

**DIPLOMA IN PHYSIOTHERAPY – SEMESTER THREE**

Third Semester			
S. No.	Name of Subject	Credits	Total Marks
1	Pathology & Microbiology	5	100
2	Pharmacology	5	100
3	General Psychology	5	100
4	Basic Nursing & First Aid	5	100
5	Biomechanics & Kinesiology	4	100
<b>Total</b>		<b>24</b>	

**Subject Name: PATHOLOGY & MICROBIOLOGY**

1. General characters and classification of Bacteria.
2. Characteristics of Bacteria.
3. Growth and Maintenance of Microbes.
4. Sterilization and Disinfection.
5. Culture Media.
6. Staining Methods.
7. Collection and Transportation of Specimen.
8. Care and Handling of Laboratory Animals.
9. Disposal of Laboratory/Hospital Waste.
10. Cell Injury and Cellular Adaptations.
11. Inflammation.
12. Haemodynamic Disorders.
13. Neoplasia.
14. Healing.

**Subject Name: PHARMACOLOGY**

1. **General Pharmacology (brief description only):**
  - a) Introduction & general concepts
  - b) Pharmaco-kinetics (routes of administration, metabolism & elimination)
  - c) Pharmaco-dynamics (mechanism of drug action, therapeutic & side effects, toxicity)
2. **Autonomic Nervous System:**
  - a) Brief outline of Sympathetic-parasympathetic nervous system
  - b) Therapeutic agents-uses, effects and interaction with physical therapy

### **3. Central Nervous System:**

- a) Anaesthetic agents- uses, side effects and interaction with physical therapy
- b) Sedatives and hypnotics - uses, side effects and interaction with physical therapy
- c) Anti epileptic drugs- uses, side effects and interaction with physical therapy
- d) Analgesics - uses, side effects and interaction with physical therapy
- e) Anti inflammatory drugs- uses, side effects and interaction with physical therapy
- f) Psychotherapeutic agents- uses, side effects and interaction with physical therapy
- g) Alcoholism and drug dependence and interaction with physical therapy
- h) Therapeutic agents used for movement disorders- uses, side effects and interaction with physical therapy

### **4. Cardio-vascular System:**

- a) Therapeutic agents (classification, effects on cardio-vascular system, uses & adverse reactions)
- b) Drugs used in cardiac failure, hypertension & arrhythmias and interaction with physical therapy
- c) Drug therapy in vascular disease & ischaemia and interaction with physical therapy

### **5. Respiratory system:**

Therapeutic agents - uses, side effects and interaction with physical therapy

### **6. Gastrointestinal system:**

Therapeutic agents in Peptic ulcer, Diarrhoea- uses, side effects and interaction with physical therapy

### **7. Endocrinal hormones:** Thyroid, adrenal, parathyroid hormones – uses, side effects and interaction with physical therapy

### **8. Diabetes mellitus:**

w.e.f. Academic Session 2006-07 Drug therapy and its interaction with physical therapy

### **9. Geriatrics:**

Pharmacological challenges in geriatric age group and its effects on physical therapy

### **Suggested Readings:**

- 1 Tripathi, K.D. Essential of Medical Pharmacology New Delhi, 1985
- 2 Laurence, D.R. Clinical Pharmacology ELBS, London 1975
- 3 Eddy, Lynne Physical Therapy pharmacology Mosby, London 1992
- 4 Barbar, F.S.K. Essential. Of Pharmacotherapeutics S. Chand, New Delhi 2000

**Subject Name:** GENERAL PSYCHOLOGY

**Unit 1: Study Of Cellular System:** Cell: Structure and organelles - Functions of each component in the cell. Cell membrane – transport across membrane – origin of cell membrane potential (Nernst and Goldman and Katz equations) – Action potential.

**Unit 2: Hematological System:** Blood composition - functions of blood – functions of RBC. WBC types and their functions. Blood groups –importance of blood groups –identification of blood groups. blood flow factors regulating blood flow such as viscosity, radius, density etc (Fahreus lindqvist effect, Poiseuille's Law).

**Unit 3: Renal and Respiratory System:** Structure of Kidney and nephron. Mechanism of Urine formation and acid base regulation. Dialysis. Components in of respiratory system. Oxygen and carbon dioxide transport and acid base regulation.

**Unit 4: Cardiac System:** Structure of heart – Properties of Cardiac muscle – Cardiac muscle and pacemaker potential - Cardiac cycle – ECG - Heart sound - volume and pressure changes and regulation of heart rate.

**Unit 5: Sensory System:** Structure of a Neuron. Synaptic conduction. Conduction of action potential in neuron Parts of brain cortical localization of functions. EEG. Simple reflexes, withdrawal reflexes. Autonomic nervous system and its functions, Structure of eye, ear and auditory and visual pathways.

**Subject Name:** BASIC NURSING & FIRST AID

1. What is nursing? Nursing principles. Inter-Personnel relationships, Bandaging: Basic turns, Bandaging extremities, Triangular Bandages and their application.
2. Nursing Position: Environment safety, Bed making, prone, lateral, dorsal, dorsal recumbent, Flower's positions, comfort measures, Aids & rest and sleep.
3. Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion.
4. Surgical Dressing: Observation of dressing procedures.
5. Lifting and transporting patients : Lifting patient up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

**Subject Name:** BIOMECHANICS & KINESIOLOGY

1. Mechanics - Definition of mechanics and Biomechanics
2. Motion: definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion.
3. Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle
4. Friction
5. Gravity - Definition, line of gravity, Centre of gravity
6. Equilibrium - Supporting base, types, and equilibrium in static and dynamic state
7. Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body
8. Pulleys - system of pulleys, types and application
9. Elasticity - Definition, stress, strain, HOOKE'S Law
10. Springs - properties of springs, springs in series and parallel, elastic materials in use

11. Muscular system
12. Definition, properties of muscle, muscular contraction, structural classification, action of muscle in moving bone, direction of pull, angle of pull, functional classification, coordination of muscular system.
13. Joint structures and functions:
  - i. Joint design, Structure of Connective Tissue, Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, over use
  - ii. Structure and functions of upper extremity joints – shoulder complex, elbow complex, wrist and hand complex
  - iii. Structure and functions of lower extremity joints – hip joint, knee joint, ankle and foot complex
  - iv. Structure and functions of axial skeletal joints – vertebral column –craniocervical, thorax, lumbar, lumbo pelvic region
  - v. Structure and functions of tempromandibular joint
14. Posture – dynamic and static posture, kinetic and kinematics of posture, analysis of posture, effect of age, pregnancy, occupation on posture.
15. Gait – kinematics and kinetics of gait, gait in running and stair climbing.