE CODE : 22PT106

TITLE OF THE COURSE: SOCIOLOGY

COURSE OBJECTIVES:

This course introduces students to sociological perspectives on health, illness, and medicine. It explores the social, political, cultural, and economic forces that shape contemporary medicine and experiences of health. Using a range of theoretical approaches, the course will examine topics related to the illness experience, health inequalities, biomedical knowledge and practices, and the impact of medical technologies.

COURSE OUTCOME:

- Students will develop and demonstrate a critical understanding of different sociological perspectives.
- Students will apply a critical sociological perspective to examine key concepts and approaches in public health, showing their awareness of issues regarding the production and distribution of power and knowledge.
- They will learn to link individual experiences of health and illness with social figurations and the social construction of normality.

Hours		Evaluation pattern		
Tot	Lec	Written		Total
		IA	Final Exam	Final Exam
60	60	10	40	50

Topic Sr No	Course content	Hours of teaching/ learning Theory
	Unit I	
	Must Know :	
1	Introduction – Definition & Relevance with Physiotherapy.	8
2	Sociology & Health –Social factors affecting Health Status, Social Consciousness& Perception of Illness, Decision Making in taking Treatment	4
3	Socialization – Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital &Rehabilitation of the patients.	6
4	Social groups-Concepts, Influence of formal & informal groups of Health & Diseases.	4
	Unit II	
	Must Know :	
5	Family-Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases &Family	4
6	Community Role- in Rural & Urban communities in Public Health, in determining Beliefs, Practices & Home Remedies in Treatment.	6
7	Social problems of the Disabled -Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems • Population Explosion • Poverty & Unemployment	6
8	Social Security & Social Legislation in relation to the Disabled	4
	Desireable to know	
9	Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting	3
	Unit III	
10	Culture -Components Impact on Human Behaviour Cultural Meaning of	3

	Sickness, Response to Sickness & Choice of Treatment	
11	Caste Systems-Features of Modern Cast Systems & its Trends, Social change factors-Human Adaptation, Stress, Deviance, Health Program, Role of Social Planning in the improvement of Health & in Rehabilitation	4
12	Social Control - Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease	3
13	Prostitution, Alcoholism, Beggary, Problems of Women in Employment, Role of a Social Worker.	3
	Nice to Know	
14	Role of Culture as Social consciousness in moulding the Perception of Reality, Culture induced Symptoms & Diseases, Sub-Culture of Medical Workers	2



Recommended Textbooks:

1. Sachdeva and Vidyabushan, Introduction to the study of sociology.
2. INDRANI T K, Text Books of Sociology for Graduates Nurses and Physiotherapy Students, JP Brothers, New Delhi, 10 edition, and Health Disorders

Principal
 College of Physiotherapy,
 Dayananda Sagar University,
 Bangalore, 560078

YEAR: II YEAR

COURSE CODE: 22PT203

TITLE OF THE COURSE: PHARMACOLOGY

COURSE OBJECTIVES:

THIS COURSE COVERS THE BASIC KNOWLEDGE OF PHARMACOLOGY INCLUDING ADMINISTRATION, PHYSIOLOGIC RESPONSE AND ADVERSE EFFECTS OF DRUGS UNDER NORMAL AND PATHOLOGIC CONDITIONS. TOPICS FOCUS ON THE INFLUENCE OF DRUGS IN REHABILITATION PATIENT/CLIENT MANAGEMENT. DRUGS USED IN IONTOPHORESIS AND PHONOPORESIS WILL BE DISCUSSED IN DETAIL.

COURSE OUTCOMES:

THE EXPECTED OUTCOMES OF THE COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS, THE STUDENT WILL BE ABLE TO UNDERSTAND THE EFFECTS AND THE ADVERSE EFFECTS OF VARIOUS DRUGS ON DIFFERENT SYSTEMS OF THE BODY. THIS WOULD HELP THE STUDENT TO UNDERSTAND THE LIMITATIONS IMPOSED BY THE DRUGS ON ANY THERAPY.

COURSE TITLE – Pharmacology														
COURSE CODE – 22PT203														
Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggre gate	Practical		Th+Pra c
								IA	Written exam	VV		IA	Final Exam	
74	00	00	74	2	-	-	2	20	80	-	-	-	-	100

S.I No.	Topic	Theory hours
UNIT – I		
1.	General Pharmacology - Must to know • Introduction to pharmacology • Classification of drugs • Sources of drugs • Routes of administration. • Pharmacokinetics - Absorption and distribution of drugs. • Pharmacokinetics - Drug Biotransformation & drug Excretion. • Pharmacodynamics - Dose response	6

		relationship. • Adverse drug reactions. • Factors modifying drug action. -Desirable to know • Drug development.	
2.	Drugs acting on Autonomic Nervous System and Peripheral Muscle Relaxants	- Must to know • General considerations – The Sympathetic and Parasympathetic Systems • Receptors • Cholinergic and Anti-Cholinergic drugs • Adrenergic and Adrenergic blocking drugs -Desirable to know • Somatic Nervous System • Muscle relaxants. -Nice to know • Glaucoma • Autonomic changes during exercise.	7
3.	Drugs acting on CVS	- Must to know • Drugs Used in the Treatment of Heart Failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors • Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors • Drugs Used in the Treatment of Vascular Disease and Tissue Ischemia • Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers -Desirable to know • Anti-arrhythmic Drugs • Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators -Nice to know • Cardiovascular changes during exercise.	7
4	Drugs acting on blood	-Must to know • Hemostasis Antithrombotics, Anticoagulants and Thrombolytics • Hyperlipidemic drugs • Cerebral Ischemia Peripheral Vascular Disease. - Desirable to know	4

		• Haematinics and Erythropoietin • Treatment of shock	
UNIT- II			
5.	Drugs used in Psychiatric conditions	- Must to know • 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 • Antipsychotic drugs • Antiepileptic Drugs • Drugs used to treat alcoholism -Desirable to know •	6
6.	Chemotherapy	- Must to know • General principles of chemotherapy. • Anti-Tuberculosis drugs • Anti -Leprosy drugs • Beta - Lactam antibiotics - I (Penicillins) • Beta - Lactam antibiotics - II (Cephalosporins) -Desirable to know • Sulfonamides&Fluoroquinolones. • Macrolides &aminoglycides • Tetracyclines&chloramphenicol (Broad spectrum antibiotics) • Immunosuppresants -Nice to know • Anti- fungal drugs • Anti- malarial drugs • Anti- protozoal drugs • Anti- viral drugs • Anti- cancerous drugs	8
7.	Endocrinology	- Must to know • Introduction to Endocrinology, • Thyroid hormones and Anti-thyroid drugs. • Treatments of diabetes mellitus. • Corticosteroids • Glucocorticoids: Pharmacological Uses	6

		of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids -Desirable to know • Oestrogen and Progesterone (effects on CNS, coagulation) • Vitamins and Calcium Metabolism, Phosphorous and Magnesium, Selenium, Zinc -Nice to know	
8.	Drugs used in Respiratory Conditions	- Must to know • Drugs used in Treatment of Obstructive Airway Diseases – COPD, Bronchial Asthma • Drugs to treat COVID- 19 • Drugs used in Upper Respiratory Tract Infections - Allergic Rhinitis, Sinusitis, cough, laryngitis, Pharyngitis.	4
UNIT- III			
9.	Inflammatory/Immune Diseases	- Must to know • Antipyretics • Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, Drug Interactions with NSAIDs • 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 Erythmatosus, Scleroderma, Demyelinating Disease, Neuropathies -Desirable to know -Nice to know • Neuromuscular changes during exercise,	7
10.	Geriatrics	- Must to know • Drugs used in Treatment of Parkinson's Disease • Dementia • Postural hypotension -Desirable to know • Adverse effects of special concern in	4

		the Elderly	
11.	Drugs acting in Gastrointestinal Disorders and Metabolism	- Must to know • Peptic Ulcer • Constipation • Laxatives • Anti-diarrhoeal drugs -Desirable to know • Anti-emetics • Intestinal Bowel Disorder drugs	5
12.	Drugs used in Pain Management	- Must to know • Anaesthesia –All types • Analgesics – all types • Opioids	3
13.	Miscellaneous topic	- Must to know • Drugs used in hyperhidrosis (Botox, Zinc) • Bone health: Vitamin D, Calcium homeostasis, Bisphosphonates, Calcitonin, Parathyroid hormone. • Drug Abuse and recreation of drugs: Steroids, Diuretics, Marijuana, Cocaine, Cannabinoids and others. -Desirable to know • Vaccines and Sera • Drugs used in Organo-Phosphate Poisoning and Nicotine Poisoning • Drugs used in dermatological conditions: Psoriasis, Scabies -Nice to know • Vertigo • Migraine	7

Recommended Textbooks

1. Lippicott's Pharmacology.
2. Essential of Medical Pharmacology by Tripathi
3. Textbook of Medical Pharmacology by Padmajaudaykumar
4. Pharmacology by N. Murugesh
5. Pharmacology & Pharmacotherapeutics by Sadoskar.

YEAR: II YEAR

COURSE CODE: 22PT204

22PT271

TITLE OF THE COURSE: EXERCISE THERAPY

EXERCISE THERAPY PRACTICALS

COURSE OBJECTIVES:

IN THIS COURSE THE STUDENT WILL LEARN THE PRINCIPLES, TECHNIQUES AND EFFECTS OF EXERCISE AS A THERAPEUTIC MODALITY IN THE RESTORATION OF PHYSICAL FUNCTION.

COURSE OUTCOMES:

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TO PRACTICAL AND CLINIC

THE STUDENT WILL BE ABLE TO LIST THE INDICATIONS AND CONTRAINDICATIONS OF VARIOUS TYPES OF EXERCISE, DEMONSTRATE THE DIFFERENT TECHNIQUE, AND DESCRIBE THE EFFECTS.

COURSE TITLE – Exercise Therapy Exercise Therapy Practicals COURSE CODE – 22PT204 22PT271														
Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggre gate	Practical		Th+Pra c
								IA	Written exam	VV		IA	Final Exam	Final Exam
100	120	30	250	4	5	1	10	20	100	30	150	-	50	200

Sr.No.	Topic /Course Content	Hours of teaching/learning	
		Theory	Practical
	UNIT I		
1	Basics of Movement science	8	8
	Must know		
	The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems	2	
	Define the following terms and describe the principles involved with suitable examples: force, gravity, equilibrium, lever, springs, tension, elasticity, axes, planes,	4	

	Speed, Velocity, Work, Energy, Power, Acceleration, Momentum, Friction and Inertia.		
	Starting Positions – Fundamental positions & derived Positions, Planning of Treatment	2	6
	Desirable to know		
	Assessment of patient's condition – Measurements of Vital parameters		2
2	Physiology of muscle contraction	3	
	Must know		
	Structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fibre type, motor unit, force gradation. Causes of decreased muscle performance Physiologic adaptation to training: Strength & Power, Endurance.	2	
	Type of contraction – Isometric, Isotonic, Isokinetic, Eccentric.	1	
3	Assessment of muscle strength	7	24
	Must know		
	Goniometry (Revision): 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 .	2	10
	Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual muscles : Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf Static power Test Dynamic power Test Endurance test Speed test	5	12
	Desirable to know		
	Measurement of Limb Length: true limb length, apparent limb length, segmental limb length. Pelvic tilt: Measurement of the angle of Pelvic Inclination.		2
4	Classification of movements	10	18
	Must know		
	Active Movements	4	6
	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 Resisted Exercise: 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.		
5	Specific exercise regimens Isotonic:	2	6
	Must know		
	de Lormes, Oxford, MacQueen, Circuit weight training, Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometrics Isokinetic regimens		
6	Passive Movements	4	4
	Must know		
	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.		
Unit II			
7	Proprioceptive Neuromuscular Facilitation	5	5
	Must know		
	: Definitions & goals Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb Procedure: components of PNF Techniques of facilitation Mobility: Contract relax, Hold relax, Rhythmic initiation Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal		
8	Suspension Therapy	4	5
	Must know		
	Definition, principles, equipment's & accessories, Indications & contraindications, Benefits of suspension therapy Types of suspension therapy: axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb		
9	Functional Re-education	4	6
	Must know		
	Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lowerlimb and Upperlimb activities.		
10	Relaxation :	4	3
	Must know		
	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, Mitchel's, additional methods.	3	
	Nice to know	1	
	Muscle fatigue, muscle spasm and tension (mental and		
11	Aerobic Exercise	4	2

	Must know		
	Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.		
12	Manual Therapy & Peripheral Joint Mobilization	5	6
	Must know		
	Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan Biomechanical basis for mobilization, Effects of joint mobilisation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.		
13	Stretching	3	6
	Must know		
	Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching.		
14	Hydrotherapy	3	4
	Must know		
	Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipments, techniques, Effects and uses, merits and demerits		
UNIT III			
15	Posture	4	4
	Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education		
16	Balance	3	4
	Must know		
	Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal, biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining		
16	Co-ordination Exercise	3	4
	Must know		

	Anatomy & Physiology of cerebellum with its pathways. Definitions: Co-ordination, Inco-ordination Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.		
17	Walking Aids	3	4
	Must know		
	Walking aids Revision. Application: Pre crutch Training and crutch gaits.		
18	Massage	4	6
	Must know		
	Classification of Massage Technique Principles, Indications and Contraindications Technique of Massage Manipulations Physiological and Therapeutic Uses of Specific Manipulations	3	
	Nice to know		
	History, various types of soft tissue manipulations techniques.	1	
19	Breathing exercises	4	6
	Must know		
	Goals, Types of breathing exercises- Inspiratory, Expiratory, Segmental, Forced Expiratory- coughing & huffing, Modified Inspiratory, Active cycle of breathing. • Physiology of the above mentioned technique • Indication, contraindication & its importance for patient		
20	Individual and Group Exercises	3	4
	Must know		
	Advantages and Disadvantages; Organisation of Group exercises, Recreational Activities and Sports		
21	Human dignity and Human Rights	2	
	Must know		
	Human dignity as an intrinsic value • Respect, care and Equality in dignity of all human beings • human dignity in different cultural and moral traditions • Ethical aspects of physiotherapists in patients relation in regard to human dignity in handling children, women, elderly, mental & Physically challenged		
22	Elements of Yoga	4	3
	Must know		
	Asanas – Principles and elements; Pranayamas – 3 Principles, Methods and Techniques		
23	SPT	-	30

Recommended Textbooks:

1. Therapeutic exercise by Barbara Bandy
2. Therapeutic exercise by Carolyn Kisner
3. Principles of exercise therapy by M. Dena Gardiner
4. Practical Exercise therapy by Hollis Margaret
5. Therapeutic exercise by Sydney Litch
6. Therapeutic exercise by Hall & Brody
7. Therapeutic exercise by Basmajian
8. Physical Rehabilitation by O'Sullivan.
9. Therapeutic massage by Sinha
10. Principles of muscle testing by Hislop.

YEAR: II YEAR

COURSE CODE: 22PT205

22PT272

TITLE OF THE COURSE: ELECTROTHERAPY

ELECTROTHERAPY PRACTICALS

COURSE OBJECTIVES:

IN THIS COURSE THE STUDENT WILL LEARN THE PRINCIPLES, TECHNIQUE AND EFFECTS OF ELECTROTHERAPY AS A THERAPEUTIC MODALITY IN THE RESTORATION OF PHYSICAL FUNCTION.

COURSE OUTCOMES:

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES, DEMONSTRATIONS, PRACTICALS AND CLINICS THE STUDENT WILL BE ABLE TO LIST THE INDICATIONS AND CONTRAINDICATIONS OF VARIOUS TYPES OF ELECTROTHERAPY DEMONSTRATE THE DIFFERENT TECHNIQUE AND DESCRIBE THEIR EFFECTS.

COURSE TITLE – Electrotherapy Electrotherapy Practicals COURSE CODE – 22PT205 22PT272														
Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggre gate	Practical		Th+Pra c
								IA	Written exam	VV		IA	Final Exam	Final Exam
100	120	30	250	4	5	1	10	20	100	30	150	-	50	200

Sr. No.	Topic / Course Contents	Hours of teaching learning	
		Theory	Practical
UNIT – I			
1	Section I - Introductory Physics	20	12
	Must Know Electricity definition, types Static electricity a. Production of electrical charges. b. Characteristics of charged body. c. Characteristics of lines of forces. d. Potential difference and EMG. Current Electricity		

	a. Units of Electricity, faraday, volt, ampere, coulomb, watt. b. Resistance in series and parallel. c. Ohms law and its application to DC/AC. d. Fuse. e. Shock: Micro/ Macro shocks, safety precaution and management, earthing techniques & precautions. f. Burns: electrical & chemical burns, prevention and management. g. Condensers: definition, principles, types, construction, working and uses. Magnetism: Definition, properties, electro-magnetic induction, electro- magnetic spectrum. Valves, transformers, types, principles, construction and working. Ionization: Principles, effects of various technique of medical ionization.		
2	Section II – Therapeutic Electricity :Low Frequency currents	55	40
	Must Know Physiological effects, therapeutic uses, indications and contraindications and dangers of faradic type current, intermittent galvanic current and galvanic current ➤ Cathodal & Anodal Galvanism, Iontophoresis with various ions & Pharmaco therapeutic drugs. ➤ Faradic current under pressure /elevation, Faradic Foot Bath ➤ Electrical stimulation for re-education-short /long pulse motor points Electrical Reactions and Electro-diagnostic tests: ➤ Electrical Stimuli & normal behavior of Nerve & muscle ➤ Types of lesion & development of reaction of degeneration. ➤ Faradic – Intermittent direct current test. ➤ S.D. Curve and its application and characteristics ➤ Chronaxie, Rheobase & Pulse ratio ➤ High voltage pulsed galvanic current TENS: Define, Principles of production, types, dosage, electrode placement, Physiological and therapeutic effects, indication & contraindications.		
	Desirable to know Micro –currents Didynamic currents		
	Nice to know- ➤ Functional electrical stimulation ➤ Long wave diathermy ➤ NEMS, Matrix Rhythm Therapy		

	UNIT -II		
3	Section – III - Therapeutic Electricity: Medium frequency currents	18	28
	Must Know Interferential therapy: Define, Principles of production, static Interferential system, dynamic interference system, dosage, electrode placement, Physiological and therapeutic effects, indication and contraindications		
	Desirable to Know ➤ Russian currents ➤ Rebox type currents Biofeedback method: ➤ Instrumentation, principles, therapeutic effects, ➤ Indications, contraindications, limitations, precautions, ➤ Operational skills and patient preparation		
	Must Know Ultraviolet rays (UVR): ➤ Wavelength, frequency, types & sources of UVR generation, ➤ Techniques of irradiation, physiological & therapeutic effects ➤ Indications, Contraindications, precautions, operational skills of equipment & patient preparation. ➤ Dosimetry of UVR. Light Amplification of stimulated Emission of Radiation (LASER) ➤ Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects ➤ Techniques of application, indications, contraindications, precautions ➤ Operational skills and patient preparation. Care of wound –application of Therapeutic currents, Ultrasound, U.V.R.& LASER		
	Nice to know- Combination Therapy		
	Desirable to Know Intermittent Therapy unit, its operation and different methods of application region wise. Interferential Pneumatic Therapy unit, its operation and different methods of application – region wise.		
	Nice to know		

	Respect for human vulnerability and personal integrity ➤ Different aspects of vulnerability - biological , social , cultural ➤ Success and failures in physiotherapy treatments ➤ Problems with the basic assumption that vulnerability should be eliminated ➤ Care ethics- New approaches in bioethics, Solidarity, duty to care ➤ Relation between vulnerability and personal integrity		
4	Section IV- HIGH FREQUENCY CURRENTS AND WAVES	25	14
	Must know High frequency currents (S.W.D.) ➤ Production, biophysical effects, types ➤ Therapeutic effects, techniques of application ➤ Indications, contraindications, precautions ➤ Operational skills and patient preparation High frequency sound waves (Ultrasound) ➤ Physics of sound including characteristics and propagation ➤ Production, biophysical effects, types ➤ Therapeutic effects, techniques of application ➤ Indications, contraindications, precautions ➤ Operational skills and patient preparation		
UNIT -III			
5	Section V Superficial heating Modalities	33	22
	Must Know Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers	4	2
	Must know Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications	3	2
	Must know Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.	4	2
	Must know Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications	3	2
	Must know Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.	3	2
	Must know Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications	3	2

	Magnetic Stimulation, Principles, Therapeutic uses, Indications & contraindication.	2	2
	Must know Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages.	6	2
6	Section-VI TRACTION	5	4
	Must know ➤ Principles of traction, classification, types ➤ Physiological & therapeutic effects ➤ Indications, contraindications ➤ Techniques of application ➤ Operational skills & precautions		
7	SPT	-	30

Recommended textbooks:

1. Claytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidence based practice by Sheila Kitchen
5. Physical agents by Michile Cameroon
6. Principles of Electrotherapy by Michile Camreeron
7. Thermal agents by Susan Michlovitz.



YEAR: II YEAR

COURSE CODE: 22PT206

TITLE OF THE COURSE: RESEARCH METHODOLOGY

COURSE OBJECTIVES:

COURSE OUTCOMES:

COURSE TITLE – Research Methodology														
COURSE CODE – 22PT206														
Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggre gate	Practical		Th+Pra c
								IA	Written exam	VV		IA	Final Exam	Final Exam
40	00	00	40	1	-	-	1	10	40	-	-	-	-	50

S.I No.	Topic		Theory hours
UNIT – I			
1.	Introduction to Research Methodology	- Must to-know ➤ Definition of research ➤ Objectives of research ➤ Types of methods and design in research ➤ Qualities of good research ➤ Issues in research.	6
2.	Statement of research problem	- Must to know • Selection of research question • Hypothesis • Defining the aims and objectives • Defining research problem.	4
3.	Selection of research design	- Must to know • Types of research designs • Principles of research design	4
UNIT- II			
4.	Sampling [methods and designs]	- Must to know • Types of sampling method • Calculation of sample size • Characteristics of good sample method	4
5.	Measurement and scaling techniques	- Must to know • Measurement in research – measurement scales	6

		• Sources of error in measurement • Technique of developing measurement tools • Meaning of scaling, its classification • Important scaling techniques	
6.	Methods of data collection	- Must to know • Types • Collection • Selection of data tool	4
UNIT- III			
7.	Processing and analysis of data	- Must to know • Processing operations • Problems in processing • Types of analysis • Testing of hypothesis • Statistics in research • Measures of central tendency • Dispersion • Asymmetry	6
8.	Ethics in research	- Must to know • Misconduct • Plagiarism • How to prepare and publish a research paper	4
9.	Computer technology	- Must to know • Introduction to computers • Computer application in research • Computers and researchers	2

Recommended Textbooks:

1. Research Principles and Methods: L Denise F. Poli & Hungler
2. Fundamentals of Research, 4th Edn.: David J. fox
3. Introduction to research for Physiotherapists by Hicks



YEAR: II YEAR

COURSE CODE: 22PT207

TITLE OF THE COURSE: BIOENGINEERING (PROGRAM ELECTIVE)

COURSE OBJECTIVES:

The objectives are to develop an understanding of basic orthotic and prosthetic devices, their uses, prescriptions, check outs and training for various musculoskeletal, neuromuscular disorders.

COURSE OUTCOMES:

At the completion of the course, students will be able to:

1.1 Understand the historical aspects, materials and instrumentation of common prostheses and orthoses

1.2 Understand the classification and basic principles of working of common prosthetic and orthotic devices.

1.3 Understand the role of a Physiotherapist in the process of prescribing and designing of prosthesis, orthosis & assistive devices

1.4 Understand the uses, assessment and prescription of common prosthesis, orthotics and assistive devices.

1.5 Demonstrate various methods of training a patient with prosthesis, orthosis or assistive devices to achieve functional independence

Note: Long questions should be asked only from "Must Know" and Short Essay and Short Answers from "Must Know" and "Good to Know". 80% of Questions in the university exam will be included from must know content 15% from desirable to know and 5% from nice to know.

COURSE TITLE – BIOENGINEERING (Program Elective)
COURSE CODE – 22PT207

Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggre gate	Practical		Th+Pra c
								IA	Written exam	VV		IA	Final Exam	Final Exam
40	00	00	40	1	-	-	1	10	40	-	-	-	-	50

S.I No.	Topic		Theory hours
UNIT – I			
1.	Introduction to Bioengineering	- Must to know • Uses of orthotics and prosthetics • Equipements • Materials • Classification of orthotics	10

		• Classification of prosthetics • Classification of adaptive devices • Biomechanical principles • Internal force system • External force system • Biomechanical analysis • Pathomechanical analysis • Biomechanics of orthosis and prosthesis - Nice to know • Historical aspects	
2.	Role of physiotherapist	- Must to know • Prescription of orthotic and prosthetic devices • Check outs of orthotic and prosthetic devices • Training with orthotic and prosthetic devices • Ergonomic modifications	6
3.	Adaptive devices	- Must to know • Overview • Adaptive devices for ADL • Sitting devices for multiple disabled • Adaptive devices for recreational activities • Adaptive devices for sports.	4
UNIT- II			
4.	Footwear modifications	- Must to know • Types of footwear and their parts • Functions of footwear • Footwear modification for deformities • Footwear modification for foot ulcers • Role of footwear in enhancement of sports performance • Prevention of sports injuries by footwear modifications	6
5.	Orthotics	- Must to know • Overview • Upper limb • Lower limb • Spinal • Orthotics for neurological disorders • Orthotics for musculoskeletal disorders • Fitting and alignment techniques • Clinical applications	6

		• Maintenance of orthoses	
6.	Prosthetics	- Must to know • Upper limb • Lower limb • Aesthetic • Clinical applications • Fitting and alignment techniques • Complications of prosthetics	4
UNIT- III			
7.	Recent advances	- Nice to know • Bionic arm • Bionic foot • 3d printed prosthetics & orthotics	4

Reference-

1. Bella J M: Amputation and Prosthetics: A case study Approach, Jaypee Brothers, New Delhi, 2 Ed, 2002.
2. Kent K Wu Foot: Orthoses Principles and clinical application, Williams and Wilkins, London, 1990..
3. Ron Seymour: Prosthetics and Orthotics Lower limb and spinal, Lippincott Williams and Wilkins, New York, 2002.
4. Lunsardi MM, Nielsen CC: Orthotics and prosthetics in rehabilitation, Butterworth Heinemann, New Delhi, Oxford, 2000.
5. Edelstein J E and Bruckner J: Orthotics A comprehensive clinical approach Jaypee brothers, New Delhi, 2004.
6. Shurr D G, Michael J W, Cook TM: Prosthetics and Orthotics Prentice hall, Michigan, 2 Ed, 2001.
7. Bowker JH, Michael JW: Atlas of limb prosthetics: surgical, prosthetics, and rehabilitation principles, Mosby, Michigan, 2 Ed, 1992.
8. Gerhardt JJ, Philip SK, Zetti JH: Immediate and early prosthetics management: Rehabilitation aspects. Huber Michigan, 2 Ed, 1986.
9. Bussell MH: New advances in prosthetics and orthotics, an issue of Physical Medicine and Rehabilitation clinics, Elsevier Health Sciences Division, 2006.
10. Janardhanam K: Topics on prosthetics and Orthotics, Educom System, Chennai, 2003.

YEAR: II YEAR

COURSE CODE: 22PT208

TITLE OF THE COURSE: DIET & NUTRITION (PROGRAM ELECTIVE)

COURSE OBJECTIVES:

The objectives are to develop an understanding of nutrition, balanced diet, their importance, assessment methods and relation with different disorders like musculoskeletal, neurological, paediatric disorders.

COURSE OUTCOMES:

At the completion of the course, students will be able to:

- 1.1 Understand the science of nutrition in daily life and in patient care.
- 1.2 Describe the Recommendation of Daily Allowances in India and by WHO.
- 1.3 Understand the role of a nutrition in overall healing in different disorders.
- 1.4 Describe different assessment techniques with advances related to food and nutrition.

Note: Long questions should be asked only from "Must Know" and Short Essay and Short Answers from "Must Know" and "Good to Know". 80% of Questions in the university exam will be included from must know content 15% from desirable to know and 5% from nice to know.

COURSE TITLE – DIET & NUTRITION (Program Elective)														
COURSE CODE – 22PT208														
Hours				Hours per week				Evaluation pattern						
Th	Prac	SPT	Total	Th	Prac	SPT	Total	Theory			Th Aggre gate	Practical		Th+Pra c
								IA	Written exam	VV		IA	Final Exam	
40	00	00	40	1	-	-	1	10	40	-	-	-	-	50

S.I No.	Topic		Theory hours
UNIT – I			
1.	Introduction to Nutrition	- Must know • Introduction to Food Science • Optimum nutrition, balanced diet, reference man, reference woman • Water & electrolyte balance - Desirable to know • Structure, Physical & Chemical properties of different types of foods constituents - Cereals & grains, Pulses & legumes, Vegetables & fruits, Nuts & oilseeds, Milk & milk products, .	5

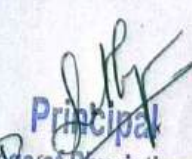
		Meat & poultry, Sugar & fat.	
2.	Importance of nutrition in different disorders	- Must know • Role of Nutrients and Energy Expenditure • Musculoskeletal Physiotherapy disorders and related Nutrition Guidelines • Neurological Physiotherapy disorders and related Nutrition Guidelines • Sports Injuries disorders and related Nutrition Guidelines • Cardio-Respiratory Physiotherapy disorders and related Nutrition Guidelines • Paediatrics Physiotherapy disorders and related Nutrition Guidelines • Obstetrics and Gynaecological Physiotherapy disorders and related Nutrition Guidelines	8
UNIT- II			
3.	Human Nutritional Requirements	- Must know • Energy – Introduction, basal metabolic rate, calculating energy requirements, energy expenditure using bomb calorimeter, indirect calorimeter etc, specific dynamic action of food, deriving nutritional requirements & recommended dietary allowances for energy for different age groups, specific dynamic action of food • Minerals & Vitamins - Deriving nutritional requirements and recommended dietary allowances for entire life span (infancy to old age) for vitamins & minerals • Critical evaluation of International recommended dietary allowances – WHO Recommended dietary allowances & Guidelines for Indians.	8
4.	Nutritional Disorders	- Must know • Major Nutritional problems: - Protein energy malnutrition - Kwashiorkor - Marasmus - Anemia - vitamin A deficiency	8

		- Iodine deficiency disorder. • Minor Nutritional Problems - Scurvy - beri- beri - pellagra - rickets - osteomalacia - osteoporosis - zinc deficiency & fluorosis - Nice to know - Their prevalence, etiology, biochemical & clinical manifestations, diagnostic techniques, preventive & therapeutic measures.	
UNIT- III			
5.	Assessment of Nutritional Status	- Must know - Various techniques for assessment of nutritional status: - Anthropometric measurements - Clinical examination - Biochemical estimations - Dietary survey	8
6.	Recent advances	- Nice to know • Super foods and its effect on human body • Food science and Technology	3

REFERENCE BOOKS:

1. Nutrition care & therapeutic nutrition. Krause.
2. Clinical dietetics & nutrition, Antia F.P. Oxford University Press (III edition) 1989
3. Therapeutic nutrition. B.Srilakshmi
4. Food Science- B. Srilakshmi.
5. Clinical Dietetics Manual – Indian Dietetics Association.
6. Nutritional problems of India – P.K. Shukla BSc Clinical Nutrition & Dietetics 20/29
7. Human Nutrition & dietetics, (Davidson & Passmore) Passmore Rand Eastwood M.A. (1986) 8th Ed. English language book society/ Churchill Livingstone..
8. Text book of Human Nutrition. Bamji MS, Rao R.N. & Reddy V. Oxford & IBH Pub Co. PVT LTD, New Delhi
9. Nutrient requirement & Recommended Dietary Allowances for Indians, ICMR 1990.
10. Indian Food Composition Table, NIN, ICMR
11. Nutritive Value of Indian Foods – NIN, ICMR
12. <https://pubmed.ncbi.nlm.nih.gov/31940634>




Principal
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YEAR : III YEAR
COURSE CODE : 17PT301
TITLE OF THE COURSE : GENERAL MEDICINE

COURSE OBJECTIVES

THIS COURSE INTENDS TO FAMILIARIZE STUDENTS WITH MEDICAL TERMINOLOGY & ABBREVIATIONS FOR EFFICIENT & EFFECTIVE CHART REVIEWING & DOCUMENTATION. IT ALSO EXPLORES SELECTED SYSTEMIC DISEASES, FOCUSING ON EPIDEMIOLOGY, PATHOLOGY, HISTOLOGY, ETIOLOGY AS WELL AS PRIMARY & SECONDARY CLINICAL CHARACTERISTICS & THEIR MANAGEMENT. DISCUSSES & INTEGRATES SUBSEQUENT MEDICAL MANAGEMENT OF GENERAL, RHEUMATOLOGY, GERONTOLOGY, CARDIO-VASCULAR & RESPIRATORY SYSTEMS, TO FORMULATE APPROPRIATE INTERVENTION, INDICATIONS, PRECAUTIONS & CONTRAINDICATIONS.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS SO THAT STUDENT WILL BE ABLE TO UNDERSTAND THE CAUSES, FINDINGS, MANAGEMENT IN RELATION WITH PHYSIOTHERAPY. THEY SHOULD HAVE A BRIEF IDEA OF THE ETIOLOGY AND PATHOLOGY, THE PATIENT'S SYMPTOMS AND THE RESULTANT FUNCTIONAL DISABILITY. THIS WOULD HELP THE STUDENTS TO UNDERSTAND THE LIMITATIONS IMPOSED BY THE DISEASES ON ANY THERAPY.

UNIT I

1. Infection : Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gastroenteritis – sexually transmitted diseases – HIV infections and Aids [3 Hours]
2. Poisoning : Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation [2 Hours]
3. Food and Nutrition : Assessment – Nutritional and Energy requirements; 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. [4 Hours]
4. Endocrinediseases: Common presenting symptoms of Endocrinedisease – common classical disease presentations, clinical features and its management; Diabetes

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Mellitus : Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes. [4 Hours]

5. Diseases of the blood : Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management ; Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated haemorrhages – complications due to therapy. [4 Hours]

UNIT II

6. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract ; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Viral Hepatitis, Wilson's Disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholecystitis. [7 Hours]

7. Cardiovascular Disease : Examination of the Cardiovascular System – Investigations : ECG, Exercise Stress Testing, Radiology ; Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart : Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest ; Examination and Investigations of diseases of arteries and veins ; Hypertension : Definition, causes, classification, types, assessment, investigations and management. [8Hours]

8. Respiratory Disease : Examination of the Respiratory System – Investigations : Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis ; Clinical manifestations of Lung disease ; Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall ; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management. [9 Hours]

UNIT III

9. Diseases of the Skin: Examination and clinical manifestations of skin diseases ; Causes, clinical features and management of the following skin conditions : Leprosy,

Psoriasis, Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections. **[6 Hours]**

10. Pediatrics : Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood, Cerebral Palsy – causes, complications, clinical manifestations, treatment ; Spina Bifida – management and treatment, Epilepsies – types, diagnosis and treatment; Recognizing developmental delay, common causes of delay ; Orthopedic and Neuromuscular disorders in childhood, clinical features and management ; Sensory disorders – problems resulting from loss of vision and hearing ; Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child. **[8 Hours]**
11. Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. **[5 Hours]**

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Harrison's Internal Medicine
3. Braunwald Text of Cardiology
4. Text Book of Cardiology by Hurst



YEAR : III YEAR
COURSE CODE : 17PT302
TITLE OF THE COURSE : GENERAL SURGERY

COURSE OBJECTIVES

THIS COURSE INTENDS TO FAMILIARIZE STUDENTS WITH PRINCIPLES OF GENERAL SURGERY INCLUDING VARIOUS SPECIALTIES LIKE CARDIOVASCULAR, THORACIC, NEUROLOGY AND PLASTIC SURGERY. IT ALSO FAMILIARIZES THE STUDENTS WITH TERMINOLOGY AND ABBREVIATIONS FOR EFFICIENT AND EFFECTIVE CHART REVIEWING AND DOCUMENTATION. IT EXPLORES VARIOUS CONDITIONS NEEDING ATTENTION, FOCUSING ON EPIDEMIOLOGY, PATHOLOGY, AS WELL AS PRIMARY AND SECONDARY CLINICAL CHARACTERISTICS AND THEIR SURGICAL AND MEDICAL MANAGEMENT.

COURSE OUTCOMES

AT THE END OF THE COURSE, THE CANDIDATE WILL BE ABLE TO:

1. DESCRIBE THE EFFECTS OF SURGICAL TRAUMA & ANAESTHESIA IN GENERAL
2. CLINICALLY EVALUATE & DESCRIBE THE SURGICAL MANAGEMENT IN BRIEF .
3. DESCRIBE PRE-OPERATIVE EVALUATION, SURGICAL INDICATIONS IN VARIOUS SURGICAL APPROACHES, MANAGEMENT AND POST OPERATIVE CARE IN ABOVE MENTIONED AREAS WITH POSSIBLE COMPLICATIONS.
4. BE ABLE TO READ & INTERPRET FINDINGS OF THE RELEVANT INVESTIGATIONS

UNIT I

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ; Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post – Operative Complications and its management [6Hours]
2. Reasons for Surgery ; Types of anaesthesia and its affects on the patient ; Types of Incisions ; Clips Ligatures and Sutures ; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery.[3 Hours]
3. Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade,

Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions. [4 Hours]

4. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer. [3 Hours]

UNIT II

5. Disorders of the Chest Wall, Lung and Mediastinum – Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum. Carcinoma of the female breast. [5 Hours]

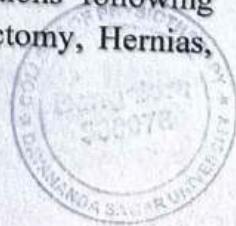
6. Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease : Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot, Transposition of Great Vessels ; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors. [6 Hours]

7. Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. Lung surgeries : Pneumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications ; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extracardiac Operations, Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications. [6 Hours]

8. Diseases of the Arteries and Veins : Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins. [5 Hours]

UNIT III

9. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Nephrectomy, Prostatectomy. [4 Hours]



- 10. Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps. [4 Hours]**
- 11. WomensHealth :** Menstrual cycle and its disorders. Hormonal disorders of females- obesity and female hormones. Cancer of the female reproductive organs- management Infections and sexually transmitted disease in female Menopause - its effects on emotions and musculoskeletal system. Malnutrition and deficiencies in females. Sterility- pathophysiology- investigations- management. Maternal physiology in pregnancy. Musculo skeletal disorders during pregnancy. Prenatal complications- investigations- management. Child birth- Stages - complications- investigations- management – Pain relief in labour - Purperium - Post Natal care. Surgical procedures involving child birth. Incontinence – Types, Causes, Assessment and Management. Definition, Indications and Management of the following surgical procedures – Hysterosalpyngography, Dilatation and Curettage, Laproscopy, Colposcopy, Hysterectomy. **[8 Hours]**
- 12. ENT:** Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy. **[3 Hours]**
- 13. Ophthalmology:** Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles- surgical management **[3 Hours]**

Recommended books:

1. General Surgical Operations – by Kirk / Williamson
2. Surgery by Nan 3. Bailey and Love's – Short Practice of Surgery
4. Chest Disease by Crofton and Douglas.
5. Patrica A Downie, Text book of Heart, Chest Vascular Disease for physiotherapists, JP Bros.

YEAR : III YEAR
COURSE CODE : 17PT303
TITLE OF THE COURSE : ORTHOPEDICS & TRAUMATOLOGY

COURSE OBJECTIVES

INTRODUCE THE STUDENT TO THE ORTHOPEDIC CONDITIONS WHICH COMMONLY CAUSE DISABILITY. PARTICULAR EFFORT IS MADE IN THIS COURSE TO FACILITATE THE UNDERSTANDING OF STUDENT WITH ANY DETAILS PERTAINING TO DIAGNOSIS WHICH WILL CONTRIBUTE TO THEIR UNDERSTANDING OF THE LIMITATIONS IMPOSED BY ORTHOPEDIC PATHOLOGY ON THE FUNCTIONING OF THE INDIVIDUAL

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TO CLINICS THE STUDENT WILL BE ABLE TO DEMONSTRATE AN UNDERSTANDING OF ORTHOPEDIC CONDITIONS CAUSING DISABILITY AND THEIR MANAGEMENT

UNIT I : 21 HRS

1. Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopaedics. Inflammation and repair, Soft tissue healing. [3 Hours]
2. Traumatology Fracture: definition, types, signs and symptoms. Fracture healing. Complications of fractures. Conservative and surgical approaches. Principles of management – reduction (open/closed, immobilization etc). Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative). [3 Hours]
3. Fractures and Dislocations of Upper Limb Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. Side swipe injury of elbow. Both bone fractures of ulna and radius. Fracture of forearm – Monteggia, Galeazzi fracture – dislocation. Chauffer's fracture. Colle's fracture. Smith's fracture. Scaphoid fracture. Fracture of the metacarpals. Bennett's fracture. Fracture of the phalanges. (Proximal and middle.) Dislocations of Upper Limb - Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates)

maneuver), surgical management (putti plat, bankart's) etc. Recurrent dislocation of shoulder. Posterior dislocation of shoulder – mechanism of injury, clinical features and management. Posterior dislocation of elbow- mechanism of injury, clinical feature, complications & management. **[6 Hours]**

4. Fracture of Spine Fracture of Cervical Spine - Mechanism of injury, clinical feature complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). Clay shoveller's fracture. Hangman's fracture. Fracture odontoid. Fracture of atlas. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, management—conservative and surgical of common fractures around thoracic and lumbar regions. Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum. **[4 Hours]**
5. Fractures and Dislocations of Lower Limb Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fracture of pelvis. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. Fractures of trochanters. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella. Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren's fracture Maisonneuve's fracture. Pott's fracture – mechanism of injury, management. Bimalleolar fracture Trimalleolar fracture Fracture calcaneum – mechanism of injury, complications and management. Fracture of talus. Fracture of metatarsals—stress fractures jone's fracture. Fracture of phalanges. Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella. **[5 Hours]**

UNIT II : 19HRS

6. Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures- Achilles, rotator cuff muscles, biceps, pectorals etc. **[3 Hours]**
7. Hand Injuries - mechanism of injury, clinical features, and management of the following - Crush injuries. Flexor and extensor injuries. Burn injuries of hand. **[2 Hours]**
8. Amputations - Definition, levels of amputation of both lower and upper limbs, indications, complications. **[2 Hours]**

9. Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia. [2 Hours]
10. Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities. Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand anomalies- syndactyly, polydactyly and ectrodactyly. Arthrogryposis multiplex congenita (amyoplasia congenita). Limb deficiencies- Amelia and Phocomelia. Klippel-Feil syndrome. Osteogenesis imperfecta (fragile osseum). Cervical rib. Acquired Deformities - Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum. Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia. [6 Hours]
11. Disease of Bones and Joints: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions : Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilitic infection of joints. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors : Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Giant cell tumor. Multiple myeloma. Metastatic tumors. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis. [4 Hours]

UNIT III: 20HRS

12. **Inflammatory and Degenerative Conditions [4 Hours]:** causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions : Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis. Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints. Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
13. **Syndromes [3 Hours]:** Causes, Clinical features, complications, management- conservative and surgical of the following : Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.
14. **Neuromuscular Disorders [3 hours]:** Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions : Cerebral palsy. Poliomyelitis. Spinal Dysraphism. Leprosy.
15. **Cervical and Lumbar Pathology [3 Hours]:** Causes, clinical feature, pathophysiology, investigations, management- Medical and surgical for the following : Prolapsed intervertebral disc (PID), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/ Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra.
16. **Orthopedic Surgeries [3 Hours]:** Indications, Classification, Types, Principles of management of the following Surgeries : Arthrodesis. Arthroplasty (partial and total

replacement). Osteotomy , External fixators. Spinal stabilization surgeries(Harrington's, Luque's, Steffi plating) etc , Limb re-attachments.

17. Regional Conditions [4 Hours]: Definition, Clinical features and management of the following regional conditions

Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis. Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis. Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

Books Recommended:

1. Outline of Fractures—John Crawford Adams.
2. Outline of Orthopedics.— John Crawford Adams.
3. Text book of Orthopedics.—Maheswari.
4. Apley's Orthopedics.
5. Textbook of Orthopedics and Traumatology— M.N. Natarajan

YEAR : III YEAR
COURSE CODE : 17PT304
TITLE OF THE COURSE : MUSCULOSKELETAL & SPORTS PHYSIOTHERAPY

COURSE OBJECTIVES

THIS COURSE SERVES TO INTEGRATE THE KNOWLEDGE GAINED BY THE STUDENTS IN CLINICAL ORTHOPEDICS WITH THE SKILLS GAINED IN EXERCISE THERAPY, ELECTRO THERAPY AND MASSAGE, THUS ENABLING THEM TO APPLY THESE IN CLINICAL SITUATIONS OF DYSFUNCTION DUE TO PATHOLOGY IN THE MUSCULOSKELETAL SYSTEM.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE FOLLOWING THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS, PRACTICAL AND CLINICAL, THE STUDENT WILL BE ABLE TO IDENTIFY DISABILITY DUE TO MUSCULOSKELETAL DYSFUNCTION. SET TREATMENT GOALS AND APPLY THEIR SKILLS IN EXERCISE THERAPY, ELECTRO THERAPY AND MASSAGE IN CLINICAL SITUATION TO RESTORE MUSCULOSKELETAL FUNCTION.

UNIT I

1. Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopaedics. Inflammation and repair, Soft tissue healing. [3 Hours]
2. Traumatology Fracture: definition, types, signs and symptoms. Fracture healing. Complications of fractures. Conservative and surgical approaches. Principles of management – reduction (open/closed, immobilization etc). Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative). [3 Hours]
3. Fractures and Dislocations of Upper Limb Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. Side swipe injury of elbow. Both bone fractures of ulna and radius. Fracture of forearm – Monteggia, Galeazzi fracture – dislocation. Chauffeur's fracture. Colle's fracture. Smith's fracture. Scaphoid fracture. Fracture of the metacarpals. Bennett's fracture. Fracture of the phalanges. (Proximal and middle.) Dislocations of Upper Limb - Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, Bankart's) etc. Recurrent dislocation of shoulder. Posterior dislocation of shoulder – mechanism of injury, clinical features

- and management. Posterior dislocation of elbow- mechanism of injury, clinical feature, complications & management. **[6 Hours]**
4. Fracture of Spine Fracture of Cervical Spine - Mechanism of injury, clinical feature complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). Clay shoveller's fracture. Hangman's fracture. Fracture odontoid. Fracture of atlas. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, management —conservative and surgical of common fractures around thoracic and lumbar regions. Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum. **[4 Hours]**
 5. Fractures and Dislocations of Lower Limb Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fracture of pelvis. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. Fractures of trochanters. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella. Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren's fracture Maisonneuve's fracture. Pott's fracture – mechanism of injury, management. Bimalleolar fracture Trimalleolar fracture Fracture calcaneum – mechanism of injury, complications and management. Fracture of talus. Fracture of metatarsals—stress fractures Jones's fracture. Fracture of phalanges. Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella. **[5 Hours]**

UNIT II

6. Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc. **[3 Hours]**
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UNIT III

12. **Inflammatory and Degenerative Conditions [4 Hours]:** causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions : Osteoarthritis, Rheumatoid arthritis, Ankylosing spondylitis, Gouty arthritis, Psoriatic arthritis, Hemophilic arthritis, Still's disease (juvenile rheumatoid arthritis), Charcot's joints, Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
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17. Regional Conditions [4 Hours]: Definition, Clinical features and management of the following regional conditions

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3. Text book of Orthopedics.—Maheswari.
4. Apley's Orthopedics.
5. Textbook of Orthopedics and Traumatology— M.N.Natarajan

YEAR : III YEAR
COURSE CODE : 17PT305
TITLE OF THE COURSE : CARDIO-RESPIRATORY & GENERAL PHYSIOTHERAPY

COURSE OBJECTIVES

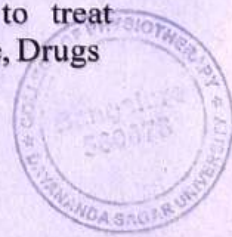
THIS COURSE SERVES TO INTEGRATE THE KNOWLEDGE GAINED BY THE STUDENTS IN CLINICAL CARDIORESPIRATORY CONDITIONS WITH THE SKILLS GAINED IN EXERCISE THERAPY, ELECTRO THERAPY AND MASSAGE, THUS ENABLING THEM TO APPLY THESE IN CLINICAL SITUATIONS OF DYSFUNCTION DUE TO PATHOLOGY IN THE CARDIO-RESPIRATORY PATHOLOGY.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE FOLLOWING THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS, PRACTICAL AND CLINICAL, THE STUDENT WILL BE ABLE TO IDENTIFY DISABILITY DUE TO CARDIO-RESPIRATORY DYSFUNCTION. SET TREATMENT GOALS AND APPLY THEIR SKILLS IN EXERCISE THERAPY, ELECTRO THERAPY AND OTHER PERTAINING SUBJECT AREAS IN CLINICAL SITUATION TO RESTORE CARDIO-RESPIRATORY FUNCTION.

UNIT I

1. Anatomical and Physiological differences between the Adult and Pediatric lung [1 Hour]
2. Bedside assessment of the patient-Adult & Pediatric [5 Hours]
3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests [6 Hours]
4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB [3 Hours]
5. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP [3 Hours]
6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning [3 Hours]
7. Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs



- to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers. **[1 Hour]**
8. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars- U.V.R and other electro therapeutics for healing of wounds, prevention of Hypergranulated Scars Keoloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues. **[2 Hours]**
 9. Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices **[2 Hours]**
 10. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit **[3 Hours]**
 11. Physiotherapy in Obstructive lung conditions **[2 Hours]**

UNIT II

12. Physiotherapy in Restrictive lung conditions **[2 hours]**
13. Management of breathlessness **[2 hours]**
14. Pulmonary Rehabilitation **[4 Hours]**
15. Physiotherapy following Lungsurgeries **[3 Hours]**
16. Respiratory failure – Oxygen Therapy and Mechanical Ventilation **[4 Hours]**
17. Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU**[4 Hours]**
18. Burns management - Role of physiotherapy in the management of burns, post grafted cases- Mobilization and Musculo-skeletal restorative exercises following burns **[3 Hours]**
19. Physiotherapy management following cardiac surgeries **[3 Hours]**
20. Cardiac Rehabilitation **[4 Hours]**
21. Physiotherapy management following PVD **[3 Hours]**

UNIT III

22. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following Surgical procedures on Abdomen and Thorax **[3 Hours]**
23. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes **[3 Hours]**
24. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases **[3 Hours]**

25. Home program and education of family members in patient care [2 Hours]
26. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincters. [3 Hours]
27. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity. [5 Hours]
28. Health Fitness and Promotion : Fitness Evaluation, Analysis of Body composition, Evaluation and prescription of Exercise, Factors affecting exercise Performance, Exercise Prescription for Specific groups : Elderly, Women and Children. [5 Hours]
29. Applied Yoga in Cardio-respiratory conditions [3 Hours]

Recommended books:

1. Tidy's physiotherapy.
2. Cash's Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]
4. Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz
5. Elements in Pediatric Physiotherapy – Pamela M Eckersley
6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
7. Cardio pulmonary Symptoms in physical Therapy practice Cohen and Michel
8. Chest Physiotherapy in Intensive Care Unit by Mackenzi
9. Cash's Text book of General Medicine and Surgical conditions for Physiotherapists.
10. Physiotherapy in Psychiatry
11. Physical Therapy for the Cancer patient by M.C Garvey
12. Physiotherapy in Obstetrics and Gynecology by Polden



YEAR : III YEAR
COURSE CODE : 17PT371
**TITLE OF THE COURSE : MUSCULOSKELETAL & SPORTS PHYSIOTHERAPY-
PRACTICAL**

Practical: 60 Hours

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Recommended books:

1. Tidy's physiotherapy.
2. Textbook of orthopedics- Cash.
3. Clinical orthopedic rehabilitation- Brotzman.
4. Orthopedic physiotherapy - JayantJoshi.
5. Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz
6. Sports physiotherapy- MariaZuluaga



YEAR : III YEAR
COURSE CODE : 17PT372
TITLE OF THE COURSE : CARDIO-RESPIRATORY & GENERAL PHYSIOTHERAPY - PRACTICALS

Practical: 60 Hours

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

- 1. Bedside case presentations and case discussions**
- 2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.**


Principal
College of Physiotherapy,
Dayananda Sagar University,
Bangalore, 560078

YEAR : IV YEAR
COURSE CODE : 17PT401
TITLE OF THE COURSE : NEUROLOGY & NEUROSURGERY

COURSE OBJECTIVES

1. The objective of this course is that after 60 hours of lectures and demonstration the student will be able to demonstrate an understanding of Neurological conditions causing disability and their management. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by neuropathology on the functioning of the individual.

2. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various neurological conditions.

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. [1 hour]
2. Classification of neurological involvement depending on level of lesion. [1 hour]
3. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system. [3 hours]
4. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV. [3 hours]
5. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement. [1 hour]
6. Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo. [2 hours]
7. Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's

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palsy, hemi facial spasm, Glossopharangeal neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia. [3 hours]

8. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi-infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, cause of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management. [4 hours]
9. Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications. [3 hours]
10. Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders. [3 hours]
11. Movement disorders: Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athetosis, Tics, Myoclonus and Wilson's disease. [3 hours]
12. Cerebellar and coordination disorders: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia telangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis. [3 hours]

13. Spinal cord disorders: Functions of tracts, definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Subacute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcoidosis. [3 hours]
14. Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management. [3 hours]
15. Infections of brain and spinal cord: Etiology, pathophysiology, classification, clinical signs & Symptoms, investigations, differential diagnosis, medical management, surgical management And complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-Polio syndrome. Complications of systemic infections on nervous system – Septic Encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis. [2 hours]
16. Motor neuron diseases: - Etiology, pathophysiology, classification, clinical signs & symptoms, Investigations, differential diagnosis, medical management, and complications of following Disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy. [2 hours]
17. Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications. [2 hours]
18. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. [2 hours]
19. Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia. [3 hours]



20. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, Hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, Acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy. [2 hours]
21. Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy. [3 hours]
22. Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome. [3 hours]
23. Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Plant & Fungal poisoning, Animal poisons, & Complications of organ transplantation. [3 hours]
24. Introduction, Indications and Complications of following Neuro surgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery -

Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation. [2 hours]

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Textbook of Neurology- Victor Adams
3. Brains Clinical Neurology.
4. Illustrated Neurology & Neurosurgery
5. Brains Diseases of Nervous System



YEAR : IV YEAR
COURSE CODE : 17PT402
TITLE OF THE COURSE : COMMUNITY MEDICINE

This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease list the methods of health administration, health education and disease preventive measures.

1. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease. [5 hours]
2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening. [7 hours]
3. Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod- borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries. [7 hours]
4. Public health administration- an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups [4 hours]
5. Health programmes in India: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme [4 hours]

6. Demography and Family Planning: Demographic cycle, Fertility, Family planning- objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods. [3 hours]
7. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics. [6 hours]
8. Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes [4 hours]
9. Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology. [3 hours]
10. Hospital waste management: Sources of hospital waste, Health hazards, Waste management [3 hours]
11. Disaster Management: Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness [4 hours]
12. Occupational Health: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts. [4 hours]
13. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation. [3 hours]
14. Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education [3 hours]

Recommended books:

1. Textbook of Preventive & Social Medicine, Dr. J E Park



YEAR : IV YEAR
COURSE CODE : 17PT403
TITLE OF THE COURSE : NEURO-PHYSIOTHERAPY

Course Objectives:

At the end of the course, the candidate will –

1) The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

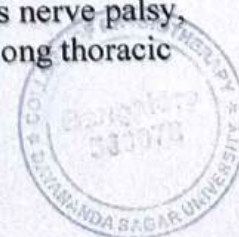
2) Acquire the knowledge of normal neurodevelopment, with specific reference to locomotion, be able to assess, identify & analyze neuro-motor & psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements sensations/perception etc, E.M.G. / N.C. Studies & arrive at functional diagnosis with clinical reasoning.

3) Acquire the skill of application of P.N.F. technique on patients., Be able to plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic advise, & parents education in neuro- pediatric care, Be able to prescribe appropriate Orthosis / splints & will be able to fabricate temporary protective & functionalsplints.

1. Neurological Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes –Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination –Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudzinski sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis. [10 hours]
2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy,

Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced Movement therapy. [14 hours]

3. Paediatric Neurology: Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's syndrome, Hydrocephalus, Chorea, Spina bifida and syringomyelia. [14 hours]
4. Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of Various Neurophysiological approaches & Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic Lateral sclerosis, and Multiple sclerosis. [10 hours]
5. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders: History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse Myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post Polio Syndrome [10 hours]
6. Evaluation and Management of Peripheral Nerve Injuries and Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic



nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudendal nerve palsy. [10 hours]

7. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait [10 hours]
8. Pre and Post surgical assessment and treatment following conditions - Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, and Spina bifida [9 hours]
9. Electro physiological testing and applications to physiotherapy
10. Applied Yoga in Neurological condition

Recommended books:

- 1) Cash's Text book for physio Therapist in Neurological disorders-Jaypee bros.
- 2) Proprioceptive Neuro muscular Facilitation – by Herman Kabat
- 3) Practical Physical Therapy – Margaret Hollis
- 4) Therapeutic exercise – by O'Sullivan
- 5) "Right in the middle" – by Patricia Davis
- 6) Stroke rehabilitation – by Margaret Johnson
- 7) Neurological Rehabilitation by DUmphred
- 8) Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz
- 9) Elements of Pediatric Physiotherapy-Eckersley

YEAR : IV YEAR
COURSE CODE : 17PT404
TITLE OF THE COURSE : COMMUNITY BASED REHABILITATION

Course objective:

The candidate will:

1. Should be able to describe:

The general concepts about health, disease and physical fitness.
Physiology of aging process and its influence on physical fitness.
National policies for the rehabilitation of disabled – role of PT.
The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in improving morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment solution for the same.
The evaluation of disability and planning for prevention and rehabilitation.
Community Based Rehabilitation in urban and rural set up.

2. Be able to identify with clinical reasoning the prevailing contextual (e.g. environmental and psycho-social cultural factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems.

3. Be able to conduct as small project {cross sectional study /survey} to access to the prevalence of specific physical health problem and /or morbidity in specific community – which may be based at the institutional level or in field.

1. Rehabilitation: Definition, types [1 hour]

2. Community: [5 hours]

- Definition of community
- Multiplicity of communities
- The community based approach
- Community entry strategies
- CBR and community Development
- Community initiated versus community oriented programme
- Community participation and mobilization

3. Introduction to Community Based Rehabilitation: [6 hours]

- Definition
- Historical review
- Concept of CBR



- Need for CBR
 - Difference between Institution based and Community based Rehabilitation
 - Objectives of CBR
 - Scope of CBR
 - Members of the CBR team
 - Models of CBR
4. Principles of Community based Rehabilitation: [10 hours]
- W.H.O.'s policies – about rural healthcare, concept of primary/tertiary health centers – district hospitals etc.
 - Role of P.T. – Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist/P. & O./ Vocational guide in C.B.R. of physically challenge person
 - Agencies involved in rehabilitation of physical handicapped – Legislation for physically handicapped
 - Concept of multipurpose health worker
 - Role of family members in the rehabilitation of a physically handicapped
5. Planning and management of CBR Programmes: [6 hours]
- CBR Programmed planning and management
 - Ownership and Governance
 - Decentralization and CBR
 - Management of CBR
 - Programmed sustainability
 - Communication and Coordination
 - Community participation
 - Mobilization and awareness
 - CBR programme influence on promoting and developing public policies
6. Disability: [6 hours]
- Definition of Impairment, Handicap and Disability
 - Difference between impairment, handicap and disability
 - Causes of disability
 - Types of disability
 - Prevention of disability
 - Disability in developed countries
 - Disability in developing countries
 - Disability Surveys: Demography
 - Screening : Early detection of disabilities and developmental disorders
 - Prevention of disabilities – types and levels
7. Disability Evaluation: [5hours]
- Introduction
 - What, Why and How to evaluate
 - Quantitative versus Qualitative data

- Uses of evaluation findings
8. Role of Government in CBR: [5 hours]
 - Laws
 - Policies
 - Programmes
 - Human Rights Policy
 - Present rehabilitation services
 - Legal aspects of rehabilitation
 9. Role of Social work in CBR: [4 hours]
 - Definition of social work
 - Methods of social work
 - History of social work
 - Role of social worker in rehabilitation
 10. Role of Voluntary Organizations in CBR: [4 hours]
 - Charitable Organizations
 - Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies
 - International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World Bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS
 11. National district level Rehabilitation: [5 hours]
 - Primary Rehabilitation Unit
 - Regional training center
 - District rehabilitation center
 - Primary health center
 - Village rehabilitation worker
 - Anganwadi worker
 12. Role of Physiotherapy in CBR: [5 hours]
 - Screening for disabilities
 - Prescribing exercise programme
 - Prescribing and devising low cost locally available assistive aids
 - Modifications physical and architectural barriers for disabled
 - Disability prevention
 - Strategies to improve ADL
 - Rehabilitation programmes for various neuromusculoskeletal and cardiothoracic disabilities
 13. Screening and rehabilitation of pediatric disorders in the community: [5 hours]
 - Early detection of high risk babies
 - Maternal nutrition and education
 - Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc



- Prevention and rehabilitation of mental retardation and Behavioral disorders
 - Immunization programmes
 - Early intervention in high risk babies
 - Genetic counselling
14. Extension services and mobile units: [2 hours]
- Introduction
 - Need
 - Camp approach
15. Vocational training in rehabilitation: [2 hours]
- Introduction
 - Need
 - Vocational evaluation
 - Vocational rehabilitation services
16. Geriatrics: [9 hours]
- Physiology of aging/degenerative changes – Musculoskeletal/Neuromotor/Cardio – respiratory/Metabolic, Endocrine, Cognitive, Immune Systems
 - Role of Physio therapy in Hospital Based Care, Half-way homes, Residential homes, Meals on wheelsetc.
 - Home for the aged, Institution based Geriatric Rehabilitation
 - Few conditions: Alzheimer's disease, Dementia, Parkinson's disease, Incontinence, Iatrogenic drug reactions, etc.
 - Ethics of Geriatric Rehabilitation
17. Industrial Health & Ergonomics: [10 hours]
- Occupational Hazards in the industrial area – Accidents due to
 - 1) Physical agents: Ex. Heat/cold, light, noise, vibration, U.V. radiation, Ionizing radiation
 - 2) Chemical agents: Inhalation, local action, ingestion
 - 3) Mechanical hazards: overuse/fatigue injuries due to ergonomic alteration and ergonomic evaluation of work place – mechanical stresses per hierarchy–
 - i Sedentary table work – executives, clerk
 - ii Inappropriate seating arrangement – vehicle drivers
 - iii Constant standing – watchman, defense forces, surgeons
 - iv Over – exertion in laborers, common accidents
 - Role of P.T. in Stress management
 - 4) Psychological hazards: Ex. Executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management – relaxation modes.
 - 5) Biological hazards

18. Lifestyle disorders:

- Physiotherapy role in planning
- Execution of lifestyle diseases like hypertension, obesity and diabetes mellitus
- Role in developing awareness programs

Practical: 60 Hours

This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardiorespiratory, pediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Recommended books:

1. Rehabilitation Medicine by Howard A Rusk.
2. Rehabilitation Medicine by Joel A Delisa



YEAR : IV YEAR
COURSE CODE : 17PT405
TITLE OF THE COURSE : RESEARCH METHODOLOGY AND BIOSTATISTICS

Research Methodology:[30 hours]

Course Objective:

The student will gain knowledge on the basic research methodology and various designs and sampling methods used in research methodology.

Course Outcome:

At the end of the course the candidate will be able to describe about the designs, sampling methods and interpretation of data in professional practice.

1. Introduction to Research Methodology: [4 hours]
 - Meaning of research
 - Objectives of research
 - Motivation in research
 - Types of research and research approaches
 - Research methods vs Methodology
 - Criteria for good research
 - Problems encountered by researchers in India.
2. Research problem: [2hours]
 - Statement of research problem
 - Statement of purpose and objectives of research problem
 - Necessity of defining the problem.
3. Research design: [4hours]
 - Meaning of research design
 - Need for research design
 - Features for good design
 - Different research designs
 - Basic principles of research design
4. Sampling design: [4 hours]
 - Criteria for selecting sampling procedure
 - Implications for sample design
 - Steps in sampling design
 - Characteristics of good sample design
 - Different types of sample design
5. Measurement and scaling techniques: [4 hours]

- Measurement in research – measurement scales
 - Sources of error in measurement
 - Technique of developing measurement tools
 - Meaning of scaling, its classification
 - Important scaling techniques
6. Methods of data collection: [4 hours]
- Collection of primary data
 - Collection of data through questionnaires and schedules
 - Difference between questionnaires and schedules
7. Sampling fundamentals: [2 hours]
- Need for sampling and some fundamental definitions
 - Important sampling distributions
8. Processing and analysis of data: [2 hours]
- Processing operations
 - Problems in processing
 - Types of analysis
 - Statistics in research
 - Measures of central tendency
 - Dispersion
 - Asymmetry
 -
9. Testing of Hypothesis: [3 hours]
- What is hypothesis?
 - Basic concepts concerning testing of hypothesis
 - Procedure of hypothesis testing
 - Measuring the power of hypothesis testing
 - Tests of hypothesis
 - Limitations of the tests of hypothesis
10. Computer technology: [1 hour]
- Introduction to computers
 - Computer application in research
 - Computers and researchers

Recommended Textbooks:

1. Research Principles and Methods: L Denise F. Poli & Hungler
2. Fundamentals of Research, 4th Edn.: David J. fox



Biostatistics:[30 hours]

Course Objective:

The student will gain knowledge on the basic concepts of biostatistics. Statistical concepts, methods of statistical analysis and interpretation of data.

Course Outcome:

At the end of the course the candidate will be able to describe the use of statistics and its need in professional practice and research.

1. Introduction: [6 hours]
 - Meaning, definition, characteristics of statistics
 - Importance of the study of statistics
 - Branches of statistics
 - Statistics and health science including physiotherapy
 - Parameters and Estimates
 - Descriptive and inferential statistics
 - Variables and their types
 - Measurement scales
2. Tabulation of data: [4 hours]
 - Basic principles of graphical representation
 - Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve
 - Normal probability curve
3. Measure of Central Tendency: [4 hours]
 - Need for measures of central tendency
 - Definition and calculation of mean – ungrouped and grouped
 - Meaning, Interpretation and calculation of median ungrouped and grouped
 - Meaning and calculation of mode
 - Comparison of mean, median and mode
 - Guidelines for the use of various measures of central tendency
4. Probability and Standard Distributions: [4 hours]
 - Meaning of probability of standard distribution
 - The binominal distribution
 - The normal distribution
 - Divergence from normality – skewness, kurtosis
5. Sampling techniques: [3 hours]
 - Need for sampling – Criteria for good samples

- Application of sampling in community
- Procedures of sampling and sampling designs errors
- Sampling variation and tests of significance

6.

Statistical significance: [5 hours]

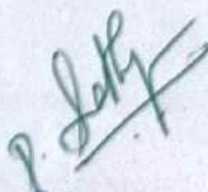
- Parametric tests: t – test
- Non parametric tests: chi square test, Mannwhitney U test, Z test, Wilcoxon's matched pair test
- Correlations

7. Analysis of variance and covariance: [4 hours]

- Analysis of variance (ANOVA)
- What is ANOVA?
Basic/principle of ANOVA
- ANOVA technique
- Analysis of Co variance (ANACOVA)

Recommended Textbooks:

- 1) Methods in Biostatistics – B. K. Mahajan
- 2) Manual of Biostatistics – Kulkarni, Bairde, Muzumdar
- 3) Elements of Health Statistics: Rao. N. S. N
- 4) An introduction of Biostatistics: Sunder Rao. P. S. S
- 5) Methods in Bio-Statistics 6th Edition, 1997: B. K. Mahajan
- 6) Biostatistics: a manual of Statistics Methods: K. Visweswara Rao
- 7) Elementary Statistics 1st Edn, 1990 in Medical Workers: Inderbir Singh
- 8) An Introduction to Gupta C. B. Statistical Methods, 1972: Ram Prasad & Sons
- 9) Basic Statistics, 3rd Edn: Simpsory G. Kaftha. P


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YEAR : I YEAR
COURSE CODE : 15MPT501
TITLE OF THE COURSE : RESEARCH AND ADMINISTRATION

RESEARCH METHODOLOGY

1. Introduction to research: Terminology in research [defining a research question, review of literature, research process]
2. Types of research: Qualitative and quantitative
3. Study design: Case study, case series, survey, Delphi process, pilot study, pre and post design, epidemiology study design (longitudinal, cohort, case control, prevalence etc.), repeated measure design, randomized controlled design.
4. Sampling design: Sampling techniques (population, sample, sample size determination- based on the study design, sampling methods, sampling errors)
5. Outcome measures: Use of outcome measures in rehab measures, psychometric properties of measurement (reliability, validity, responsiveness, sensitivity, specificity, MCID etc.), Measurement errors.
6. Data collection and analysis: Technique of data collection, tools, data processing, interpretation and presentation of data in graphical representation.
7. Scientific writing: Definition, kind of scientific documentation (research paper, review paper, books, review and meta-analysis, thesis, conference and project reports)
8. Presentation and publication of research: step and process, significance of report writing, step in report writing, precaution in writing a research report, oral and poster presentation of research paper in conference, preparation of abstract.
9. Critical appraisal of a research.

BIOSTATISTICS

1. Introduction to biostatistics: Terminology, definition, application and uses of biostats, frequency distribution.
2. Descriptive statistic, measure of central tendency, measure of dispersion and measure of asymmetry.
3. Hypothesis testing (test of significance, type 1 and type 2 error, confidence interval, power analysis.)
4. Parametric and non-parametric: T-test, ANOVA, ANCOVA, chi-square, Mann-Whitney u-test, Wilcoxon test, Kruskal-Wallis test, Friedman's test and z test.
5. Correlation and regression.
6. Epidemiological measure: Rate, ratio, proportion, incidence, prevalence, relative risk, ratio risk, odd's ratio, professional practice.


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ETHICS

1. Ethical issues in physiotherapy practice- clinical, research, academic.
2. Administration, legislation, rules and regulation governing physiotherapy practice n- national and international(IAP and WCPT)
3. Scope of physiotherapy in hospital, community and industry.
4. Education- formal and non-formal, philosophy of health, education, circular planning.
5. Teaching techniques-teaching-learning method to facilitate learning, method for facilitate learning, use of audio-visual aid, clinical teaching.
6. History taking, assessment, tests, patient communication, documentation of findings, treatment organization and planning, execution of intervention.
7. Principal of management, planning, organization, budget, policy process and quality assurance.
8. Documentation of rehabilitation, assessment and management... international classification of functioning, disability and health format (ICF).
9. Exercise prescription for health and fitness.

YEAR : 1 YEAR
COURSE CODE : 15MPT502
TITLE OF THE COURSE : APPLIED SCIENCES

BIOMECHANICS AND CLINICAL KINESIOLOGY:

1. Biomechanics of tissues, structure of musculo skeletal system and clinical application.
Skeletal muscle, bone, articular cartilage, tendon, ligament, peripheral nerves.
2. Normal and applied biomechanics of upper extremity, lower extremity, vertebral column thorax and chest wall (ventilation and circulation) and TMJ.
3. Kinetic and kinematic analysis of body balance, equilibrium, integrated function (gait, posture and ADL).
4. Ergonomic approach to lifting and handling, work space and environment, patient position, body mechanics and transfer techniques.

EXERCISE PHYSIOLOGY:

1. Energy sources, production, expenditure and transfer at rest and various physical activities.
2. Response and adaptation of various systems to exercise and training (aerobic, anaerobic and flexibility).
3. Aerobic and anaerobic exercises – principles of training, factors affecting aerobic and anaerobic training and response, types of training, overtraining, de-training, DOMS, specific aids to enhance performance and conditioning.
4. Environmental influence on exercise and performance – high and low altitude and hypoxia, hypobaric and hyperbaric, hot and cold environment, thermoregulation, dehydration and rehydration, acclimatization.
5. Fatigue – classification, physiology and assessment.
6. Consideration of age and gender in exercise and training.
7. Nutrition – recommended intake, role in exercise, supplementary nutrition and deficiencies.
8. Body composition and diet – assessment of body composition, obesity and weight control.

ELECTRO PHYSIOLOGY:

1. Anatomy and physiology of peripheral nerve, muscle, and NMJ.
2. Electrical properties of muscle and nerve.
3. Introduction for neuro muscular electrical stimulation.
4. Classification, components and electro physiological assessment.



5. Electrical stimulation and its effects on various systems.
6. Muscle plasticity in response to electrical stimulation.
7. Safety consideration in electro therapy

YEAR : I YEAR
COURSE CODE : 15MPT503
TITLE OF THE COURSE : FUNCTIONAL DIAGNOSIS AND THERAPEUTICS

FUNCTIONAL DIAGNOSIS

1. Clinical examination in general and detection of movement dysfunction including Gait.
2. Developmental screening, motor learning, motor control assessment.
3. Principles of pathological investigations and imaging techniques related to neuromuscular skeletal and cardiopulmonary disorders with interpretation.
4. Anthropometric measurement.
5. Health related physical fitness assessment.
6. General assessment for orthopedic, neurological and cardiopulmonary conditions.
7. Basics of exercise ECG testing and monitoring, PFT and spirometry.
8. Basics of electrophysiological testing and diagnosis FG test SD curve, NCV, EMG, ECG, Evoked potentials.
9. Physical disability evaluation and diagnosis.
10. Evaluation and theories of aging.

THERAPEUTICS:

1. Pain (neurobiology, various theories, modulation and management of pain).
2. Theories of motor control and motor learning.
3. Use of exercise therapy technique and application on various types of cases.
4. Application of electrotherapy techniques on patients, monitoring of dosage and winding up procedures.
5. Massage, mobilization and manipulation.
6. Facilitation and inhibition techniques.
7. General guidelines to be followed in burn rehabilitation and cancer rehabilitation protocol.
8. Physiotherapy following plastic surgery.
9. Yoga-concept of yogic practices.
10. Aids and appliances, adaptive functional devices to improve movement dysfunction.



SPECIALTY : ORTHOPAEDICS

YEAR : II YEAR
COURSE CODE : 15MPT0601
TITLE OF THE COURSE : MUSCULO SKELETAL DISORDERS

- 1 Exercise Physiology, Fitness Testing and Exercise Prescription
- 2 Orthopaedic Physical Assessment
- 3 Principles of Treatment of Common Sports Injuries, Protocols and their Rationale
- 4 Biomechanics and Pathomechanics of Common Musculoskeletal Conditions.
- 5 Hand: Functions, Assessment, Treatment of Common Conditions i.e., Hansen's Disease, Rheumatoid Arthritis, Spastic Hand, Complex Regional Pain Syndrome (Reflex sympathetic Dystrophy) , Tendon Injuries, Stiff Hand.
- 6 Advanced Electrotherapeutics:
 - Physiology of Pain
 - Pain Management Modalities and Theory Rationale
 - Electrodiagnosis: Theoretical knowledge of Electromyography & Nerve Conduction Velocity Testing
 - Normal and in Neuro-musculoskeletal Conditions
- 7 Basic Knowledge of common drugs used in Orthopaedics:
 - Effects, Interactions & Relevance to Therapeutic Modalities (anti-inflammatory, analgesics, antipyretics, antibiotics, antihypertensive, diabetic drug therapy)
- 8 Principles of Different Schools of Manual Therapy:
 - Cyriax
 - Maitland
 - David Butler & Shackdock
 - McKenzie
 - Kaltenborn
 - Mulligan
 - Neuromuscular Techniques
- 9 Biomechanical Properties of Basic Connective Tissue
- 10 Basic Knowledge of Radiology:
 - Plain Radiographs
 - Bone Scans
 - Computed Tomography / Magnetic Resonance Imaging
- 11 Physiotherapeutic Assessment and Management of the Following Conditions :
 - Degenerative Joint Disorders
 - Seronegative & Positive Arthritic Disorders
 - Infections: Osteomyelitis, Septic Arthritis & Tubercular
 - Nerve Injuries & Entrapment Neuropathies (including Orthotics)
 - Fractures, Dislocations & their Complications

- Amputation (including Prosthetics)
- Cervical & Lumbar Disorders
- Spinal Cord Injury
- Arthroplasty: Excision, Partial & Total Joint Replacement of Upper /lower Limb
- Arthrodesis & Osteotomies
- Cumulative Trauma Disorders
- Soft Tissue Injuries
- Metabolic and Endocrine Disorders
- Fibromyalgia
- Burns
- Paediatric Conditions & Related Musculoskeletal Surgeries


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YEAR : II YEAR
COURSE CODE : 15MPT0621
TITLE OF THE COURSE : MANUAL THERAPY

1. Clinical Reasoning in Manual Therapy
 - Hypothesis Generation
 - Expert Reasoning Strategies
 - Clinical Reasoning Errors
 - Pattern Recognition
 - Role of Reassessment in Reasoning
 - Hypothesis Categories in Manual Therapy.
2. McKenzie's School of Thought :
 - Elaborate the Classification of Spinal Pain as adopted by McKenzie – Postural, Dysfunction and Derangement.
 - Quebec task force classification of Spinal disorders
 - Assessment and Treatment procedures
3. Neurodynamics (Shacklock) and Neural tissue Mobilization (Butler)
 - Basics of Anatomy, Physiology, Biomechanics of Neural tissue
 - Clinical Reasoning, Principles of Subjective, Objective, Treatment and Reassessment in Spinal and Extremity Adverse Neural Tension Disorders
 - Clinical Presentation of Intraneural and Extra Neural Pathology
 - Indication, Contraindication and Precautions in Altered Neurodynamics and Management of Upper and Lower Extremity and Spine
4. Maitland's School of Thought:
 - Principles of Subjective Examination and Physical Examination, Treatment, Re-Assessment of Spinal and Peripheral Joints Problems
 - Movement Diagram its Application
 - The Manipulative VBI testing-Australian Protocol Approach, & its Application
 - High Velocity Thrust Techniques
 - Clinical Presentation and Management of a various Peripheral and Vertebral Neuromusculoskeletal Conditions
5. Combined Movements (B.C. EDWARDS)
 - Regular & Irregular Patterns in Cervical Thoracic & Lumbar Regions
 - Spinal Dysfunction Diagnosis and Treatment using Combined Movements
6. Cyriax's School of Thought :
 - History, Physical Examination - Selective Tissue Tension Tests, Management Strategies in Spinal and Peripheral Joint & Soft Tissue Dysfunction.
 - Techniques: Deep Transverse Friction, Massage, Manipulation, Injection
7. Mulligan's School of Thought:
 - Principles of Assessment and Treatment Using Mulligan's Concept
 - Natural Apophyseal Glides (NAGS), Sustained Natural Apophyseal Glides (SNAGS), Reverse Natural Apophyseal Glides (RNAGS), Mobilizations With Movement (MWM)


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- Application in Spinal and Peripheral Joint Dysfunction
8. Osteopathic and Chiropractic Schools of Thought :
 - Theoretical Principles of Assessment And Treatment
 9. Positional Release Techniques :
 - Assessment and Treatment Procedures
 - Strain and Counter Strain Technique
 - Functional Technique
 10. Neuromuscular Techniques:
 - Assessment and Treatment Procedures
 - Integrated Neuromuscular Inhibition Techniques
 11. Neuro-Musculoskeletal Taping Techniques
Peripheral Joint And Spinal Joint Dysfunctions
 12. Pilates – School of Thought
 13. Movement Impairment Syndromes- Shirley Sharman
 - Diagnosis and Treatment of Movement Impairment Syndromes
 14. Myofascial Release Techniques:
 - Trigger Point Therapy
 - Principles of Assessment and Treatment
 15. Muscle Energy Technique:
 - Theories of Spinal and Peripheral Dysfunction
 - Fryette's laws of Physiological Spinal Motion
 - Segmental Vertebral Dysfunction – Neutral Rotation and Side flexion (NRS), Extension Rotation and Side flexion (ERS), Flexion Rotation & Side Flexion(FRS)
 - Screening Examination, Scanning Examination, Skill Rolling, Segmental Definition (Diagnosis)
 - Treatment using Muscle Energy Techniques
 16. Pain Sciences:
 - Models of Pain & Disability
 - Biomedical and Biopsychosocial Model
 - Mature Organism Model
 - Main's, Orchestra
 - Fear Avoidance Model
 - Patient Centered Model
 - Basic Molecular Biology, Neurobiology, Stress Biology and Pain
 - Integration of Neurobiology into Clinical Reasoning Models
 - Pain Deconstruction into Pathobiological Mechanisms
 - Peripheral and Central Pain Mechanisms, Theory of Modulation of Pain
 - Identification of Risk Factors for Chronicity
 - Pain Measurement Tools & Management Strategies Via Physiotherapy
 - Merging Bio-psychosocial Approaches into Physiotherapy Management



- Multidisciplinary Pain Management Strategies
- Diagnostic Dilemmas and Common Pain States

Drug Therapy, Cultural and Age Influences on Pain, Placebo & Nocebo

17. Motor Control: Peripheral and Spinal Pain

- Theories of Motor Control and Motor Learning
- Neuromusculoskeletal Systems; Movement Development
- Causes and Mechanisms of Abnormal Movement
- Injury and Recovery of Function
- Application of Motor Control and Motor Learning Theory into Clinical Practice
- Functional Stability Retraining: Principles and Strategies

18. Miscellaneous:

- Evidenced Based Practice in Manual Therapy
- Medico-Legal Issues
- Effective Documentation
- Effective Communication

19. Practical:

- Demonstration of Techniques
- Hand-On- Practice of Assessment and Treatment Techniques of various Schools of Thought

YEAR : II YEAR
COURSE CODE : 15MPT0622
TITLE OF THE COURSE : SPORTS REHABILITATION

- 1 History of Sports Medicine
 - Ancient Greece and Gladiators, Hippocrates and Galon
 - FIMS and its Evolution
- 2 Primary Care Sports Medicine its Scope and Philosophy
 - Medical research in Injury Prevention
- 3 Medico-Legal Issues
 - Negligence, Liability, Litigation
 - Basic Principles to Reduce the Threat of Litigation
 - Act of God
 - Assumption of Risk
 - Contributing Negligence
 - Comparative Negligence
 - Legal rights of Disabled Athletes
- 4 Sports Psychology
 - Role of Sports Psychologist
 - Predictive Models of Injury
 - Psychological Factors involved in Performance
 - Treatment for Injury and Pain
 - Injury Prone Profile
 - Crisis Intervention
 - Techniques of Relaxation
- 5 Sports Nutrition
 - Significance of Nutrition
 - Common Food Fads
 - Maximizing Energy Stores
 - Maintaining Adequate Hydration
 - Weight Gain and Loss
 - Optimizing Pre-competition Meal
 - Ergogenic Aids
 - Vegetarianism
- 6 Sports Physiology
 - High Energy Phosphagen System
 - Cellular Oxidation
 - Aerobic/Anaerobic Glycolysis
 - Krebs Cycle
 - Interrelationship with Carbohydrates, Protein, Fat, Metabolic Mill
 - Energy Systems
 - VO₂ Max and O₂ Debt and Deficit and Recovery
 - Lung Volumes



YEAR : II YEAR
COURSE CODE : 15MPT0622
TITLE OF THE COURSE : SPORTS REHABILITATION

- 1 History of Sports Medicine
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 - Energy Systems
 - VO₂ Max and O₂ Debt and Deficit and Recovery
 - Lung Volumes



- Onset of Blood Lactate Accumulation
- Support systems and their adaptation to aerobic and anaerobic training
- Thermoregulation and Exercises – Altitude Training – Under Water
- 7 Sports Performance Related
 - Muscle Fiber Typing and Prediction of Sports Selection and Performance.
 - Anthropometry and Performance
 - Body Composition and Measurement – Obesity/Weight Control
- 8 Sports Pharmacology
 - Historical Perspective
 - International Olympic Committee and the Ban
 - Classification of Doping, Drug Testing, Permitted Drugs
 - Ethical Dilemma
- 9 Principles of Injury Prevention, Diagnosis, Treatment and Rehabilitation
 - History Taking
 - Intrinsic and Extrinsic Factors
 - Work Ergonomics and Leisure
 - Training History
 - Knowledge of the Sport
 - Electrophysical Modalities
 - Taping and Splinting Technique
 - Aquatic Therapy
 - Stretching, Warm up & Cool down
 - Speed, Speed Endurance Development, Agility, Power, Balance, Plyometrics & Reaction Time Training
 - Overtraining Syndrome
- 10 Sports related Injuries Upper Limb, Head and Neck
 - Specific Protocols for Rehabilitation
 - Common Injuries to the Head, Neck, Shoulder, Upper arm, Elbow, Wrist, Hand and Fingers.
- 11 Sports Related Injuries Lower Limb, Spine
 - Common Injuries
 - Specific Protocols for Rehabilitation
- 12 Paediatric Sports Medicine
 - Introduction
 - Adult and growing Bone
 - Training Guidelines
 - Nutrition
 - Common Problems
- 13 Exercises in Geriatrics
 - Training Guidelines in Geriatric Population
 - Training to Maintain Fitness – General Exercise Prescription
 - Age Related Changes

- 14 Sports for the Special Population
 - Screening for Participation and Prevention of Injuries and Rehabilitation
 - Classification of Sports for Paraplegics
 - Mental Retardation
 - Wheel Chair Athletes
- 15 Sports in Chronic Illnesses
 - Rheumatoid Arthritis
 - Scoliosis
 - Diabetes
 - Hypertension
 - Congenital Heart Diseases
 - Bronchial Asthma and Exercise induced Asthma
 - Sports anemia
 - Epilepsy
- 16 Sports Specific Injuries in the following Games
 - Basket Ball
 - Hockey
 - Soccer
 - Track and Field
 - Swimming and Diving
 - Racket Sports
 - Cycling Injuries
 - Volley Ball
 - Adventure Sports
 - Kabaddi
 - Combat Sports
 - Martial Arts
 - Dance
- 17 Women
 - Gender Differences in Sports Participation
 - Effects of Exercise on Menstrual Cycle and Performance
 - Exercise and Pregnancy, Lactation, Menopause, Osteoporosis and Prevention
 - Common Injuries in Women
 - Care of Breast
- 18 Promotion of Healthy Lifestyle in the Community
- 19 Practical
 - Sports Biomechanics
 - Sports Radiology
 - On site Emergencies
 - Assessment of Training Shoes
 - Biomechanical Analysis, Evaluation of Various Games, Sports and Athletes



- Sports First aid – Complete Programme, Structure Drills & Cardio Pulmonary Resuscitation.
- Training Methods and Assessment of Training Schedules, Nutritional Evaluation and Psychological Counseling
- Attachment to Teams and Covering Matches and Tournaments and providing Rehabilitation and Treatment to Injured Athlete
- Examination of Joints of Upper Limb, Lower limb & Spine
- Travelling with Teams

SPECIALTY: NEUROSCIENCES

YEAR : II YEAR
COURSE CODE : 15MPTN601
TITLE OF THE COURSE : NEURO PSYCHOSOMATIC DISORDERS

- 1 Neuroanatomy and Neurophysiology
 - Sensory System
 - Spinal Cord and its Connections
 - Brainstem and its Connections
 - Cerebellum, Basal ganglia, Cerebral cortex, Limbic system and Hypothalamus
 - Neural control, Basis of Muscle Tone, Posture, Complex Movements and Locomotion
 - Special Senses
 - Peripheral Nerves and Spinal Nerves
 - Autonomic Nervous System
 - Pain Pathways and Physiology of Pain
 - Memory and Learning
 - Circulation of Brain
 - Fluid Compartments and Fluid Balance in the Central Nervous System
 - Blood Brain Barriers
- 2 Normal Sequential Behavioral & Physiological Changes throughout Developmental Arc
- 3 Facilitatory& Inhibitory Treatment Techniques and their Neurophysiological Basis
- 4 Physiotherapeutic Treatment Approaches in Neurological Rehabilitation :
Bobath and (Neuro Developmental Therapy (NDT), Brunnstorm Movement Therapy, Roods approach, Proprioceptive Neuromuscular Facilitation (PNF), Vojta, Sensory Integration Therapy (SI), Motor Relearning Program (MRP),Myofascial Release (MFR).
- 5 Motor Control, Theories of Motor Control & Motor Development and Principles of Motor Learning
- 6 Reflex Maturation – Neurophysiological Basis
- 7 Basic Evaluation Tools in Neurology
- 8 Special Investigative Procedures (in brief)
 - Blood and Cerebrospinal fluid (CSF) – Protein, Glucose Cells
 - Electroencephalogram (EEG),Radiographs, Myelogram, Computer Tomography (CT) and Magnetic Resonance Imaging (MRI)of Brain and Spinal Column
- 9 Disorders of Movements including Lesions in Lower and Upper Motor Neuron, Cerebellum & Basal Ganglia.
- 10 Musculoskeletal Treatment Concepts Applied to Neurology:
Adverse Neural Tissue Tension Tests in Upper Limb and Lower Limb.



- 11 Orthotics/ Splinting/Wheel Chair (Planning & Prescription) in Neurological Conditions
- 12 Repetitive Nerve Stimulation (RNS) and ENMG
- 13 Basics of Electrophysiology
 - Properties of Nerve and Muscle
 - Neuromuscular Junction
 - Generation and Propagation of Action Potential
- 14 Basics of Electrodiagnosis
 - Historical Background, Methods and Goals of Electrodiagnosis
 - Instrumentation
- 15 Electromyography (EMG)
 - Panel Diagram
 - Stages of Electromyography, Technique/Procedure
 - Indications, Contraindications and Uses
 - Quantitative & Qualitative Analysis of the Responses
- 16 Nerve Conduction Studies
 - Basics of Nerve Conduction (Orthodromic, Antidromic)
 - Instrumentation
 - Procedure /Technique (Sensory and Motor Nerve Conduction)
 - Parameters, its Implication & Factors Affecting Nerve Conduction Studies
 - Interpretation of Nerve Conduction Studies (includes practical)
- 17 Electrical Study of Reflexes
 - Definition, Settings, Procedure, Parameters, Clinical Implications and Uses
 - Hoffman's Reflex (H-Reflex)
 - F-response
 - Axon Reflex
 - Blink Reflex
 - Jaw Jerk
- 18 **Electrical stimulation:**
 - **Principles Underlying Electrical Stimulation Test**
 - **Stimulation Specifications – Normal and Denervated.**
 - **Faradic – Galvanic Test and Strength Duration (SD) Curve Test**
 - **Chronaxie, Rheobase - Curve Assessments**
- 19 Evoked potentials
 - Somato Sensory Evoked Potential,
 - Motor Evoked Potential,
 - Brainstem Evoked Potential &
 - Visual Evoked Potential
- 20 Biofeedback
 - Definition and Types
 - EMG Biofeedback
 - Instrumentation, Indication, Contraindication and Uses, Principles of Biofeedback Steps, Procedure/ Technique and Evidences for Practice

- 21 Spasticity
- Neuropathology
 - Assessment
 - Medical & Surgical Management
 - Rehabilitation Measures
- 22 Oromotor Rehabilitation
- 23 Assessment and Management of Neurogenic Bladder



YEAR : II YEAR
COURSE CODE : 15MPTN621
TITLE OF THE COURSE : ADULT NEUROLOGY

- 1 CerebroVascular Accidents.
 - Causes, Types & Pathophysiology
 - Investigations, Medical & Surgical Management
 - Stroke Syndromes
 - Complications and their Management
 - Physiotherapy Management
- 2 Infections of Nervous System
Meningitis, Encephalitis, Guillain-Barré Syndrome (GBS), Bulbar polio, Parasitic Infection & Human Influenza Virus (HIV)
- 3 Demyelinating Diseases of Nervous System
- 4 Degenerative and Metabolic Diseases of Nervous System
 - Classification
 - Differential Diagnosis and Prognosis
 - Medical and Surgical Management
 - Evaluation
 - Rehabilitation
- 5 Diseases of Spinal Cord
Lathyrism, Transverse Myelitis, Syringomyelia, Radiculopathy, Tumors of Spinal Cord and Vascular Disorders (Infarction)
- 6 Diseases of Peripheral Nerves
 - Classification
 - Differential Diagnosis and Prognosis
 - Medical and Surgical Management
 - Evaluation
 - Rehabilitation
- 7 Diseases of Cranial Nerves
- 8 Diseases of Muscles
 - Classification
 - Myopathies, Myotonias, Muscular Dystrophies and Neuromuscular Junction Disorders
- 9 Traumatic Brain injury – Adult
 - Acute care and Prognostic Outcome
 - Coma Stimulation
 - Restoration of Motor Control
 - Complications and their Management
 - Rehabilitation and Community Reintegration

- 10 Traumatic Spinal Cord Injuries.
 - Acute care and Prognostic outcome
 - Restoration of Motor Control
 - Complications and Management (Autonomic Dyreflexia and Pressure sore)
 - Rehabilitation and Community Reintegration
- 11 Space Occupying Lesions in Central Nervous System.
 - Classification
 - Differential Diagnosis and Prognosis
 - Psychosocial Problems
 - Medical and Surgical Management
 - Evaluation
 - Rehabilitation
- 12 Vestibular Disorders and Management.
 - Role of Vestibular System in Postural Control
 - Postural Abnormalities In Vestibular Disorders
 - Vestibular Functions Tests and Clinical Examination
 - Central and Peripheral Vestibular Disorders
 - Bilateral Vestibular Dysfunctions
- 13 Disorders of Speech and Language, Perception & Cognitive Impairments (Physiotherapy Implications)
 - Aphasia, Dysarthria and Dysphonia
 - Perceptual Problems
 - Dyslexia
 - Approaches in Cognitive Rehabilitation
- 14 Developmental Diseases of Nervous System, Surgical Management and Rehabilitation
- 15 Medical, Surgical and Physiotherapy Management In Disturbances of Cerebro Spinal Fluid (CSF) and its Circulation
- 16 Compressive Myelopathies.
 - Classification
 - Surgical Management (Laminectomy)
 - Spinal Stability after Surgery
 - Postoperative Physiotherapy Management
- 17 Gait in Neurological Conditions: Assessment and Retraining



YEAR : II YEAR
COURSE CODE : 15MPTN622
TITLE OF THE COURSE : PAEDIATRIC NEUROLOGY

- 1 Normal Development:
 - Intrauterine Life
 - Motor Development during Infancy
 - Motor Behavior during Early Childhood and Adolescent
- 2 Reflex and Reactions
- 3 **Assessing Motor Development in Children – Principles of Evaluation and Assessment Screening**
 - Milani – Comparetti Motor Development Screening Test
 - Denver II Development Screening Test
 - Neurological Examination of Full Term New Born Infant
 - Brazelton Neonatal Behavioral Assessment Scale
 - Neurological Assessment of Preterm & Full Term Infant by Dubowitz&Dubowitz
 - Movement Assessment of Infants
 - Test of Infant Motor Performance and Development
 - Alberta Infant Motor Scale
 - Gross Motor Performance Measures
 - Peabody Developmental Motor Scales
 - Bruininks-Oseretsky Test of Motor Proficiency (BOTMP)
 - Comprehensive Developmental Scales.
 - ❖ Gesell Developmental schedules
 - ❖ Bayley scales of Infant Development
 - ❖ Neonatal Behavioral Assessment Scale
 - Early Intervention Developmental Project
 - Gross Motor Function Measure (GMFM)
 - Assessment of Functional Capabilities
 - ❖ Paediatric Evaluation Of Disability Inventory
 - ❖ Functional Independence Measure for Children
- 4 **High Risk Infant Assessment and Intervention**
 - High Risk Clinical Signs
 - Neonatal Neuropathology
 - Neuromotor Assessment
 - ❖ Apgar Score
 - ❖ Clinical Assessment of Gestational Age
 - ❖ Assessment of Intervention in Neonatal Intensive Care Unit (NICU)
 - Follow up Programs for High Risk Conditions
 - ❖ Asphyxia
 - ❖ Lesions with Hypoxic Ischemic Encephalopathy (HIE)
 - ❖ Intraventricular Hemorrhage (IVH)

- ❖ Acute Respiratory Distress Syndrome (ARDS), Bronchopulmonary Dysplasia (BPD), Meconium Aspiration
 - ❖ Metabolic Conditions - Metabolic Acidosis
 - ❖ Hyperbilirubinaemia
 - ❖ Congenital Heart Diseases
- 5 Cerebral Palsy
 - Classification
 - Assessment
 - Physiotherapy Management
 - Adaptive Equipments
 - 6 Acute Brain Injury in Childhood and Physical Therapy.
 - Acute Care and Prognostic Outcome
 - Cognitive Rehabilitation
 - Restoration of Motor Control
 - Complications and their Management
 - Rehabilitation and Community Integration
 - 7 Minimal Brain Dysfunction; Learning Disability, Attention Deficit, Autism, Developmental Coordination Disorder
 - 8 Mental Retardation (MR)
 - Classification
 - Etiology and Pathology of Mental Retardation
 - Physical Therapy Assessment and Management including Sensory Integration Therapy.
 - 9 Genetic Diseases with Emphasis on Down Syndrome and Spina Bifida
 - Neuropathology
 - Cardio Pulmonary Anomalies
 - Sensory Deficits
 - Musculoskeletal Deficits
 - Physical Therapy Assessment and Interventions
 - 10 Neuromuscular Disorders in Childhood
 - Classification
 - Assessment
 - Physiotherapy Management.
 - 11 Brachial plexus injury
 - Classification
 - Prognostic Indicators
 - Follow up Assessment
 - Physiotherapy
 - 12 Role of Physiotherapist in Paediatric Brain and Spinal cord Tumors
 - 13 Adaptive Equipment for Physically Challenged Children
 - 14 Community Integration and other Social Aspects of a Disabled Child

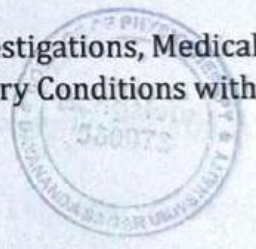


SPECIALITY: CARDIOPULMONARY SCIENCES

YEAR : II YEAR
COURSE CODE : 15MPTP601
TITLE OF THE COURSE : CARDIOPULMONARY DISORDER

- 1 Applied Anatomy and Physiology of Cardiopulmonary System.
- 2 A. Embryology and Development of Cardiopulmonary System
B. Differences between Adult and Paediatric Cardiopulmonary System.
- 3 A. *Biomechanics of Thorax*
B. *Pathological Changes in Unilateral and Bilateral Chest Deformities*
- 4 *Physiology and Analysis of Breath Sounds and Heart Sounds*
- 5 *Assessment of Cardiovascular and Pulmonary System*
- 6 Investigations in Cardio Pulmonary System and its Clinical Implication.
 - Lipid Profile
 - Chest X-ray
 - Pulmonary Function Tests
 - Arterial Blood Gas Analysis
 - Computed Tomography Thorax
 - Electrocardiogram
 - Echocardiography
 - Stress Test
 - Angiogram
 - Sputum Culture Tests
 - Serum Enzymes and Markers of Inflammation
 - Complete Blood Picture and Electrolytes
 - Pleural Fluid Analysis
- 7 Drugs and their Impact on Cardiopulmonary System & Exercise Science
- 8 Artificial Airways and Airway Adjuncts
 - Rationale for Choice
 - Technique of Insertion
 - Implications for Respiratory Care
- 9 Basic Life Support/ Advanced Cardiac Life Support
- 10 Physiological Changes of Cardiopulmonary Systems in Body Positioning and Basis of Early Mobilization
- 11 Humidifiers, Aerosol Therapy
- 12 Bronchial Hygiene Therapy – Conventional and Advanced
- 13 Chest Physiotherapy Techniques : Clinical Reasoning and Evidence Based Practice
- 14 Mechanical Ventilation-Physiology, Modes and Weaning Criteria
- 15 Non-Invasive Ventilation
 - Continuous Positive Airway Pressure Therapy
 - Bi-level Positive Airway Pressure Therapy
- 16 Dyspnea – Physiology, Assessment, Management

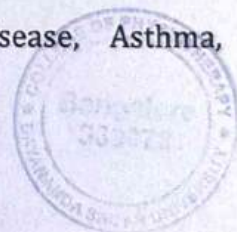
- 17 Ventilatory Muscles – Testing and Training
- 18 Cancer Rehabilitation
- 19 Burns Rehabilitation
- 20 Renal Rehabilitation
- 21 Diabetic Foot, Wound Care, Physiotherapy Management
- 22 Outcome Measures in Cardiopulmonary Physiotherapy & Rehabilitation
- 23 Respiratory Care and Rehabilitation in Surgical Conditions
 - Abdominal Surgeries, Spinal Surgeries & Replacement Surgeries
- 24 Oxygen Therapy
- 25 Cardiac Assistive Devices and Implants
 - Intra-Aortic Balloon Pump, Cardiac Pacemakers & Ventricular Assistive Device
- 26 Intercostal Drainage- Precautions during Chest Physiotherapy
- 27 Etiopathogenesis, Types, Clinical Manifestations, Assessment and Investigations, Medical & Surgical Management, Physiotherapy Treatment for Cardiac Conditions with Emphasis on
 - Ischemic Heart Disease
 - Valvular Heart Diseases
 - Heart Failure
 - Cardiomyopathies
 - Arrhythmias and Conduction Defects
 - Congenital Heart Diseases
- 28 Pre, Peri and Post Surgical Physiotherapy Management in Surgical Conditions (includes Knowledge about Surgical Procedures) with Emphasis on:
 - Coronary Artery Bypass Grafting
 - Valvular Repair Surgeries
 - Correction of Congenital Heart Defects
 - Percutaneous Transluminal Coronary Angioplasty
 - Mediastinal Surgeries
 - Heart Transplantation and Cardiac Pacemakers
- 29 Etiopathogenesis, Types, Clinical Manifestations, Assessment and Investigations, Medical and Surgical Management, Physiotherapy Treatment for The Pulmonary Conditions with Emphasis on:
 - Chronic Obstructive Pulmonary Diseases
 - Bronchial Asthma
 - Bronchiectasis
 - Cystic Fibrosis
 - Pneumonia
 - Lung Abscess
 - Pulmonary Tuberculosis
 - Lung Cancers
 - Pleural Disorders
 - Interstitial Lung Diseases & other conditions leading to Restrictive Lung Defects
 - Chest trauma



- Diaphragm Palsy
 - Herniations in to the Chest Wall
- 30 Pre, Periand Post-surgical Physiotherapy Management in all Pulmonary Surgeries, Pleural surgeries & Surgeries for Chest Wall Injuries (Including Knowledge about Surgical Procedures)
 - 31 Evidence Based Practice in Cardiopulmonary Physical Therapy
 - 32 Delegation and Documentation in Cardio pulmonary Physiotherapy Practice & Research
 - 33 Cardiopulmonary Exercise Testing:
Physiology of Exercise Testing, Types of Tests, Modes of Testing, Protocols, Interpretation and Clinical Implication
 - 34 Principles of Exercise Prescription
 - 35 Infection Control

YEAR : II YEAR
COURSE CODE : 15MPTP621
TITLE OF THE COURSE : INTENSIVE CARE MANAGEMENT

1. Introduction to the Intensive Care Unit (ICU) and Intensive Care Unit Setup. Physiotherapy Role in Intensive Care Unit
2. Intensive Care Unit Monitoring, Evaluation and Management
3. Endotracheal Intubation and Extubation
4. Evidence Based Physiotherapy Practice in Intensive Care Unit
5. Basic Therapeutics
 - Pharmacology of Respiratory Care
 - Airway Care
 - Humidification and Aerosol Therapy
 - Oxygen Therapy
 - Blood gases Analysis
 - Lung Expansion Therapy and Chest Physiotherapy
 - Physiology of Intermittent Positive Pressure Breathing
 - Analgesics and Sedatives
 - Intensive Therapy Apparatus (Adult & Paediatric-Airways)
 - Manual Hyperinflation –Types, Technique
 - Chest Physiotherapy Techniques & Advanced Devices used in Airway Clearance
6. Special Considerations to Body Positioning and Respiratory Care in Intensive Care Unit
7. Mechanical Ventilation.
 - Classification and Types
 - Modes
 - Ventilatory Strategies and Weaning for Intensive Care Unit Conditions
 - Graphics
 - Troubleshooting
 - Strategies to Promote Respiratory Care and Rehabilitation
8. Intensive care Unit Management for Primary & Secondary Cardiopulmonary Dysfunction
 - Respiratory Failure
 - Acute Exacerbation of Chronic Obstructive Pulmonary Disease, Asthma, Bronchiectasis
 - Acute Respiratory Distress Syndrome
 - Pulmonary Edema
 - Acute Myocardial Infarction
 - Pulmonary Emboli
 - Burns
 - Tetanus
 - Trauma – Hydro/Pneumothorax, Head and Spinal Injury.
 - Hypoxic Encephalopathy



- Stroke
 - Sepsis
 - Aspiration
 - Pneumonia
 - Ventilator Associated Pneumonia
 - Drug Overdose & Poisoning
9. Clinical Assessment and Physiotherapy Management in Neonatal/Paediatric Intensive Care Unit Conditions with Emphasis on:
 - Hyaline Membrane (Respiratory Distress Syndrome)
 - Meconium Aspiration
 - Pneumonia
 - Cyanotic and Acyanotic Heart Diseases
 10. Epidemics and Endemics- Common in Intensive Care Unit -Severe Acute Respiratory Syndrome, H1NI, Viral Infection etc.
 11. Complications in Intensive Care Unit (Prevention and Management)
 12. Respiratory Care in Neurological Disorders
 - Cerebro Vascular Accident
 - Guillain-Barre Syndrome
 - Motor Neuron Disease
 - Muscular Dystrophy
 - Traumatic Brain Injury and Spinal Cord Injury
 13. Critical Care Rehabilitation – Rationale, Guidelines, Considerations and Evidence

YEAR : II YEAR
COURSE CODE : 15MPTP622
TITLE OF THE COURSE : CARDIOPULMONARY REHABILITATION AND FITNESS

1. Cardiac Rehabilitation
 - Goals
 - Infrastructure and Ideal Setup
 - Components and Team
 - Rationale for Cardiac Rehabilitation
 - Indications, Contraindications.
 - Assessment - Risk Stratification
 - Role of Physiotherapy
 - Various Test Protocols
 - Phases of Rehabilitation
 - Exercise Testing in High Risk Groups – Changes seen in Cardiac Conditions and Implications for Training
 - Exercise Prescription and Precautions.
 - Outcome Measures
2. Primary and Secondary Prevention of Cardiovascular and Pulmonary Conditions.(Existing and Novel Risk Factor Evaluation, Physiotherapy Approach)
3. Peripheral Vascular Diseases and Physiotherapy Management and Rehabilitation
4. *Pulmonary Rehabilitation*
 - Goals
 - Pulmonary Rehabilitation team
 - Components of Pulmonary Rehabilitation
 - Rationale of Pulmonary Rehabilitation
 - Role of Physiotherapy
 - Respiratory Assessment and Various Test Protocols
 - Indications, Contraindications and Complications
 - Exercise Testing in High Risk Groups – Changes seen in Pulmonary Conditions and Implications for Training
 - Exercise Prescription and Precautions
 - Management of Obstructive and Restrictive Conditions
 - Management of Hyperventilation Syndrome
 - Outcome Measures
5. Respiratory Management following Neurological & Spinal Cord Injuries
6. Cardiovascular and Pulmonary Rehabilitation in Paediatrics
7. Outcomes and Recent Advances in Cardiovascular and Pulmonary Rehabilitation
8. *Fitness and Wellness – Concept / Components*
9. **Physical Fitness – Assessment**
10. **Principles of Training Individual Components of Physical Fitness**
11. **Acute Changes and Chronic Adaptations of Various Systems to Aerobic and Anaerobic Exercises with Environmental Influence**



12. Exercise Prescription in Special Population with Physiological Basis and Precautions:

- Diabetes Mellitus
- Hypertension
- Metabolic Syndrome
- Dyslipidemia
- Chronic Obstructive Pulmonary Disease
- Obesity
- Osteoporosis
- Traumatic Brain Injury
- Spinal Cord Injury
- Stroke
- Ischemic Heart Disease
- Heart Failure
- Polycystic Ovarian Syndrome
- Depression
- Sleep Disorders
- Chronic Kidney Disease
- Endocrinal Abnormalities
- Immune Disorders
- Children and Adolescents

13. Nutrition

- Measurement of Energy in Food and during Physical Activity
- Nutritional Ergogenic Aids
- Eating Disorders

14. Weight Management

15. Stress- Exercise as a Stress Management Technique

16. Aging and Exercise

17. Fatigue: Causes and Management

18. Work site Health Promotion

19. Behavioral Principles Applied to Physical Activity and Exercise

- Theories and Models of Exercise Behavior
- Behavioral Strategies to Enhance Physical Activity Participation
- Factors Associated with Regular Exercise
- Exercise Adherence and Compliance

20. Health Counseling

21. Fitness Evaluation and Training Methods in Children

22. Physical Activity – Methods of Evaluation (Objective and Subjective), Rationale for Promoting Health, Current Evidence

23. Genetic Basis of Exercise and its Response

24. Immunity and Exercise

SPECIALITY: COMMUNITY PHYSIOTHERAPY

YEAR : II YEAR
COURSE CODE : 15MPTC601
TITLE OF THE COURSE : COMMUNITY BASED REHABILITATION

1. International Classification of Functioning, Disability and Health (ICF)
 - a) History of ICF (models of disability), Aims, Properties, Overview of Components and Uses of ICF Core Sets
 - b) Definitions and Levels of Classification
 - d) Implication in Physiotherapy (Physical and Psychosocial)
2. Community Based Rehabilitation Program (Physiotherapy)
 - a) WHO Matrix and Physiotherapy Role in IEC (information, education and communication)
 - b) Principles of Community Based Rehabilitation
 - c) Process of Implementation of CBR
 - d) Evaluation of Impairment and Disability
 - e) Evaluation of Patient and CBR Program
3. Community Physiotherapy
 - a) Approaches in Rehabilitation
 - b) Healthcare Delivery Models
 - c) Therapy Interventions based on Quality of Life
4. Research on the Needs of Community Physiotherapy with Updated Science
5. Family's Role in Rehabilitation
6. Principles, Concepts and Practical application of Community Physiotherapy, Changing Needs (personal, family and social) and Planning of Future for Disabilities in Various Conditions; i.e. Spinal Cord Injury; Traumatic Brain Injury; Stroke; Parkinson's Disease; Arthritis; Heart & Pulmonary diseases; Chronic Pain; Osteoporosis; Ageing with Disabilities etc.
7. Practical application of Community Physiotherapy and Planning of Future for Disabilities in- Peripheral Vascular Diseases; Amputations
8. Childhood Disorders (Early detection and Management throughout Life Spans); Autisms; Cerebral Palsy
9. Handling and Facilitation Techniques for Infants with Disability in Community
10. Barrier Free Design- Making the environment Accessible to the Disabled Individual (i.e. Accessibility and inclusiveness)
Principles of Universal Design
11. Assistive Technology for Physical and Cognitive Rehabilitation (with respect to Planning, Evaluation, Design, Prescription, Acceptance, Economy and Psychosocial Aspects) of
 - a) Basic and Instrumental Activities of Daily Living
 - b) Ambulatory Aids and Wheel Chairs
 - c) Orthotic and Prosthetic Aids



12. Psychological and Functional Aspects of Chronic Illness and Disability
13. Physiotherapy in Schools
 - a) Role of PT in Fitness of Normal School Children
 - b) Physiotherapy for Students with Disability (Locomotor and Somato-sensory)
 - c) Adapted Physical Activity
14. Environmental Issues in Child Health
15. Women's Health
 - a) Fitness in Pregnancy
 - b) Role of Antenatal Education at Community Level in Prevention of Maternal Mortality and Infant Morbidity
 - c) Post Natal Problems and Management
16. Occupational Hazards
 - a) Biological and Chemical
 - b) Physical/Environmental
 - c) Mechanical
 - d) Psychosocial
17. Occupational Biomechanics of Spine, Upper and Lower Extremity (During Static Work, Repetitive Work and Loading Tasks)
18. Work Related Musculoskeletal Disorders (Overuse Injuries of the Musculoskeletal Systems)- Definition, Etiopathogenesis, Risk factors, Evaluation and Management

YEAR : II YEAR
COURSE CODE : 15MPTC621
TITLE OF THE COURSE : GERIATRICS

1. Epidemiology of Aging and Related Morbidities
2. Theories of Aging (Merits and Demerits)
3. Changes due to Aging in
 - Musculoskeletal Systems
 - Nervous Systems
 - Cardiovascular Systems
 - Respiratory Systems
 - Endocrinology Systems
 - Immunological Systems
 - Gastrointestinal Systems
 - Genito-Urinary Systems
 - Thermoregulatory Systems

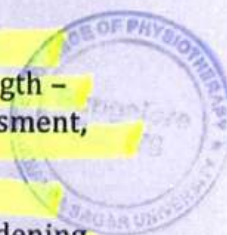
Homeostasis and Aging
 Medical/Surgical Conditions of each Systems related with Elderly and their
 Physiotherapy Interventions
4. Nutrition in Older Adults (Anemia in elderly)
5. Geriatric Pharmacology- Implication for Physiotherapy
6. Cognitive Aging and Psychosomatic Disorders
 - Dementia, Depression and Emotional and behavioral issues
 - Early Detection and Physiotherapeutic Intervention
7. Clinical and Physiotherapeutic Evaluation of Elderly
 (Using Outcome Measures and Assessment Tools i.e. Scales, Posturography, Inclinometer, Perineometer etc.)
8. Posture, Balance and Falls in Older Adults
 - a) Neurophysiology of Balance,
 - b) Biomechanical Changes
 - c) Physiotherapy and Safety Issues
9. Gait in Older Adults
 Classification, Pathomechanics, Assessment and Management
10. Co-ordination Issues in Older Adults
 (Therapeutic Assessment and Management)
11. Pain in Older Adults (Pathogenesis, Assessment and Management)
12. Lifestyle Diseases in Old Age e.g. Hypertension, Diabetes, Cancer (Identification and Management)
13. Pelvic Floor Dysfunction in Older Adults
 Urinary and Fecal Incontinence(Assessment and Management)
14. Fitness in Older Adults
15. Geriatric Care in various settings
16. Identification and Prevention of Abuse among Elderly, Caregivers Counseling



17. Technology for Adaptive Aging
18. Geriatric Syndrome and Role of Other Disciplines

YEAR : II YEAR
COURSE CODE : 15MPTC622
TITLE OF THE COURSE : OCCUPATIONAL HEALTH

1. Industrial Safety & Labor Laws related to Workers Health and Compensation
2. Occupational Hazards
 - a) Biological and Chemical
 - b) Physical/Environmental
 - c) Mechanical
 - d) Psychosocial
3. Human Information Processing, Skill and Performance
4. Occupational Stress: Etiology, Patho-Physiology and Remedial Measures
5. Ergonomics
 - a) Introduction
 - b) Principles
 - c) Scope
 - d) Evaluation
6. Occupational Biomechanics of Spine, Upper and Lower Extremity (During Static Work, Repetitive Work and Loading Tasks)
7. Anthropometric Principles in Workplace
 - a) Design using Anthropometric Data
 - b) Design for People with Functional Limitations (Pregnancy, Older Adults)
8. Occupational Risk Assessment of Design in Jobs Primarily Involving
 - a) Sitting
 - b) Standing
 - c) Lifting
9. Work Related Musculoskeletal Disorders (Overuse Injuries of the Musculoskeletal Systems)- Definition, Etiopathogenesis, Risk factors, Evaluation and Management
10. Evaluation and Management in Occupational Health and Ergonomics
 - a) Pre-placement Evaluation and Management - workers core strength - model for injury prediction and prevention, muscle fatigue assessment, functional job analysis technique
 - b) Post Injury Evaluation (Functional Capacity)
 - c) Rehabilitation of Injured Worker (Work Conditioning, Work Hardening, Employee Fitness, Return to Work Evaluation, Work Place Administration)
 - d) Ergonomics at Work Place (Furniture, Tools),
11. Ergonomics for Sedentary Worker (Executive/ clerical including Visual Display Terminal Workplaces), Health Care Professionals and Manual Worker (Repetitive tasks, Sustained tasks, Lifting etc.)
12. Ergonomics in Assistive Technology
13. Ergonomics in Sports

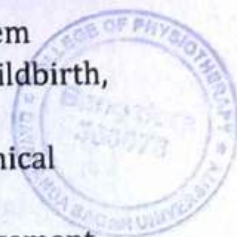


- 14. Ergonomics in Children
- 15. Challenges to Inclusion in Workplace
 - a) Physically Challenged
 - b) Cognitively Challenged
 - c) Ageing d) Illiterate

SPECIALITY: WOMEN'S HEALTH & PAEDIATRICS

YEAR : II YEAR
COURSE CODE : 15MPTW601
TITLE OF THE COURSE : OBG AND PEDIATRIC CARE

1. Normal Embryologic Development
Cardiopulmonary System, Musculoskeletal System and Neurological System
2. Theories of Motor Development, Motor control, Principles and Theories of Motor Learning and Skill Acquisition
3. Normal Child Development
 - a. Motor Development
 - b. Somato-Sensory Development
 - c. Speech / Language Development,
 - d. Psychosocial Development,
 - e. Oromotor Development
 - f. Perceptive-Cognitive Development
4. Developmental Reflexes: Integration & Clinical Implications
5. Physical Growth Characteristics - Anthropometric changes from Birth through Adolescence
6. Development of Posture and Movement from Neonate to Childhood
7. Evaluation- Physical (Musculoskeletal, Neurological, Cardiopulmonary), Psychological, Behavioral, Social and Environmental in Paediatrics
8. Play in Infancy, Childhood and Adolescence
9. Early Intervention in High Risk Infants
10. Therapeutic Approaches in Paediatric Rehabilitation (Principles and Practice): Neuro Developmental Technique, Roods, Vojta, Sensory Integration, Myofascial release & Recent Techniques
11. Principles & Techniques of Chest Physiotherapy in Paediatrics
12. Physical Modalities in Paediatrics Rehabilitation
13. Women's Reproductive Health: Anatomy of Female Reproductive system
14. Physiology of Puberty and Menarche, Menstruation , Sexual Health, Childbirth, Purperium and Menopause
15. Anatomical and Physiological Changes during Pregnancy and their Clinical Implications
16. Primary Health Care in Obstetrics and Gynecology: Screening & Management
17. Cancer Screening in Women: Normal and High Risk Population
18. Physical Agents Application in Obstetric and Gynecological Rehabilitation
19. Prenatal diagnosis: Dual Markers, Tripple test, Glucose Challenge & Tolerance Test, Biophysical Profile, Amniocentesis, Chronic Villi Sampling, Investigations during labour – Partogram, Non-Stress Test
20. Investigations in Paediatrics : Blood Parameters, Radiographs, Magnetic Resonance Imaging & Computed Tomography



SPECIALITY: WOMEN'S HEALTH & PAEDIATRICS

YEAR : II YEAR
COURSE CODE : 15MPTW601
TITLE OF THE COURSE : OBG AND PEDIATRIC CARE

1. Normal Embryologic Development
Cardiopulmonary System, Musculoskeletal System and Neurological System
2. Theories of Motor Development, Motor control, Principles and Theories of Motor Learning and Skill Acquisition
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20. Investigations in Paediatrics : Blood Parameters, Radiographs, Magnetic Resonance Imaging & Computed Tomography

YEAR : II YEAR
COURSE CODE : 15MPTW621
TITLE OF THE COURSE : WOMEN'S HEALTH

1. Changes in Adolescence
 - A. Morphological and Physiological Changes
 - B. Diet and Exercise
 - C. Eating Disorders
 - D. Menstrual & Peri-Menstrual Problems
 - E. Sexual Functions & common Sexual Issues.
2. Physiotherapy in Obstetric Care
 - A. Maternal, Fetal and Placental Responses to Exercise
 - B. Antenatal and Postnatal Care and Exercise Training Considerations
3. Musculoskeletal Pain and Dysfunction in Childbearing years: Physiotherapy Evaluation & Management
4. Maternal Complications and Diseases
 - A. Cardiovascular and Metabolic Disorders
 - B. Neurological
 - C. Musculoskeletal
 - D. Respiratory
5. Physiotherapy Care during Labor -
 - A. Maternal Position
 - B. Pain Mechanism and Management
6. Post-Partum - Anatomical and Physiological Changes
Post -Natal Exercise Program, Post Caesarean Exercise Program
7. Physiotherapy Care in High Risk Pregnancy
8. Neonate Handling: Assessment and Management
9. The Climacteric - Anatomical, Physiological, Psychological, Cardiovascular and other Systemic Changes in Postmenopausal Stage
Complications in Postmenopausal period: Osteoporosis, Falls & Fractures in Elderly Women.
10. Changes in Bone Mineral Density in Women: Assessment and Management
11. Physiotherapy in Gynecology :
Pelvic Inflammatory Diseases & Pelvic Floor Dysfunction
12. Chronic Pelvic Pain Women: Assessment and Management
13. Physiotherapy following Gynecological Surgery
14. Cancer Rehabilitation
15. Lymphedema and Management
16. Exercise Prescription & Training Consideration for -
 - A. Women
 - B. Female Athletes & Injuries in Athletic Women.
 - C. Gynecological Conditions (Polycystic Ovary Syndrome(PCOS), Infertility, Obesity)



17. Growth, Performance, Activity and Training during Adolescent period
18. Fitness Testing and Exercise Prescription in Gynecological Conditions, Infertility, PCOD, Obesity
19. Women in Workplace : Ergonomic Control of Musculoskeletal Injuries
20. Women With Special Needs

YEAR : II YEAR
COURSE CODE : 15MPTW622
TITLE OF THE COURSE : PAEDIATRIC REHABILITATION

- 1 Physical Development
 - a. Typically Developing Children and Special Children
- 2 Gross and Fine Motor Assessment in Infants and Children
- 3 Evaluation Scales and Outcome Measures in Paediatrics
 - A. Musculoskeletal assessment including Gait
 - Paediatric Pain Profile (PPP)
 - Edinburgh Visual Gait Score
 - Selective Control Assessment of the Lower Extremity (SCALE)
 - Gillette Functional Assessment Questionnaire
 - Selective motor control scale (SMC)
 - POSNA Pediatric Musculoskeletal Functional Health Questionnaire
 - Observational Gait Assessment (RANCHO LOS AMIGOS)
 - B. Developmental and Neurological Assessment: Principles of Evaluation & Screening
 - Milani – Comparetti Motor Development Screening Test
 - Denver II Development Screening Test
 - Neurological Examination of Full Term New Born Infant
 - Brazelton Neonatal Behavioral Assessment Scale
 - Neurological Assessment of Preterm & Full Term Infant by Dubowitz & Dubowitz
 - Movement Assessment of Infants
 - Test of Infant Motor Performance and Development
 - Alberta Infant Motor Scale
 - Gross Motor Performance Measures
 - Peabody Developmental Motor Scales
 - Bruininks-Oseretsky Test of Motor Proficiency (BOTMP)
 - Comprehensive Developmental Scales.
 - ❖ Gesell Developmental Schedules
 - ❖ Bayley Scales of Infant Development
 - ❖ Neonatal Behavioral Assessment Scale
 - Early Intervention Developmental Project
 - Gross Motor Function Measure (GMFM)
 - Assessment of Functional Capabilities
 - ❖ Paediatric Evaluation of Disability Inventory
 - ❖ Functional Independence Measure for Children
 - Cardiopulmonary Assessment
 - ❖ Neonatal Pain Scales,
 - ❖ Energy Expenditure Index
 - ❖ Exercise Testing Protocols for Children



- 4 Physiotherapy Assessment & Management of the following conditions
 - A. Cardio Pulmonary Diseases & Disorders
 - Respiratory distress Syndrome, Bronco Pulmonary Dysplasia
 - Meconium Aspiration Syndrome
 - Neonatal /Congenital Pneumonia
 - Persistent pulmonary Hypertension of the newborn
 - B. Respiratory Tract Disorders and Parenchymal Lung Diseases
 - C. Congenital Heart Defects and Cardiomyopathies
 - D. Congenital Abnormalities of Chest
 - E. Respiratory Care: Neonatal & Paediatric Intensive Care- Evaluation and Management. – Monitoring in PICU & NICU & Mechanical Ventilation
- 5 Physiotherapy Assessment & Management in Neonatal Cardio Pulmonary & General Surgical Conditions
- 6 Evaluation and Management of Childhood Orthopaedic Conditions(Physiotherapy perspective) : Congenital and Acquired
- 7 Neurological Diseases and Disorders in Children
 - Diseases of the Brain and Spinal Cord
 - Diseases of the Peripheral Nervous System
 - Diseases of Neuro-muscular Junction & Muscles
 - Traumatic Brain Injury
 - Complications of Prematurity
 - Genetic Disorders, Infectious Diseases
 - Cerebral Palsy.
 - Brain and Spinal Cord Injury: Traumatic and Acquired
 - Myelodysplasia and Hydrocephalus
 - Brachial Plexus Injuries
 - Developmental Coordination Disorders
 - Cognitive Impairment and Pervasive Developmental Delay
 - Learning Disability, Autism & Attention Deficit-Hyperactivity Disorder (ADHD)
 - High Risk Infant –
Assessment & Intervention, Clinical Assessment of Gestational Age, High Risk Conditions – Perinatal Asphyxia, Hypoglycemia, Hyperbilirubinemia, Hypoxia Ischaemic Encephalopathy, Intraventricular Hemorrhage, Meconium Aspiration, Metabolic Abnormalities, Neonatal Convulsions

Physiotherapy Perspective in Assessment and Management of above Clinical Disorders
- 8 Hematology / Oncology- Hemophilia, Cancers, Immune Deficiency Syndrome
- 9 Endocrine & Metabolic Disorders in Paediatrics
- 10 Burns in Children and Rehabilitation

- 11 Behavioral and Learning Problems in Special Children
- 12 Barriers and Facilitators for Paediatric Rehabilitation
- 13 Orthotic and Adaptive/Assistive aids in Paediatric Rehabilitation
- 14 Environmental risks-Drug Exposure, Lead Poisoning, Fetal Alcohol Syndrome, Nutritional disorders
- 15 Physical Fitness in Paediatrics- Testing, Prescriptions and Training.(Typical Developing & Special children)
- 16 Electrodiagnosis in Paediatrics – Electromyography Nerve Conduction Studies, Evoked Potentials
- 17 Evidence Based Examination and Intervention of Children with Disabilities
- 18 Advances in Paediatric Physiotherapy



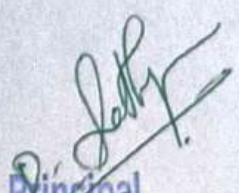
YEAR : II YEAR
COURSE CODE : 15MPTN602
TITLE OF THE COURSE : RECENT ADVANCES AND EVIDENCE BASED PRACTICE. NEURO SCIENCES

Method of Assessment - Written

1. Stroke Rehabilitation
2. Polyneuropathies
3. Vestibular rehabilitation
4. Inflammatory diseases of CNS
5. Spina Bifida
6. SCI & Cerebellum disorders
7. Myopathies
8. NMJ Disorders
9. Parkinsonism
10. Traumatic brain injury
11. Gait rehabilitation
12. Assistive devices in Neuro rehabilitation
13. Hand function in neuro rehabilitation
14. Balance in neuro rehabilitation
15. Management of tonal abnormalities

YEAR : II YEAR
COURSE CODE : 15MPT0602
TITLE OF THE COURSE : RECENT ADVANCES AND EVIDENCE BASED PRACTICE.
ORTHOPEADICS

1. Manual Therapy
2. Advance electrotherapeutics
3. Sport Psychology
4. Sport Physiology
5. Sport Pharmacology
6. Pain
7. Amputation
8. Joint Replacements
9. Footwear in Sports
10. Doping
11. Taping
12. MET
13. Neuro dynamics & Neural mobilization
14. Women athletes
15. Advanced care of back & neck


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