



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



PARAMEDICAL EDUCATION & TRAINING COUNCIL

Ch. No.157/1, Near Laxmi Nagar, Metro Station Gate No 1, Vikas Marg, Delhi-92

- 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

Web : <https://paramedicaleducationcouncil.org>

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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)
- 0
- 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



➤ **00bservation 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