ANNAMACHARYA UNIVERSITY

(ESTD UNDER AP PRIVATE UNIVERSITIES (ESTABLISHMENT AND REGULATION) ACT, 2016
(UNIVERSITY LISTED IN UGC AS PER THE SECTION 2(f) OF THE UGC ACT, 1956
RAJAMPET, YSR Kadapa District, AP – 516 126, INDIA
COLLEGE OF ALLIED HEALTH SCIENCES

3rd YEAR COURSE STRUCTURE 2024-25 ADMITTED BATCH

DEPARTMENT OF PHYSIOTHERAPY

Third Year						
S.No	Subjects	Subject Code	Hrs/week			Credits
			L	T	P	C
1.	General Medicine, Pharmacology, Paediatrics	24HBPT31T	4	-	-	4
2.	General Surgery including Plastic Surgery, Obstetrics s Gynaecology	24HBPT32T	4	-	-	4
3.	Clinical Orthopaedics	24HBPT33T	4	-	-	4
4.	Physiotherapy in Orthopaedic Conditions	24HBPT34T	4	-	-	4
5.	Clinical Neurology	24HBPT35T	4	-	-	4
6.	Physiotherapy in Neurology Conditions	24HBPT36T	4	-	-	4
7.	Physiotherapy in Orthopaedic Conditions - Lab	24HBPT34L	-	-	2	1
8.	Physiotherapy in Neurology Conditions - Lab	24HBPT36L	-	-	2	1
		Total	24	-	4	26

Title of the Course	**: General Medicine, Pharmacology, Pediatrics**
Category	: Medical Sciences
Year	: III Year
Course Code	: 24HBPT31T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
4	-	-	4	136

Course Objectives

1. Provide knowledge of common medical disorders relevant to physiotherapy.
2. Understand etiology, clinical features, investigations, and management of systemic diseases.
3. Integrate medical knowledge into physiotherapy treatment planning.
4. Introduce basic principles of pharmacology and drug actions.
5. Understand commonly used drugs in rehabilitation practice.
6. Study drug interactions, side effects, and implications for physiotherapy.
7. Understand growth, development, and common pediatric disorders.
8. Learn about congenital and acquired pediatric conditions affecting rehabilitation.
9. Prepare students to handle children with sensitivity and professional care.

Course Outcomes

1. Describe the pathophysiology and clinical features of common medical conditions.
2. Identify contraindications and precautions for physiotherapy interventions.
3. Correlate medical management with physiotherapy practice.
4. Demonstrate understanding of emergency care in medical conditions.
5. Explain basic concepts of pharmacokinetics and pharmacodynamics.
6. List commonly used drugs in pain, inflammation, cardiovascular and respiratory conditions.
7. Recognize adverse drug reactions and drug interactions relevant to physiotherapy.
8. Apply pharmacological knowledge in planning physiotherapy care.
9. Describe normal growth and developmental milestones.
10. Identify common pediatric illnesses and developmental disorders.
11. Recognize physiotherapy needs in children with neurological, musculoskeletal, and respiratory conditions.
12. Apply principles of pediatric care and communication in physiotherapy practice.

Unit 1 – General Medicine: Infections s Haematology 14hrs

- **Infections** – Viral (JE, chikungunya, herpes, varicella, measles, rubella, Hep B, Hep C, HIV); Bacterial (Hansen's disease, tetanus);
  Parasitic (Filariasis).
- **Haematology** – Iron, folic acid, B12 deficiency anemia; bleeding C clotting disorders (esp. hemophilia).

Unit 2 – General Medicine: Cardiovascular Diseases 18hrs

- Heart failure
- Rheumatic fever
- Infective endocarditis
- Ischemic heart disease
- Hypertension
- Congenital heart diseases (ASD, VSD, PDA, Fallot's tetralogy)
- Pulmonary embolism, DVT, pulmonary infarction
- Peripheral vascular diseases

Unit 3 – General Medicine: Respiratory Diseases 18hrs

- Common conditions: bronchitis, pneumonia, TB, bronchiectasis, emphysema, lung abscess
- Pleural diseases: effusion, empyema, pneumothorax, hydro-pneumothorax
- Obstructive airway: asthma, COPD, cystic fibrosis
- Interstitial C occupational lung diseases
- Chest wall deformities (funnel chest, pigeon chest, barrel chest, kyphoscoliosis)
- Introduction to intensive respiratory care

Unit 4 – General Medicine: Bone, Joint, Connective Tissue, Renal, Metabolic s Geriatrics 18hrs

- Autoimmune concepts (SLE, polymyositis, dermatomyositis, PAN, scleroderma)
- Rheumatoid arthritis, osteoarthritis (clinical features, drug C non-drug therapy)
- **Renal** – Acute C chronic renal failure, UTI C complications
- **Metabolic** – Diabetes mellitus, obesity, calcium metabolism disorders
- **Geriatrics** – Hypertension, IHD, stroke, BPH, cataract, Alzheimer's

Unit 5 – Pharmacology: General Principles s ANS Drugs 16hrs

- General pharmacology: terminology, routes, kinetics, dynamics, adverse effects, drug poisoning
- Drugs on **ANS**: cholinergic, anticholinergic, adrenergic, anti-adrenergic

Unit 6 – Pharmacology: System-wise Drugs 18hrs

- Peripheral nervous system: skeletal muscle relaxants, local anaesthetics
- CNS drugs: anaesthetics, anti-epileptics, anti-parkinsonism, antipsychotics

- Respiratory system: cough C asthma drugs
- CVS drugs: antihypertensives, anti-anginal, MI drugs, CHF drugs
- Endocrine drugs: GH, thyroid hormone, insulin, corticosteroids

Unit 7 - Pharmacology: Chemotherapy s Other Drugs 12hrs

- Chemotherapy: penicillin, quinolones, anti-TB, anti-leprotic, anti-malarial
- Others: diuretics, antiemetics

Unit 8 - Paediatrics 22hrs

- Growth C development (birth–12 years)
- Maternal C neonatal high-risk factors, neonatal infections, metabolic problems
- Community programmes (WHO/national/local); immunization schedule
- **Conditions:**
  - Cerebral palsy (types, associated defects, prevention)
  - Muscular dystrophy
  - Spina bifida, meningomyelocele
  - Still's disease
  - Acute CNS infections C sequelae
- Nutrition: diet requirements, malnutrition, rickets (Vit D deficiency/resistant)
- Paediatric lung infections (bronchiectasis, lung abscess, asthma)

Text Books:

1. Principles and Practice of Medicine – Davidson
2. Essentials of Paediatrics - O.P.Ghai.

Reference Books:

1. Medicine for students and Practitioners – K. Chaudhury.
1. Pharmacology for Physiotherapist - K. Ashok ShenoyC K V Ramesh
2. Text Book Pharmacology for Physiotherapist - Padmaja Uday Kumar.
3. Text book of Pharmacology – Tripati.
4. Illustrated Pharmacology – Lippincott.
5. Physiotherapy in Paediatrics: Shepherd.

Title of the Course	: **General Surgery including Plastic Surgery, Obstetrics s Gynaecology**
Category	: Medical Sciences
Year	: III Year
Course Code	: 24HBPT32T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
4	-	-	4	136

Course Objectives

1. Understand basic surgical and obstetric concepts relevant to physiotherapy.
2. Know common surgical procedures and post-operative complications.
3. Learn about burns, plastic surgery, and rehabilitation methods.
4. Understand female pelvic anatomy, pregnancy changes, and childbirth.
5. Recognize complications like stress incontinence and prolapse uterus.
6. Apply this knowledge to plan safe physiotherapy care for patients.

Course Outcomes

1. Describe abdominal surgical incisions and their effect on physiotherapy.
2. Identify post-operative complications and plan physiotherapy accordingly.
3. Classify burns and know precautions and management in acute stage.
4. Prevent and manage burn deformities using physiotherapy techniques.
5. Understand plastic surgery procedures and apply rehabilitation strategies.
6. Explain pregnancy-related changes and their impact on musculoskeletal function.
7. Plan physiotherapy care for antenatal, labour, and postnatal stages.
8. Manage complications of childbirth and gynaecological conditions with physiotherapy interventions.

Unit 1: Abdominal Surgical Incisions **14hrs**

- Types of incisions: Midline, Paramedian, Subcostal, Transverse.
- Indications and surgical relevance.

- Effects on mobility, respiration, and abdominal muscle function.
- Physiotherapy considerations in post-operative rehabilitation.

Unit 2: Post-operative Complications in Major Surgeries 20hrs

- Surgeries: Nephrectomy, Appendicectomy, Herniorrhaphy, Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy, Ileostomy.
- Complications: Pain, Haemorrhage, Infection, Deep vein thrombosis, Respiratory complications, Restricted mobility.
- Physiotherapy role: Early ambulation, Breathing exercises, Posture correction, Pain management.

Unit 3: Burns – Classification and Acute Management 16hrs

- Classification: Depth (superficial, partial-thickness, full-thickness) and surface area (Rule of Nines, Lund-Browder chart).
- Causes: Thermal, Chemical, Electrical, Radiation.
- Medical management: Fluid resuscitation, Wound care, Infection control.
- Precautions and early physiotherapy in the acute stage.

Unit 4: Burn Deformities, Prevention and Rehabilitation 16hrs

- Common deformities: Contractures, Hypertrophic scars, Keloids.
- Prevention: Proper positioning, Splinting, Pressure garments.
- Cosmetic treatment: Scar management, Skin care.
- Functional treatment: Range of motion exercises, Strengthening, Mobility training.

Unit 5: Plastic Surgery in Burns and Rehabilitation 16hrs

- Plastic surgery procedures: Skin grafts, Local flaps, Reconstructive surgeries.
- Post-surgical care: Splinting methods for claw hand, axillary contracture, foot drop.
- Prevention of contractures and deformities.
- Physiotherapy role: Functional training, Exercise therapy, Return to ADLs.

Unit 6: Anatomy and Physiology in Obstetrics **16hrs**

- Female pelvis: Structure and obstetric importance.
- Embryonic and foetal development overview.
- Physiological changes during pregnancy: Skeletal, Muscular, Cardiovascular, Postural adaptations.
- Implications for physiotherapy care.

Unit 7: Antenatal, Labour and Postnatal Management **18hrs**

- Antenatal programme: Posture education, Breathing exercises, Relaxation, Pelvic floor strengthening.
- Mechanism of labour.
- Postnatal management: After normal delivery, forceps delivery, and caesarean section.
- Physiotherapy intervention: Pain relief, Core strengthening, Functional rehabilitation.

Unit 8: Complications of Childbirth and Gynaecological Conditions **20hrs**

- Complications of childbirth: Prolonged labour, Obstructed labour, Postpartum haemorrhage, Infections.
- Stress incontinence: Predisposing factors – weak pelvic floor, multiple deliveries, menopause.
- Prolapse uterus: Causes – multiparity, obesity, chronic straining.
- Physiotherapy management: Pelvic floor muscle training, Lifestyle advice, Core stabilization.

Textbooks:

1. Textbook of Physiotherapy for Obstetric and Gynaecological conditions - G.B. Madhuri
2. Textbook of general surgical conditions: Cash.

Reference Books:

1. Essentials of Surgery - S.B.Agarwal.
3. Burn Care - David N Hemdon.
4. Physiotherapy in Obstetrics C Gynaecology - Polden
5. Physiotherapy in Obstetrics and Gynaecology - Jill Mantle.

Title of the Course : Clinical Orthopaedics
Category : Medical Sciences
Year : III Year
Course Code : 24HBPT33T
Branch : BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
4	-	-	4	136

Course Objectives

1. Understand the anatomy, physiology, and biomechanics of the musculoskeletal system.
2. Identify common orthopaedic conditions, fractures, and joint disorders.
3. Learn principles of assessment, diagnosis, and clinical evaluation of orthopaedic patients.
4. Understand conservative and post-surgical management of orthopaedic conditions.
5. Apply physiotherapy interventions for rehabilitation of musculoskeletal and orthopaedic patients.
6. Develop skills in planning and implementing individualized treatment programs.

Course Outcomes

1. Demonstrate knowledge of the musculoskeletal system and common orthopaedic conditions.
2. Assess and evaluate patients with fractures, joint disorders, and soft tissue injuries.
3. Identify post-surgical complications and design appropriate physiotherapy interventions.
4. Apply physiotherapy techniques such as exercises, mobilization, and functional training.
5. Plan and execute rehabilitation programs to restore mobility, strength, and function.
6. Integrate orthopaedic knowledge into safe, effective, and evidence-based physiotherapy practice.

Unit 1: Introduction s Principles of Orthopaedic Treatment **16 hours**

- Introduction to orthopaedic terminology and common orthopaedic diseases.
- Clinical examination and basic investigations.
- Radiological and imaging techniques in orthopaedics.

- Principles of treatment procedures:
    - Non-operative: Splints, Tractions (indications, usage, limitations).
    - Operative: Soft tissue release, Tendon transfers, Osteotomy, Arthrodesis, Arthroplasty (shoulder, hip, knee), Arthroscopic procedures.
- Basic knowledge of implants: Wires, pins, nails, rods, plates, screws, external fixators, Ilizarov fixator.

Unit 2: Fractures s Dislocations – General Principles 20 hrs

- Classifications of fractures: Etiology, geometry, communication with environment.
- General and local signs and symptoms of fractures and dislocations.
- Principles of management: Reduction, immobilization, Plaster of Paris, functional cast bracing, internal fixation.
- Complications: Fracture disease, Volkmann's ischemic contracture, Sudeck's osteodystrophy, avascular necrosis, stiffness, Carpal Tunnel Syndrome, Myositis Ossificans, Shoulder-Hand Syndrome.
- Factors influencing fracture healing.

Unit 3: Upper Limb Fractures s Dislocations 18 hrs

- Major fractures and joint injuries of the upper limb:
    - Shoulder dislocations, surgical neck of humerus, greater tuberosity, shaft of humerus, supracondylar fracture.
    - Elbow dislocations, Monteggia fracture, forearm fractures, Colles' fracture, scaphoid fractures.
- Clinical features, management principles, and complications.

Unit 4: Lower Limb Fractures s Dislocations 18 hrs

- Major fractures and joint injuries of the lower limb:
    - Hip dislocations, intracapsular and extracapsular fracture neck of femur.
    - Fracture shaft of femur, supracondylar fracture femur, patella, condylar fractures, tibial fractures, ankle fractures, calcaneum, 5th metatarsal.
- Principles of management and complications.

Unit 5: Spine, Hand, Peripheral Nerve Injuries s Recurrent Dislocations 18 hrs

- Spinal fractures and dislocations: Mechanism, clinical features, management, complications.
- Hand injuries: Skin, soft tissue, tendon, bone, and joint injuries (Bennet's fracture, Mallet finger).
- Recurrent dislocations: Shoulder and patella – mechanism, clinical features, management.
- Peripheral nerve injuries: Radial, median, ulnar, sciatic, lateral popliteal, brachial plexus (Erb's, Klumpke's, crutch palsy).

Unit 6: Amputations, Bone s Joint Infections, Tumours 14 hrs

- Amputations: Classification, indications, pre-operative, operative, prosthetic management, complications.
- Bone and joint infections: Acute/chronic osteomyelitis, septic arthritis, tuberculosis (hip, knee, spine).
- Bone and joint tumours: General classification, clinical features, and management (benign and malignant).

Unit 7: Chronic Arthritis, Spinal s Congenital Deformities, Low Back Ache 16 hrs

- Chronic arthritis: Rheumatoid arthritis, Osteoarthritis, Ankylosing spondylitis – pathology, deformities, management.
- Spinal deformities: Classification, clinical features, management, complications.
- Poliomyelitis: Residual paralysis management, orthosis, muscle transfers.
- Congenital deformities: CTEV, CDH, flat foot, vertical talus, limb deficiency, spina bifida, meningomyelocele, wry neck.
- Evaluation of low back ache: Etiological factors – prolapsed intervertebral disc, spondylitis, spondylolisthesis, lumbar canal stenosis.

Unit 8: Miscellaneous Conditions, Leprosy, and Sports Injuries 16 hrs

- Miscellaneous conditions: Painful arc syndrome, Tennis elbow, Plantar fasciitis – clinical features and management.
- Leprosy: Orthopaedic affections – claw hand, foot drop, trophic ulcers.
- Sports injuries: Sprains, muscle strains – ankle, knee, shoulder; Internal derangements of the knee joint – meniscal injuries, cruciate ligament injuries.

Textbooks:

1. Textbook of Orthopaedics – John Ebnezar.
2. Clinical Orthopaedics by Richardson

Reference Books:

1. Text book of Orthopaedics by Dr.M. Natarajam
2. System of orthopaedics by Graham Apley
3. Outline of Orthopaedics – Adams
4. Outline of Fractures – Adams.
5. Orthopedics and fractures – Ronald MC Rae.

Title of the Course : Physiotherapy in Orthopedic Conditions
Category : Medical Sciences
Year : III Year
Course Code : 24HBPT34T
Branch : BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
4	-	-	4	136

Course Objectives

1. To develop knowledge of orthopaedic physiotherapy assessment including subjective and objective methods.
2. To understand the principles of fractures, dislocations, and spinal injuries.
3. To study clinical features, investigations, and management of orthopaedic conditions.
4. To train in physiotherapy interventions during immobilization and mobilization phases.
5. To enhance clinical reasoning and decision-making skills.
6. To understand deformities and their physiotherapy management.
7. To gain knowledge of bioengineering concepts including orthotics and prosthetics.
8. To develop skills in rehabilitation of sports injuries, neurological conditions, and post-surgical cases.

Course Outcomes

1. Able to perform comprehensive physiotherapy assessment of orthopaedic conditions.
2. Apply clinical reasoning to interpret findings and diagnose functional problems.
3. Plan and implement treatment for fractures, dislocations, and spinal conditions.
4. Demonstrate management during immobilization and mobilization phases.
5. Assess and manage deformities and musculoskeletal disorders effectively.
6. Apply knowledge of orthotics, prosthetics, and biomechanical principles.
7. Provide pre- and post-operative physiotherapy care.
8. Design rehabilitation programs, home exercises, and injury prevention strategies.

UNIT 1: Physiotherapy Assessment in Orthopaedic Conditions **16 hrs**

A. General s Vertebral Column Assessment

- **Subjective Examination**

  History: occupation, symptoms, major complaints

- **Objective Examination**

1. Observation: body type, musculature, deformity, gait
2. Palpation: temperature, swelling, tenderness, bony landmarks
3. Postural assessment (plumb line)
4. Active movements: flexion, extension, lateral flexion, rotation
5. Special Tests
    - Straight Leg Raise (SLR)
    - Prone Knee Bend
    - Passive Neck Flexion
    - Kernig's Sign

1. Assessment of proximal joints (pelvic C shoulder girdle)
2. Neurological tests: muscle strength, sensation, reflexes

B. Interpretation Principles

- Clinical reasoning
- Correlation of findings with pathology
- Selection of appropriate physiotherapy techniques

UNIT 2: Fractures – Principles s Management **20 hrs**

A. General Principles

- Mechanism of injury
- Clinical features
- Complications
- Principles of fracture healing

B. Physiotherapy Management

- **During Immobilization**
    - Pain relief, edema control
    - Maintain joint mobility (adjacent joints)
    - Prevent complications
- **During Mobilization**
    - ROM exercises

- Strengthening
- Functional training

C. Upper Limb Fractures

- Clavicle, humerus (upper 1/3, shaft, distal)
- Radius C ulna fractures (Colles', olecranon, head of radius)
- Scaphoid, Bennett's, metacarpals

D. Lower Limb Fractures

- Pelvis, femur (neck, shaft, trochanter)
- Knee C patella
- Tibia, fibula, ankle (Pott's, Dupuytren's), calcaneum, metatarsals

UNIT 3: Dislocations s Spinal Fractures **16 hrs**

A. Dislocations

- Hip (congenital, traumatic, posterior, central)
- Shoulder (anterior, recurrent)
- Patella

B. Physiotherapy Management

- Reduction phase care
- Immobilization C mobilization
- Functional rehabilitation

C. Spinal Fractures

- Assessment C management principles

UNIT 4: Deformities **16 hrs**

Conditions:

- CTEV, CDH, Torticollis
- Scoliosis, Kyphosis, Lordosis
- Coxa vara

- Genu varum, valgum, recurvatum
- Pes planus, pes cavus

Components:

- Clinical features
- Investigations
- Medical C surgical management
- Physiotherapy assessment C treatment

UNIT 5: Degenerative, Inflammatory s Infective Conditions **18 hrs**

A. Degenerative s Inflammatory

- Osteoarthritis (knee, hip, hand)
- Rheumatoid arthritis
- Ankylosing spondylitis
- Gout
- Perthes disease
- Osteoporosis
- Hemophilia

B. Infective Conditions

- Osteomyelitis (acute C chronic)
- Septic C pyogenic arthritis
- Tuberculosis: spine, hip, knee

- Clinical features
- Investigations
- Medical/surgical management
- Physiotherapy rehabilitation

UNIT 6: Spinal Conditions **16 hrs**

Conditions:

- Cervical C lumbar spondylosis
- Spondylolisthesis
- Spinal canal stenosis
- Intervertebral disc prolapse (IVDP)
- Coccydynia
- Sacroiliac dysfunction
- Sacralisation C lumbarisation
- Assessment
- Medical management
- Physiotherapy treatment
- Home program

UNIT 7: Bioengineering, Amputations s Orthopaedic Surgeries **18 hrs**

A. Bioengineering

- Orthotics C prosthetics classification
- Biomechanical principles
- Design principles
- Indications C contraindications
- Advantages C disadvantages
- Checkout procedures
- Footwear modifications

B. Amputations

- Definition, types, levels, indications
- Pre C post-operative physiotherapy
- Stump care C bandaging

- Ideal stump
- Prosthetic training
- Complications

C. Orthopaedic Surgeries

- ORIF, arthroplasty, osteotomy
- Tendon transfer, soft tissue repair
- Arthroscopy, arthrodesis
- Spinal surgeries
- **Physiotherapy management**
    - Pre C post-operative care
    - Protocols: TKR, THR, ACL reconstruction

UNIT 8: Neurological-Orthopaedic s Sports Conditions **16 hrs**

A. Neurological Conditions

- Cerebral palsy
- Poliomyelitis (including post-polio syndrome)
- Leprosy
- Tendon transfers C orthotic management

B. Sports s Soft Tissue Injuries

- Types: ligament, muscle, tendon, nerve injuries
- Healing stages (acute, subacute, chronic)
- Conditions:
    - Rotator cuff injuries, bursitis
    - Tennis/golfer's elbow
    - Carpal tunnel syndrome
    - Trigger finger, De Quervain's
    - IT band syndrome, piriformis syndrome

- Knee ligament injuries
- Ankle sprain, plantar fasciitis

C. Rehabilitation

- Injury prevention
- Physiotherapy protocols
- Role of yoga in orthopaedics
- Epiphyseal injuries

Textbooks:

1. Textbook of orthopedics for physiotherapist – Jayant Joshi.
2. Cash Text book of orthopedics and rheumatology

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RAJAMPET, YSR Kadapa District, AP – 516 126, INDIA

COLLEGE OF ALLIED HEALTH SCIENCES

Title of the Course	: Clinical Neurology
Category	: Medical Sciences
Year	: III Year
Course Code	: 24HBPT35T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
4	-	-	4	136

COURSE OBJECTIVES

1. To understand neuroanatomy relevant to physiotherapy practice.
2. To learn neurophysiological principles related to motor control, learning, tone, and pain.
3. To perform neurological assessment including higher mental functions, cranial nerves, motor and sensory systems.
4. To understand functional assessment techniques like gait analysis, ADL, and functional status evaluation.
5. To gain knowledge of neurological disorders including congenital, vascular, traumatic, degenerative, infective, and demyelinating conditions.
6. To understand spinal cord and peripheral nerve disorders and their clinical effects.
7. To learn principles of neurological rehabilitation management across all age groups.
8. To develop clinical reasoning skills for physiotherapy intervention planning.

COURSE OUTCOMES

1. Describe and apply neuroanatomy and neurophysiology in clinical practice.
2. Explain motor control, motor learning, tone, and pain mechanisms.
3. Perform and interpret neurological examination (cranial nerves, motor, sensory, higher functions).
4. Assess and document gait and ADL functional abilities.
5. Identify clinical features of congenital, vascular, traumatic, and spinal cord disorders.
6. Explain demyelinating, degenerative, infective, and muscle disorders.
7. Recognize peripheral nerve and movement disorders and their impact.
8. Plan and apply neurological rehabilitation strategies effectively.

UNIT 1: Neuroanatomy **18 hrs**

- Basic anatomy of the brain and spinal cord
- Blood supply of the brain and spinal cord

- Visual pathway
- Cerebellum and extrapyramidal system connections
- Spinal cord segments and spinal nerves relationship
- Long tracts of the spinal cord
- Brachial and lumbar plexuses
- Cranial nerves

UNIT 2: Neurophysiology **16 hrs**

- Neurophysiological basis of learning
- Motor control and motor learning
- Muscle tone and disorders of tone and posture
- Bladder control
- Muscle contraction and movement
- Pain mechanisms

UNIT 3: Neurological Assessment – I **16 hrs**

- History taking (CNS vs PNS involvement)
- Higher mental functions (orientation, memory, attention, speech, language)
- Cranial nerve assessment
- Motor power assessment

UNIT 4: Neurological Assessment – II **16 hrs**

- Sensory assessment (touch, pain, position)
- Tone assessment (spasticity, rigidity, hypotonia)
- Cerebellar function assessment
- Higher cortical functions (apraxia, etc.)
- Gait analysis
- ADL assessment
- Functional status evaluation

UNIT 5: Congenital, Vestibular s Vascular Disorders **18 hrs**

- Vestibular disorders
- Congenital disorders: cerebral palsy, hydrocephalus, spina bifida
- Cerebrovascular accidents:
    - Classification (thrombotic, embolic, haemorrhagic, inflammatory)
    - Localization and sequelae
    - Rehabilitation

UNIT 6: Trauma, Spinal Cord s Demyelinating Disorders **18 hrs**

- Head injury and spinal cord injury (localization, first aid, sequelae management)
- Spinal cord diseases:
    - Craniovertebral anomalies
    - Syringomyelia
    - Disc diseases
    - Tumours
    - Arachnoiditis
- Demyelinating disorders:
    - Guillain–Barré syndrome
    - ADEM
    - Transverse myelitis
    - Multiple sclerosis

UNIT 7: Degenerative, Infective s Muscle Disorders **16 hrs**

- Degenerative disorders: Parkinson's disease, dementia
- CNS infections: meningitis, tuberculosis, poliomyelitis
- Muscle diseases: classification, clinical features, progression, management

UNIT 8: Peripheral Nerve s Miscellaneous Disorders **18 hrs**

- Peripheral nerve disorders:
    - Nerve injuries
    - Entrapment neuropathies
    - Peripheral neuropathies
- Miscellaneous conditions:
    - Epilepsy
    - Myasthenia gravis
    - Intracranial tumours
    - Motor neuron disease
    - Unconscious patient management
    - Japanese encephalitis
    - Cerebellar lesions and ataxias
    - Movement disorders (dystonia, chorea, ballismus, athetosis, tics, myoclonus, Wilson's disease)

Textbooks:

1. Clinical Neuro Anatomy – Vishram Singh.
2. Neurological Examination – Robert J. Schwartzman.

Title of the Course	: Physiotherapy in Neurology Conditions
Category	: Medical Sciences
Year	: III Year
Course Code	: 24HBPT36T
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
4	-	-	4	136

COURSE OBJECTIVES

1. To understand basic neuroanatomy and neurophysiology.
2. To learn neurological assessment techniques.
3. To understand principles of neurological examination and evaluation.
4. To study treatment methods in neurological conditions.
5. To understand cerebral palsy and developmental disorders.
6. To learn about peripheral nerve and muscle disorders.
7. To understand spinal cord injuries, CVA, and related conditions.
8. To gain knowledge of rehabilitation in major neurological diseases.

COURSE OUTCOMES

1. Explain basic neuroanatomy and neurophysiology.
2. Perform neurological assessment.
3. Apply treatment principles in neurological conditions.
4. Assess and manage cerebral palsy cases.
5. Manage peripheral nerve and muscular disorders.
6. Handle Parkinsonism and cerebellar conditions.
7. Treat spinal cord injuries and stroke patients.
8. Plan rehabilitation for head injury and motor neuron disease.

UNIT 1: Neuroanatomy and Neurophysiology Review **16 hrs**

- Structure and function of neuron, synapse, supporting tissue
- Organization and function of:
    - Cerebral hemispheres
    - Cerebellum

  - Spinal cord
  - Peripheral nerves
  - Pyramidal system
  - Extrapyramidal system
- Factors influencing alpha motor neuron activity
- Neurological basis of muscle tone and movement
- Demonstration of:
  - Hypotonia
  - Hypertonia (spasticity and rigidity)
  - Ataxia
  - Athetosis
  - Chorea

UNIT 2: Principles of Neurological Assessment **18 hrs**

- History taking skills
- Assessment of higher functions
- Cortical sensations
- Cranial nerves
- Dorsal column sensations
- Pain and temperature sensations
- Motor function assessment:
  - Muscle power grading
  - Range of motion
  - Balance and coordination
- Reflex assessment:
  - Superficial and deep reflexes
  - Reflex maturation (stimulus, position, positive/negative reactions and significance)

- Gait assessment:
    - Normal gait
    - Abnormal gait (spastic, ataxic, paralytic)
- Recording methods:
    - Colour coding on body charts
    - Graphical recording

UNIT 3: Principles of Neurological Treatment 18 hrs

- Sensory re-education (hypersensitivity, hyposensitivity, anesthesia)
- Management of altered tone (hypertonicity, hypotonicity)
- Motor re-education:
    - Strengthening exercises
    - Coordination exercises
    - Joint mobilization
    - Equilibrium and labyrinthine system use
    - PNF patterns
    - Sensory stimulation techniques (vibration, tactile, ice)
    - Stretch facilitation
    - Joint compression inhibition
    - Reflex activity for motor improvement
    - Physiological motor behavior sequence
- Functional training:
    - Free exercises
    - Gait training with/without aids
    - ADL training
    - Mat exercises

- Recreational activities

- Ambulatory aids in neurological conditions:
  - UMN lesions
  - LMN lesions
  - Dorsal column dysfunction
  - Cerebellar dysfunction
- Splints and braces in UMN and LMN lesions
- Chronic pain management in neurological conditions
- Vestibular rehabilitation
- Orthoses and assistive devices: selection, training, and use

UNIT 4: Cerebral Palsy **18 hrs**

- Definition and classification:
  - Monoplegia, diplegia, paraplegia, hemiplegia, tetraplegia
  - Spastic, athetoid, mixed types
- Associated problems (visual, hearing, speech, intelligence)
- Reflex assessment (cortical, midbrain, brainstem, spinal levels)
- Developmental milestones (birth to 5 years)
- Functional assessment:
  - Rolling, crawling, sitting, kneeling, standing, walking
- Contracture assessment:
  - Hip, knee, ankle, upper limb, spine deformities
- Treatment:
  - Passive movements
  - Stretching
  - Spasticity reduction (ice)
  - Positioning

- Reflex inhibition and movement facilitation
- Carrying techniques
- Bimanual activities
- Midline crossing activities

- Home program
- Introduction to Bobath and Rood techniques

UNIT 5: Peripheral Nerve Lesions and Muscular Dystrophy **16 hrs**

Peripheral Nerve Lesions:

- Types of nerve lesions
- Motor assessment (specific muscles, ROM, girth)
- Sensory assessment (touch, pain, temperature, paresthesia, regeneration)
- Autonomic function (sweating, skin, atrophy)
- Treatment:
  - Electrical stimulation
  - Active/assisted/resisted exercises
  - Passive mobilization
  - Pain relief modalities
- Splints (static, dynamic, functional)
- Muscle transfer preparation and post-operative management
- Home program

Muscular Dystrophy:

- Stages (ambulatory, wheelchair, bed)
- Exercise importance (resistive, active, free exercises)
- Contracture and deformity assessment
- ROM and muscle power assessment
- Functional assessment

- Treatment:
    - Strengthening exercises
    - Hydrotherapy
    - Suspension therapy
    - Passive stretching
    - Positioning
- Gait training with orthoses
- Chest physiotherapy:
    - Breathing exercises
    - Percussion
    - Postural drainage
    - Assisted coughing

UNIT 6: Parkinsonism, Cerebellar Lesions and Poliomyelitis 16 hrs

Parkinsonism:

- Natural history, course, prognosis
- Assessment:
    - Posture, balance, rigidity, tremor, gait
    - Speech, dexterity, voluntary movement
    - Disability grading (Yahr)
- Treatment:
    - Postural awareness
    - Relaxation
    - Gait training (heel-toe gait, obstacles, start/stop, direction changes)
    - Home exercise program

Cerebellar Lesions:

- Assessment:

- Tone, coordination, dysmetria, gait, posture

- Treatment:
  - Frenkel's exercises
  - Weighted exercises
  - Balance and equilibrium training
  - Visual compensation
  - Ambulatory aids

Poliomyelitis:

- Disease stages
- Acute stage management
- Recovery stage assessment and treatment
- Residual paralysis management
- Contracture and deformity assessment
- Orthotic management
- Tendon transfer procedures
- Functional retraining

UNIT 7: Spinal Cord Lesions, CVA and Polyneuropathies **18 hrs**

Spinal Cord Lesions:

- Types and signs
- Acute positioning
- Motor, sensory, reflex assessment
- Respiratory assessment
- Lesion level identification
- Treatment stages:
  - Immobilization
  - Mobilization

- Spinal orthoses
- Motor re-education
- Respiratory training
- Gait training and transfers
- Spasticity management
- Hydrotherapy
- Team approach

Cerebrovascular Accidents (CVA):

- Hemiplegia: features
- Sensory, tone, movement and balance deficits
- Treatment:
    - Positioning
    - Bed mobility
    - Mat activities
    - Sitting and standing training
    - Weight transfer training
    - Gait training
    - Tilt board activities
    - Sensory stimulation techniques
    - Shoulder pain and shoulder hand syndrome management
    - Orthoses and gait re-education

Polyneuropathies, Multiple Sclerosis, Guillain-Barré Syndrome:

- Assessment:
    - History, observation, motor/sensory exam
    - Reflex testing
    - Balance and coordination

- Gait and functional analysis
- Differential diagnosis
- Problem identification
- Short- and long-term goals
- Management of complications
- Physiotherapy interventions

UNIT 8: Head Injury and Motor Neuron Disease **16 hrs**

- Physiotherapy management of:
  - Head injury
  - Motor neuron disease
- Functional assessment
- Rehabilitation planning
- Mobility training
- Prevention of complications
- Long-term care strategies

Textbooks:

1. Cash Textbook of Neurology for Physiotherapy
2. Physiotherapy in Neuro conditions – Glady Samuel Raj.

Title of the Course	: Physiotherapy in Orthopaedic Conditions - Lab
Category	: Medical Sciences
Year	: III Year
Course Code	: 24HBPT34L
Branch	: BPT

Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
-	-	4	2	64

LIST OF EXPERIMENTS:

1. Assessment of upper limb fractures and Physiotherapy management.
2. Assessment of upper limb dislocations and Physiotherapy management.
3. Assessment of lower limb fractures and Physiotherapy management.
4. Assessment of lower limb dislocations and Physiotherapy management.
5. Assessment of Spinal fractures and Physiotherapy management.
6. Assessment of Spinal dislocations, and Physiotherapy management.
7. Assessment of soft tissue injuries and physiotherapy management.
8. Assessment of post orthopaedic surgeries and physiotherapy management
9. Assessment of Neuromuscular disorders and physiotherapy management.
10. Assessment of bone, joint disorders, and physiotherapy management.

Title of the Course	: Physiotherapy in Neurology Conditions - Lab
Category	: Medical Sciences
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Lecture Hours	Tutorial Hours	Practice Hours	Credits	No. of Periods
-	-	4	2	64

LIST OF EXPERIMENTS:

1. Demonstrate and record subjective assessment and case history taking in neurological patients.
2. Examination of higher mental functions and cranial nerves in a simulated clinical setting.
3. Assessment of muscle tone using standardized scales and evaluate muscle strength using Manual Muscle Testing.
4. Demonstrate detailed sensory and motor examination including superficial, deep, and cortical sensations.
5. Evaluation of coordination and balance using standard clinical tests.
6. Demonstrate gait analysis and identify abnormal gait patterns.
7. Demonstrate Neurodevelopmental techniques including Bobath Concept, Proprioceptive Neuromuscular Facilitation, and Rood Approach.
8. Demonstration of training patients in functional activities including bed mobility, transfers, and activities of daily living.
9. Demonstrate case-based evaluation, formulate differential diagnosis, and design physiotherapy management plans for neurological conditions.
10. Assessment and Physiotherapy Management for Cerebral Palsy, Muscular Dystrophy and Paediatric Rehabilitation.