CHARUTAR VIDYA MANDAL UNIVERSITY

FACULTY OF PHYSIOTHERAPY

RITA A. PATEL INSTITUTE OF PHYSIOTHERAPY

BPT - Semester V

Course Code: BPT–128

Course Title: Medicine-I

Course Credit Hours:

Hrs. / Wk			Credits			Marks		Total Marks
L	P	T	L	P	T	Theory	Practical	
4	-	4	4	-	4	100	-	100

Course Outline: This course introduces physiotherapy students to common medical conditions and systemic diseases relevant to rehabilitation. It covers general medicine, cardiovascular, respiratory, vascular, gastrointestinal, urogenital, rheumatological, dermatological, obstetric and gynecological, infectious and sexually transmitted diseases**,** focusing on etiology, clinical features, complications and management. Special emphasis is placed on acute and intensive care, including trauma, emergencies, ICU procedures, cardiopulmonary monitoring and mechanical ventilation. The course equips students with the knowledge and skills to safely assess and manage patients, integrating medical understanding into effective physiotherapy practice.

Sr No	Title of the Unit	Minimum number of Hours
1	General Medicine	7
2	Diseases of the Cardiovascular and Vascular Systems	11
3	Diseases Of Respiratory System	10
4	Gastrointestinal Disorders	5
5	Infectious Diseases	5
6	Urogenital System	5
7	Rheumatology	5
8	Dermatological Disorders	5
9	Obstetrics, Gynecology, Leprosy and Sexually Transmitted Diseases	15
10	Intensive and Emergency Care	8

Total hours (Theory): 76Hrs

Total hours (Practical): 00 Hrs

Total hours: 76 Hrs

Unit Sr No	Course Content	Hours of Teaching
1	**General Medicine**	**7 Hours**
1.1	Introduction to General Medicine	
1.2	Fever – causes, types and management, Anemia – types, causes and treatment, Diabetes Mellitus – causes, symptoms, complications, Hypertension – causes and complications,	
1.3	Nutritional disorders, Thyroid disorders (Hypothyroidism, Hyperthyroidism) Obesity, Thyrotoxicosis, Myxedema, Vitamin deficiencies, Rickets, Osteomalacia	
2	**Diseases of the Cardiovascular and Vascular Systems**	**11 Hours**
2.1	Define, etiology, pathogenesis, clinical features, complications	
2.2	Conservative and Surgical management of the following conditions: Ischemiac heart disease, Myocardial infarction, Heart Failure, Congestive Cardiac Failure and Cardiac Arrest, Rheumatic fever, Hypertension, Infective endocarditis, Myocarditis & cardiomyopathy, Cardiac Tumours, Valvular lesions, Stress test, Congestive cardiac failure	

2.3	Deep Vein Thrombosis, Burger's Disease, Varicose veins, Atherosclerosis, Raynaud's Disease, Phlebitis, Peripheral vascular disease (TAO)	
3	**Diseases Of Respiratory System**	**10 Hours**
3.1	Define, etiology, pathogenesis, clinical features, Investigations, complications	
3.2	Conservative and Surgical management of the following conditions: COPD - chronic bronchitis and Emphysema, Bronchial asthma Suppurative disease-Bronchiectasis, Lung abscess, Common infectious disease-Pulmonary TB, Pneumonia, Interstitial lung disease	
3.3	Occupational lung disease (silicosis asbestosis, pneumoconiosis, brucellosis, farmer's lung), Pulmonary vascular disease-pulmonary HT, pulmonary thromboembolism, Cancer lung Aspergillosis, Cystic fibrosis, Disease of pleura- Pneumothorax, hydro pneumothorax, pleural effusion, Empyema, Lung function tests, Respiratory failure, Pulmonary edema, COVID-19, Swine flu	
4	**Gastrointestinal Disorders**	**5 Hours**
4.1	Peptic ulcer, Pancreatitis, Dysentery and diarrhea, Inflammatory bowel disease, Jaundice, Cirrhosis of liver	
5	**Infectious Diseases**	**5 Hours**
5.1	Tuberculosis, Malaria, Typhoid, Infective hepatitis, Tetanus, Mucormycosis	
6	**Urogenital System**	**5 Hours**
6.1	Structure and function of kidneys,Physiology of micturition, Acute renal failure, Chronic renal failure, Glomerulonephritis, Pyelonephritis	
7	**Rheumatology**	**5 Hours**
7.1	Rheumatoid arthritis, Ankylosing spondylitis, Gout, Osteoarthritis, Spondyloarthritis, Systemic lupus erythematosus, Polyarteritis nodosa, Mixed connective tissue disorder, Scleroderma	
8	**Dermatological Disorders**	**5 Hours**
8.1	Structure and function of skin, Primary and secondary lesions, Scabies, Pediculosis, Dermatophytosis, Pityriasis versicolor, Candidiasis, Impetigo / Boil, Herpes zoster, Eczema / Dermatitis / Allergies, Psoriasis, Acne, Alopecia, Vitiligo / Leucoderma	
9	**Obstetrics, Gynecology, Leprosy and Sexually Transmitted Diseases**	**15 Hours**
9.1	Female reproductive anatomy and physiology, puberty, menstrual cycle, pregnancy diagnosis and changes, antenatal/postnatal care, labor, lactation, family planning,gynecological infections, uterine/vaginal disorders, surgeries (hysterectomy, D&C, etc.), menopause, sterility, cancers, incontinence.	

9.2	Leprosy and physiotherapy in leprosy	
9.3	Sexually transmitted diseases: Syphilis, Gonorrhoea**,** Chancroid**,** AIDS	
10	**Intensive and Emergency Care**	**8 Hours**
10.1	Medical and surgical emergencies, trauma, shock, hemorrhage, burns, septicemia, ICU care (airway management, CPR, bronchoscopy, tracheostomy, intubation, chest tubes), ECG, ABG analysis, mechanical ventilation, gas therapy, psychological care, Basic Life Support (BLS).	

Course Outcomes (COs):

At the end of the course, the students will be able to

CO1	Explain the basic concepts of general medicine and describe the causes, clinical features, complications and medical management of common conditions such as fever, anemia, diabetes mellitus, hypertension, nutritional disorders and thyroid disorders.
CO2	Describe the etiology, pathophysiology, clinical features, investigations and medical management of diseases related to the cardiovascular and vascular systems and understand their impact on physical function.
CO3	Identify and explain various respiratory system disorders including COPD, asthma, tuberculosis, pneumonia, respiratory failure and other pulmonary conditions and understand their implications for physiotherapy management.
CO4	Understand the clinical features and medical management of gastrointestinal, renal and infectious diseases and recognize their relevance in-patient rehabilitation and physiotherapy care.
CO5	Explain the pathophysiology and clinical presentation of rheumatological disorders, skin diseases and communicable and sexually transmitted diseases and understand their functional limitations.
CO6	Demonstrate knowledge of intensive and emergency care including cardiopulmonary resuscitation, airway management, monitoring techniques and the role of physiotherapy in critical care and rehabilitation.

Recommended Text Books:

1. Cash’s Text book for Physiotherapists in Chest, Heart & Vascular Diseases
2. Cash’s Text book in General Medicine & Surgical Conditions for Physiotherapists
3. Chest Physical Therapy & Pulmonary Rehabilitation – Donna Frown Filter
4. Physiotherapy in Respiratory and Cardiac Problem – Pryor and Prasad
5. Davidson's Principles and Practice of Medicine – Stuart H. Ralston, Ian Penman, Mark W. J. Strachan, Richard Hobson
6. Kumar and Clark's Clinical Medicine – Parveen Kumar and Michael L. Clark
7. Harrison's Principles of Internal Medicine – J. Larry Jameson et al.

Recommended Reference Books:

1. Textbook of Critical Care Medicine
2. Oxford Handbook of Clinical Medicine
3. Essentials of Cardiopulmonary Physical Therapy – Hillgass and Sodosky

CO–PO–PSO Matrix:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4	PS O5
CO1	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO2	3	3	2	2	2	3	2	2	2	2	2	2	3	2	2	2	2
CO3	3	3	3	2	2	2	2	2	2	2	2	2	3	3	2	2	2
CO4	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO5	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	2
CO6	3	3	3	2	3	3	3	2	3	2	2	2	3	3	2	3	2

CHARUTAR VIDYA MANDAL UNIVERSITY

FACULTY OF PHYSIOTHERAPY

RITA A. PATEL INSTITUTE OF PHYSIOTHERAPY

BPT - Semester V

Course Code: BPT–129

Course Title: Surgery-1

Course Credit Hours:

Hrs. / Wk			Credits			Marks		Total Marks
L	P	T	L	P	T	Theory	Practical	
4	-	4	4	-	4	100	-	100

Course Outline: This course provides basic knowledge of common surgical conditions, surgical principles and post-operative care relevant to physiotherapy practice. It covers topics such as infections, wound healing, burns, oncology, amputations, abdominal and hand surgeries, ENT disorders, anaesthesia and basic radiological interpretation. The course helps students understand surgical procedures and their physiotherapy implications for effective rehabilitation and patient care.

Sr No	Title of the Unit	Minimum number of Hours
1	Surgical Principles, Techniques, and Supportive Care	8
2	Infections and Post-operative Care	8
3	Amputation and Hand Surgery	11
4	Abdominal Surgery	11
5	Anaesthesia and Radiological Interpretation	9
6	Burns	8
7	Wound	7
8	Oncology and ENT Disorders	14

Total hours (Theory): 76 Hrs

Total hours (Practical): 00 Hrs

Total hours: 76 Hrs

Unit Sr No	Course Content	Hours of Teaching
1	**Surgical Principles, Techniques and Supportive Care**	**8 Hours**
1.2	Introduction to surgical conditions	
1.3	Principles of surgery, suturing	
1.4	surgical infections, haemostasis, fluid & electrolyte balance, acid-base status	
1.5	nutrition in surgery, surgical drains (e.g., ICD, Foley, Hemovac, CVC, PICC).	
2	**Infections and Post-operative Care**	**8 Hours**
2.2	Acute and chronic infections (e.g., Bacteremia, septicemia, pyaemia, toxaemia, abscess, gangrene, TB), hospital-acquired infections, post-operative complications and their physiotherapy implications.	
3	**Amputation and Hand Surgery**	**11 Hours**
3.1	Amputations	
3.2	Hand Surgery: Trauma to hand and its management, Tendon transplant, Principle of cineplasty	
4	**Abdominal Surgery**	**11 Hours**
4.1	Explain the common abdominal incisions.	
4.2	Discuss the common abdominal and pelvic organ surgical procedures and its Physiotherapy implications (Herniorrhaphy, Cystectomy, Colostomy, Ileostomy, Hysterectomy, Prostatectomy, cystectomy, Appendectomy and Cholecystectomy)	
4.3	Demonstration/ Clinical Exposure: Various abdominal incisions (status of surgical wound)	
4.4	Identification of external aid uses in abdominal surgeries: Drainage tubes, catheters, Naso-gastric tubes, IV lines	

5	**Anaesthesia and Radiological Interpretation**	**9 Hours**
5.1	Anaesthesia: Types (general, spinal, local), systemic effects, fluid/electrolyte imbalance, acid-base imbalance and their management.	
5.2	OT setup and basic OT demonstrations	
5.3	Radiology Introduction to radiological interpretation of fractures	
5.4	Radiological findings in OA,RA, spine disorders, chest conditions	
5.5	Basics of CT,MRI and angiography	
6	**Burns**	**8 Hours**
6.1	Definition of burns, Classification of burns, Causes and prevention	
6.2	Pathological changes, Clinical features, Complications, Management of burns	
6.3	Skin Grafts: Types of grafts, Grafting procedures, Survival of skin graft	
6.4	Flaps: Types of flaps, Uses of flaps	
7	**Wound**	**7 Hours**
7.1	General survey of trauma, Pathology and clinical features of wound repair Primary wound healing, Secondary wound healing, Tertiary wound healing	
7.2	Clean wounds, Contaminated wounds, Infective wounds, Principles of treatment, Factors affecting wound healing, Ulcers, Gangrene	
8	**Oncology and ENT Disorders**	**14 Hours**
8.1	Hearing**:** Anatomy and physiology of hearing, Assessment of hearing loss, Management of hearing loss	
8.2	ENT Disorders: Otitis media, Sinusitis, Rhinitis	
8.3	Facial Nerve Palsy-Causes, Management**;** Larynx-Functional paralysis, Tracheostomy, Care of tracheostomy**;** Vertigo-Causes, Assessment, Management	
8.4	Oncology**:** Cancer staging, onco-surgical procedures, mastectomy, palliative care	

Course Outcomes (COs):

At the end of the course, the students will be able to

CO1	Describe the basic principles of surgery, surgical techniques, infections, wound healing and post-operative care relevant to physiotherapy practice.
CO2	Explain the clinical features, management and physiotherapy implications of common surgical conditions including burns, amputations and abdominal surgeries.
CO3	Identify common ENT disorders, hand injuries and their surgical management relevant to physiotherapy rehabilitation.
CO4	Interpret basic radiological investigations such as X-ray, CT and MRI related to musculoskeletal and systemic conditions.
CO5	Apply the knowledge of surgical procedures and post-operative precautions while planning physiotherapy management for surgical patients

Recommended Text Books:

1. S. Das – A Concise Textbook of Surgery, Latest Edition, Dr. S. Das Publications.
2. Bailey & Love's Short Practice of Surgery, Norman S. Williams et al., CRC Press.
3. Cash's Textbook of General Medical and Surgical Conditions for Physiotherapists, Patricia A. Downie, Jaypee Brothers.

Recommended Reference Books:

1. Kirk's General Surgical Operations, by Kirk & Williamson.
2. Schwartz's Principles of Surgery, McGraw-Hill Education.

CO–PO–PSO Matrix:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4	PS O5
CO1	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO2	3	3	3	2	2	2	2	2	2	2	2	2	3	3	2	2	2
CO3	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO4	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3
CO5	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	2	2

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FACULTY OF PHYSIOTHERAPY

RITA A. PATEL INSTITUTE OF PHYSIOTHERAPY

BPT - Semester V

Course Code: BPT –130

Course Title: Non - Traumatic Orthopedics

Course Credit Hours:

Hrs. / Wk			Credits			Marks		Total Marks
L	P	T	L	P	T	Theory	Practical	
4	-	4	4	-	4	100	-	100

Course Outline: This course provides an overview of the etiology, clinical features, complications and management of non-traumatic orthopedic disorders. It includes the study of congenital and acquired musculoskeletal deformities, infective and arthritic conditions of bones and joints, bone tumors, metabolic bone diseases and connective tissue disorders. The course also addresses neuromuscular disorders and cervical and lumbar spinal pathologies with emphasis on their pathophysiology and clinical presentation.

Sr No	Title of the Unit	Minimum number of Hours
1	Introduction	6
2	Deformities	10
3	Disease of Bones and Joints	11
4	Inflammatory and Degenerative Conditions	11
5	Syndromes	6
6	Neuromuscular Disorders	9
7	Cervical and Lumbar Pathology	10
8	Regional Conditions	13

Total hours (Theory): 76 Hrs

Total hours (Practical): 00 Hrs

Total hours: 76 Hrs

Unit Sr No	Course Content	Hours of Teaching
1	**Introduction**	**6 Hours**
1.1	Introduction to Non-Traumatic orthopedic Disorders , Clinical examination in an orthopedic patient	
1.2	Inflammation and repair, soft tissue healing	
1.3	Radiological and Imaging techniques in Orthopedics	
1.4	Inflammation and repair, soft tissue healing	
2	**Deformities**	**10 Hours**
2.1	Congenital Deformities - clinical features, complications, medical and surgical management.	
2.2	CTEV, CDH, Torticollis, Scoliosis, Flat foot, Vertical talus	
2.3	Hand anomalies- syndactyly, polydactyly and ectrodactyly, Arthrogryposis multiplex congenita (amyoplasia congenita)	
2.4	Limb deficiencies- Amelia and Phocomelia, Klippel Feil syndrome, Osteogenesis imperfecta (fragile ossium), Cervical rib	

2.5	Acquired Deformities – Acquired Torticollis, Scoliosis, Kyphosis, Lordosis, Genu varum, Genu valgum, Genu recurvatum, Coxa vara, Pes cavus, Hallux rigidus, Hallux valgus, Hammer toe, Metatarsalgia	
3	**Disease of Bones and Joints**	**11 Hours**
3.1	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.	
3.2	Arthritic conditions: Pyogenic arthritis, Septic arthritis, Syphilitic infection of joints	
3.3	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	
3.4	Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia, Osteoporosis	
4	**Inflammatory and Degenerative Conditions**	**11 Hours**
4.1	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	
4.2	Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)	
5	**Syndromes**	**6 Hours**
5.1	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	
6	**Neuromuscular Disorders**	**9 Hours**
6.1	Definition, causes, clinical feature, complications, management, (Multidisciplinary approach) medical and surgical of the following conditions:- Cerebral palsy, Poliomyelitis, Spinal Dysraphism, Leprosy	
7	**Cervical and Lumbar Pathology**	**10 Hours**
7.1	Causes, clinical feature, Patho-physiology, investigations, management - Medical and surgical for the following: - Prolapsed intervertebral disc (PID), Spinal Canal Stenosis, Spondylosis (cervical and lumbar), Spondylolysis, Spondylolisthesis, Lumbago/ Lumbosacral strain, Sacralization, Lumbarization, Coccydynia, Hemivertebra	
8	**Regional Conditions**	**13 Hours**
8.1	Definition, Clinical features and management of the following regional conditions	
8.2	Shoulder: Periarthritis shoulder (adhesive capsulitis), Rotator cuff tendinitis. Supraspinatus Tendinitis, Infraspinatus Tendinitis, Bicipital Tendinitis, Subacromial Bursitis	

8.3	Elbow: Tennis Elbow, Golfer's Elbow, Olecranon Bursitis (student's elbow), Triceps Tendinitis
8.4	Wrist and Hand: De Quervain's Tenosynovitis, Ganglion, Trigger Finger/ Thumb, Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture
8.5	Pelvis and Hip: IT Band Syndrome, Piriformis Syndrome, Trochanteric Bursitis
8.6	Knee: Osteochondritis Dissecans, Prepatellar and Suprapatellar Bursitis, Popliteal Tendinitis, Patellar Tendinitis, Chondromalacia Patella, Plica Syndrome, Fat Pad Syndrome (Hoffa's syndrome)
8.7	Ankle and Foot: Ankle Sprains, Plantar Fasciitis / Calcaneal Spur, Tarsal Tunnel Syndrome, Achilles Tendinitis, Metatarsalgia, Morton's Neuroma

Course Outcomes (COs):

At the end of the course, the students will be able to

CO1	Describe the etiology, pathophysiology, clinical manifestations, diagnostic measures and management of disorders of bones, joints, muscles and soft tissues.
CO2	Demonstrate competencies in identifying common clinical signs of various musculoskeletal disorders
CO3	Demonstrate abilities in performing special tests to differentially diagnosing soft tissue injuries
CO4	Demonstrate abilities to interpret radiological findings related to physiotherapy practice
CO5	Appreciate the role of different specialist in diagnosing and managing musculoskeletal disorders

Recommended Text Books:

1. Essentials of Orthopaedics by – Maheswari, 3rd edition Mehta publications
2. John Crawford Adams, David L. Hamblen. Outline of Orthopedics. Hamblen ChurchillLivingstone,2001
3. John Ebnezar, Textbook of Orthopedics: With Clinical Examination Methods in Orthopedics, Boydell & Brewer Ltd;2010
4. Louis Solomon, David Warwick, Selvadurai Nayagam, Apley's System of Orthopaedics and Fractures, 10^{th} Edition, CRC Press, 2010
5. Essentials of Orthopaedics and Applied Physiotherapy –Joshi J.,Kotwal P,4^{th} Edition, Elsevier,2020

Recommended Reference Books:

1. Tureks Orthopaedics
2. Cambells Operative Orthopaedics

CO–PO–PSO Matrix:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4	PS O5
CO1	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO2	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO3	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO4	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3
CO5	2	2	2	2	2	2	2	2	3	2	2	2	2	2	3	3	2

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FACULTY OF PHYSIOTHERAPY

RITA A. PATEL INSTITUTE OF PHYSIOTHERAPY

BPT - Semester V

Course Code: BPT –131

Course Title: Physical and Functional Diagnosis -1

Course Credit Hours:

Hrs. / Wk			Credits			Marks		Total Marks
L	P	T	L	P	T	Theory	Practical	
4	4	8	4	2	6	100	100	200

Course Outline: This course focuses on the principles of human growth, development and maturation along with detailed assessment of neuromuscular dysfunction. It includes subjective and objective examination techniques, neurological assessment and functional outcome measures used in physiotherapy practice. The course also introduces electrophysiology of muscle contraction, electro-diagnostic techniques and interpretation of diagnostic investigations. In addition, it covers neonatal and pediatric physiotherapy assessment scales used for developmental and functional evaluation.

Sr No	Title of the Unit	Minimum number of Hours
1	General principles of Human Development & Maturation Aspects	12
2	Assessment of Neuro-Muscular Dysfunction	38
3	Functional Assessment for Neuro-Muscular Dysfunction	24
4	Electro Physiology of muscle contraction, Therapeutic Current	32
5	Interpretation of various investigations	12
6	Pediatric & Neonatal Physiotherapy Assessment	34

Total hours (Theory): 76 Hrs

Total hours (Practical): 76 Hrs

Total hours: 152 Hrs

Unit Sr No	Course Content	Hours of Teaching
1	**General principles of Human Development & Maturation Aspects**	**12 Hours**
1.1	Physical, motor, sensory, cognitive & perceptive, emotional, social development	
1.2	factors influencing human development & growth	
1.3	principles of maturation, specific development	
2	**Assessment of Neuro-Muscular Dysfunction**	**38 Hours**
2.1	Subjective Examination: Demographic Data. Chief complaint, History of Present illness including functional limitation, Past Medical Surgical history, Family history, Occupational & Personal history, Socio-Economic, Environmental and Psychological History, Drug and Treatment History etc.	
2.2	Objective Examination: General Examination including Vitals parameters (Temperature, Respiratory Rate, Peripheral Pulses, Blood Pressure), Body Built of Patient, Attitude of Limb, Bony contours, Deformities, Trophic changes.	
2.3	Examination of Posture. Examination of Spasm, Tenderness, Edema /swelling/wasting including Limb girth measurement, Scar examination etc.	

2.4	Neurological Examination: Higher mental functions & cranial nerves. Motor Examination: Altered muscle Tone, Range of motion, Joint mobility, Postural deviation, Voluntary Control testing, Altered Muscle Strength, Endurance, Abnormal movement, Inco-ordination, limb length etc.	
2.5	Examination of Bladder, Balance& coordination, Gait deviation and Functional evaluation etc. as per ICF norms.	
3	**Functional Assessment for Neuro-Muscular Dysfunction**	**24 Hours**
3.1	Berg Balance Scale, Modified Ashworth Scale, Functional Independence Measure (FIM), Barthel Index, Glasgow Coma Scale (GCS)	
3.2	Functional Balance Scales, Prosthetic Evaluation Questionnaire (PEQ) – For amputee functional status, Short Physical Performance Battery (SPPB) etc.	
3.3	Dynamic Gait Index (DGI), Mini Mental State Examination (MMSE), Stroke Rehabilitation Assessment of Movement (STREAM), ASIA Impairment Scale	
4	**Electro Physiology of muscle contraction, Therapeutic Current**	**32 Hours**
4.1	As tool for electro-diagnosis – physiological principles – use of alternating & direct current in electro-diagnosis such as SD curves, use of Biofeedback unit for assessment of muscle function.	
4.2	Principles of Electromyography – Motor unit – Normal characteristics – Activity at rest, Recruitment/frequency pattern at minimal activity, Interference pattern – Abnormal E.M.G. pattern. Principles of nerve conduction.	
4.3	Late responses: F-wave, H-reflex. Electro- physiological principles of assessment of Myoneural junction. E.M.G. instrumentation: Basic components, Panel diagram, Types of electrodes.	
4.4	Biofeedback: Introduction, Principles of biofeedback, Therapeutic effects, Indications, Contraindications and Techniques of treatment.	
4.5	Electrophysiology of muscle & nerve, FG test, Test for sensory & pain threshold/ pain tolerance –technique Normal & abnormal EMG pattern, NCV.	
5	**Interpretation of various investigations**	**12 Hours**
5.1	Blood investigations and diagnostic markers.	
5.2	Radiological and imaging investigations – X-ray, USG, CT scan and MRI.	
5.3	Electro-diagnostic investigations – EMG, NCV and SDC findings etc.	
6	**Pediatric & Neonatal Physiotherapy Assessment**	**34 Hours**
6.1	Neonatal assessment and developmental screening.	
6.2	Neonatal scales: APGAR Score, Neonatal Behavioral Assessment Scale (NBAS), New Ballard Score	
6.3	Pediatric developmental assessment scales: Denver Developmental Screening Test (DDST), Bayley Scales of Infant Development, Peabody Developmental Motor Scale	

	(PDMS)
6.4	Pediatric neurological assessment scales: Gross Motor Function Measure (GMFM), Gross Motor Function Classification System (GMFCS)
6.5	Pediatric balance and functional assessment scales used in physiotherapy.

Course Outcomes (COs):

At the end of the course, the students will be able to

CO1	Describe the principles of human growth, development and maturation and the factors influencing different aspects of development.
CO2	Perform systematic subjective and objective assessment of patients with neuromuscular dysfunction.
CO3	Demonstrate neurological examination and functional evaluation techniques to identify impairments and functional limitations.
CO4	Apply standardized functional outcome measures and assessment scales used in physiotherapy practice.
CO5	Explain the electrophysiology of muscle and nerve and principles of electro-diagnostic techniques such as EMG, NCV and biofeedback.
CO6	Describe and apply neonatal and pediatric physiotherapy assessment scales used for developmental and neurological evaluation.

Recommended Text Books:

1. Neuromusculoskeletal Examination and Assessment — Nicola J. Petty
2. Physical Rehabilitation — Susan B. O'Sullivan & Thomas J. Schmitz
3. Neurological Examination for Physiotherapists — Chaitali Shah
4. Motor Control: Translating Research into Clinical Practice — Anne Shumway-Cook & Marjorie Woollacott
5. Electrodiagnosis in Diseases of Nerve and Muscle — Jun Kimura

Recommended Reference Books:

1. Clinical Electromyography: Nerve Conduction Studies — Shin J. Oh
2. Nerve Conduction Testing and Electromyography for the Physical Therapist — Gary Krasilovsky
3. Neurology and Neurosurgery Illustrated — Kenneth W. Lindsay & Ian Bone
4. Clinical Neurophysiology — U. K. Misra & J. Kalita

CO–PO–PSO Matrix:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4	PS O5
CO1	3	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	2
CO2	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO3	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
CO4	3	3	2	2	2	2	3	2	2	2	2	2	3	2	2	2	3
CO5	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3
CO6	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	2	2

CHARUTAR VIDYA MANDAL UNIVERSITY

FACULTY OF PHYSIOTHERAPY

RITA A. PATEL INSTITUTE OF PHYSIOTHERAPY

BPT - Semester V

Course Code: BPT –132

Course Title: Biostatistics and Research Methodology

Course Credit Hours:

Hrs. / Wk			Credits			Marks		Total Marks
L	P	T	L	P	T	Theory	Practical	
4	-	4	4	-	4	50	-	50

Course Outline: The course aims to help students understand basic research principles and Statistical methods in health sciences, promoting evidence-based practice. The focus is on enabling students to read research literature, draw inferences and interpret statistical test results, rather than manual calculations. Research papers and thesis reports using various research designs will be presented and small group discussions will be organized to enhance understanding of the literature.

Sr No	Title of the Unit	Minimum number of Hours
1.	Introduction to Research methodology	3
2.	Research problem, Design and Sampling	10
3.	Measurement & scaling techniques	5
4.	Methods of data collection	8
5.	Processing & analysis of data	8
6.	Testing of hypothesis	5
7.	Computer technology	2
8.	Introduction to Biostatistics	5
9.	Tabulation of Data	5

10.	Measure of Central Tendency, Probability and Standard Distributions	10
11.	Sampling techniques	5
12.	Analysis of variance & covariance	5
13.	Format of scientific documents	5

Total hours (Theory): 76 Hrs

Total hours (Practical): 00 Hrs

Total hours: 76 Hrs

Unit Sr No	Course Content	Hours of Teaching
1	**Introduction to Research methodology**	**3 Hours**
1.1	Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India	
2	**Research problem, Design and Sampling**	**10 Hours**
2.1	Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem	
2.2	Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design	
2.3	Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design	
3	**Measurement & scaling techniques**	**5 Hours**
3.1	Measurement in research- Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, Important scaling techniques	
4	**Methods of data collection**	**8 Hours**
4.1	Collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules	
4.2	Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions	
5	**Processing & analysis of data**	**8 Hours**
5.1	Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship	
6	**Testing of hypothesis**	**5 Hours**
6.1	What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis	

7	**Computer technology**	**2 Hours**
7.1	Introduction to Computers, computer application in research, computers & researcher	
8	**Introduction to Biostatistics**	**5 Hours**
8.1	Introduction: 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	
9	**Tabulation of Data**	**5 Hours**
9.1	Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve	
10	**Measure of Central Tendency, Probability and Standard Distributions**	**10 Hours**
10.1	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 the mean, median and mode, Guidelines for the use of various measures of central tendency	
10.2	Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skew ness, kurtosis	
11	**Sampling techniques**	**5 Hours**
11.1	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	
12	**Analysis of variance & covariance**	**5 Hours**
12.1	what is ANOVA, Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA)	
13	**Format of scientific documents**	**5 Hours**
13.1	Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis	

Course Outcomes (COs):

At the end of the course, the students will be able to

CO1	Explain the need for the research in physiotherapy practice
CO2	Explain the process of research
CO3	Discuss the study designs with appropriate examples
CO4	Discuss the methods of data collection in physiotherapy research
CO5	Analyze the components statistical analysis

Recommended Text Books:

1. Mahajan, B. K. (2002). Methods in biostatistics. Jaypee Brothers Publishers
2. Hicks, C. Research for physiotherapists: project design and analysis. Churchill Livingstone
3. Mohsin S.M. – Research methods in Behavioral Sciences. Orient publications, New Delhi
4. Gupta S.P. – Statistical Methods. Sultan Chand and sons Publishers, New Delhi

Recommended Reference Books:

1. Bailey N.T.J. – Statistical methods in Biology. The English University Press, London
2. Colton – Statistics in medicine. Little Brown Company, Boston
3. Goulden C.H. – Methods of Statistical Analysis. Asia Publishing House, New Delhi

CO–PO–PSO Matrix:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4	PS O5
CO 1	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	3
CO 2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	3
CO 3	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3
CO 4	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3
CO 5	2	2	2	2	2	2	3	2	2	2	3	2	2	2	2	2	3

CHARUTAR VIDYA MANDAL UNIVERSITY

FACULTY OF PHYSIOTHERAPY

RITA A. PATEL INSTITUTE OF PHYSIOTHERAPY

BPT - Semester V

Course Code: BPT –133

Course Title: Clinical Education 2

Course Credit Hours:

Hrs. / Wk			Credits			Marks		Total Marks
L	P	T	L	P	T	Theory	Practical	
-	8	8	-	5	5	-	100	100

Course Outline: The Clinical Observation course is designed to provide third-year Bachelor of Physiotherapy students with practical exposure to patient examination, assessment techniques and therapeutic modalities used in physiotherapy practice. The course emphasizes observation and understanding of clinical evaluation procedures such as posture analysis, gait assessment, range of motion testing, muscle strength evaluation, neurological examination and the application of electrotherapy modalities. It also focuses on professional ethics, psychosocial assessment and effective communication within the healthcare team to enhance clinical competence and professional responsibility.

Sr No	Title of the Unit	Minimum number of Hours
1	Examination and Assessment	194
2	Electrotherapy	100
3	Ethics	10

Total hours (Theory): 00 Hrs

Total hours (Practical): 304 Hrs

Total hours:304 Hrs

Unit Sr No	Course Content	Hours of Teaching
1	**Examination and Assessment**	**194 Hours**
1.1	Demographic details and history assessment Posture, Gait, Pain Assessment, ROM & End feel, MMT	
1.2	Dermatome/Myotome, Limb length discrepancy Limb girth, Muscle Tone examination	
1.3	Reflexes -superficial and deep, higher mental examination, Cranial nerve examination Sensory examination, Auscultation, PNF	
1.4	Resisted exercise, Frenkel's exercise, Stretching Mobilization, Coordination, Massage manipulation	
2	**Electrotherapy**	**100 Hours**
2.1	Electrotherapy, TENS, LASER, NMES, US, Wax Superficial heating modalities SWD,MWD,PEME, Cryotherapy, SD Curve, FG Test, IFT	
3	**Ethics**	**10 Hours**
3.1	Collecting data on psychosocial factors	
3.2	Inter professional communication (Health care team) Ethics in clinical practice	

Course Outcomes (COs):

At the end of the course, the students will be able to

CO1	Perform comprehensive patient examination and assessment including history taking, posture, gait, pain, ROM and MMT.
CO2	Assess neurological and musculoskeletal parameters including dermatome, myotome, reflexes, sensory and cranial nerve examination.
CO3	Demonstrate and apply physiotherapy techniques such as stretching, mobilization, PNF and coordination exercises with massage.
CO4	Apply electrotherapy modalities including TENS, NMES, US, LASER, IFT and thermotherapy techniques appropriately.
CO5	Interpret electrodiagnostic tests such as SD Curve and FG Test for clinical decision-making.
CO6	Apply ethical principles, effective communication and psychosocial considerations in clinical practice.

Books Recommended:

1. The Principles of Exercise Therapy by M.Dena gardiner 4th edition

2. Clinical orthopedic assessment- David Magee, 6th edition, Elsevier publications.

3. Clinical Neurophysiology for - U k Misra, 2nd edition, Elsevier publications.

4. Physical Rehabilitation- O' Sullivan, 5th edition.

5. Cardiovascular and pulmonary physical therapy: Evidence to practice, Donna Frownfelter & Elizabeth Dean, 5th edition, Mosby Publication.

6. Measurements of Joint Motion - Cynthia C. Norkin. 3rd edition. Jaypee publication

7. Therapeutic exercise by carol kisner and lynn allen colby 7th edition

CO–PO–PSO Matrix:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4	PS O5
CO1	3	3	2	2	2	2	2	2	2	2	2	2	3	2	3	2	2
CO2	3	3	2	2	2	2	2	2	2	2	2	2	3	2	3	2	2
CO3	3	3	3	2	2	2	3	2	2	2	2	2	3	3	3	2	3
CO4	3	3	2	2	2	3	3	2	2	2	2	2	3	2	3	2	3
CO5	3	3	2	2	2	3	3	2	2	2	2	2	3	2	3	2	3
CO6	3	2	2	3	3	2	2	2	2	2	2	3	2	2	3	3	2