SYLLABUS AND CURRICULUM OF DIPLOMA IN PHYSIO THERAPY COURSE

DIPLOMA IN PHYSIOTHERAPY (DPT)

The **Diploma in Physiotherapy (DPT)** is a **paramedical diploma course** focused on the **science of physical movement** and **manual therapy techniques** used to treat various injuries, physical disabilities, and rehabilitation needs.

Course Overview

- **Full Form**: Diploma in Physiotherapy (DPT)
- **Duration**: 2 Years + 6 Months (Internship)
- **Eligibility**:
    - 10+2 pass (Science stream – PCB or PCM usually preferred)
    - Minimum 45–50% marks
    - On the basis of 10th (Only Certificate Courses)

Career Opportunities after D P T

- **Physiotherapy Clinics**
- **Multispecialty Hospitals**
- **Rehabilitation Centres**
- **Orthopaedic Clinics**
- **Sports Injury Clinics**
- **NGOs & Community Health Centres**
- **Old Age Homes**
- **Home-based physiotherapy services**

SEMESTER – I

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DPT101	ANATOMY & PHYSIOLOGY	45 Min	1 Hrs.	50	50
DPT102	INTRODUCTION OF PHYSIOTHERAPY, MASSAGE MANIPULATION EXERCISE, PHYSICAL DRILL & YOGA	45 Min	1 Hrs.	50	50
DPT103	BASICS OF EXERCISE THERAPY & ELECTROTHERAPY	45 Min	1 Hrs.	50	50
DPT104	BIOCHEMISTRY	45 Min	1 Hrs.	50	50

ANATOMY & PHYSIOLOGY

THEORY

PART A: HUMAN ANATOMY

1. Introduction to Human Anatomy

- Definition, branches & scope
- Anatomical position and terminology
- Levels of structural organization

2. Skeletal System

- Classification of bones
- Structure and function of bones
- Major bones of the body: skull, vertebral column, thorax, upper and lower limbs
- Types of joints and their movements

3. Muscular System

- Classification and types of muscles
- Structure of skeletal muscle
- Major muscle groups and their actions (upper limb, lower limb, trunk, head & neck)

4. Nervous System

- Central Nervous System: Brain & Spinal cord (structure & function)
- Peripheral Nervous System: Cranial and Spinal nerves
- Autonomic Nervous System basics
- Reflex arc

5. Cardiovascular System

- Structure and function of heart
- Circulation of blood (systemic & pulmonary)
- Major arteries and veins
- Blood pressure and pulse

6. Respiratory System

- Anatomy of upper & lower respiratory tract
- Mechanics of breathing
- Gas exchange process

7. Digestive System

- Structure and function of digestive organs
- Accessory organs: liver, pancreas
- Process of digestion and absorption

8. Urinary System

- Kidneys: structure and function
- Ureters, bladder, urethra
- Urine formation

9. Reproductive System

- Male and female reproductive organs
- Menstrual cycle basics

10. Endocrine System

- Major glands: pituitary, thyroid, adrenal, pancreas
- Hormones and their functions

11. Integumentary System

- Structure of skin, layers, and appendages

- Functions of skin

12. Special Senses

- Eye: anatomy and visual pathway
- Ear: anatomy and auditory pathway
- Taste and smell: brief overview

PART B: HUMAN PHYSIOLOGY

1. Cell Physiology

- Structure and function of cell
- Cell membrane transport mechanisms
- Cell division (mitosis, meiosis)

2. Blood & Lymph

- Composition and functions of blood
- Blood groups & coagulation
- Structure and function of lymphatic system

3. Muscular Physiology

- Muscle contraction mechanism (sliding filament theory)
- Neuromuscular junction

4. Cardiovascular Physiology

- Cardiac cycle
- Heart sounds and ECG basics
- Regulation of blood pressure

5. Respiratory Physiology

- Mechanics of respiration
- Lung volumes and capacities
- Regulation of respiration
- Gas exchange and transport

6. Gastrointestinal Physiology

- Digestive enzymes and functions
- Absorption in small intestine

7. Renal Physiology

- Functions of kidneys
- Urine formation
- Regulation of water and electrolytes

8. Endocrine Physiology

- Hormone regulation and feedback mechanisms
- Role of major hormones

9. Nervous System Physiology

- Neuron structure & nerve impulse
- Synaptic transmission
- Reflexes and sensory/motor pathways

10. Reproductive Physiology

- Puberty, menstruation, and pregnancy physiology
- Spermatogenesis & oogenesis

11. Special Senses Physiology

- Vision mechanism
- Hearing and balance
- Taste and olfaction

PRACTICAL

ANATOMY PRACTICALS

➢ Osteology (Study of Bones)

- Identification of major bones: skull, vertebrae, scapula, clavicle, humerus, radius, ulna, femur, tibia, fibula, pelvis
- Surface features of bones (muscle attachments, joints, foramina)

➢ Arthrology (Study of Joints)

- Classification of joints: fibrous, cartilaginous, synovial
- Demonstration of joint movements (flexion, extension, abduction, etc.)
- Study of common joints: knee, hip, shoulder, elbow, wrist, ankle

➢ Myology (Study of Muscles)

- Major muscle groups of body: origin, insertion, action (OIA)
- Identification on charts, models or cadaver (if available)
- Muscle palpation techniques (basic level)

➢ Cardiovascular System

- Demonstration of heart anatomy using models
- Identification of major arteries and veins (aorta, carotid, femoral, jugular)
- Study of circulatory pathways

➢ Respiratory System

- Identification of respiratory organs using charts/models
- Study of lung lobes, trachea, bronchi

➢ Digestive System

- Identification of digestive organs
- Liver, pancreas, stomach, intestines

➢ Nervous System

- Study of brain and spinal cord (parts and functions)
- Cranial nerves: names and basic functions
- Models/charts for understanding nerve pathways

➢ Urinary & Reproductive Systems

- Identification of kidneys, ureters, bladder
- Male & female reproductive organs (basic structure)

➢ Endocrine & Integumentary Systems

- Study of glands (thyroid, pituitary, adrenal) using models
- Structure of skin (layers, glands, appendages)

PHYSIOLOGY PRACTICALS

➢ Blood & Circulation

- Measurement of blood pressure (BP)
- Pulse rate measurement at radial and carotid artery
- Blood group determination (ABO, Rh)

- Bleeding time & clotting time

➢ Respiratory Function Tests

- Measurement of respiratory rate
- Chest expansion
- Peak expiratory flow rate (PEFR) (if equipment available)

➢ Reflex Testing

- Superficial and deep reflexes (e.g., knee jerk, biceps reflex, plantar reflex)
- Reflex arc demonstration

➢ Sensory & Motor Examination

- Touch, pain, temperature testing
- Muscle power grading (basic introduction)
- Range of motion testing (using goniometer – optional)

➢ Digestive System Observations

- Effect of saliva on starch (experiment)
- Observation of peristaltic movement (chart/video-based)

➢ Urine Analysis (Basic)

- Physical examination of urine (color, odor, clarity)
- Test for glucose, albumin (using dipsticks if permitted)

➢ ECG (Observation only)

- Components of ECG wave (P, QRS, T)
- Heart rate interpretation

INTRODUCTION OF PHYSIOTHERAPY, MASSAGE MANIPULATION EXERCISE, PHYSICAL DRILL & YOGA

THEORY

1. Introduction to Physiotherapy

- Definition and history of Physiotherapy

- Role of Physiotherapy in health care system
- Objectives and scope of Physiotherapy
- Branches/specialties in Physiotherapy:
  - Musculoskeletal
  - Neurological
  - Cardiopulmonary
  - Pediatric
  - Sports
  - Geriatric
- Principles of rehabilitation
- Ethics and professionalism in physiotherapy

2. Massage Therapy

- Definition and purpose of massage
- Historical background (Indian, Chinese, Swedish massage systems)
- Types of massage:
  - Effleurage
  - Petrissage
  - Tapotement
  - Friction
  - Vibration
- Physiological effects of massage:
  - On skin, muscles, circulation, lymph, nervous system
- Indications and contraindications of massage

3. Manipulation Exercise

- Definition of manipulation and mobilization
- Difference between active, passive, and resisted exercises
- Joint range of motion (ROM) techniques
- Stretching and strengthening exercises
- Common manipulation techniques: Maitland, Mulligan (intro level)

4. Physical Drill / Therapeutic Exercises

- Purpose and principles of therapeutic exercise
- Classification:
  - Isometric
  - Isotonic
  - Isokinetic
- Warm-up and cool-down exercises
- Posture and balance training
- Gait training (basic)
- Use of therapeutic exercise in rehabilitation

5. Yoga

- Introduction and philosophy of Yoga
- Difference between Yoga and physical exercise
- Benefits of Yoga in physical and mental health
- Types of Yoga:
  - Hatha Yoga
  - Raja Yoga
- Introduction to key components:
  - Asanas
  - Pranayama
  - Meditation
  - Surya Namaskar

PRACTICAL

➢ Introduction to Physiotherapy

- Familiarization with physiotherapy equipment and modalities (intro only)
- Patient positioning and body mechanics
- Bed mobility training: turning, sitting, transferring
- Use of mobility aids: walker, crutches, cane (demo & practice)
- Documentation of clinical assessment (basic)
- Demonstration of universal precautions & hygiene

➢ Massage Practical

- Preparation for massage: patient position, draping, hygiene
- Application of massage mediums: oils, powder
- Demonstration and practice of massage techniques:
  - Effleurage (stroking)
  - Petrissage (kneading)
  - Tapotement (percussion)
  - Friction (circular)
  - Vibration
- Regional massage practice:
  - Back massage
  - Upper limb massage
  - Lower limb massage
  - Neck and shoulder massage
- Observation and documentation of patient response

➢ Manipulation & Therapeutic Exercise Practical

- Joint movements: active, passive, active-assisted

- Manual stretching of muscle groups (e.g., hamstring, calf)
- Strengthening exercises: isometric, isotonic (demo & practice)
- Joint mobilization basics:
  - Grade I–II mobilizations (intro level)
- Goniometric measurement of Range of Motion (ROM)
- Functional mobility drills (bed to chair, sit-to-stand)

➢ Physical Drill Practical

- Postural assessment and correction (visual & practical)
- Warm-up and cool-down routines
- Static and dynamic balance exercises
- Physical drills: marching, spot running, arm circles, jumping jacks
- Gait training: parallel bar walking, stair climbing
- Group therapeutic exercises with music or counts

➢ Yoga Practical

- Demonstration and practice of basic **asanas**:
  - Tadasana, Vrikshasana, Trikonasana, Bhujangasana, Shavasana, etc.
- **Surya Namaskar**: full sequence practice
- **Pranayama** techniques:
  - Anulom-Vilom, Bhramari, Kapalbhati (intro level)
- **Meditation and breathing awareness**: 5–10 minutes
- Yoga-based relaxation: guided or self-practice using Shavasana/Yoga Nidra
- Observation of physical and mental responses to yoga practices

BASICS OF EXERCISE THERAPY & ELECTROTHERAPY

THEORY

PART A: BASICS OF EXERCISE THERAPY

1. Introduction to Exercise Therapy

- Definition, aims, objectives
- Classification of therapeutic exercises
- Principles of exercise therapy
- Effects of exercise on body systems

2. Anatomical & Mechanical Fundamentals

- Planes and axes of movement
- Types of movement: flexion, extension, abduction, rotation
- Types of muscle contraction: isometric, isotonic, isokinetic

- Lever system and its application in the human body
- Gravity and its effects in exercise therapy

3. Posture & Gait

- Normal posture and types of postural deviations
- Posture assessment techniques
- Gait cycle and phases
- Gait abnormalities and their correction

4. Range of Motion (ROM)

- Types: Active, Passive, Assisted, Active-resisted
- Indications and contraindications
- Techniques to increase ROM
- Use of goniometer

5. Strengthening & Stretching

- Types of strengthening exercises
- Progressive resistance exercise
- Manual and mechanical resistance
- Stretching techniques: static, dynamic, PNF

6. Coordination & Balance Training

- Types of coordination exercises
- Balance training techniques
- Proprioception exercises

7. Mobility Aids & Functional Training

- Walking aids: cane, walker, crutches
- Gait training in patients
- Bed mobility and transfer training
- Activities of daily living (ADL) training

PART B: BASICS OF ELECTROTHERAPY

1. Introduction to Electrotherapy

- Definition, history, scope
- Classification of electrotherapeutic agents:
    - Thermal
    - Mechanical

- Electrical
- Electromagnetic

2. Basic Physics in Electrotherapy

- Electricity: current, voltage, resistance
- Types of current: AC, DC, pulsatile
- Ohm's law and safety precautions
- Electrodes: types, placement, maintenance

3. Low Frequency Currents

- Faradic current: principles, effects, uses
- Galvanic current: principles, effects, uses
- Iontophoresis: introduction

4. Medium Frequency Currents

- Interferential Therapy (IFT): principles, indications, contraindications
- Russian Currents (overview)

5. High Frequency Currents

- Short Wave Diathermy (SWD): types, dosage, indications
- Microwave Diathermy (MWD)

6. Superficial Heating & Cooling Modalities

- Hot packs, paraffin wax bath, IR therapy
- Cryotherapy: ice packs, ice massage

7. Ultrasound Therapy

- Physiological effects
- Application methods
- Indications and contraindications

PRACTICAL

PART A: BASICS OF EXERCISE THERAPY

➢ Demonstration of Movements

- Active, passive, assisted, and resisted movements of:

  - Upper limb (shoulder, elbow, wrist, fingers)
  - Lower limb (hip, knee, ankle, toes)
  - Neck and trunk
- Use of goniometer to measure Range of Motion (ROM)

➢ Strengthening Exercises

- Isometric and isotonic exercises for:
  - Quadriceps, hamstrings, biceps, triceps, etc.
- Manual resistance techniques
- Progressive resistance exercises using weight cuffs, therabands

➢ Stretching Exercises

- Static and dynamic stretching of major muscle groups
- Precautions during stretching
- PNF (Proprioceptive Neuromuscular Facilitation) stretching basics

➢ Posture & Balance

- Identification and correction of postural faults
- Posture training exercises
- Balance exercises:
  - Static: single-leg stance, tandem standing
  - Dynamic: reaching tasks, wobble board

➢ Gait & Mobility Training

- Gait pattern observation and correction
- Walking aids: correct usage of walker, cane, crutches
- Sit-to-stand practice
- Bed mobility: rolling, shifting, transfers

➢ Functional Exercises

- Activities of Daily Living (ADL) training (basic)
- Therapeutic use of:
  - Shoulder wheel
  - Pulley system
  - Therapy ball
  - Parallel bars

PART B: BASICS OF ELECTROTHERAPY

➢ Equipment Handling & Safety

- Demonstration of physiotherapy electrical machines
- Machine care and maintenance
- Patient preparation and safety precautions

➢ Electrode Placement

- Types of electrodes: carbon, sponge, self-adhesive
- Placement for different muscle groups
- Cleaning and storing electrodes

➢ Application of Low Frequency Currents

- **Faradic current**: muscle re-education
- **Galvanic current**: iontophoresis (intro)
- **TENS**: for pain relief – pad placement and operation

➢ Medium Frequency Current Therapy

- **IFT (Interferential Therapy)**:
  - Electrode placement techniques
  - Use for pain and edema
- **Russian Currents**: muscle strengthening (demo)

➢ High Frequency Therapy (if available)

- **Short Wave Diathermy (SWD)**: capacitive and inductive methods
- **Microwave Diathermy (MWD)**: dosage and positioning

➢ Superficial Heat & Cold Modalities

- **Hot pack** application (hydrocollator packs)
- **Paraffin wax bath** technique
- **Infrared lamp therapy**
- **Cryotherapy**: ice massage, cold pack

➢ Ultrasound Therapy

- Coupling techniques (gel application)
- Continuous and pulsed modes
- Indications and contraindications
- Treatment of soft tissue injuries

BIOCHEMISTRY

THEORY

1. Introduction to Biochemistry

- Definition and scope in physiotherapy
- Importance of biochemistry in health and disease
- Structure and function of cell, cell organelles
- pH and buffer systems in the human body
- Water, electrolytes, and acid-base balance

2. Carbohydrates

- Definition, classification, and functions
- Monosaccharides, disaccharides, polysaccharides (glucose, fructose, starch, glycogen)
- Digestion and absorption of carbohydrates
- Glycolysis, Krebs cycle, glycogenesis, gluconeogenesis (intro level)
- Blood glucose regulation
- Diabetes mellitus (brief concept)

3. Proteins and Amino Acids

- Classification, structure, and functions of proteins
- Essential and non-essential amino acids
- Protein digestion and absorption
- Plasma proteins and their functions
- Urea cycle (basics)
- Protein-energy malnutrition

4. Lipids

- Classification and biological functions
- Saturated and unsaturated fatty acids
- Digestion, absorption, and transport of lipids
- Cholesterol: structure, function, and disorders
- Ketone bodies and ketosis (brief)

5. Enzymes

- Definition, classification, and characteristics
- Mechanism of enzyme action
- Factors affecting enzyme activity (pH, temperature, concentration)

- Clinical significance of enzymes (e.g., CPK, SGOT, SGPT, LDH)

6. Vitamins

- Classification: fat-soluble (A, D, E, K) and water-soluble (B-complex, C)
- Sources, functions, daily requirements
- Deficiency disorders
- Role in wound healing, muscle and nerve health

7. Minerals

- Major minerals: Calcium, Phosphorus, Sodium, Potassium, Magnesium
- Trace elements: Iron, Zinc, Iodine
- Functions, sources, deficiency disorders
- Importance in muscle contraction, nerve conduction, and bone health

8. Hormones (Introductory)

- Definition and classification
- Functions of important hormones:
  - Insulin, glucagon
  - Thyroid hormones
  - Cortisol, adrenaline
- Hormonal effects on metabolism and physical activity

9. Clinical Biochemistry (Overview)

- Normal values and significance of:
  - Blood glucose
  - Urea, creatinine
  - Bilirubin
  - Uric acid
- Basic interpretation of:
  - Liver function test (LFT)
  - Renal function test (RFT)
- Biochemical markers in inflammation and muscle injury

10. Acid-Base Balance

- Concept of pH in the human body
- Buffers: bicarbonate, phosphate, proteins
- Disorders: acidosis and alkalosis (basic understanding)

PRACTICAL

➢ Laboratory Safety and Orientation

- Introduction to biochemistry lab equipment (pipettes, centrifuge, colorimeter, etc.)
- Lab safety rules and precautions
- Use of lab coats, gloves, goggles
- Cleaning and maintenance of glassware
- Handling of biohazardous material and waste disposal

➢ Preparation Techniques

- Preparation of standard solutions (normal and molar)
- Dilution techniques
- Buffer solution preparation
- Reagent preparation for biochemical tests

➢ Qualitative Analysis of Biomolecules

A. Carbohydrates

- Molisch's test (general test for carbohydrates)
- Benedict's test (reducing sugars)
- Barfoed's test (monosaccharides)
- Iodine test (starch)
- Fehling's test
- Seliwanoff's test (ketoses)

B. Proteins

- Biuret test (peptide bonds)
- Ninhydrin test (amino acids)
- Xanthoproteic test (aromatic amino acids)
- Millon's test (tyrosine)
- Lead acetate test (sulfur-containing amino acids)

C. Lipids

- Grease spot test
- Saponification test
- Sudan III stain
- Emulsification test

➢ Quantitative Estimations (using Colorimeter/Manual Methods)

- Estimation of blood glucose (glucose oxidase method)
- Estimation of urea (diacetyl monoxime method)
- Estimation of serum cholesterol (Zak's method)
- Estimation of total protein (Biuret method)
- Estimation of creatinine

➢ Clinical Biochemistry Procedures (Demonstration Level)

- Sample collection techniques (blood & urine)
- Serum/plasma separation
- Preservation of biochemical samples
- Urine analysis:
    - Physical examination (color, odor, volume)
    - Chemical analysis: glucose, albumin, ketones, bile salts (using dipsticks or Benedict's test)

SEMESTER – II

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DPT201	FIRST-AID AND NURSING	45 Min	1 Hrs.	50	50
DPT202	PHYSIOTHERAPY IN ORTHOPAEDICS, NEUROLOGICAL, MEDICAL & SURGICAL	45 Min	1 Hrs.	50	50
DPT203	DRUGS USED IN PHYSIOTHERAPY	45 Min	1 Hrs.	50	50
DPT204	BASIC OF PHARMACOLOGY, PATHOLOGY AND MICROBIOLOGY	45 Min	1 Hrs.	50	50

FIRST-AID AND NURSING

THEORY

1. Introduction to First-Aid

- Definition and importance
- Aims and principles of first-aid
- Emergency assessment: DRABC (Danger, Response, Airway, Breathing, Circulation)
- Golden hour concept

2. Management of Common Injuries

- Wounds and bleeding: types, control methods (direct pressure, elevation, bandaging)
- Burns and scalds: degrees, management
- Fractures: types, symptoms, first-aid splinting
- Sprains and strains: symptoms and basic care
- Dislocations and their management
- Head injuries and spinal injuries (basic precautions)
- Crush injuries and amputations

3. Emergency Conditions

- First-aid for:
  - Fainting
  - Seizures
  - Shock
  - Heart attack
  - Stroke
  - Drowning
  - Electric shock
  - Poisoning
  - Snake and insect bites

4. Bandaging and Dressing Techniques

- Types of bandages: roller, triangular
- Application of bandages for limbs, head, and joints
- Dressing of simple wounds
- Immobilization methods using slings and splints

5. Cardiopulmonary Resuscitation (CPR)

- Basic Life Support (BLS) – adult and child
- Chest compressions and rescue breathing
- Use of automated external defibrillator (AED) (intro only)

6. Basics of Nursing

- Role of physiotherapists in nursing care
- Patient positioning and turning
- Bed making (open, closed, occupied)
- Pressure sore prevention
- Vital signs: temperature, pulse, respiration, blood pressure
- Use of hot and cold applications (packs, compresses)
- Administration of oral and topical medications (basic level)

7. Hygiene and Infection Control

- Personal hygiene of patient and caregiver
- Handwashing techniques (aseptic)
- Care of mouth, skin, nails
- Disinfection and sterilization
- Biomedical waste management (basic)

8. Patient Handling and Mobility

- Transferring patients: bed to wheelchair, stretcher use
- Lifting and carrying techniques (safe handling)
- Use of walking aids: cane, crutches, walker
- Fall prevention techniques

PRACTICAL

➢ First-Aid Practical Skills

- **Assessment of emergency scene** (DRABC protocol)
- **CPR (Cardiopulmonary Resuscitation)** on manikin (adult and child)
- **Artificial respiration techniques**
- **Application of pressure bandage** to control bleeding
- **Use of tourniquet** (demonstration only)
- **Management of fractures using splints** (upper limb, lower limb)
- **Immobilization techniques** for spinal injuries
- **First-aid for burns** – dressing and cooling methods
- **Management of fainting and shock**
- **First-aid for snake/insect bites and poisoning** (mock demonstration)
- **Choking relief** – Heimlich maneuver (demo)
- **Transport of injured person** – stretcher and carry techniques

➢ Bandaging & Dressing Techniques

- **Use of different bandages**:

  - Triangular bandage (arm sling, scalp, hand)
  - Roller bandage (ankle, wrist, elbow)
- **Dressing of wounds** (clean and sterile dressing)
- **Application of compresses** – hot and cold
- **Supportive taping and strapping** (basic demo)
- **Use of splints and slings** – practical demonstration

➢ Basic Nursing Care Techniques

- **Measurement of vital signs**:
  - Temperature (oral, axillary)
  - Pulse (radial, carotid)
  - Respiration rate
  - Blood pressure (manual)
- **Bed-making procedures**:
  - Open bed
  - Closed bed
  - Occupied bed
- **Turning and positioning of patients**:
  - Supine, prone, lateral, Fowler's
  - Prevention of pressure sores
- **Use of bedpans, urinals, and hygiene supplies**
- **Assisting in oral and personal hygiene** (teeth, nails, skin)
- **Topical application of medications** (ointments, dressings)
- **Sterilization and disinfection of instruments**

➢ Patient Mobility & Transfer

- **Transfer from bed to wheelchair and vice versa**
- **Use of stretcher, spine board, transfer belt**
- **Assisting with walking aids**:
  - Cane
  - Crutches
  - Walker
- **Demonstration of gait training**
- **Fall prevention strategies**
- **Safe handling and lifting techniques**

PHYSIOTHERAPY IN ORTHOPAEDICS, NEUROLOGICAL, MEDICAL & SURGICAL

THEORY

1. Physiotherapy in Orthopaedic Conditions

▪ *Basic Concepts*

- Healing of bone, muscle, ligament, tendon
- Inflammation and repair process
- Types of fractures and dislocations
- Post-immobilization stiffness and joint contractures

▪ *Common Conditions & Management*

- Fractures: upper limb, lower limb, spine
- Osteoarthritis, Rheumatoid arthritis
- Spondylosis and disc prolapse (cervical, lumbar)
- Frozen shoulder
- Bursitis, tendonitis
- Ligament injuries (ACL, MCL)
- Congenital disorders (clubfoot, scoliosis)

▪ *Post-operative Rehabilitation*

- Joint replacement (hip, knee, shoulder)
- Internal fixation and external fixation rehab
- Amputation rehab and prosthetic training

2. Physiotherapy in Neurological Conditions

▪ *Basic Neuroanatomy (Review)*

- Upper and lower motor neuron lesions
- Reflexes and muscle tone
- Paralysis types: hemiplegia, paraplegia, quadriplegia

▪ *Common Neurological Disorders*

- Stroke (CVA) rehabilitation
- Parkinson's disease
- Cerebral palsy
- Spinal cord injury
- Peripheral nerve injuries (e.g., Bell's palsy, radial/ulnar nerve injury)
- Multiple sclerosis
- Guillain-Barré syndrome

▪ ***Rehabilitation Techniques***

- Neurodevelopmental techniques (NDT)
- Proprioceptive neuromuscular facilitation (PNF)
- Gait training
- Balance and coordination exercises
- Use of assistive devices

3. Physiotherapy in Medical Conditions

▪ ***Respiratory Disorders***

- COPD (Chronic Obstructive Pulmonary Disease)
- Asthma
- Pneumonia
- Bronchitis
- Post-COVID pulmonary rehab

▪ ***Cardiovascular Conditions***

- Myocardial infarction
- Hypertension
- Heart failure
- Cardiac rehab phases (I, II, III)
- Exercise tolerance testing (intro level)

▪ ***General Medical Conditions***

- Diabetes and exercise prescription
- Obesity and weight management
- Geriatric rehabilitation

4. Physiotherapy in Surgical Conditions

▪ ***Pre- & Post-Operative Physiotherapy Care***

- General principles of post-surgical physiotherapy
- Deep breathing and coughing exercises
- Prevention of DVT and pulmonary complications
- Bed mobility, turning, and transfer techniques

▪ ***Post-Surgical Cases***

- Thoracotomy, abdominal surgery
- Mastectomy rehabilitation

- Post-hernia repair
- Appendectomy, cholecystectomy
- C-section recovery exercises

▪ ***ICU Physiotherapy (Introductory Level)***

- Chest physiotherapy
- Suctioning (theory)
- Early mobilization and weaning support

PRACTICAL

➢ Orthopaedic Physiotherapy

❖ *Assessment Techniques*

- Goniometric measurement of joint range of motion (ROM)
- Manual muscle testing (MMT)
- Posture and gait analysis

❖ *Rehabilitation Techniques*

- Passive, active-assisted, active, and resistive exercises
- Joint mobilization techniques
- Isometric & isotonic exercise prescription
- Cryotherapy and heat therapy in joint and muscle injuries
- Post-fracture mobilization and stiffness management
- Use of walking aids (canes, crutches, walker)

❖ *Post-operative Management*

- Post-THR (Total Hip Replacement) rehab
- Post-TKR (Total Knee Replacement) rehab
- Rehab for ligament injuries (ACL, meniscus)

➢ Neurological Physiotherapy Practical

❖ *Assessment Techniques*

- Reflex testing (deep tendon and superficial)
- Tone assessment (spasticity, rigidity)
- Balance and coordination assessment
- Sensory testing (light touch, proprioception)

❖ *Rehabilitation Techniques*

- Neurodevelopmental techniques (e.g., Bobath, NDT)
- Proprioceptive neuromuscular facilitation (PNF)
- Bed mobility and transfer training
- Gait training with parallel bars/walkers
- Wheelchair training
- Mirror therapy (for stroke)
- Task-oriented activities (ADL-based)

➢ Medical Physiotherapy Practical

❖ *Respiratory Therapy*

- Breathing exercises: diaphragmatic, pursed-lip
- Incentive spirometry
- Postural drainage positions
- Chest percussion and vibration (manual)
- Active Cycle of Breathing Technique (ACBT)
- Cough facilitation techniques

❖ *Cardiac Therapy*

- Monitoring of heart rate, BP, and perceived exertion during exercise
- Basic aerobic training (step-ups, treadmill if available)
- Relaxation techniques
- Education on warm-up and cool-down

➢ Surgical Physiotherapy Practical

❖ *Pre- & Post-Operative Management*

- Instruction in breathing exercises pre-surgery
- Prevention of post-op complications (DVT, atelectasis)
- Early mobilization post-surgery (bed-to-chair, ambulation)
- Log rolling techniques (post abdominal/thoracic surgery)
- Limb elevation and circulatory exercises
- Coughing and huffing techniques

❖ *ICU-based Techniques (Introductory)*

- Use of oxygen delivery systems
- Positioning for drainage and pressure relief
- Simple chest physio and suctioning demo (observation only)
- Passive limb mobilization in unconscious patients

DRUGS USED IN PHYSIOTHERAPY

THEORY

1. Introduction to Pharmacology

- Definitions: drug, pharmacology, posology, toxicology
- Sources of drugs
- Routes of drug administration (oral, IV, IM, topical, etc.)
- Dosage forms (tablet, capsule, ointment, injection)
- Factors modifying drug action (age, weight, genetics, food)

2. Pharmacokinetics & Pharmacodynamics (Basic Concepts)

- Absorption, distribution, metabolism, excretion
- Mechanism of drug action
- Half-life, onset, duration of action
- Drug interactions (basic awareness)

3. Drugs Related to Physiotherapy Practice

A. Analgesics & Anti-inflammatory Drugs

- NSAIDs (e.g., Ibuprofen, Diclofenac, Paracetamol)
- Opioids (basic overview, e.g., Tramadol)
- Corticosteroids (e.g., Prednisolone – local & systemic)

B. Muscle Relaxants

- Central-acting: Diazepam, Baclofen
- Peripheral-acting: Dantrolene

C. Antispasmodics & Anticonvulsants

- Used in neurological rehab (e.g., Gabapentin, Carbamazepine)

D. Anti-Parkinsonian & CNS Drugs

- Levodopa-carbidopa
- Role in movement disorders

E. Drugs in Cardiopulmonary Rehabilitation

- Bronchodilators (e.g., Salbutamol)
- Antihypertensives (e.g., Amlodipine, Atenolol)

- Diuretics (e.g., Furosemide)
- Anticoagulants (e.g., Aspirin, Warfarin – precautions during mobilization)

F. Wound Healing & Post-Surgical Medications

- Antibiotics (e.g., Amoxicillin, Cefixime – overview)
- Antiseptics and topical agents
- Pain relief gels and sprays

4. Drug Precautions for Physiotherapists

- Timing of therapy with pain medications
- Fall risk in sedated/elderly patients
- Handling patients on anticoagulants or steroids
- Drug-induced side effects (dizziness, hypotension, fatigue)

5. Electrotherapy & Drug Use

- Phonophoresis (drugs used: hydrocortisone gel, diclofenac)
- Iontophoresis (ions used and indications)

6. Legal & Ethical Aspects

- Prescription rights (physiotherapists – limitations)
- Drug storage & safety
- Working alongside physicians in a multidisciplinary team

PRACTICAL

➢ Drug History Taking & Documentation

- Identifying common medications taken by patients
- Recording patient drug history (from case files or patient interview)
- Understanding prescriptions and abbreviations (e.g., OD, BD, PRN)
- Assessing compliance with prescribed medications

➢ Observation of Drug Administration (Demonstration-Based)

- Observation of oral, topical, and parenteral drug administration in a clinical setting
- Understanding roles of nurses vs. physiotherapists in medication administration
- Identifying and interpreting drug labels and dosages

➢ Handling Patients Under Medication

- Recognizing physiotherapy precautions in:
  - Patients on **NSAIDs, steroids, muscle relaxants**
  - Patients on **anticoagulants or antihypertensives**
  - Patients under **sedatives or CNS depressants**
- Managing physiotherapy sessions around drug effects (e.g., fatigue, dizziness)

➢ Electrotherapy + Pharmacological Applications

- **Iontophoresis:**
  - Practical setup and precautions
  - Use of ions like potassium iodide, dexamethasone
- **Phonophoresis:**
  - Application technique using gels (e.g., diclofenac, hydrocortisone)
  - Contraindications and care

➢ 5. Case-Based Clinical Application

- Reviewing **case files** and identifying medications relevant to physiotherapy
- Writing short **clinical notes** on how drugs affect therapy sessions
- Discussing drug timing in relation to exercise tolerance (e.g., pain meds before therapy)

BASIC OF PHARMACOLOGY, PATHOLOGY AND MICROBIOLOGY

THEORY

I. BASIC PHARMACOLOGY

1. Introduction to Pharmacology

- Definitions: drug, pharmacology, posology, toxicology
- Classification and sources of drugs
- Routes of drug administration (oral, IV, IM, topical, etc.)

2. Pharmacokinetics & Pharmacodynamics

- Absorption, distribution, metabolism, and excretion of drugs
- Drug action mechanism
- Half-life, onset, duration of action

3. Common Drugs Used in Physiotherapy

- NSAIDs, analgesics, corticosteroids
- Muscle relaxants and spasmolytics
- Bronchodilators, antihypertensives
- Drugs used in Parkinsonism and seizures

4. Adverse Drug Reactions and Drug Interactions

- Types of adverse drug reactions
- Drug safety and precautions for physiotherapists
- Drug dependency and withdrawal symptoms

5. Drug Use in Special Conditions

- Elderly patients
- Pregnant and lactating women
- Liver and kidney disease patients

II. BASIC PATHOLOGY

1. Introduction to Pathology

- Definitions and basic concepts: disease, lesion, symptoms, signs
- Cellular responses to injury (inflammation, necrosis, apoptosis)

2. Inflammation & Healing

- Acute and chronic inflammation
- Healing by regeneration and repair
- Factors influencing wound healing

3. Disorders of the Musculoskeletal System

- Arthritis (rheumatoid, osteoarthritis)
- Fracture healing and complications
- Degenerative joint diseases

4. Common Neurological Pathologies

- Stroke (CVA)
- Parkinson’s disease
- Multiple sclerosis

5. Tumors and Neoplasia (Basics)

- Benign vs malignant tumors
- Common cancers related to physiotherapy care (bone, brain, breast)

III. BASIC MICROBIOLOGY

1. Introduction to Microbiology

- Classification of microorganisms: bacteria, viruses, fungi, protozoa
- Differences between prokaryotic and eukaryotic cells

2. Infection and Immunity

- Pathogenesis of infection
- Types of immunity: innate and acquired
- Antigen, antibody, vaccines

3. Common Infectious Diseases

- Respiratory infections (TB, pneumonia)
- Wound infections (Staphylococcus, MRSA)
- Gastrointestinal infections (E. coli, cholera)

4. Sterilization & Disinfection

- Methods of sterilization: autoclaving, dry heat, chemical
- Aseptic techniques in physiotherapy clinics

5. Hospital-Acquired Infections (HAIs)

- Prevention and control
- Role of physiotherapist in infection control
- Use of PPE, hand hygiene

PRACTICAL

➢ BASIC PHARMACOLOGY

❖ *Prescription Reading & Interpretation*

- Understanding drug names (generic vs brand)
- Interpreting common prescriptions used in physiotherapy cases
- Identifying dosage, frequency, and route of administration

❖ ***Drug Handling & Storage (Demonstration-Based)***

- Safe handling of NSAIDs, muscle relaxants, corticosteroids
- Proper drug storage conditions (temperature-sensitive drugs)
- Checking expiry date and batch numbers

❖ ***Drug Precaution in Physiotherapy***

- Identifying side effects that may alter therapy sessions
- Precautions in drug-induced dizziness, sedation, or bleeding
- Documenting drug-related patient complaints

❖ ***Case Study Practice***

- Preparing case notes for a patient on medication
- Listing physiotherapy considerations based on drug history

➢ **BASIC PATHOLOGY**

❖ ***Identification of Pathological Specimens***

- Slide observation or chart demonstration of:
  - Inflammatory cells
  - Degenerative tissues
  - Bone tumor and joint pathology (images/models)

❖ ***Observation of Clinical Signs***

- Clinical case demonstration of:
  - Inflammation (redness, swelling)
  - Contracture and deformity in joints
  - Wound healing stages (photos or real observation)

❖ ***Report Interpretation***

- Understanding simple lab reports:
  - ESR, CRP, RA factor
  - X-ray/CT scan reports of bone and joint pathology

❖ ***Record Work***

- Documenting observations with patient cases
- Preparing short notes on commonly observed pathological conditions in physiotherapy

➢ BASIC MICROBIOLOGY

❖ *Aseptic Technique Practice*

- Hand washing – 7-step WHO method
- Wearing and removing gloves, mask, apron
- Handling sterile dressing materials

❖ *Sterilization & Disinfection Techniques*

- Demonstration of:
  - Autoclave and hot air oven models
  - Chemical disinfection (alcohol, phenol, glutaraldehyde)
- Cleaning of physiotherapy tools and machines

❖ *Microscopy (Demo or Slide Observation)*

- Identification of:
  - Bacteria shapes (cocci, bacilli)
  - Common fungal pathogens
  - Gram staining principles (demo or chart)

❖ *Infection Control in Clinical Setup*

- Practical application of PPE
- Biomedical waste disposal (color coding)
- Patient-wise linen and equipment handling

SEMESTER – III

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DPT301	PHYSIOTHERAPY IN SPORTS & CARDIOLOGY CONDITIONS	45 Min	1 Hrs.	50	50
DPT302	BASIC LIFE SUPPORT (BLS) & CARDIOPULMONARY RESUSCITATION (CPR)	45 Min	1 Hrs.	50	50
DPT303	PHYSIOTHERAPY IN NEUROLOGIC	45 Min	1 Hrs.	50	50

	CONDITIONS AND REHABILITATION				
DPT304	BASIC SURGERY, ENT, OPHTHALMOLOGY, GYNAECOLOGY & OBSTETRICS	45 Min	1 Hrs.	50	50

PHYSIOTHERAPY IN SPORTS & CARDIOLOGY CONDITIONS

THEORY

SPORTS PHYSIOTHERAPY

1. Introduction to Sports Physiotherapy

- Definition, scope and importance
- Role of physiotherapist in sports teams
- Pre-participation physical evaluation
- Warm-up and cool-down principles

2. Common Sports Injuries

- Classification: Acute vs. chronic
- Types:
  - Sprains and strains
  - Fractures and dislocations
  - Tendonitis, bursitis
  - Ligament injuries (e.g., ACL tear)
  - Meniscus injuries
  - Stress fractures

3. Assessment in Sports Injuries

- History taking specific to sports
- Physical examination techniques
- Functional evaluation
- Special orthopedic tests

4. Management of Sports Injuries

- PRICE / POLICE protocol
- Electrotherapy modalities (Ultrasound, TENS, IFT)
- Manual therapy techniques

- Kinesio-taping and strapping
- Cryotherapy and thermotherapy
- Soft tissue mobilization
- Sports massage

5. Rehabilitation in Sports

- Phases of rehabilitation
- Strengthening and flexibility training
- Proprioception and balance exercises
- Agility and sport-specific drills
- Return-to-play criteria

6. Injury Prevention & Performance Enhancement

- Ergonomics and biomechanics in sports
- Fitness training and conditioning
- Nutrition basics in sports
- Role of orthotics and supportive devices

CARDIOPULMONARY PHYSIOTHERAPY

1. Introduction to Cardiopulmonary Physiotherapy

- Scope and importance
- Physiotherapist's role in cardiac & pulmonary care
- Basics of cardiopulmonary anatomy and physiology

2. Assessment in Cardiopulmonary Conditions

- History and clinical examination
- Chest expansion, breath sounds
- Pulse oximetry, spirometry, ABG interpretation
- Functional tests (6MWT, treadmill test, etc.)

3. Common Cardiopulmonary Conditions

- Cardiac:
  - Myocardial infarction
  - Congestive heart failure
  - Angina
  - Hypertension
  - Post CABG/PTCA conditions
- Pulmonary:
  - COPD (Chronic Bronchitis, Emphysema)

- Bronchial Asthma
- Pneumonia
- Restrictive lung diseases
- Post-operative pulmonary complications

4. Physiotherapy Management in Cardiac Conditions

- Phase-wise cardiac rehabilitation (Phase I to IV)
- Exercise prescription in cardiac rehab
- Monitoring during exercise (HR, BP, ECG)
- Relaxation techniques and breathing exercises

5. Physiotherapy in Pulmonary Conditions

- Airway clearance techniques:
  - Postural drainage
  - Percussion & vibration
  - Huffing & coughing
- Breathing exercises:
  - Diaphragmatic
  - Segmental
  - Pursed-lip breathing
- Use of incentive spirometry
- Mobilization and functional training

6. Physiotherapy in ICU and Post-surgical Conditions

- Chest physiotherapy in ventilated patients
- Early mobilization
- Preventing DVT, pressure sores
- Positioning and suctioning techniques

PRACTICAL

➢ SPORTS PHYSIOTHERAPY PRACTICALS

❖ *Assessment Techniques*

- History taking in sports injuries
- Postural assessment
- Gait analysis (normal & abnormal)
- Joint range of motion (ROM) testing – manual and goniometric
- Muscle strength testing (MMT)

- Functional evaluation (e.g., hop test, agility drills)
- Special tests for:
  - ACL/PCL (e.g., Lachman test)
  - Meniscal injuries (McMurray's test)
  - Ankle sprain (anterior drawer test)
  - Shoulder instability (apprehension test)

❖ *Modalities in Sports Rehab*

- Application of:
  - **Cryotherapy** (ice packs, cold sprays)
  - **Thermotherapy** (hot packs, paraffin wax)
  - **Ultrasound therapy** for soft tissue healing
  - **TENS / IFT** for pain relief
  - **Shortwave diathermy (SWD)** for chronic injuries

❖ *Therapeutic Exercises*

- Stretching exercises for common sports-related tight muscles
- Strengthening exercises (static, isotonic, isokinetic)
- Balance and proprioception training using balance boards, foam pads
- Plyometric exercises
- Sport-specific drills and conditioning programs
- Core strengthening and flexibility exercises

❖ *Techniques & Skills*

- Demonstration of taping and strapping (ankle, knee, shoulder)
- Kinesiology taping techniques
- Use of orthotics, braces, and supports
- Soft tissue mobilization and sports massage
- Warm-up and cool-down routines for different sports

➢ CARDIOPULMONARY PHYSIOTHERAPY

❖ *Clinical Assessment Skills*

- Measurement of:
  - **Vital signs** (HR, BP, RR, SpO_2)
  - **Chest expansion**
  - **Breath sounds** (auscultation)
  - **Peak flow rate**
  - **6-Minute Walk Test (6MWT)**
  - **Spirometry basics** (FVC, FEV1)

❖ *Respiratory Therapy Techniques*

- Demonstration and practice of:
  - **Breathing exercises**: Diaphragmatic, segmental, pursed-lip
  - **Airway clearance techniques**:
    - Postural drainage
    - Percussion and vibration
    - Huffing and coughing techniques
  - **Incentive spirometry** usage
  - **Active cycle of breathing technique (ACBT)**

❖ *Cardiac Rehabilitation Skills*

- Exercise prescription based on cardiac condition and phase
- Aerobic exercise monitoring (treadmill, cycling, walking)
- ECG monitoring during exercise
- Relaxation techniques (Jacobson's, guided breathing)
- Progression through cardiac rehab phases (I-IV)

❖ *ICU & Post-Operative Physiotherapy*

- Suctioning technique (closed/open)
- Chest physiotherapy in ventilated patients
- Early mobilization in ICU/post-op patients
- Positioning techniques for respiratory benefit
- Prevention of complications: DVT, bed sores

BASIC LIFE SUPPORT (BLS) & CARDIOPULMONARY RESUSCITATION (CPR)

THEORY

1. Introduction to Emergency Care

- Definition and importance of BLS & CPR
- Goals of BLS and the "Chain of Survival"
- Legal and ethical considerations (Good Samaritan law)
- Responsibilities of a first responder/physiotherapist in emergencies

2. Basic Anatomy & Physiology

- Cardiovascular system: Heart anatomy & function
- Respiratory system: Lungs and airway structure
- Physiology of oxygenation and circulation

- Pathophysiology of cardiac arrest, respiratory arrest, and shock

3. Basic Life Support (BLS) – Adults, Children, and Infants

- BLS sequence (C-A-B: Compressions, Airway, Breathing)
- Scene safety and victim assessment
- Recognition of sudden cardiac arrest
- Activation of emergency response system

a) Chest Compressions

- Proper hand placement
- Compression depth and rate
- Recoil and minimizing interruptions

b) Airway Management

- Head-tilt, chin-lift and jaw-thrust maneuvers
- Recovery position
- Use of oropharyngeal and nasopharyngeal airways

c) Rescue Breathing

- Mouth-to-mouth, mouth-to-mask techniques
- Bag-valve-mask ventilation (BVM)
- Oxygen administration basics

d) Use of AED (Automated External Defibrillator)

- Identification of shockable vs. non-shockable rhythms
- Safe AED use and voice prompts
- Pediatric vs. adult AED pads

4. CPR Techniques (Based on AHA/ERC Guidelines)

- One-rescuer and two-rescuer CPR (Adult/Child/Infant)
- High-quality CPR performance
- Ratio of compressions to breaths
- CPR for special situations:
    - Drowning victims
    - Trauma patients
    - Pregnant women
    - Choking (Heimlich maneuver)

5. Post-Resuscitation Care

- Monitoring of vital signs
- Maintenance of airway
- Oxygenation and circulation support
- Positioning and transfer of patient
- Documentation and handover to advanced medical team

6. Special Considerations

- CPR in COVID-19 and infectious cases
- Team-based resuscitation roles
- Communication during emergencies
- Simulation and mock drill training

PRACTICAL

➢ Patient Assessment & Scene Safety

- Demonstration of scene safety checks
- Checking patient responsiveness
- Activating emergency medical services (EMS)
- Checking breathing and pulse simultaneously
- Practice of calling for help and obtaining AED

❖ Chest Compressions

- Correct hand placement for adults, children, and infants
- Proper compression depth:
  - Adult: at least 2 inches (5 cm)
  - Child: about 2 inches (5 cm)
  - Infant: about 1.5 inches (4 cm)
- Compression rate: 100–120/min
- Full chest recoil technique
- Minimizing interruptions in compressions
- Switching compressors (2-person CPR) every 2 minutes

❖ Airway Management

- Head-tilt, chin-lift maneuver
- Jaw-thrust maneuver (suspected spinal injury)
- Checking airway for foreign body obstruction
- Practice with airway adjuncts:
  - Oropharyngeal airway (OPA)
  - Nasopharyngeal airway (NPA)

❖ Rescue Breathing

- Mouth-to-mouth and mouth-to-mask ventilation
- Bag-Valve-Mask (BVM) ventilation technique with and without oxygen
- Two-rescuer BVM technique
- Oxygen delivery and use of mask devices

❖ Full CPR Sequence (C-A-B)

- One-rescuer CPR (Adult/Child/Infant)
- Two-rescuer CPR (Adult/Child/Infant)
- Compression to breath ratios:
  - Adult: 30:2
  - Child/Infant (2-rescuers): 15:2
- Practice of coordinated CPR team roles

❖ AED (Automated External Defibrillator) Use

- Operating an AED: Turn on, attach pads, follow prompts
- Safety during defibrillation
- Placement of AED pads (Adult vs Pediatric)
- AED use in wet conditions or with hairy chest
- Practice of AED in CPR sequence (hands-on simulation)

❖ Management of Choking

- Relief of choking in responsive adult (Heimlich maneuver)
- Chest thrusts and back blows in infants
- Management of unresponsive choking victim
- Simulation of foreign body airway obstruction scenarios

❖ Special Situations Practice

- CPR in:
  - Pregnant patient
  - Drowning victim
  - Suspected spinal injury
  - Trauma patients
- Use of barrier devices (mask, face shield)
- Post-CPR recovery position placement

❖ Team-based Resuscitation Simulation

- Assigning roles: compressor, airway manager, AED operator
- Effective communication and leadership

- Practice full code scenarios with time tracking

PHYSIOTHERAPY IN NEUROLOGIC CONDITIONS AND REHABILITATION

THEORY

1. Introduction to Neurophysiotherapy

- Scope and importance of neuro physiotherapy
- Role of physiotherapist in neuro-rehabilitation
- Structure and function of the nervous system (CNS & PNS)
- Neuroplasticity and motor learning principles

2. Neurological Examination & Assessment

- Subjective & objective assessment
- Glasgow Coma Scale (GCS)
- Tone assessment (Modified Ashworth Scale)
- Reflex testing – superficial, deep, and pathological
- Cranial nerve testing
- Posture and gait evaluation
- Functional independence measures (FIM, Barthel Index)

3. Common Neurological Conditions

a) Central Nervous System (CNS) Disorders

- Stroke (CVA, Hemiplegia)
- Traumatic brain injury (TBI)
- Spinal cord injuries (Paraplegia, Quadriplegia)
- Parkinson's Disease
- Cerebral Palsy (CP)
- Multiple Sclerosis (MS)
- Motor neuron disease (MND)
- Ataxia and incoordination

b) Peripheral Nervous System Disorders

- Peripheral neuropathy
- Bell's palsy (Facial nerve palsy)
- Brachial plexus injury
- Carpal tunnel syndrome
- Guillain-Barré Syndrome (GBS)

4. Physiotherapy Assessment in Neurological Cases

- Assessment of tone, balance, coordination, gait, reflexes
- Muscle strength (MMT), endurance and joint range
- Sensory and motor system evaluation
- ADL (Activity of Daily Living) assessment

5. Neuro-Physiotherapy Treatment Approaches

- Bobath (Neurodevelopmental Treatment - NDT)
- Proprioceptive Neuromuscular Facilitation (PNF)
- Rood's techniques
- Brunnstrom's stages of recovery
- Task-oriented training
- Mirror therapy
- Constraint-induced movement therapy (CIMT)
- Vestibular rehabilitation

6. Physiotherapy Management of Specific Conditions

- Hemiplegia: Positioning, early mobilization, gait training
- Spinal cord injury: Bladder/bowel care, wheelchair training
- Parkinson's: Cueing strategies, relaxation, balance training
- Cerebral Palsy: Stretching, strengthening, orthotic prescription
- Ataxia: Coordination and balance training
- Neuropathies: TENS, strengthening, sensory re-education

7. Use of Modalities in Neurological Rehabilitation

- TENS and FES (Functional Electrical Stimulation)
- Infrared, hot packs, cold packs
- EMG biofeedback
- Use of orthotics and assistive devices (AFO, KAFO, walkers, wheelchairs)

8. Gait Training & Balance Rehabilitation

- Static and dynamic balance exercises
- Parallel bar training
- Assistive device training (stick, walker, crutches)
- Stair climbing, floor transfer techniques
- Coordination exercises

9. ADL Training & Functional Independence

- Basic ADL: grooming, dressing, feeding

- Advanced ADL: mobility, community reintegration
- Environmental modifications
- Patient and caregiver education

10. Community-Based Neuro-Rehabilitation

- Home exercise programs
- Family counseling and involvement
- Vocational rehabilitation
- Assistive technologies for independent living

PRACTICAL

❖ Neurological Assessment Skills

- **Level of consciousness assessment** (e.g., Glasgow Coma Scale)
- **Cranial nerve examination**
- **Motor examination:**
  - Manual Muscle Testing (MMT)
  - Tone assessment (Modified Ashworth Scale, Tardieu scale)
  - Reflex testing – superficial and deep tendon reflexes
- **Sensory examination:**
  - Light touch, pain, temperature, vibration, proprioception
- **Coordination testing:**
  - Finger-nose test
  - Heel-shin test
  - Rapid alternating movements
- **Gait assessment**
- **Balance testing** (e.g., Romberg's test, Berg Balance Scale)
- **Functional Independence Measures (FIM) / Barthel Index**

❖ Practical Management of Neurological Conditions

❖ *Hemiplegia (Post-Stroke)*

- Bed positioning techniques to prevent contractures
- Passive and active-assisted ROM exercises
- Mat activities and rolling techniques
- Bridging and transfer training
- Sitting and standing balance training
- Gait training with assistive devices

❖ *Spinal Cord Injury (Paraplegia / Quadriplegia)*

- Positioning to prevent pressure sores

- Chest physiotherapy and breathing exercises
- Strengthening of available muscle groups
- Wheelchair mobility training
- Transfer techniques (bed to wheelchair and vice versa)

❖ *Parkinson's Disease*

- Rhythmic cueing techniques
- PNF patterns for trunk rotation
- Relaxation exercises
- Posture correction and balance training
- Gait re-education

❖ *Cerebral Palsy*

- Stretching and passive mobilization
- Facilitation of voluntary movements
- Use of orthoses (AFOs)
- Balance and coordination activities
- ADL and functional training

❖ *Peripheral Nerve Injuries (e.g., Bell's Palsy)*

- Facial exercises
- Electrical stimulation
- Massage and sensory stimulation

❖ *Guillain-Barré Syndrome & Neuropathies*

- Strengthening exercises
- Sensory re-education
- Functional mobility training

❖ Neuro-Physiotherapy Techniques

- **Bobath (NDT) principles** – positioning, handling techniques
- **PNF (Proprioceptive Neuromuscular Facilitation)** patterns
- **Rood's technique** – facilitatory/inhibitory methods
- **Brunnstrom's stages** application in hemiplegia
- **Mirror therapy** and **CIMT (Constraint-Induced Movement Therapy)**

❖ Balance, Coordination, and Gait Training

- Static and dynamic balance exercises
- Coordination exercises (Thera-band, wobble board, ball work)

- Parallel bar gait training
- Use of walking aids (crutches, cane, walker)
- Stairs and obstacle training

❖ Use of Electrotherapy & Assistive Devices

- Application of:
  - TENS
  - Functional Electrical Stimulation (FES)
  - Infrared, hot and cold packs
- Demonstration and practice in:
  - EMG biofeedback
  - Use of orthotics (AFO, KAFO)
  - Wheelchair types and training
  - Transfer boards and adaptive aids

❖ ADL Training & Functional Skills

- Dressing, feeding, grooming techniques
- Bed mobility and transfers
- Toilet and bathing activities
- Home and environment modification advice
- Patient and caregiver education

BASIC SURGERY, ENT, OPHTHALMOLOGY, GYNAECOLOGY & OBSTETRICS

THEORY

1. BASIC SURGERY

a) Introduction to Surgery

- General principles of surgery
- Asepsis and antisepsis
- Wound healing and complications
- Pre-operative and post-operative care
- Types of sutures and surgical instruments (overview)

b) Common Surgical Conditions

- Abscess, cellulitis, ulcers
- Hernias (inguinal, umbilical, femoral)
- Haemorrhoids, fistula, fissures
- Varicose veins

- Burns and their classification
- Tumors: benign vs malignant

c) Orthopaedic Surgeries (Overview for PT)

- Open reduction internal fixation (ORIF)
- Joint replacement surgeries (hip, knee)
- Amputations and prosthetic rehabilitation

2. EAR, NOSE & THROAT (ENT)

a) Ear

- Anatomy and physiology of the ear
- Common ear disorders:
  - Otitis media
  - Otitis externa
  - Hearing loss (conductive, sensorineural)
  - Tinnitus, vertigo (Meniere's disease)
- Use of hearing aids

b) Nose

- Rhinitis, sinusitis
- Nasal polyps
- Deviated nasal septum (DNS)
- Epistaxis and nasal packing

c) Throat

- Tonsillitis, pharyngitis, laryngitis
- Voice disorders and speech-related ENT conditions
- Tracheostomy care and suctioning
- Sleep apnea (brief overview for rehab relevance)

3. OPHTHALMOLOGY

a) Anatomy and Physiology of Eye

- Parts of the eye and their functions
- Visual pathways and vision control

b) Common Eye Disorders

- Conjunctivitis

- Refractive errors (myopia, hypermetropia, astigmatism)
- Cataract and its management
- Glaucoma (overview)
- Retinopathy and diabetic eye conditions
- Eye injuries and first aid

c) Eye Care for Special Populations

- Eye care in stroke patients
- Low vision rehabilitation (basic intro)

4. GYNAECOLOGY

a) Female Reproductive Anatomy & Physiology

- Uterus, ovaries, menstrual cycle
- Hormonal changes and regulation

b) Common Gynaecological Conditions

- Menstrual disorders: amenorrhea, dysmenorrhea
- Polycystic ovarian syndrome (PCOS)
- Uterine fibroids
- Pelvic inflammatory disease (PID)
- Endometriosis

c) Surgical Procedures

- Hysterectomy
- D&C (dilation and curettage)
- Oophorectomy

5. OBSTETRICS

a) Pregnancy and Physiology

- Normal pregnancy: stages and physiological changes
- Labor and delivery process
- Puerperium (postnatal period)

b) Common Obstetric Conditions

- Pre-eclampsia and eclampsia
- Gestational diabetes
- Preterm labor

- Breech presentation
- Caesarean section

c) Postnatal & Antenatal Physiotherapy (Introduction)

- Importance of antenatal exercises
- Postnatal rehabilitation and physiotherapy role
- Pelvic floor muscle strengthening
- Back care during and after pregnancy

PRACTICAL

❖ BASIC SURGERY

❖ *Clinical Observation & Skills*

- Observation of dressing techniques for wounds, burns, ulcers
- Identification of surgical instruments (basic set)
- Observation of minor surgical procedures (e.g., incision & drainage)
- First aid for surgical emergencies (e.g., bleeding, burns, fractures)
- Pre- and post-operative physiotherapy care
- Observation of:
    - Hernia repair
    - Amputations
    - Orthopaedic surgeries (e.g., joint replacement)

❖ *Physiotherapy Role in Surgery*

- Early mobilization in post-op cases
- Breathing exercises to prevent post-op pulmonary complications
- Positioning to prevent bedsores and contractures
- Limb elevation and compression techniques

❖ ENT (EAR, NOSE, THROAT)

❖ *Examination Skills*

- Observation of otoscopic, rhinoscopic, and laryngoscopic examinations
- Understanding tuning fork tests: Rinne's and Weber's tests
- Observation of audiometry reports

❖ *Physiotherapy Applications*

- Vestibular rehabilitation exercises for balance disorders
- Observation of tracheostomy care and suctioning

- Postural drainage and airway clearance in ENT-related conditions
- Voice exercises and breathing techniques (for laryngeal conditions)

❖ OPHTHALMOLOGY

❖ *Examination & Observation*

- Eye chart reading (Snellen's chart)
- Observation of basic eye screening (vision testing, pupil reflex)
- Clinical signs in common eye disorders (e.g., cataract, conjunctivitis)

❖ *Physiotherapy Role*

- Observation of eye care in stroke or brain injury rehab
- Positioning and protection of eye in facial nerve palsy
- Orientation and mobility training in low vision patients

❖ GYNAECOLOGY

❖ *Clinical Observation*

- Observation of pelvic exam procedure (demo/simulation only)
- Menstrual care education sessions
- Observation of common gynaecological surgeries (e.g., hysterectomy)

❖ *Physiotherapy Applications*

- Pelvic floor muscle exercise demonstration (Kegel's exercises)
- Pain management techniques in dysmenorrhea and pelvic pain
- Post-surgical rehabilitation after gynaecologic procedures
- Teaching hygiene and ergonomic practices during menstruation

❖ OBSTETRICS

❖ *Antenatal Care*

- Observation of antenatal check-up and fetal monitoring
- Demonstration of antenatal exercises:
    - Breathing techniques
    - Posture training
    - Stretching and mobility exercises

❖ *Postnatal Care*

- Physiotherapy after normal delivery and caesarean section

- Teaching postnatal exercises:
  - Abdominal tightening
  - Pelvic floor strengthening
  - Back care and body mechanics
- Positioning for breastfeeding and baby handling

SEMESTER –IV

PAPER CODE	SUBJECT NAME	THEORY HOURS	PRACTICAL HOURS	THEORY MARKS	PRACTICAL MARKS
DPT401	COMMUNITY MEDICINE, INCLUDING PEDIATRICS AND PSYCHIATRY	45 Min	1 Hrs.	50	50
DPT402	HAND HYGIENE & PREVENTION OF CROSS INFECTION	45 Min	1 Hrs.	50	50
DPT403	PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS, ORTHOTICS, AND PROSTHETICS	45 Min	1 Hrs.	50	50
DPT404	FOOD SCIENCE AND NUTRITION	45 Min	1 Hrs.	50	50

COMMUNITY MEDICINE, INCLUDING PEDIATRICS AND PSYCHIATRY

COMMUNITY MEDICINE / PUBLIC HEALTH

1. Introduction to Community Medicine

- Definition and scope of community medicine
- Concept of health and disease
- Determinants of health
- Levels of prevention (Primordial, Primary, Secondary, Tertiary)
- Indicators of health (morbidity, mortality, DALY)

2. Epidemiology

- Definition and types of epidemiology
- Modes of disease transmission
- Outbreak investigation

- Common epidemiological terms: incidence, prevalence, endemic, epidemic
- Surveillance and screening

3. Communicable Diseases (Basics & Prevention)

- Tuberculosis
- Malaria
- Dengue
- HIV/AIDS
- Hepatitis
- Diarrheal diseases
- COVID-19 (recent addition)

4. Non-Communicable Diseases (NCDs)

- Hypertension
- Diabetes
- Cancer
- Obesity
- Stroke
- Role of physiotherapy in prevention and rehabilitation

5. Environmental Health

- Water sanitation and purification
- Air pollution and health effects
- Waste disposal (biomedical waste management)
- Housing and health

6. Nutrition and Health

- Nutritional disorders (kwashiorkor, marasmus, anemia, obesity)
- Balanced diet
- Nutrition programs in India (ICDS, Midday Meal Scheme)

7. Health Education and Promotion

- Methods of health education (posters, talks, role plays)
- IEC (Information, Education, Communication) techniques
- Behavior change communication (BCC)

8. National Health Programs (Overview)

- National Tuberculosis Elimination Program (NTEP)
- National Leprosy Eradication Program (NLEP)

- Reproductive & Child Health (RCH)
- Universal Immunization Program (UIP)
- AYUSH and NRHM initiatives

SECTION B: PEDIATRICS (CHILD HEALTH)

1. Growth and Development

- Milestones: gross motor, fine motor, language, social
- Growth monitoring charts (weight, height, head circumference)

2. Common Pediatric Conditions

- Cerebral palsy
- Down syndrome
- Congenital muscular torticollis
- Spina bifida
- Developmental delay
- Neonatal jaundice
- Respiratory infections in children

3. Pediatric Rehabilitation (Basics)

- Early intervention programs
- Role of physiotherapy in cerebral palsy and developmental delay
- Pediatric orthoses and assistive devices
- Parent education and involvement

4. Immunization

- National Immunization Schedule
- Types of vaccines (live, killed, toxoid)
- Cold chain maintenance

5. Nutrition in Children

- Breastfeeding and complementary feeding
- Protein-energy malnutrition
- Micronutrient deficiency (Vitamin A, iron, iodine)

PSYCHIATRY / MENTAL HEALTH

1. Introduction to Mental Health

- Definition of mental health and illness

- Causes of mental illness: biological, psychological, social
- Stigma and myths about mental disorders

2. Common Psychiatric Disorders

- Depression
- Anxiety disorders
- Schizophrenia
- Substance abuse (alcohol, drugs)
- Bipolar disorder
- Somatoform disorders

3. Pediatric Psychiatric Disorders

- Autism Spectrum Disorder (ASD)
- Attention Deficit Hyperactivity Disorder (ADHD)
- Intellectual disability (mental retardation)

4. Role of Physiotherapy in Psychiatry

- Relaxation techniques: Jacobson's progressive muscle relaxation
- Breathing exercises for anxiety
- Exercise therapy in depression and schizophrenia
- Group therapy and recreational therapy basics
- Sensory integration techniques (for autism and ADHD)

5. Mental Health Services

- Psychiatric hospitals and community mental health
- Suicide prevention helplines
- Role of mental health professionals (psychiatrist, psychologist, social worker)

PRACTICAL

❖ COMMUNITY MEDICINE

❖ *Community-Based Health Survey*

- Conducting house-to-house surveys
- Collection of basic health data (age, weight, immunization, sanitation)
- Identification of high-risk individuals and families
- Preparation of health profile and reports

❖ *Health Education Activities*

- Preparation of posters/charts for health awareness
- Conducting health talks in community settings
- Role-plays and street plays on public health topics (e.g. hygiene, nutrition, vaccination)

❖ *Field Visits*

- Visit to Primary Health Centre (PHC) / Community Health Centre (CHC)
- Observation of immunization programs
- Visit to water purification plants / waste disposal units
- Interaction with Accredited Social Health Activists (ASHAs), ANMs, and Anganwadi workers

❖ *Basic Screening and Assessment*

- Measuring BMI, BP, pulse, respiratory rate
- Growth monitoring (height/weight)
- Identification of malnutrition or common disorders in a community
- Screening camps for lifestyle disorders (diabetes, hypertension, joint pain)

❖ *First Aid and Preventive Care*

- Demonstration of basic first aid techniques
- Demonstrating exercises for back pain, joint stiffness to community members
- Preventive physiotherapy education (posture correction, fall prevention in elderly)

B. PEDIATRICS – PRACTICAL TRAINING

❖ *Developmental Assessment*

- Assessment of developmental milestones (gross motor, fine motor, speech)
- Use of Denver Developmental Screening Test (DDST) or equivalent
- Documentation of developmental delays

❖ *Pediatric Physiotherapy Techniques*

- Positioning and handling techniques for children with CP
- Passive and active-assisted movements
- Neurodevelopmental treatment (NDT) basics
- Balance and coordination activities using play therapy
- Use of pediatric orthoses, assistive aids

❖ *Parent & Caregiver Training*

- Home exercise programs
- Family education and counseling for special children
- Demonstration of feeding and toileting techniques (if required)

❖ *Observational Training*

- Observation of pediatric physiotherapy sessions in clinics/hospitals
- Interaction with pediatricians, therapists, and caregivers

PSYCHIATRY

❖ *Patient Interaction & Observation*

- Observation of patients with psychiatric disorders
- Understanding patient behavior and communication challenges
- Attending psychiatric case discussions (if accessible)

❖ *Physiotherapy in Mental Health*

- Practicing relaxation techniques:
  - Deep breathing
  - Progressive muscle relaxation (PMR)
  - Guided imagery and meditation
- Group therapy-based exercises (walking, games)
- Basic yoga techniques for stress and anxiety relief

❖ *Case-Based Practice*

- Preparation of simple case reports of patients with depression, anxiety, or schizophrenia
- Planning a basic exercise/rehabilitation plan for patients with psychiatric disorders

❖ *Mental Health Awareness Activities*

- Mental health day campaigns
- Poster preparation and role plays on reducing mental health stigma
- Visit to mental health institutions (optional where feasible)

HAND HYGIENE & PREVENTION OF CROSS INFECTION

THEORY

1. Introduction to Infection Control

- Definition and importance of infection prevention
- Understanding healthcare-associated infections (HAIs)
- Chain of infection (Agent–Host–Environment model)
- Role of physiotherapists in breaking the chain of infection

2. Microbiology Basics for Infection Control

- Types of pathogens: Bacteria, viruses, fungi, parasites
- Modes of transmission:
  - Direct contact
  - Indirect contact
  - Droplet
  - Airborne
  - Vector-borne
- Common infectious diseases in physiotherapy settings
- Role of surface contamination and fomites

3. Hand Hygiene

- WHO's "Five Moments for Hand Hygiene":
  1. Before touching a patient
  2. Before clean/aseptic procedures
  3. After body fluid exposure risk
  4. After touching a patient
  5. After touching patient surroundings
- Techniques:
  - Handwashing with soap and water
  - Hand rubbing with alcohol-based sanitizer
  - Duration and steps of effective handwashing (WHO 7-step method)
- Indications for hand hygiene
- Use of gloves: When and how
- Misconceptions about hand hygiene

4. Personal Protective Equipment (PPE)

- Types of PPE: Gloves, masks, gowns, face shields, goggles
- Donning and doffing procedures
- Proper disposal of PPE
- Limitations and correct use

5. Environmental Hygiene & Surface Disinfection

- Cleaning vs. disinfecting vs. sterilizing

- Common disinfectants used in physiotherapy clinics
- Disinfection protocols for therapy beds, machines, tools, and surfaces
- Laundry and linen hygiene practices
- Biomedical waste management basics

6. Aseptic Techniques in Physiotherapy

- Use of sterile equipment (e.g., for electrotherapy, dry needling, wound care)
- Preventive steps in treating open wounds or post-surgical patients
- Safety protocols in ICU/ward physiotherapy
- Footwear, clothing, and personal hygiene of physiotherapists

7. Cross Infection Control in Special Situations

- Infection control in outpatient clinics
- Infection control in community/home visits
- Dealing with patients having contagious diseases (e.g., TB, MRSA, COVID-19)
- Immunization for healthcare workers

8. Education, Audit, and Compliance

- Training and educating staff and patients
- Monitoring compliance through hand hygiene audits
- WHO Hand Hygiene Observation Form
- Reporting and managing exposure incidents

PRACTICAL

❖ Hand Hygiene

❖ *Handwashing Technique*

- Demonstration of correct handwashing using soap and water
- WHO 7-step handwashing technique
- Duration and effectiveness checks (20–40 seconds)
- Use of UV/fluorescent gel for training (if available)

❖ *Alcohol-Based Hand Rub*

- Application technique for alcohol-based hand rub
- When to use sanitizer vs. soap
- Practice on all WHO "5 Moments of Hand Hygiene"
- Timing and rubbing method (20–30 seconds)

❖ *. Hand Hygiene Compliance Drills*

- Simulated patient interaction to practice when to perform hand hygiene
- Peer and instructor feedback sessions

❖ Use of Personal Protective Equipment (PPE)

❖ *Gloves*

- Indications for sterile vs. non-sterile gloves
- Proper technique of donning and doffing gloves
- Safe disposal of gloves

❖ *Masks, Gowns, Face Shields*

- Demonstration of putting on and removing surgical masks and N95 masks
- Gown wearing/removal without contamination
- Eye protection protocols
- Full PPE protocol for high-risk procedures or airborne precautions

➢ Surface & Equipment Disinfection

❖ *Clinical Equipment Hygiene*

- Cleaning protocols for:
  - Electrotherapy machines
  - Treatment couches
  - Walking aids and exercise tools
- Use of appropriate disinfectants (e.g., sodium hypochlorite, alcohol-based sprays)

❖ *Environment Sanitization*

- Surface disinfection of door handles, chairs, floors
- Daily cleaning checklists
- Color-coded cleaning tools practice (optional)

➢ Aseptic Precautions in Patient Handling

- Precautions when treating patients with wounds, open skin, or catheters
- Demonstrating care during suctioning, dry needling, or ICU physio
- Barrier techniques for high-risk patients

➢ 5. Biomedical Waste Handling

- Identification and segregation of biomedical waste

- Use of color-coded bins for disposal
- Demonstration of needle and sharp disposal
- Handling and disposal of soiled linen and PPE

➢ Infection Control Drills & Simulations

- Role-play scenarios involving:
  - Contact with infected patients
  - Community physiotherapy with hygiene challenges
  - Treating patients with airborne/droplet precautions
- Emergency response during exposure incidents (e.g., needlestick injury)

PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS, ORTHOTICS, AND PROSTHETICS

THEORY

1. Introduction to Orthopaedic Physiotherapy

- Definition, scope, and objectives
- Role of physiotherapy in orthopedic rehabilitation
- Healing process of bone and soft tissue

2. Fractures and Dislocations

- Classification of fractures
- Physiotherapy management during:
  - Immobilization phase
  - Mobilization phase
  - Post-operative phase
- Dislocations – common joints (shoulder, hip, patella)
- Complications and physiotherapy approaches

3. Post-Surgical Orthopaedic Conditions

- Total Hip Replacement (THR)
- Total Knee Replacement (TKR)
- Spinal surgeries (e.g., laminectomy, spinal fusion)
- Tendon repairs (e.g., Achilles, rotator cuff)

4. Common Orthopaedic Disorders and Physiotherapy

- Osteoarthritis, Rheumatoid arthritis
- Low back pain, cervical spondylosis

- Disc herniation and sciatica
- Frozen shoulder, tennis elbow, carpal tunnel syndrome
- Plantar fasciitis, flat foot, genu varum/valgum

5. Congenital and Pediatric Orthopaedic Conditions

- Clubfoot (CTEV)
- Congenital hip dislocation
- Scoliosis and kyphosis
- Rickets and bone deformities
- Physiotherapy goals for children

6. Orthotics

- Definition and purpose
- Classification: static vs. dynamic orthoses
- Types of orthoses:
  - Upper limb orthoses
  - Lower limb orthoses (KAFO, AFO, HKAFO)
  - Spinal orthoses (Taylor brace, Milwaukee brace)
  - Foot orthoses (shoe inserts, heel cups)
- Principles of orthotic prescription
- Role of physiotherapist in orthotic training and adjustment

7. Prosthetics

- Introduction to amputation and types
- Levels of amputation: above elbow, below elbow, above knee, below knee
- Types of prostheses
- Gait training with prostheses
- Physiotherapy management post-amputation:
  - Stump care and bandaging
  - Strengthening, balance, and mobility training

8. Rehabilitation and Functional Training

- Functional evaluation tools
- Use of assistive devices: canes, crutches, walkers
- Home program design and ergonomic advice
- Return to work and ADL (Activities of Daily Living) training

9. Documentation & Patient Education

- SOAP notes and physiotherapy progress records
- Educating patients about posture, joint protection, and lifestyle changes

PRACTICAL

Patient Assessment and Evaluation

- History taking specific to orthopedic conditions
- Observation and palpation techniques
- Joint range of motion assessment (goniometry)
- Manual muscle testing (MMT)
- Functional mobility assessments (e.g., TUG, gait analysis)

Therapeutic Techniques

Electrotherapy & Physical Agents

- Ultrasound therapy for musculoskeletal conditions
- TENS and IFT for pain management
- Hot packs, cold packs, paraffin wax bath
- Shortwave diathermy (SWD) for deep heating
- Traction therapy (cervical and lumbar)

Exercise Therapy

- Passive, active, active-assisted exercises
- Strengthening protocols for post-fracture and joint replacement cases
- Mobilization techniques (Maitland, Kaltenborn – basic level)
- Stretching of tight muscles and soft tissues
- Proprioceptive and balance training

Management of Specific Orthopaedic Cases

- TKR and THR rehabilitation protocols
- Post-fracture rehab (e.g., Colles' fracture, femur shaft, etc.)
- Rehabilitation for soft tissue injuries (ligament sprains, tendinitis)
- Scoliosis and kyphosis corrective exercises
- Clubfoot (CTEV) stretching and bracing assistance

Orthotics Practical Training

- Identification and application of:
  - Upper limb orthoses (wrist cock-up, dynamic splints)
  - Lower limb orthoses (AFO, KAFO, HKAFO)
  - Spinal braces (LS corset, Milwaukee brace)
- Measuring and fitting orthotic devices

- Patient education and gait training with orthoses
- Inspection and maintenance of orthotic devices

➢ Prosthetics Practical Training

- Demonstration of:
  - Below knee and above knee prosthetic parts
  - Upper limb prosthesis fitting
- Stump care, bandaging techniques
- Gait training with prosthesis:
  - Parallel bar walking
  - Use of assistive devices post-amputation
- Balance and strength training for amputees

➢ Use of Assistive Devices

- Training with:
  - Crutches (axillary, elbow)
  - Walkers (reciprocal, rolling)
  - Canes (standard, quad)
- Measurement and fitting techniques
- Gait training with assistive devices

➢ Patient Handling and Ergonomics

- Safe transfer techniques (bed to wheelchair, walker use)
- Ergonomic training for post-surgical and injury patients
- Training on ADLs (Activities of Daily Living)

FOOD SCIENCE AND NUTRITION

THEORY

1. Introduction to Nutrition

- Definition and importance of nutrition
- Classification of nutrients: Macronutrients and Micronutrients
- Basic concepts of:
  - Balanced diet
  - Recommended Dietary Allowances (RDA)
  - Nutritional requirements across life stages

2. Macronutrients

A. Carbohydrates

- Sources, types (simple & complex)
- Digestion and metabolism
- Role in energy production

B. Proteins

- Essential and non-essential amino acids
- Biological value of proteins
- Sources and requirements

C. Fats

- Saturated vs. unsaturated fats
- Essential fatty acids
- Role in the body and energy storage

3. Micronutrients

A. Vitamins

- Fat-soluble (A, D, E, K): functions, sources, deficiencies
- Water-soluble (B-complex, C): functions, sources, deficiencies

B. Minerals

- Calcium, Iron, Zinc, Iodine, Sodium, Potassium
- Role in bone health, muscle function, and metabolic pathways

4. Water and Electrolyte Balance

- Importance of water in the body
- Electrolyte functions (sodium, potassium, chloride)
- Signs and effects of dehydration and fluid overload

5. Diet and Disease

- Nutritional management in:
    - Obesity and weight control
    - Diabetes mellitus
    - Hypertension and cardiovascular diseases
    - Osteoporosis

  - Anemia
- Role of diet in injury healing and recovery in physiotherapy

6. Nutrition in Special Conditions

- Nutrition during:
  - Pregnancy and lactation
  - Infancy and childhood
  - Elderly age
  - Post-surgical rehabilitation
  - Athletes and physically active individuals

7. Food Science Basics

- Food groups and classification
- Cooking methods and nutrient losses
- Food additives and preservatives
- Food hygiene and safety
- Reading food labels (calories, ingredients, expiry)

8. Therapeutic Nutrition

- Concept of therapeutic diet
- Soft, liquid, high-protein, low-fat diets
- Enteral and parenteral nutrition basics
- Role of dietician and interdisciplinary team

9. National Health & Nutrition Programs (India)

- ICDS (Integrated Child Development Services)
- Mid-Day Meal Scheme
- Anemia Mukt Bharat
- WHO/UNICEF initiatives related to nutrition

10. Role of Physiotherapists in Nutrition

- Counseling patients for healthy eating
- Nutritional advice in rehabilitation settings
- Preventing malnutrition and promoting recovery

PRACTICAL

➢ Identification & Classification

- Identification of food items by group:

  - Cereals, pulses, vegetables, fruits, dairy, fats, etc.
- Classification of foods based on function:
  - Bodybuilding, energy-giving, protective foods

➢ Calculation of Nutritional Requirements

- Calculation of:
  - Basal Metabolic Rate (BMR)
  - Total Energy Requirement
  - Recommended Dietary Allowance (RDA) for various age groups
- Macronutrient and micronutrient calculation based on activity level (sedentary, moderate, heavy)

➢ Diet Planning and Menu Preparation

- Preparation of a **balanced diet plan** for:
  - Children, adolescents, adults, elderly
  - Pregnant and lactating mothers
  - Athletes and physically active individuals
- Preparation of therapeutic diet charts for:
  - Diabetes
  - Hypertension
  - Obesity
  - Osteoporosis
  - Anemia

➢ Nutritional Assessment Techniques

- Anthropometric measurements:
  - Height, weight, BMI calculation
  - Waist-hip ratio
  - MUAC (Mid-upper arm circumference)
- Dietary surveys using:
  - 24-hour dietary recall method
  - Food frequency questionnaire

➢ Food Preparation Demonstrations

- Basic food preparations using healthy methods:
  - Boiling, steaming, grilling
- Demonstrating low-fat cooking techniques
- Healthy snacks and high-protein meal prep
- Demonstrating nutrient preservation during cooking

➢ Food Label Reading & Analysis

- Understanding nutritional labels on packaged food
- Identifying calorie, protein, fat, sugar, and sodium content
- Identifying food additives and preservatives

➢ Observation of Food Safety and Hygiene Practices

- Personal hygiene in food handling
- Safe food storage practices
- Identification of adulterated foods (basic household tests)
- Handwashing and kitchen sanitation protocols

➢ Case-Based Activities

- Developing a diet plan based on clinical case studies
- Nutritional counseling role-play or demonstrations for:
    - Weight management
    - Post-operative recovery
    - Lifestyle modification

LIST OF HOLIDAYS

TOTAL DAY IN 1 YEAR	365/366
SUNDAY	52 DAYS
SUMMER VACATION	10 DAYS
WINTER VACATION	10 DAYS
GAZETTED HOLIDAYS	23 DAYS
OTHER HOLIDAYS	20 DAYS
TOTAL HOLIDAYS	115 DAYS
TOTAL WORKING DAYS	365-115=250

TOTAL HOURS

THEORY CLASS PER DAY	**3 HOURS**
PRACTICAL CLASS PER DAY	4 HOURS
TOTAL HOURS PER DAY	7 HOURS
TOTAL HOURS IN 1 YEAR	250*7=1750
TOTAL HOURS IN 6 MONTHS	875 HOURS

Chairman

Paramedical Education & Training Council