Government of NCT of Delhi

Delhi Pharmaceutical Sciences and Research University Sector-3, Pushp Vihar, New Delhi-17

Syllabus

For

Bachelor of Physiotherapy

BATCH (2015-2019)

FIRST YEAR

CURRICULUM HOURS
FIRST YEAR

THEORY COURSES	SUBJECT HOURS
1.ANATOMY	160
2.PHYSIOLOGY	160
3.PSYCHOLOGY & SOCIOLOGY	160
4.BIOCHEMISTRY	40
5.PRINCIPLES OF BIOMECHANICS & EXERCISE THERAPY	120
6.PRINCIPLES OF BIOELECTRIC MODALITIES	120

PRACTICAL COURSES	SUBJECT HOURS
1.ANATOMY	160
2.PHYSIOLOGY	160
3.PRINCIPLES OF BIOMECHANICS & EXERCISE THERAPY	80
4.PRINCIPLES OF BIOELECTRIC MODALITIES	80

BACHELOR OF PHYSIOTHERAPY (BPT)
FIRST YEAR

ANATOMY

COURSE CODE: BPT – 101

Course objective:

- Understanding of gross anatomy of various body parts.
- Application of knowledge of anatomy to learn evaluation and application of physical therapy.
- Major emphasis of learning is towards Musculo-skeletal, cardio-respiratory, and nervous system.

Course Contents:
Module I: General Anatomy

Introduction and concepts
Terminologies
Importance of Anatomy in Physiotherapy
Bone structure, blood supply, growth, ossification, and classification.
Muscle classification, structure, and functional aspect.
Nerve-structure, classification with examples.
Neurons-classification with examples, simple reflex arc. Parts of typical spinal curve/Dermatomes Joints classification, structures of joint, movements, range limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.
Circulatory system-Parts of heart, blood supply, major arteries and veins of the body, structure of blood vessels.
Lymphoid system-circulation & function, lymphoid organs and their structure and functions.

Module II: Extremities

Upper extremity

- Osteology (Clavicle, scapula, humerus, radius, ulna, carpals, metacarpals, phalanges)
- Joints – structure, range of movement
- Soft Parts- Brest, Pectoral Region, Axilla, Front of the arm, back of the arm, cubital fossa, front forearm, back of forearm, palm, and dorsum of hand.
- Muscles – origin, insertion, actions, nerve supply
- Major nerves – course, branches, and implications of nerve injuries
- Major vessels – course and implications of pathological event
- Development of limb bones, muscles, and anomalies
- Arches of the Hand, skin of palm, and dorsum of the hand
- Radiographic identification of bone and joints

Lower Extremity

- Osteology (Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals, and phalanges) Joints – structure, range of movement
- Soft parts- Gluteal region, front & back of the thigh (femoral triangle, femoral canal, and inguinal canal), medial side of the thigh (adductor canal), lateral side of the thigh, popliteal fossa, anterior & posterior compartment of the leg, sole of the foot
- Muscles – origin, insertion, actions, nerve supply
- Major nerves – course, branches, and implications of nerve injuries
- Major vessels – course and implications of pathological event
- Development of limb bones, muscles, and anomalies
- Arches of foot, skin of the foot
- Radiographic identification of bone and joints

Module III: Spine
Muscles of back – Superficial layer, Deep muscles, origin, insertion, action and nerve supply.
Vertebral column – Development & Structure, Structure & Joints of vertebra.
Applied anatomy & Developmental defects.
Surface Anatomy.
Radiographic identification of bone and joints

Module IV: Thorax
Thoracic cage Pleural cavities & Pleura Lungs and Respiratory tree Mediastinum & Pericardium, Heart and great vessels, Diaphragm & Surface Anatomy

Module V: Abdomen and Pelvis
Abdominal cavity – divisions.
Muscles of abdominal wall, pelvic floor.
Bony Pelvis
Digestive system (Liver & pancreas, Alimentary canal).
Urinary system – Kidney, Ureter, bladder, urethra
Adrenal gland
Genital system – male and female.
Surface Anatomy

Module VI: Head & Neck
Cranium
Facial Muscles
Central nervous system – disposition, parts and functions
Cerebrum
Cerebellum
Midbrain & brain stem
Blood supply & anatomy of strokes
Spinal cord- anatomy, blood supply, nerve pathways
Pyramidal, extra pyramidal system
Thalamus, hypothalamus
Ventricles of brain, CSF circulation
Development of nervous system & defects (Brief Description)
Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution and palsies)
Sympathetic nervous system, its parts and components (Brief Description)
Parasympathetic nervous system (Brief Description).
Triangles of neck - Boundaries & contents
Deep structures of neck – Thyroid, Parathyroid
Scalp – Brief about salivary glands
Orbit & eye

Module VII: Embryology
Embryology in brief covering neuromuscular developmental aspects.

Text & References:
- Handbook of General Anatomy, Dr. B.D. Chaurasia
- Color Atlas of Anatomy, a Photographic study of the Human Body, Roben, Johanneswetal
- Gray's Anatomy, M. Berry, Lawrence H. Bannister
- Textbook of Anatomy (3 vol.), B.D. Chaurasia
- Blood supply & anatomy of strokes
- Spinal cord – anatomy, blood supply, nerve pathways, applied significance.
- Pyramidal, extra pyramidal system
- Thalamus, hypothalamus (Brief Description)
- Ventricles of brain, CSF circulation (Brief Description)
- Development of nervous system & defects (Brief Description) Nerve plexuses.
- All Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution, and palsies)
- Autonomic nervous system- Sympathetic nervous system, its parts, and components (Brief Description),
- Parasympathetic nervous system (Brief Description), Surface Anatomy

ANATOMY PRACTICAL

COURSE CODE: BPT-101

Course Objective:

- Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves
- Demonstration through dissected parts, slides, models, charts, etc.
- Demonstration of dissected parts (upper extremity, lower extremity, thoracic & Abdominal viscera, face, and brain)
- Demonstration of skeleton articulated and disarticulated.
- During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs.

PHYSIOLOGY

COURSE CODE: BPT 102

Course Objective:

- To understand the Physiological functions of human body
- To understand the application of physiological functions & physiology of exercise in relation to physical therapy
- Major area of learning is cardio-respiratory, Musculo-skeletal, and nervous system.

Course Contents:
Module I: General Physiology

Structure of cell membrane
Transport across cell membrane
Functional morphology of the cell
Intercellular communication
Homeostasis

Module II: Muscle

Skeletal & cardiac muscle
Morphology, properties
Electric & Mechanical responses & their basis
Concept of isometric & isotonic muscle contraction
Pacemaker tissues & their potential in cardiac muscle Metabolism

Module III: Nerve

Nerve- General Concept Nerve cell – structure
Genesis of resting membrane potential & Action potential
Their ionic basis, all or none phenomenon
Ionic basis of nerve conduction
Classification & types of nerve fiber
Mixed nerves & compound action potential
Concept of nerve injury & Wallerian degeneration

Module IV: Synaptic & Junction Transmission

Functional anatomy of synapses
Electrical events in postsynaptic neurons
Inhibition & facilitation at synapses
Properties of reflexes
Sense organ, receptors, electrical & chemical events in receptors
Ionic basis of excitation

Sensory pathways for touch, temperature, pain, proprioception & others
Control of tone & posture: Integration at spinal, brain stem, cerebellar, Basal ganglion levels, along with their functions & clinical aspects.
Hypothalamus

Module V: Autonomic nervous system

Module VI: Higher functions of nervous system
Learning & memory, neocortex, limbic functions, sexual behaviors, fear & rage, motivation– brief idea.
Special senses
Arousal mechanisms & sleep

Module VII: Male & female reproductive system

Module VIII: Cardiovascular System
Dynamics of blood & lymph flow
Anatomical, biophysical consideration of arterial, arteriolar & capillary system, venous system & Lymphatic circulation
Origin and spread of cardiac excitation.
Basic idea of Electrocardiogram
Mechanical events of Cardiac cycle, Cardiac output, its regulation.
Local & systemic regulatory mechanisms of CVS, humoral & neural
Cerebral, coronary, splanchnic, skin, Placental & fetal circulation

Module IX: Respiratory System
Physiological anatomy of lungs, mechanics of respiration
Pulmonary circulation, Gas exchange in lungs, Oxygen & Carbon dioxide transport
Other function of respiratory system
Neural & chemical control of breathing
Regulation of respiratory activity, non-chemical influences on respiratory activity.
Cardiorespiratory adjustments in health & disease:
Exercise, high-altitude, deep-sea diving
Hypoxia, hypercapnia, hypocapnia, oxygen treatment
Asthma, emphysema, artificial respiration

Module X: **Cardio-respiratory adjustments in health & disease**
Exercise, high-altitude, deep-sea diving
Hypoxia, hypercapnia, hypocapnia, oxygen treatment
Asthma, emphysema, artificial respiration

Module XI: Blood
W.B.C., R.B.C., Platelets formation & functions
Plasma, Blood Groups
Hemostasis, Immunity

Module XII: Renal System
Renal circulation
Glomerular filtration rate, clearance, Tubular function
Water excretion, concentration of urine-regulation of Na+, Cl-, K+ excretion
Diuretics
Physiology of urinary bladder
Difference of tonicity, volume & pH of body fluids

Module XIII: Digestive System & Endocrinology
Digestion & absorption of lipids, carbohydrates, proteins, nucleic acids, water, electrolytes, vitamins & minerals
Gastrointestinal secretions & their regulation
Liver & Exocrine Pancreas

PHYSIOLOGY PRACTICAL

COURSE CODE: BPT 121

Course Objective:

- Examination of pulse, B.P., respiratory rate, & measure study the effect of posture & exercise.
- Spirometry to measure various lung capacities & volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometry (demonstration only)
- Estimate of Hemoglobin, T.R.B.C., T.W.B.C. count (demonstration only)
- Blood indices, Blood grouping, Bleeding & Clotting time (demonstration only)
- Examination of pulse, B.P., respiratory rate, Heart rate & Apex beat & measure study the effect of posture & exercise.
- Sensory Examination: Pain, Temperature, touch, vibration, two- point discrimination
- Muscular Examination: Myotomes

PSYCHOLOGY AND SOCIOLOGY

COURSE CODE: BPT 103

Course Objective:

- This course will enable the student to understand specific psychological factors and effects in physical illness. and this will help them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge.

Note: This course is to be taught by two teachers (Psychologist & Sociologist / Medical Sociologist). Each part carries equal weightage. External Question Paper for each part shall be set by two relevant subject paper setters. The examinees shall use different answer books for the two different parts. And relevant subject teachers shall evaluate these.

Course Contents:

PSYCHOLOGY (PART – A)

1. What is psychology? Fields of application of psychology, influence of heredity and environment on the individual
2. Learning – theories & principles learning
3. Memory, Forgetting, theories of memory and forgetting, thinking & methods to improve memory
4. Thinking – process, problem solving, decision making and creative thinking
5. Motivation - theories and types of Motivation
6. Emotions - theories of Emotions and stress
7. Attitudes – theories, attitudes and behavior, factors in attitude change
8. Intelligence - theories of intelligence
9. Personality, theories of personality, factors influencing personality
10. Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age
11. Behavior - normal and abnormal
12. Counseling - Definition, Aims and principles
13. Psychotherapy – brief introduction to paradigms in psychopathology and therapy
14. Psychological need of children and geriatric patients
15. Communication – effective and faulty
16. Emotional and behavioral disorders of childhood and adolescence- (in brief)

a) Disorders of under and over controlled behavior
b) Eating disorders

17. Mental deficiency

a) Mental retardation,
b) Learning disabilities
c) Autistic behavior

18. anxiety disorders -

a) Phobias, panic disorder,
b) Generalized Anxiety disorder,
c) Obsessive Compulsive Disorder,
d) Post –traumatic stress disorder
19. Somatoform and Dissociate Disorders -
a) Conversion Disorder,
b) Somatization Disorder,
c) Dissociate Amnesia & Dissociate Fugue
20. Personality Disorder
21. Patho-physiological Disorders – stress and health
22. Severe psychological disorders – Mood disorders, psychosis

SOCIOLOGY (PART – B)

A-Introduction
1. Meaning-Definition and scope of Sociology
2. Its relationship with Anthropology, Psychology, Social Psychology, and ethics.
3. Methods of Sociology-case study, Social Survey, Questionnaire, interview, and opinion poll methods
4.Importance of its study with special reference to health care professionals.

B-Social Factors in Health and Disease:
1.The meaning of Social Factors. 2. The role of social factors and illness.

C-Socialization:
1. Meaning and nature of Socialization.
2. Primary, Secondary, and Anticipatory Socialization.
3. Agencies of Socialization.

D. Social Groups:
1. Concepts of social groups.
2. Influence of formal and informal groups on health and sickness.
3. The roll of primary groups and secondary groups in the hospital and rehabilitation settings.

E- Family:
1. The family - Meaning and definition, Functions
2. Changing family Patterns
3. Influence of family on the individual health, family, and nutrition.
4. The effects of sickness on family and psychosomatic disease and their importance to Physiotherapy

F-Community:
1. Rural community – Meaning and features – Health hazards of rural population
2. Urban community – Meaning and features – Health hazards of urban population

G-Culture and Health:
1. Concept of culture
2. Cultures and Behavior
3. Cultural meaning of sickness
4. Culture and health disorders

H-Social change:
1. Meaning of social changes & Factors of social change.
2. Human adaptation and social change.
3. Social change and stress.

4. Social and deviance.
5. Social change and health Program.
6. The role of social planning in the improvement of health and in rehabilitation.

I-Social problems of disabled:
Consequences of the following social problems in relation to sickness and Disability, remedies to prevent these problems -
1. Population explosion.
2. Poverty and unemployment.
3. Beggary.
4. Juvenile delinquency.
5. Prostitution.
6. Alcoholism.
7. Problems of women in employment.

J-Social security: Social security and social legislation in relation to the Disabled.

K-Social worker: Meaning of social work; the role of a medical social worker.

FUNDAMENTALS OF BIOMECHANICS AND EXERCISE THERAPY

COURSE CODE: BPT 104

Course Objective:

On completion of the course the student can:

- Understand the basic principles of biomechanics.
- Understand the basic principles of exercise therapy and its effects.

Course Contents:

Module I: Mechanics
Definition of mechanics and Biomechanics

Module II: Force
Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pull of muscle.

Module III: Momentum
Principles and practical application

Module IV: Friction

Module V: Gravity
Definition, line of gravity, Centre of gravity.

Module VI Equilibrium
Supporting base, types, and stability of equilibrium Energy work and power
Energy (potential and kinetic), work and power

Module VII; Levers
Definition, function, classification, and application of levers in physiotherapy & order of levers with example of lever in human body.
Pulleys, System of pulleys, types, and application

Module VIII: Elasticity
Definition, stress, strain, HOOKE'S Law, Springs
Properties of springs, springs in series and parallel, elastic materials in use, Thera bands

Module IX: Aims and scope of various biomechanical modalities.
Shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine,

ankle exerciser, balancing board, springs, weights etc.

Module X: Hydrostatics and Hydrodynamics
Specific gravity, Hydrostatic pressure, Archimedes Principle, Properties of water, and other liquids, Buoyancy law of floatation, factors determining up thrust, and effect of buoyancy on movements performed in water. Equilibrium of a floating body, Bernoulli's theorem.

Module XI: Normal Posture
definition & description, static and dynamic, alignments of various joints, centre of gravity, planes & muscular moments, and Analysis of posture

Module XII Movements
Anatomical definition and description, Movements, and exercise as therapeutic modality and their effects, Physiological reaction of exercise

Module XIII Traction
Rationale, Technique, indications & contra-indications

Module XIV Normal Gait
definition & description, alignments, centre of gravity during gait cycle, planes & muscle acting mechanisms, pattern, characteristics Normal Gait cycle, time & distance parameters, & determinants of Gait

Module XV: Soft tissue manipulation
History, definition, types and their rationale, general effects, local effects of individual manipulation (physiological effects) and uses, contra-indications and techniques of application.

Module XVI: Starting positions.
Description and muscle work, Importance of fundamental and derived types, Effects, and uses of individual positions

Text & References:

- The Principles of Exercise Therapy, Dena Gardiner
- Practical Exercise Therapy, Hollis, Margaret & Phylfletcher cook
- Therapeutics Exercise (Foundation & Technique), Colby & Kisner
- Tidy's Physiotherapy, Thomson Eal

FUNDAMENTALS OF BIOMECHANICS AND EXERCISE THERAPY PRACTICAL

COURSE CODE: BPT 104

- Demonstration of biomechanical principles
- Study of structure, function & application of various biomechanical modalities: Shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine
- Ankle exerciser, balancing board
- Springs, tension bands, weights
- Hydrotherapy equipment
- Suspension equipment and components
- Study of structure, function, and application of suspensions
- Demonstration and practice of starting and derived positions
- Demonstration and practice of soft tissue manipulation

PRINCIPLES OF BIOELECTRICAL MODALITIES

COURSE CODE: BPT 105

Course Objective:

- Demonstration of Bioelectrical principles.
- Demonstration of electrotherapy instruments, principles of their functioning, usage, and safety implications for human beings. This course will enable the student to understand the basic electricity, electronics, equipment for use in physiotherapy and their application in Electrotherapy.

Course Contents:

Module I: Fundamentals of Electricity & Magnetism

1. DC Currents -Modern concept of electricity: fundamental electric charges (proton and electron), bound and free electrons, free electrons, and current, static electric charge, charging of an object potential and capacitance, potential difference and EMF
2. AC currents: Sinusoidal wave from, frequency, wavelength, Amplitude, and phase of a sine wave, Average & RMS value of a sine wave
3. Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm's law, resistances in series and parallel

Module II: Capacitors:

4.Electric field around a capacitor, charging and discharging a capacitor, types of capacitors with application of each in Physiotherapy department
5. Rheostat: series and shunt Rheostat with application of each in the Physiotherapy Department

Module III: Effects of electric Current:

6.Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention.

Module IV Magnetism:

7. Magnetic - non-magnetic substances and their properties, properties of magnet, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism, magnetic effects of electric current, Electromagnetic induction, Lenz's law, Inductor and Inductance types of inductors, reactance and impedance.

Module V: Thermionic Valves:

8.Thermionic emission, Diode and Triode valves and their characteristics, construction, and application of Cathode Ray Oscilloscope

Module VI Semiconductor Devices:

9.Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices. Basing of Diode and their characteristics, Light Emitting Diodes, integrated circuits

Module VII Electronic Circuits:

10.Rectifiers & smoothing circuits, Oscillators - Sinusoidal and non-sinusoidal Types

Module VIII A.C. AND D.C. meters:

11.Functions and applications of Ammeter and volt meters, Ohmmeters, Wheat stone bridge

Module IX Introduction to Therapeutic Energies

12.Thermal, Mechanical, Electrical, Electromagnetic and magnetic - Definition, description, physiological effects, pathological effects and dangers

Module X Biomedical Instrumentation for Physical Therapy:

13.Brief description of generation, circuit diagrams and testing

Low frequency currents, Direct currents, Medium frequency currents
Short wave Diathermy-continuous and pulsed
Microwave Diathermy
Ultrasound
Actino-therapy - Infrared, UVR and Lasers
Paraffin wax bath, hydrocollator, cold packs

PRINCIPLES OF BIOELECTRICAL MODALITIES

COURSE CODE: BPT 105

- Demonstration of Bioelectrical principles
- Demonstration of electrotherapy instruments used in physiotherapy, principles of their functioning, usage and safety implications for human beings.
- Heat therapy – wax bath, hydro-collator, steam bath, cold pack
- Deep heat therapy – short wave and microwave diathermy
- Ultrasound therapy
- Light therapy – infra red, ultraviolet, lasers
- Therapeutic currents
- TENS, Interferential therapy, muscle stimulator

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SYLLABUS

BACHELOR OF PHYSIOTHERAPY

BATCH (2015-2019)

SECOND YEAR

S. No.	Course Code	Subject	Periods			Yearly Credit Units	Evaluation scheme		
			L	T	P/S		Internal	External	Total
1	BPT 201	Pathology and Microbiology	2	-	-	4	20	80	100
2	BPT 202	Pharmacology	2	-	-	4	20	80	100
3	BPT 203	Medicine and Paediatrics	2	-	-	4	20	80	100
4	BPT 204	General Surgery and Obstetrics& Gynaecology	3	-	-	6	20	80	100
5	BPT 205	Exercise Therapy	4	-	-	8	20	80	100
6	BPT206	Electro Therapy	4	-	-	8	20	80	100
7	BPT 221	Exercise Therapy (P)	-	-	4	8	20	80	100
8	BPT 222	Electro Therapy (P)	-	-	4	8	20	80	100
9	BPT 223	Orientation to Clinical*	-	-	*		20	80	100#
		Total	**17**	**-**	**8**	**50**	**180**	**720**	**900**

***The student is required to undergo clinical training for 4 hours/two days a week**

 # Evaluation to be conducted jointly by both Internal and External Examination

PATHOLOGY & MICROBIOLOGY

Course Code: BPT 201 **Credit Units: 02**

Course Objectives:

The course is designed to help students understand the concept of:
The deviations in the structure and functions of tissues and body organs when diseased.
The nature of disease, its causes, development, and consequences.
To introduce the students to the basic aspects of microbiology and pathology.

PATHOLOGY

Course Contents/Syllabus:

Module I: GENERAL PATHOLOGY

- Introduction to Pathology.
- Inflammation – General morphology, types, phenomenon of acute inflammation.
- Tissue repair – Wound healing, fracture, skin, nerves, muscles
- Cell Injury – Degeneration, Physical and Chemical irritants, Ionizing radiations, Cellulites.
- Disturbance of circulation – oedema, thrombosis, infarction, embolism.
- Necrosis, Gangrene
- Growth and its disorders – atrophy and hypertrophy (pseudo).
- Cellular ageing
- Tumours – definitions, classification, characteristics of being and malignant tumours, aetiology and spread of tumours, systemic effects.
- Infection – Acute, chronic, including AIDS.
- Immunity and Hypersensitivity

Module II: SYSTEMIC PATHOLOGY

- Hematopoietic system: Anaemia, definition, classification, aetiology, lab investigations, blood picture; Haemorrhagic disorders – causes and classification (haemophilia).
- Cardiovascular System: Rheumatic Heart diseases, Myocardial infarction, Atherosclerosis and other disease of blood vessels – TAO, Buerger's diseases, Thrombophlebitis Congenital Heart diseases.
- Respiratory System: Pneumonia, Bronchitis, Bronchiectasis, Asthma, Emphysema, Tuberculosis and Carcinoma of Lungs Occupational Lung Diseases.
- Central Nervous System: Meningitis, Encephalitis, Cerebral Haemorrhage, Cerebro-vascular Accident, Brief outline of CNS Tumours.
- Alimentary System: Peptic Ulcer Ulcerative lesions of intestine.
- Hepato-Biliary System: Hepatitis, Cirrhosis.
- Lymphatic System: Cholecystitis, Cholelithiasis, Lymphadenitis, Tumours.
- Urinary System: Nephritis, Glomerular Nephritis, Nephrotic Syndrome.
- Skin: Scleroderma, Psoriasis, Autoimmune disorders.
- Endocrine System: Thyroid – Thyroiditis and Thyroid tumours, Diabetes mellitus.
- Peripheral Nervous System: Neuritis, Neuralgia, GBS, Neuropathies.
- Musculoskeletal System: Poliomyelitis, Myopathies, Volkmann's Ischaemic contracture, Osteomyelitis, Osteoarthritis, Septic, Arthritis, Gout, Osteomalacia, Bone Tumours like Giant

Cell tumour, Osteosarcoma, Ewing's, Hemarthrosis.

Text Reading:

- Robbin's Basic Pathology, Kumar Vijay & Cotron
- Robbin's Pathology with CD Rom(E), Ennaneul Robin et at

MICROBIOLOGY

Course Contents/Syllabus- Theory:

Module I
Introduction and Historical Perspective
Discovery of microbial world and Golden era of Microbiology,
Scope of Microbiology.
Microbial nutrition.
Culture media.
Concept of Pure culture.
Sterilization.
Microscopy.

Module II
Diversity of Microbes:
Overview of viruses, bacteria, archaea, fungi, protozoa, algae, understanding microbial diversity in environment.
Structure and Function of Prokaryotic Cells: Cell walls, cell membranes, flagella and pili, capsules, cell inclusions, endospores, ribosomes, nucleoid, plasmids.

Module III
Microbial Growth:
Definition of growth, growth curve, measurement of growth, continuous culture; effect of environmental factors on growth.

Module IV
Medical Microbiology
Microorganisms associated with humans.
Microbial virulence and pathogenesis.
Infectious disease transmission.
Microbial diseases: Bacterial Diseases (Cholera, Tetanus).
Viral diseases (Poliomyelitis, AIDS).

Text& References:

- Prescott, Harley and Klein's Microbiology, Willey, Sherwood, Woolverton, 8th edition, 2011, McGraw ISBN-13: 978-0073302089.
- Microbiology An Introduction, Tortora, Funke and Chase, 9th edition, 2006, Benjamin Cummings ISBN 13: 9780321733603.

PHARMACOLOGY

Course Code: BPT 202 **Credit Units: 02**

Course Objectives:
The course is designed to help students understand the concept of:
Pharmaco-kinetics, Pharmaco-dynamics.
Usage of common drugs with (indications, contraindications, side effects)
The drug actions that may affect the physical therapy treatment.
Note: Course is not prescription oriented.

Course Contents/Syllabus:
Module I: General Pharmacology

- Introduction & general concepts
- Pharmaco-kinetics (routes of administration, metabolism & elimination)
- Pharmaco-dynamics (mechanism of drug action, therapeutic & side effects, toxicity)

Module II: **Central Nervous System**

- Anaesthetic agents- uses, side effects and interaction with physical therapy.
- Sedatives and hypnotics – use, side effects and interaction with physical therapy.
- Anti-Epileptic drugs – uses, side effects and interaction with physical therapy.
- Analgesics – uses, side effects and interaction with physical therapy.
- Anti-inflammatory drugs – uses, side effects and interaction with physical therapy.
- Psychotherapeutic agents – uses, side effects and interaction with physical therapy.
- Alcoholism and drug dependence and interaction with physical therapy
- Therapeutic agents used for movement disorders – uses, side effects and interaction with physical therapy.

Module III: Autonomic Nervous System

- Brief Outline of Sympathetic – parasympathetic nervous system
- Therapeutic agents – uses, effects and interaction with physical therapy.

Module IV: Cardio-vascular System

- Therapeutic agents (classification, effects on cardio-vascular system, uses & adverse reactions)
- Drugs used in cardiac failure, Hypertension & arrhythmias and interaction with physical therapy.
- Drug therapy in vascular disease & ischemia and interaction with physical therapy.

Module V: Respiratory system (brief description only)
Therapeutic agents – uses, side effects and interaction with physical therapy.

Module VI: Glucocorticoids & Thyroxin
Uses, side effects and interaction with physical therapy (brief description only)

Module VII: Diabetes mellitus (brief description only)

Drug therapy and its interaction with physical therapy.

Module VIII: Gastrointestinal system (brief description only)
Therapeutic agents in Peptic ulcer, uses, side effects and interaction with physical therapy

Module IX: Geriatrics (brief description only)

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

Module X: Drug Therapy for Infection

Antibiotics, Antitubercular Drugs and Ant leprosy drugs.

Module XI: Peripheral Nervous System

Skeletal Muscle Relaxants
Local Anaesthetics

Text & References:
- Essentials of Medical Pharmacology, K.D. Tripathi
- Pharmacology & Pharmaco theraperetics, Satokar, R.S. et al

MEDICINE & PEDIATRICS

Course Code: BPT203 **Credit Units: 02**

Course Objectives:
The course is designed to help students understand the concept of:

- The subject of medicine, and the medical patient and a paediatric patient.
- The implications of medical condition in physical therapy
- Clinical presentation, management and prevention of paediatric disorders and the diseases affecting the various system of the body.
- Goals of medical treatment and surgical procedures for diseases.
- The limitations imposed by the diseases on any therapy that may be prescribed.
- Growth and development of a child and Immunization Programme.

Evaluate a Paediatric patient and its special needs in relation to physical therapy.

MEDICINE

Module I: Introduction

- Brief outline of subject of medicine, a medical patient, common signs & symptoms of disease.
- Clinical approach to medical patient
-

Module II: Cardio-vascular System

- Manifestations of heart & vascular disease & general principle of diagnosis.
- Brief description of following diseases along with outline of management.
- Cardiac failure
- Rheumatic heart disease
- Congenital heart disease (ASD, VSD, PDA)
- Ischaemic heart disease
- Hypertension
- Infective endocarditis
- Atherosclerosis
- Deep vein thrombosis
- Valvular Heart Disease

Module III: Diseases of connective tissues

- Brief description of manifestations along with outline of management of common connective tissues, joints & bone diseases
- Osteoarthritis
- Rheumatoid arthritis
- Psoriatic arthritis
- Spondylo-arthritis
- SLE
- Polymyositis
- Osteoporosis
- Osteomalacia & rickets
- Gout

Module IV: Diseases of the blood

- Brief description of manifestations along with outline of management of common blood diseases
- Anaemia
- Leukaemia

- Coagulopathy

Module V: Diseases of skin

- Brief description of manifestations along with outline of management of common skin diseases
- Infections (scabies, pediculosis, taeniasis, impetigo) & psoriasis.
-

Module VI: Geriatrics

- Brief outline of ageing, manifestations of diseases in old people.
- General principles of management
- Implications of ageing in physical therapy
-

Module VII: Endocrine Diseases

Diabetes, Thyroid Disorders and Adrenal Disorders.

Module VIII: Respiratory System

Brief description of following diseases, manifestations, general principles of diagnosis along with outline of management

- Obstructive Pulmonary diseases (Bronchial Asthma, COPD)
- Pulmonary infections (Pneumonia, Bronchitis, Lung abscess, Tuberculosis)
- Respiratory failure
- Occupational lung disease
- Pleurisy
- Pulmonary embolism.

Module IX: Alimentary tract

Brief description of manifestations of alimentary tract disease & general principle of diagnosis & outline of management of following diseases

- Peptic ulcer disease, constipation
- Common infections of small & large intestine.

Module X: Liver Diseases (In Brief)

Brief description and management

- Hepatitis
- Jaundice.

PEDIATRICS

Module I: Growth and development of child

- Motor, mental, social (in detail)
- Normal and pathological

Module II: Congenital disorders

Types, brief description of common inherited diseases with outline of management
Neurological
Musculoskeletal

Module III: Infectious Diseases (In Brief)

Brief description of concept of infection
Types of infection
Classification & manifestation of infection
General principle of management
Common infectious diseases in children (In Brief)

Brief description of following infectious diseases along with outline of management

- Tetanus
- Diphtheria
- Mycobacterial (Tuberculosis, Leprosy)
- Measles
- Chicken pox
- Gastroenteritis
- HIV
- Malaria
- Poliomyelitis

Module IV: Immunization programmes

Introduction
WHO schedule.
Different vaccinations
Rationale
Special consideration to various disease eradication programmes like Pulse-Polio.

Module V: Nutrition

Nutritional requirements
Malnutrition syndrome (Protein, energy Malnutrition-Kwashiorkor, Marasmus)
Management in brief
Nutritional & Metabolic Diseases- Brief description of following diseases along with outline of management of Diabetes Mellitus, Vitamins & Minerals Deficiencies, Obesity.

Module VI: Clinical presentation, management & prevention (in detail)

Cerebral palsy
Poliomyelitis
Muscular dystrophy
Spina bifida
RHD

Module VII: Acute CNS infections

Clinical presentation, complications and management
Bacterial and tubercular infections in brief.

Text &References:

- Davidson's Principles & Practice of Medicine, Haslett Et al.
- API Textbook of Medicine, Siddharth Shah.
- Harrison's Principles of Internal Medicine, Edited by Dennia L. Kasper Et al.
- Textbook of Medicine (vol. I & II), K.V. Krishna Das.
- Ghai Essential Pediatrics, O.P. Ghai, Piyush Gupta & VK Paul.

GENERAL SURGERY AND OBSTERICS & GYNEOCOLOGY

Course Code: BPT 204 **Credit Units: 03**

Course Objectives:
The course is designed to help students understand the concept of:

- Common surgical conditions & surgical procedures.
- Implications of surgical conditions and procedures on physical therapy
- Various incisions used in different surgeries and their post operative complications.
- The intervention for post operative complications.
- Common gynaecological conditions and procedures (in brief)
- Common Obstetrical conditions and procedures (in brief)
- Implications of gynaecological and Obstetrical conditions and procedures on physical therapy

GENERAL SURGERY

Module I: Introduction

- Surgery, surgical patient, principles of surgical examination (Brief description)

Module II: Anaesthesia

- Brief description of events of General Anaesthesia, potential complications & outline of management

Module III: Wounds

- Brief description of various types of wounds, scars, ulcers, boils etc

Module IV: Burns

- Causes, classification, complications, conservative management of patients
- Management of burns & wounds and scars.

Module V: Nutrition

- Brief outline of nutritional support (Blood & Fluids)

Module VI: Vascular Disorders

- Arterial occlusion, dilatations, arteritis, small vessel abnormalities (brief description of clinical features, complication & management)
- Gangrene – classification, brief clinical features & management
- Amputations – causes & types (brief outline only).
- Superficial & deep vein thrombosis – pathogenesis, prevention & management
- Lymphoedema – brief outline of causes, clinical features & management

Module VII: Plastic surgery

- General principles of plastic surgery and postoperative management (In Brief)

Module VIII: Nerve Injuries

- Causes, clinical features of various types of Cranial & peripheral nerve injuries, complications & management

Module IX: Abdominal wall

Brief surgical anatomy
Brief description of various types of abdominal incisions, resultant potential complications and management of incision complications in various abdominal surgeries.
Brief description of causes, clinical presentation and management of various types of hernias.

Module X: Thorax

Brief surgical anatomy
Chest injuries – classification, causes, clinical features, complications & management
Pulmonary resection – causes, outline of management to improve functional lung capacity.
Pleura – brief description of clinical presentation, complications, and management of pleural conditions (pneumothorax, hydropneumothorax, hemopneumothorax and pleurisy.)
Heart: - brief description of various surgical heart diseases with respect to clinical presentation, complications, and management (valvular heart disease, congenital heart disease – e.g. ASD, VSD, PDA, RHD, Tetralogy of Fallot. Ischaemic heart disease – brief description, clinical presentation, complications and management. Outline of postoperative complications in cardiac surgery and their management, restoration of functional capacity.

Module XI: Brief description of principles of cardio-pulmonary resuscitation

Brief description of principles of cardio-pulmonary resuscitation

Module XII: Cranium & Spinal cord

Brief surgical anatomy
Head injuries & Spinal cord injuries – classification, clinical features, complications & management. Brief outline of other intra-cranial disorders with clinical features, complications & management (Abscess, space occupying lesions, hydrocephalus, vascular malformation, spina bifida, cervical & lumbar disc lesions)

OBSTERICS & GYNEOCOLOGY

Module I: Female reproductive System

Brief Anatomy
Basic principles of clinical examination, investigation, diagnosis, prognosis of female reproductive system disorders, Menstruation and its disorders.

Module II: Obstetrics

Physiological changes during pregnancy
Labour, stages of labour & delivery
Musculoskeletal problems in an obstetric/gynaecological patient, management
Prenatal, natal and post-natal care.

Module III: Gynaecological Conditions

Pelvic inflammatory disease
Prolapse uterus, urinary incontinence, causes & management.
Tumour of the reproductive systems, management
Surgical consideration in obstetrics and gynaecology. - Caesarean Section, hysterectomy etc.

Module IV: Abortion and birth control

Abortion and birth control

EXERCISE THERAPY

Course Code: BPT 205 **Credit Units: 4**

Course Objectives:

The course is designed to help students understand the concept of:

- Skill of assessment of isolated and group muscle strength subjectively and objectively.
- Analysis of normal musculoskeletal movements during gait and daily living activities.
- Skill of joint mobilization and muscle re-education.
- Techniques of walking aids

Module I: **Active movements**

Free, assisted and resisted.
Indication, contraindications, and advantages
Techniques of various types of active exercises
Home programs of strengthening of various muscle group including progressive resisted exercises.
Special emphasis on: Shoulder abductors & flexors, Triceps brachii, Hip abductors & flexors, quadriceps femoris, Abdominal and back extensors.

Module II: Passive movements

Definition
Relaxed, forced, and stretching type.
Indications, contraindications and advantages
Techniques of various passive movements.
Muscle Stretching
Special emphasis on stretching of Pectoralis major, biceps brachii, triceps brachii, long flexors of fingers. Rectus femoris, llio-tibial band, gastrocnemius and soleus, hamstrings, hip adductors, ilio-psoas, Sternocleidomastoid.

Module III: Goniometry

Types of Goniometers
Introduction
Measurement of various joints range in normal and disease condition
Different techniques of goniometry
Limb-length measurements.

Module IV: Hydrotherapy

History and introduction, indication and contraindication dangers and precautions, hydrotherapy regimes of exercises, hydrotherapy exercise for all age groups, different types of pools and baths.

Module V: Relaxation

Description of fatigue and spasm
General causes, signs and symptoms of fatigue
Techniques of Relaxation – local and General with indication
Rationale f relaxation Techniques.

Module VI: Yoga

Yogasanas and Pranayam
Physiology and therapeutic principles of yoga
Yogasana for physical culture
Relaxation and meditation
Application of yogasana in physical fitness, flexibility
Therapeutic application of yoga
Yoga a holistic approach

Module VII: Manual Muscle Testing

Concept, introduction, significance and limitations.
Grade systems.
Techniques of Muscle testing.
Emphasis on skills to grade upper limb, lower limb, neck and trunk muscles including trick movement.

Module VIII: Joint Mobility

Joint range, stiffness, range and limitations.
Accessory movements –glides, traction and approximation.
Mobilization of peripheral joints in detail.

Module IX: Re-education of muscles

Concept, technique, spatial and temporal summation.
Various re-education techniques and facilitating methods.
Progressive strengthening of various muscle groups in Grade-I-Grade V.
Muscle strengthening technique.
PNF.

Module X: Suspension therapy

Principles of suspension, types, components of suspension apparatus, effects and uses of suspension therapy and their therapeutic applications

Module XI: Walking Aids

Cane-Types, parts, measurement & gait patterns.
Crutch:
Description of crutch –components, classification.
Crutch measurements.
Crutch use –Preparation, Training, counselling,
Crutch gaits –types & significance,
Crutch complications –Palsy, dependency etc.
Walkers-Types, parts, measurement & gait patterns.
Sitting & stair-climbing with walking aids.

Module XII: Balance and Co-ordination

Balance –static and dynamic.
Incoordination: LMNL & UMNL, cerebellar lesion, loss of Kinaesthetic sense (Tabes dorsalis, leprosy, syringomyelia).
Re-education of balance and coordination: PNF and Frenkel's exercises.

ELECTROTHERAPY

Course Code: BPT 206 **Credit Units: 4**

Course Objectives:

The course is designed to help students understand the concept of:

- Justification of use and therapeutic effects of the various electrotherapeutic modalities
- Different techniques of applications of various electrotherapeutic modalities
- Indications and contraindications of the various electrotherapeutic modalities
- Precautions and Potential harmful effects of various electrotherapeutic modalities
- Dosimetry of various electrotherapeutic modalities

Module I: Heating Modalities

Hydrocollator Unit - Therapeutic effects and Uses, Techniques and Applications, Indications, Contraindications, Precautions and Potential harmful and dosimetry.

Paraffin wax bath - Therapeutic effects and Uses, Techniques and Applications, Indications, Contraindications, Precautions and Potential harmful and dosimetry.

Whirlpool bath - Therapeutic effects and Uses, Techniques and Applications, Indications, Contraindications, Precautions and Potential harmful and dosimetry.

Module II: Infrared Therapy

Therapeutic effects and uses.
Techniques of application
Indications, contraindications
precautions and Potential harmful effects
Dosimetry

Module III: Cryotherapy

Therapeutic effects and uses.
Techniques of application
Indications, contraindications
precautions and Potential harmful effects
Dosimetry

Module IV: Ultrasonic Therapy

Therapeutic effects and uses.
Techniques of application
Indications, contraindications
precautions and Potential harmful effects
Dosimetry

Module V: Traction Instruments

Rationale
Therapeutic effects and uses.
Techniques of application
Indications, contraindications
precautions and Potential harmful effects
Dosimetry

Module VI: Laser

Therapeutic effects and uses.
Techniques of application
Indications, contraindications
precautions and Potential harmful effects
Dosimetry

Module VII: Ultraviolet therapy

Therapeutic effects and uses.
Techniques of application
Indications, contraindications
precautions and Potential harmful effects
Dosimetry
Photosensitization
Sensitizers and Filters
wavelength, penetration, tolerance
Treatment application condition wise
Comparison between UVR & IR Therapy

Module VIII: Low Frequency Currents

Nerve Muscle Physiology: brief outline.

Faradic current-
Therapeutic effects and uses,
Techniques of application,
Indications, contraindications,
Precautions and Potential harmful effects,
Parameters of dosimetry,
Group muscle stimulation,
Faradic footbath,
Faradism under pressure and muscle re-education.

Module IX: Galvanic current

Therapeutic effects and uses,
Techniques of application,
Indications, contraindications,
Precautions and Potential harmful effects,
Parameters of dosimetry.

Module X: Iontophoresis

Definition,
Principles & factors,
Therapeutic effects and uses,
Techniques of application,
Indications, contraindications,
Precautions and Potential harmful effects,
Parameters of dosimetry.

Module XI: TENS therapy

Principle of therapy,
Types,
Therapeutic effects and uses,
Techniques of application,
Indications, contraindications,
Precautions and Potential harmful effects,
Parameters of dosimetry,
Theories of pain and pain control.

Module XII: Electro – Diagnosis

S.D. Curve,
Reaction of degeneration,
Chronaxie & Rheobase,
Outline of EMG and NCV.

Module XIII: Medium Frequency currents

Interferential therapy-
Therapeutic effects and uses,
Techniques of application,
Indications, contraindications,
Precautions and Potential harmful effects,
Dosimetry.

Module XIV: High Frequency currents

Short wave Diathermy: Continuous & Pulsed
Therapeutic effects and uses,
Techniques of application - capacitor and induction methods,
Indications, contraindications,
Precautions and Potential harmful effects,
Dosimetry.

Module XV: Microwave Diathermy-

Therapeutic effects and uses,
Techniques of application - capacitor and induction methods,
Indications, contraindications,
Precautions and Potential harmful effects,
Dosimetry.

Module XVI: Advanced Electrotherapy

Computerization of modalities,
Programming of parameter,
Selection and combination of parameters,
Combined therapy – U.S. + TENS-Principles, uses, indications etc.,
Principles of Biofeedback, indications & uses,
Longwave Therapy,
Extracorporeal shockwave therapy

EXERCISE THERAPY (PRACTICAL)

Course Code: BPT 221 **Credit Units: 2**

List of Experiments:

- Demonstration of active movements of Limbs
- Demonstration of active movements of spine.
- Demonstration of passive movements of Limbs
- Demonstration of passive movements of spine.
- Demonstration of Goniometry of Limbs
- Demonstration of Goniometry of Spine
- Demonstration of relaxation techniques
- Demonstration of mechanical spinal traction
- Demonstration of posture

- Demonstration of Manual Muscle testing of Limbs
- Demonstration of Manual Muscle testing of spine
- Demonstration of mobilization of peripheral joints of upper limb
- Demonstration of mobilization of peripheral joints of lower limb
- Demonstration of PNF patterns
- Demonstration of crutch gait

- Demonstration of Frenkel's Exercises

ELECTRO THERAPY (PRACTICAL)

Course Code: BPT 222 **Credit Units: 2**

List of Experiments:

- Demonstration of various accessories used in electrotherapy laboratory.
- Demonstration and practice of therapeutic application of Hydrocollator
- Demonstration and practice of therapeutic application of Wax bath
- Demonstration and practice of therapeutic application of Whirlpool bath
- Demonstration and practice of therapeutic application of Infra-red
- Demonstration and practice of therapeutic application of Cold Packs
- Demonstration and practice of therapeutic application of Ultrasound
- Demonstration and practice of therapeutic application of Electrical Traction.
- Demonstration and practice of therapeutic application of Lasers
- Demonstration and practice of therapeutic application of Ultraviolet Radiation Lamp

- Demonstration and practice of various motor point stimulations.
- Demonstration and practice of therapeutic application of Faradic Currents.
- Demonstration and practice of therapeutic application of Interrupted Galvanic Currents.
- Demonstration and practice of therapeutic application of TENS.
- Demonstration and practice of SD curves plotting, Chronaxie and Rheobase.
- Demonstration and practice of therapeutic application of Interferential currents.
- Demonstration and practice of therapeutic application of Short-wave diathermy.
- Demonstration and practice of therapeutic application of Microwave Diathermy.

ORIENTATION TO CLINICALS

Course Code: BPT 223 **Credit Units: 04**

Course Objectives: This course aims to inculcate the following in the student:

- Awareness of the Health care system in Hospital
- Professional behaviour appropriate to physiotherapy
- Operate within individual strength and limitations.
- Communicate effectively with the client.
- Develop critical thinking ability in the students and an appropriate level of physiotherapy skill to carry out physiotherapy treatment and manage the presenting problem of the patient.

Course Contents/Syllabus:

Module I: ORIENTATION

The student will be posted in the hospitals (department of Physiotherapy) & he/she will use clinical reasoning skills to assess, diagnosis, examine, interpret findings, and provide Physiotherapy treatment to patients visiting the department.
History, Assessment & Examination, should be clearly documented and presented in the classroom.
This practical is patient oriented.

***The student is required to undergo clinical training for 4 hours/two days a week (450hrs)**

AIDS & APPLIANCES
The student will be acquainted with the equipment used for various exercises in the physiotherapy department and he/she will learn how to train the patients using various aids and appliances like walkers, crutches, cane, parallel bars.

 # Evaluation to be conducted jointly by both Internal and External Examination

Government of NCT of Delhi

Delhi Pharmaceutical Sciences and Research University

Sector-3, Pushp Vihar, New Delhi-17

Revised Syllabus

For

Bachelor of Physiotherapy

(3rd & 4th Year)

Delhi Pharmaceutical Sciences & Research University, New Delhi
BPT 3rd Year (Batch 2015)

		Theory (hours)	Practical (hours)	Total (hours)	Weekly class hours
BPT 301	Biomechanics & Kinesiology	**100**	**60**	**160**	**4**
BPT 302	Clinical Orthopedics	**100**	**60**	**160**	**4**
BPT 303	Clinical Neurology & Neurosurgery	**100**	**60**	**160**	**3**
BPT 304	Pediatrics & Geriatrics	**100**	**-**	**100**	**2**
BPT 305	Physiotherapy in General Medical & Surgical Conditions	**100**	**80**	**180**	**4**
BPT 306	Physiotherapy in Orthopedic Conditions	**120**	**120**	**240**	**4**
BPT 307	Research Methodology & Biostatistics	**100**	**-**	**100**	**2**
BPT 308	Radiodiagnosis and Radiology (Non University)	**50**	**-**	**50**	**1**
BPT 309	First Aid & Emergency (non University)	**50**		**50**	**1**
	Clinical Training		**350**	**350**	**15**
	Total hours	**820**	**730**	**1550**	**40**

Scheme of Examination (Marks Distribution) - 3rd Year

Code No.	Course Titles	Theory		Total	Practical		Total
		M.M. Annual	M. M. Sessional		M.M. Annual	M. M. Sessional	
BPT 301	Biomechanics & Kinesiology	70	30	100	70	30	100
BPT 302	Clinical Orthopedics	70	30	100	70	30	100
BPT 303	Clinical Neurology & Neurosurgery	70	30	100	70	30	100
BPT 304	Pediatrics & Geriatrics	70	30	100	-	-	-
BPT 305	Physiotherapy in General Medical & Surgical Conditions	70	30	100	70	30	100
BPT 306	Physiotherapy in Orthopedic Conditions	70	30	100	70	30	100
BPT 307	Research Methodology & Biostatistics	70	30	100	-	-	-
	Total			700			500

BPT 4th Year (Batch 2015)

Sr no.	Name of Subject	Hours			
		Theory (hours)	**Practical (hours)**	**Total (hours)**	**Weekly class hours**
BPT 401	Physiotherapy in Neurological Conditions	**120**	**120**	**240**	**6**
BPT 402	Physiotherapy in Cardiothoracic conditions	**120**	**120**	**240**	**6**
BPT 403	Physiotherapy in sports	**100**	**80**	**180**	**6**
BPT 404	Community Rehabilitation & Bioengineering	**100**	**100**	**200**	**5**
BPT 405	Organisation & Administration: Law & Ethics	**60**	**-**	**60**	**1**
BPT 406	Research Project		**200**	**200**	
BPT 407	Computer applications (non University)	**50**		**50**	
	Clinical Training		**350**	**350**	**15**
	Total hours	**600**	**970**	**1570**	**40**

Scheme of Examination (Marks Distribution) – 4th Year

Code No.	Course Titles	Theory		Total	Practical		Total
		M.M. Annual	**M. M. Sessional**		**M.M. Annual**	**M. M. Sessional**	
BPT 401	Physiotherapy in Neurological Conditions	70	30	100	70	30	100
BPT 402	Physiotherapy in Cardiothoracic conditions	70	30	100	70	30	100
BPT 403	Physiotherapy in sports	70	30	100	70	30	100
BPT 404	Community Rehabilitation & Bioengineering	70	30	100	70	30	100
BPT 405	Organisation & Administration: Law & Ethics	70	30	100			
BPT 406	Research Project			200			
	Total			700			400

Third Year
BIOMECHANICS & KINESIOLOGY
Paper-1

Code BPT-301

Subject Description:
Kinesiology involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of musculoskeletal system. Students are taught to understand the various quantitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait are also included.

Module I MECHANICS

1. Describe types of motion planes of motion direction of motion & quantity of motion.
2. Define forces, force vectors, components of forces.
3. Describe gravity line of human body, stability & centre of gravity relocation, reaction forces.
4. Describe Newton Law of reaction, equilibrium- law of inertia & establishing equilibrium of an object.
5. Describe objects in motion, law of acceleration, joint distraction in a linear force system.
6. Describe concurrent force system: composition of forces, muscle action lines, total muscle force vector, divergent, muscle pulls, anatomic pulleys.
7. Describe parallel force systems: First class levers, second levers, third class levers-torque, and mechanical advantage.
8. Define moment arm. Moment arm of a muscle force. Moment arm of gravity & anatomic pulleys.
9. Describe equilibrium of a lever.

Module II JOINT STRUCTURE AND FUNCTION

1. Materials used in human joint construction. Describe the basic principles of a human joint design.
2. Describe the general properties of connective tissue.
3. Classification of joints.
4. Describe the tissues present in human joints; dense fibrous tissue,
5. Describe about synarthrosis, diarthrosis, amphithrosis and detailed classification of synovial joints.
6. Describe joint function, open kinematic chains and closed kinematic chains, range of motion.
7. Describe the effects of injury, ageing, immobilization etc. on the joints.
8. Identify the plane and axis of motion for any given motion at a specific joint (shoulder, elbow, wrist, knee, hip and ankle).

Module III MUSCLE STRUCTURE AND FUNCTION

1. Describe elements of muscle structure, composition of muscle fiber, motor unit, motor point, types of muscle fibers, muscle fibers size, arrangement and number, muscle tension, length -tension relationship, mobility and stability function of muscles.
2. Describes muscle contraction, speed and angular velocity, applied load, voluntary control, torque and isokinetic exercise.
3. Summaries factors affecting muscle tension.
4. Classify muscles-spurt and shunt muscles, tonic and phasic muscles, agonist and antagonist & synergists.
5. Factors affecting muscle function: types of joint and location of muscle attachment, number of joints, passive insufficiency, and sensory receptors.
6. Describe the following:

Order of myofibrils in sarcomere ,Alpha motor neuron, Connective tissue & development of tension in a muscle, Isokinetic exercise, Active & passive insufficiency with example, Active & passive tension, Concentric eccentric & isometric contractions, Reverse origin action, Factors affecting muscle tension, Characteristics of different fiber types motor units, The angular velocity of isometric, concentric, eccentric & isokinetic contractions.

Module IV THE VERTEBRAL COLUMN

1. Articulations, ligaments & muscles, typical & atypical vertebrae & intervertebral disc
2. Describe factors affecting stability & mobility
3. Regional structure & curves of vertebral column & function of cervical, dorsal, lumbar & sacral vertebrae.
4. Describe the muscles of the vertebral column. Flexors & extensors, rotators & lateral flexors
5. Describe the effects of injury & development deficits.
6. Mechanics of intervertebral disc
7. Motions of vertebral column
8. Lumbar- pelvic rhythm
9. Movement of ribs during rotation
10. Rotation of vertebrae in each region
11. Structure providing stability & mobility of vertebral column
12. Identification of ligaments that limit specific motions (flexion, extension, lateral flexion & rotation)
13. The effect of disease process injury or other defects in the vertebrae
14. The effects of forces acting on the structural components of vertebral column during motion & at rest.
15. The effects of an increased lumbosacral angle on the pelvis & lumbar vertebral column.

Module V THE SHOULDER COMPLEX

1. Describe the structural components of the shoulder complex including the articulating surfaces, capsular attachments and ligaments and movements of the following joints:

(i) Sternoclavicular
(ii) Acromioclavicular
(iii) Scapulothoracic
(iv) Glenohumeral

2. Describe the function of shoulder complex including dynamic stability of the glenohumeral joint, glenohumeral rhythm, scapula thoracic and glenohumeral contributions.
3. Describe the muscles of elevation (Deltoid, Supraspinatus, infraspinatus, teres major, subscapularis, upper trapezius, lower trapezius, Serratus anterior, middle trapezius and rhomboids).
4. Describe the muscles of depression, latissimus dorsi, pectorals, teres major and rhomboids.

Module VI THE ELBOW COMPLEX

1. Describe the structure of the humeroulnar and humeroradial joints including articulating surfaces, joint capsule, ligaments and muscles.
2. Describe the function of the humeroulnar and humeroradial, all joints including the axis of motion, range of motion, muscle action.
3. Describe the structure of the superior and inferior radioulnar joints.
4. Describe the function of the superior and inferior radioulnar joints.
5. Describe the mobility and stability of the elbow complex its relationship to hand and wrist.
6. Describe the effects of injury and the resistance to longitudinal compression forces to distraction forces and to medial lateral forces.

Module VII WRIST AND HAND COMPLEX

1. Describe the articular surfaces of the joint of wrist & hand complexes including radiocarpal joint, metacarpal joint, ligaments of the wrist complex & function of each, structure of fingers.
2. Accessory joint structures found in the wrist & hand complex, including the function of each.
3. Describe the structure of carpometacarpal, MCP & IP joints of thumb along with the extrinsic & intrinsic muscles.
4. The sequence of joint activity occurring from full wrist flexion to extension including the role of scaphoid, sequence of joint activity in radial & ulnar deviation from neutral.
5. The role of wrist musculature in producing wrist motion.
6. The gliding mechanism of the extrinsic wrist finger flexors. The structure of the extensor mechanism, ligaments & muscles that compose it.
7. How MCP extension, PIP joint flexion & extension, DIP joints flexion & extension occur, musculature & ligaments that produce & control them.
8. Describe the role of wrist in optimizing length- tension in the extrinsic hand muscles.

9. Describe prehension, power, cylindrical, spherical & hook grips. Precision handling, pad to pad, tip to tip & pad to side, prehension & functional position of wrist &hand.
10. Role of interosseus & lumbrical muscles at the MCP & IP joints.

Module VIII THE HIP COMPLEX

1. Describe the general features of the hip joint including the articulating surfaces on the pelvis and the femur, angulations, angle of inclination, angle of torsion, internal architecture of femur and pelvis, joint capsule, ligaments and muscles (Flexors, Extensors-One joint extensors, two extensors, Adductors, medial rotators and lateral rotators).
2. Describe the function of hip – Rotation, between pelvis, lumber spine and hip, pelvis motion, anterior posterior pelvic tilting, lumbar pelvic rhythm, lateral pelvic tilting, pelvic rotation.
3. Summarize the pelvic motions in the static erect posture.
4. Describe femoral motion.
5. Describe hip stability in erect bilateral stance, sagittal plane equilibrium and unilateral stance.
6. Describe reduction of forces with weight shifting and using a cane and deviations from normal in muscular weakness and bony abnormalities.
7. The articulating surfaces of the pelvis and femur.
8. The structure and function of ligaments of the hip joint.
9. The angle of inclination and the angle of torsion.
10. The planes and axes of the following pelvic motions and the accompanying motions at the lumbar spine and hip joints, pelvic rotation and anterior, posterior and lateral tilting of the pelvis.
11. The muscle activity that produces tilting and rotation of the pelvis.
12. Motions of the femur on the pelvis including planes and axes of rotation.
13. The structure and function of all the muscles associated with the hip joints.
14. The forces that act on the head of femur.
15. The position of greatest stability at the hip.

Module IX THE KNEE COMPLEX

1. Describe the structure of the tibiofemoral joint, articulating surfaces on femur and tibia, the menisci, joint capsule and bursa, ligaments and other supporting structures, anterior-posterior and ligaments and mediolateral stability, muscle structure, knee flexors and extensors, axes of knee complex: Mechanical axes, anatomic axis and axis of motion.
2. Describe the function of the tibiofemoral joint range of motion, flexion and extension, rotation, abduction and adduction, locking and unlocking. Function of menisci and muscle function.
3. Describe the structure & Function of the patellofemoral joint.
4. Describe the effects of injury and disease in the tibiofemoral and patellofemoral joints.
5. Motion of the femoral condyles during flexion and extension in a closed kinematic chain.

6. Motion of the tibia in flexion and extension in an open kinematics chain.
7. Draw Q angle when an illustration of the lower extremity.
8. Describe the following:
    a) The origin and insertion of all the muscles at the knee.
    b) The bursae surrounding the knee.
    c) The attachment of the ligaments of the medial compartments.
    d) Structure that contribute to the stability of the knee including dynamic and static stabilizers.
    e) The normal forces that are acting on the knee.

Module X ANKLE-FOOT COMPLEX

Describe the structure, ligaments, axis and function of the following: ankle joint, tibiofibular joints, subtalar joints, talocalcaneonavicular joints, transverse tarsal joint, tarsometatarsal joint, plantar arches, metatarsophalangeal joints, interphalangeal joints.

Define the terminology unique to the ankle foot complex, including inversion-eversion, pronation-supination, dorsiflexion, plantar flexion and adduction and abduction.

Module XI POSTURE

1. Describe the effects of gravity and indicate the location of the gravity line in the sagittal plane in optimal posture.

2. Analyze- posture with respect of the optimal alignment of joints in the anteroposterior and lateral views.

Module XII GAIT

1. The stance, swing and double support phases of gait.
2. The subdivisions of the stance and swing phases of gait.
3. The time and distance parameters of gait.

Practical

Various assessment and evaluation techniques for above mentioned should be demonstrated and practiced by the students

Reference books:

1. Practice exercise therapy – Hollis- Blackwell scientific publication
2. Muscle testing and functions – Kendall-williams and wikins.
3. Daniels and Worthingham's – Muscle testing-Hislop and Montgomery-W.B. Saunders.
4. Measurement of joint motion guide to Goniometry-Norkins and White-F.A. Davis.
5. Biomechanical principles: Frenkel Nordin
6. Joint structure and function: Norkins

Third Year
CLINICAL ORTHOPEDICS
Paper-II

Code BPT-302

Subject description :
This subject follows the basic science subjects to provide the knowledge about orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

Module I
a. Introduction to orthopedics.
b. Clinical examination, Common investigative procedures, Radiological and Imaging techniques, Inflammation and repair, Soft tissue healing.

Module II
Traumatology
Fracture: definition, types, signs and symptoms, Fracture healing, Complications of fractures, Conservative and surgical approaches, Principles of management

Subluxation/dislocations – definition, signs and symptoms, management (conservative and operative).

Module III
Fractures of Upper Limb –
Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

Fractures of clavicle and scapula, Fractures of greater tuberosity and neck of humerus, Fracture shaft of humerus, Supracondylar fracture of humerus, radial head, olecranon, and epicondyles, Side swipe injury of elbow. Fracture of forearm – monteggia, galeazzi fracture, Colle's fracture, Smith's fracture, Scaphoid fracture, Fracture of the metacarpals, Bennett's fracture, Fracture of the phalanges,

Dislocations of Upper Limb –

Mechanism of injury, clinical feature, complications, conservative management, surgical management of dislocation of shoulders and elbow.

Module IV

Fracture of Spine

Mechanism of injury, clinical feature, complications, Management of fracture of Cervical, thoracic & lumber Spine

Fracture of Pelvis

Module V

Fractures of Lower Limb

Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fractures of Femoral Neck, trochanters, Fracture shaft femur, Supracondylar fracture of femur, Fractures of the condyles of femur, Fracture patella, Fractures of tibial condyles, Both bones fracture of tibia and fibula, Pott's fracture Bimalleolar fracture, Trimalleolar fracture, Fracture calcaneum, Fracture of talus, Fracture of metatarsals, stress fractures, Fracture of phalanges.

Dislocations of Lower Limb

Mechanism of injury, clinical features, complications and management of the following dislocations of hip, patella and Knee.

Module VI

Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, and bursitis.

Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee, Cruciate injuries of knee, Medial and lateral collateral injuries of knee, Lateral ligament of ankle, Wrist sprains, Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid, tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.

Module VII

Amputations - Definition, levels of amputation of lower and upper limbs, indications, complications.

Module VIII

Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.

Congenital Deformities – CTEV, CDH, Torticollis, Scoliosis, Flat foot, Vertical talus, Hand anomalies- syndactyly, polydactyly and ectrodactyly. Arthrogryposis multiplex congenital, Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfect (fragile ossium), Cervical rib,

Acquired Deformities- Acquired Torticollis, Scoliosis, Kyphosis, Lordosis, Genu varum, Genu valgum, Genu recurvatum, Coxa vara, Pes cavus, Hallux rigidus, Hallux valgus, Hammer toe, Metatarsalgia.

Module IX

Disease of Bones and Joints: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions:

a. Infective conditions: Osteomyelitis (Acute / chronic).TB of spine and major joints like shoulder, hip, knee, ankle, elbow etc.
b. Arthritic conditions: Pyogenic arthritis. Septic arthritis, Syphilitic infection of joint.
c. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma. Enchondroma, Ewing's sarcoma. Gaint cell tumor. Multiple myeloma. Metastatic, tumors.
d. Perthes disease, and Avascular Necrosis.
e. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia, Osteoporosis

Module X

Inflammatory and Degenerative Conditions: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions:

a. Osteoarthritis. Rheumatoid arthritis, Ankylosing spondylitis, Gouty arthritis, Psoriatic arthritis, Hemophilic arthritis, charcot's joints.
b. Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

Module XI

Neuromuscular Disorders: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions:
Cerebral palsy, Poliomyelitis, Leprosy.

Module XII

Orthopedic Surgeries: Indications, Classification, Types, Principles of management of the following Surgeries: Arthrodesis, Arthroplasty, Osteotomy, External fixators, Spinal stabilization surgeries.

Practicals: Instruments used in orthopaedic surgery, Internal Fixator, External Fixator, orthopaedic Tractions, Implants, Special test & diagnostic procedure from relevant portion of theory.

Recommended Books:

1. Apley's System of Orthopaedics and Fractures by Louis Solomon, David Warwick, and Selvadurai Nayagam (2010)
2. Text book of Orthopedics.— J. Maheswari.
3. Orthopedic Principles - A Resident's Guide by David Ip (2005)
4. Campbell's Operative Orthopaedics by S. Terry Canale and James H. Beaty (2007)
5. Outline of Orthopedics. — John Crawford Adams.

Third Year
CLINICAL NEUROLOGY AND NEUROSURGERY
Paper-III

Code BPT-303

Subject Descriptions:

a) To understand clinical manifestations of Neurological and Psychological disorders
b) The rationale and implications of psychological disorders on disability
c) To understand the management of neural & psychological disorders

Section – A (Neurology)

Module -I

Nervous system: Disorders of Neurological functions in the light of Anatomy and Physiology (Brief description only) - Cerebrum, Cerebellum, Spinal Cord, Major Nerve Tracts, Motor System, Sensory System, Autonomic System, Reflexes, Communication & CSF.

Clinical examination of a neurological patient, General manifestations of nervous system disease & principles of diagnosis & management, Cranial Nerves and special senses with major emphasis on V, VII, X, XI, & XII

Module -II

Introduction, clinical features, assessment, diagnosis, medical & surgical Management of following conditions:

- Brief Description of Headache, migraine, raised intra-cranial pressure

- Disorders of cerebral circulation - ischaemia, haemorrhages (CVA), HT encephalopathy
- Demyelinating diseases (brief description) - acute disseminated encephalomyelitis,
- multiple sclerosis
- Convulsive disorders (brief description) - epilepsy (GM, PM, Psychomotor), tetany

Module -III

Metabolic and intoxication disorders (brief description) - Alcoholism, Drug addiction, heavy metals poisoning (lead, mercury, copper), Organo-phosphorous poisoning, electric shock, tetanus, botulism

Module -IV

Introduction, clinical features, assessment, diagnosis, medical & surgical Management of following conditions:

Peripheral nerve disorders: traumatic/ compression or entrapment neuropathy, polyneuritis, GB syndrome, diabetic polyneuropathy and spinal radiculopathies. Special emphasis on brachial and lumbosacral plexuses and major nerves – radial, ulnar, median, femoral, and sciatic nerve

Module -V

Extra pyramidal syndromes - Parkinson's disease, Chorea, Athetosis, Dystonia, Hemiballismus, Spasmodic Torticollis Developmental and degenerative syndromes – cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy Inflammatory conditions (brief description) – meningitis (bacterial, tubercular), viral encephalitis, syphilis, rabies

Module -VI

Introduction, clinical features, assessment, diagnosis, medical & surgical Management of following:

- Disorders of Spinal cord and Cauda Equina- spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, Neurogenic bladder and bowel disease
- Muscle disorders – Progressive muscular dystrophy, polymyositis, myasthenia gravis, floppy infant syndrome
- Autonomic nervous system (brief description)– clinical features of autonomic disorders, autonomic dysreflexia, autonomic nervous system and pain

Module -VII

Introduction, Indications and Complications of following Neuro surgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation.

Psychiatry

Module -VIII

(Brief outline only)

Principles of psychiatric examination

Modalities of psychiatric treatment

Psychiatric illness and physical therapy link
Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -
i. Anxiety neurosis
ii. Depression
iii. Obsessive compulsive neurosis
iv. Psychosis
v. Maniac-depressive psychosis
vi. Drug induced psychosis
vii. Post-traumatic stress disorder
viii. Psychosomatic reactions: Stress and Health, theories of Stress – Illness

Module -IX
Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illness
i Organic brain syndrome
ii. Dementia
iii. Drug dependence and alcoholism
iv. Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue
v. Multiple Personality & Depersonalization disorder

Module -X
i Child psychiatry: Brief descriptions of manifestations, and management of childhood disorders - attention deficit syndrome, and behavioral disorders
ii Mental deficiency- (descriptive)
a. Mental retardation,
b. Learning disabilities
c. Autistic behavior

Practical
The syllabus for practical examination shall be relevant portion of the theory

Recommended Books:

1. Principles of Neurology by Adams and Victor
2. Dejong's The Neurologic Examination by William W. Campbell
3. Neurology & Neurosurgery Illustrated by Lindsay
4. A short Textbook of Psychiatry by Niraj Ahuja

Third Year
PEDIATRICS AND GERIATRICS
Paper-IV

Code BPT-304

Subject description:
This subject follows the basic science subjects to provide the knowledge about Pediatric and Geriatric conditions that therapists would encounter in their practice. The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of the conditions causing disability, list the etiology, clinical features and methods of investigations and management. To understand a paediatrics patient and its special needs in relation to physical therapy.

Module I:
Normal Growth and development of child – motor, mental, language and social

Module II:
Pathological presentations of growth and development disorders

Module III:
Common infectious diseases in children: Brief description of following infectious diseases along with outline of management: Tetanus, diphtheria, Mycobacterial, measles, chicken pox, gastroenteritis, HIV, and Malaria

Module IV:
Immunization programmes – WHO schedule, different vaccinations, rationale; special consideration to various disease eradication programmes like Pulse-Polio

Module V:
Child and nutrition - Nutritional requirements, malnutrition syndrome, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies in children and management in brief

Module VI:
Clinical presentation, management & prevention of the following: - Cerebral palsy, Poliomyelitis, Muscular dystrophy

Module VII:
Childhood rheumatism-types, clinical presentation, & management in brief

Module VIII:
Acute CNS infections: clinical presentation, complications and management of bacterial and tubercular infections in brief

Module IX:

Clinical presentation, management & prevention of the following respiratory conditions: URI, LRI, bronchiolitis, asthma, TB (in brief)

Module X:
Clinical presentation, management & prevention of the following cardiac conditions: Rheumatic heart disease, SABE, Congenital heart disease - ASD, VSD, PDA (in brief)

Module XI:
Geriatrics- physiology of ageing, manifestations of diseases in old people
General principles of management. Implications of aging in physical therapy
Falls & Prevention in Geriatric population.

Books Recommended:
1. Essential Pediatrics by Ghai, O. P.
2. Nelson's Text Book of Pediatrics by Behrman, R.
3. Davidsons Principle & Practice of medicine by Haslett c
4. Harrison's Principle of internal medicine

Third Year
PHYSIOTHERAPY IN GENERAL MEDICAL AND SURGICAL CONDITION
Paper-V

Code BPT-305

Subjects Description:
1. To make the students aware about most general conditions affecting the body
2. Physiotherapist intervention in preventing & rehabilitating general conditions indicating physiotherapy intervention
3. Emphasis over general surgical conditions
4. Understand domain of different medical conditions
5. Rehabilitation approach for different surgical & medical conditions.

Module I
Principle of post-surgical physiotherapy management under the following: Wound, Ulcer Boils, carbuncles,

Pre and Post-Operative Physiotherapy Common Abdominal Incisions & common surgeries with their Physiotherapy Treatment & Post-Operative complications of Appendectomy, Gallbladder Surgeries, Hernia, Splenectomy, Nephrectomy etc.
Scar management

Pre and Post-Operative Physiotherapy assessment management of liposuction, Breast Cancers (Mastectomy)

Module II

Post-operative P.T. assessment and management of Burns, Skin grafting and flaps

Dermatology: Physiotherapy assessment and management

- Chronic ulcers
- Leprosy (including Neuro-muscular complications)
- Other dermatological conditions: Psoriasis, Vitiligo, Acne and Skin grafting

ENT: Physiotherapy management in Maxillary Sinusitis, Rhinitis, Vertigo, Tonsillitis, Otitis media, Palatal surgeries

Module III

Obstetrics and Gynaecology- Principles of Physical Therapy Management with:

- Pelvic Floor Care
- Incontinence and prolapse uterus
- Pelvic inflammatory disease
- Musculo-skeletal and other problems associated with pregnancy, labour and caesarean section
- Physiotherapy in Ante-natal and post natal care

Module VI

Physiotherapy management in cancer and AIDS

Practical

Various Physiotherapy modalities and treatment techniques for above mentioned conditions should be demonstrated and practice by the students.

Books Recommended

1. Tidy's Physiotherapy
2. Cash Physiotherapy in General conditions
3. Physical Rehabilitation by Susan Sullivan
4. Management Principle for Physical Therapists

Third Year
PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS

Paper-VI

Code BPT-306

Subject Description
This course serves to integrate the knowledge gained by the students in Clinical Orthopaedic, with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to musculoskeletal pathology.

Module -1
Traumatology:
Brief review of the following condition and various management aims, physiotherapeutic intervention, means and technique of physiotherapy should be taught.
Fracture and dislocations: Classification and type of displacement, method of immobilization, healing of fractures and factors affecting union, non union, delayed Union etc., common sites of fractures and their general physiotherapeutic management.

Specific fractures and their physiotherapeutic management:
Upper limb: Clavicle, humerus, ulna, radius, crush injuries of hand.
Lower Limb: fracture neck of femur, shaft of femur, patella, tibia fibula, pott's fracture, fracture of tarsal and metatarsals.
Spine: fracture and dislocations of cervical, thoracic and lumbar vertebrae with and without neurological deficits.

Module -II
Surgical procedures:
Pre and post operative physiotherapy management of common corrective procedure like arthroplasty, arthrodesis, osteotomy, patellectomy, tendon transplants, soft tissue release, grafting, including post polio residual paralysis and leprosy deformities corrections.

Amputation: Level of amputation of upper limb and lower limb, stump care, stump bandaging, Pre and post operative physiotherapy management, pre and post prosthetic management including check out of prosthesis, training etc.

Module –III
Deformities: Etiology, pathology, clinical presentation, diagnostic criterion general, orthotic, and Physiotherapy Management of the following: Congenital torticollis, Cervical rib, CTEV, Pes cavus , Pes planus and other common congenital deformities, Scoliosis, Kyphosis, lordosis, Coxa vara, Genu valgum, Genu varum and recurvatum.

Module -IV
Degenerative and infective conditions: Etiology, pathology, clinical presentation, diagnostic criterion, general, and Physiotherapy Management of the following: osteoarthritis of major joints, Spondylosis, Spondylitis, Spondylolisthesis, PIVD, Periarthritis of shoulder, Tuberculosis of spine, bone and major joints, and other miscellaneous orthopaedic conditions treated by Physiotherapy.

Module -V

Arthritis and Allied conditions: Etiology, pathology, clinical presentation, diagnostic criterion general, and Physiotherapy Management of the following: Osteo- arthritis-generalized, rheumatoid Arthritis, infective Arthritis, Spondylitis, ankylosing spondylitis, Non articular Rheumatism, Fibrositis, trigger point, fibromyalgia. Perthes disease, Ganglion, Duputuren's contracture

Deficiency disease- Rickets, Osteomalacia, Osteoporosis and other deficiency disorders related to Physiotherapy their clinical presentation, etiopathogenesis, management strategies including physiotherapy interventions.

Module -VI

Regional Orthopaedics - P.T. Assessment & Management of all regional joints, bones & soft tissues.

Regional Conditions: Definition, Clinical features and management of the following regional conditions

Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.

Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow).Triceps Tendinitis

Wrist and Hand: De Quervain's Tenosynovitis Ganglion, Trigger Thumb, Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.

Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis.

Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome).

Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

Cervical and Lumbar Pathology: Neck pain, Prolapsed interverbral disc (PID), Spinal Canal Stenosis, Spondylosis (cervical and lumbar), Spondylolysis, Spondylolisthesis, Lumbago/ Lumbosacral strain, Socialization, Coccydynia, Hemivertebra.

Practical

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended

1. Cash textbook orthopedics and Rheumatology for physiotherapists - Downie
2. Tidy's physiotherapy- Tomson et. al
3. Essentials of orthopedics and applied physiotherapy - Joshi and Kotwal
4. Tetraplegia & Paraplegia- Bromley- W.B. Saunders.
5. Orthopedics physiotherapy- Donatelli & Wooden
6. Rheumatological Physiotherapy- David –
7. Orthopaedic Physiotherapy- Tids well –
8. Physiotherapy for amputee- Engstrom & Van de van
9. Sports Injuris: Diagnosis and management: Norris Butterworth

Third Year
RESEARCH METHODOLOGY & BIOSTATISTICS
Paper-VII

Code BPT-307

Subject Descriptions:

1. To develop skills of critical thinking and selection of research strategy
2. To acquire skills to review literature, formulate problems, research writing and publishing

Module I Research in Physiotherapy

1. Introduction
2. Research- types, concept, definition
3. Research Problem and Research Question
4. Phases of Research
5. Research Proposal
6. Research Ethics

Module II Concepts of measurements

1. Dependent and independent variables
2. Reliability and validity
3. Scales of Measurements

Module III Research design

1. Types- Qualitative & Quantitative
2. Utilization of various design models

Module IV Implementing Research

1. Critical Analysis of article
2. Publishing and presenting research Article
3. Report and Article Writing

Biostatistics

Module I Introduction

Introduction to Biostatistics

i. Definition, Concept, Function and Limitation
ii. Measures of central tendency and dispersion, rate, ratio, proportion, incidence and prevalence.

Sampling & Assignment

i. Methods of sampling- Probabilistic and non-probabilistic Sampling
ii. Methods of Assignment

Module II Basic probability distribution and sampling distributions:

1. Concept of probability and probability distribution.
2. Normal, Binomial distribution, Standard error and confidence intervals, Skewness and kurtosis.

Module III Tests of Significance:

1. Basic of Testing of hypothesis-Null and alternate hypothesis.
2. Type I and type II errors.
3. Level of significance and power of t test, p value.
4. Parametric test, non-parametric test, correlation and regression.
5. Test-t-test, f-test and chi squire test

Recommended books:

1. Research methods for Clinical Therapists by Carolyn M Hicks
2. Foundation of clinical Research by Portney & Watkins
3. Physical Therapy Research: Principles & Applications by Elizabeth Domholdt
4. Methods in Biostatistics: for medical students & research workers by B.K. Mahajan
5. Fundamentals of Statistics by S.C Gupta

Third Year
RADIODIAGNOSIS & RADIOLOGY
(Non University)

Code BPT-308

SUBJECT DESCRIPTION- This course covers the study of common diagnostic and therapeutic imaging tests. At the end of the course students will be aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management. The course will cover that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

1. IMAGE INTERPRETATION

a. History
b. A New Kind of Ray
c. How a Medical Image Helps
d. What Imaging Studies Reveal
e. Radiography(x-rays)
f. Fluoroscopy
g. Computed Tomography (CT)
h. Magnetic Resonance Imaging (MRI)

i. Ultrasound

j. Endoscopy.

2. RADIOGRAPHY

a. Equipment components

b. Procedures for Radiography

c. Benefits versus Risks and Costs

d. Indications and contraindications.

3. FLUOROSCOPY

a. What is Fluoroscopy?

b. Equipment used for fluoroscopy

c. Indications and Contra indications

d. How it helps in diagnosis

e. The Findings in Fluoroscopy

f. Benefits versus Risks and Costs.

4. COMPUTED TOMOGRAPHY (CT)

a. What is Computed Tomography?

b. Equipment used for Computed Tomography

c. Indications and Contra indications

d. How it helps in diagnosis

e. The Findings in Computed Tomography

f. Benefits versus Risks and Costs.

5. MAGNETIC RESONANCE IMAGING (MRI)

a. What is MRI?

b. Equipment used for MRI

c. Indications and Contra indications

d. How it helps in diagnosis

e. The Findings in MRI

f. Benefits versus Risks and Costs

g. Functional MRI.

6. ULTRASOUND

a. What is Ultrasound?

b. Equipment used for Ultrasound

c. Indications and Contra indications

d. How it helps in diagnosis

e. The Findings in Ultrasound

f. Benefits versus Risks and Costs.

7. ENDOSCOPY

a. What is Endoscopy?

b. Equipment used for Endoscopy

c. Indications and Contra indications

d. How it helps in diagnosis

e. The Findings in Endoscopy

f. Benefits versus Risks and Costs.

Recommended books:

1. Atlas Imaging in Sports Medicine by Anderson, J, & Read, J.W.
2. Diagnostic Imaging for Physical therapist by Swain J

Third Year
FIRST AID & EMERGENCY
(Non-University)

Code BPT-309

1. Importance of First Aid in Physiotherapy.
2. Examination of Vital Signs
3. First Aid in cardiac arrest.
4. First Aid in Respiratory failure.
5. First Aid in Burns.
6. First Aid in Electric shock.
7. First Aid in Drowning.
8. First Aid in Spinal cord injuries.
9. First Aid in Hypovolemic Shock.
10. First Aid in Poisoning
11. Instrumentation used in First Aid (First Aid kit).
12. First Aid in RTA.
13. Indication of CPR.
14. Assessment and technique of CPR.
15. Artificial ventilation.

Recommended Textbooks

1. First aid in emergency – St-john. Ambulance Association.
2. Physiotherapy for burns & Reconstruction – Glassey.
3. Surgical & Medical Procedures for Nurses

Fourth Year
Physiotherapy in Neurological Conditions
Paper-I

Subject code: BPT 401

Course Objectives:

- The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology.
- The student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals
- The student will be able to apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

Module I: Basics of Neuroanatomy

Cerebrum, Cerebellum, spinal cord, major nerve tracts, motor system, sensory system, autonomic system, reflexes, CSF

Module II: Clinical examination of a neurological patient

Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc,

Balance examination, coordination examination, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading.

Module III: Evaluation and Management Brain Injury

Cerebrovascular accidents -

Definition, etiology, classification – thrombotic, embolic, hemorrhagic Clinical findings, management

Head injury

Types and Mechanisms of head injury Clinical features, potential complications

Physiotherapy principles of immediate and postoperative therapeutic management

Module IV: Evaluation and Management of CNS Infections

Etiology, Pathophysiology, Clinical features, assessment and management of

- Meningitis
- Tuberculous infection of CNS
- Tabes dorsalis
- Encephalitis

Module V: Evaluation and Management of Muscle Disorders and Movement Disorders

- Parkinson disease
- Dystonia, Chorea, Ballism, Athetosis
- Ataxia- Cerebellar, Friedreich.
- Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait.

Module VI: Basic Principle and concept of Neurological Treatment Approaches

- Bobath Neurodevelomental Therapy
- Proprioceptive Neuromuscular Facilitation.
- Motor Relearning Program
- Rood's approach

Module VII: Evaluation and Management of Muscle Disorders

- Myopathies
- Muscular dystrophy
- Spinal muscular atrophy
- Poliomyelitis, Post-Polio Syndrome.

Module VIII: Evaluation and Management of Peripheral Nerve Injuries and Disorders

- Guillain-Barre Syndrome
- Peripheral nerve injuries
- Entrapment neuropathies
- Peripheral neuropathies- Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, sciatic nerve palsy, Common peroneal nerve palsy,

Module IX: Evaluation and Management Spinal Cord Disorders

- Spinal cord injury: Types and Mechanisms of spinal cord injury, Clinical features, potential complications
- Physiotherapy principles of immediate and postoperative therapeutic management

Module X: Diseases and disorders of the spinal cord

Physiotherapy assessment & Management of the following

- Craniocerebral junction anomalies

- Syringomyelia
- Transverse Myelitis
- Subacute Combined Degeneration of the cord

Module XI: Demyelinating & Degenerative Disorders of Nervous System

- Acute disseminated encephalomyelitis
- Multiple sclerosis
- Motor Neuron Disease

Module XII: Paediatric Neurology

Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications,

Use of various neurological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus,, Spina bifida, and syringomyelia.

<u>Practical</u>

Principles of Assessment

- Skills in history taking: Present, Past, medical, familial, personal histories
- Assessment of higher mental function -Consciousness, Orientation, Wakefulness, memory

Cranial Nerve

- Clinical assessment of neurological function of Cranial nerve

Sensory Function Examination

- Sensory examination –Superficial, Deep and Cortical sensations

Motor System Examination

- Reflexes –Developmental reflexes, deep tendon reflexes, Superficial reflexes
- Assessment of motor function: grading of muscle power, tone (Hypotonia, Hypertonia - spasticity and rigidity, Ataxia, Athetosis, Chorea) and assessment of range of motion.

Neurological Treatment Approaches

- Bobath & Neurodevelomental Therapy- Techniques
- Proprioceptive Neuromuscular Facilitation- Techniques
- Motor Relearning Program
- Rood's approach

Movement Disorder Examination

- Assessment of Balance and coordination
- Assessment of gait - both normal and abnormal (spastic, ataxic and paralytic patterns)

- Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale

Neurological Examination for above mentioned conditions should be demonstrated and practice by the students with the following:

- Evaluation and assessment of Muscular disorder cases.
- Evaluation and assessment Spinal Cord Disorders.
- Evaluation and assessment Management of Peripheral Nerve Injuries and Disorders.
- Evaluation and assessment Pediatric cases.

Reference Books:

1. Cash Text Book for Physiotherapists in Neurological Disorders-Jaypee Bros. Publication 5th edition
2. Proprioceptive Neuro Muscular Facilitation- By A. Susan
3. Right In The Middle-Patracia Devis,2nd edition
4. Stroke Rehabilitation--Margaret Johnson,3rd edition
5. Neurological Rehabilitation- Umphred Davis 6th edition
6. Neurological Physiotherapy-Problem solving approach: Susan Edwards, 2nd edition
7. Adult Hemiplegia: Evaluation and treatment: Berta Bobath, 2nd edition
8. Physical Rehabilitation by Susan O Sullivan

Fourth Year
Physiotherapy in Cardiothoracic Conditions
Paper-II

Subject code: BPT 402

Course Objectives: The subject is designed to provide knowledge in assessing and planning physiotherapy interventions for various Cardiothoracic conditions.
The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient‘s vital signs, student must know emergency drugs indication and contra-indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient.

Module I : Investigations and tests
Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests. Bedside assessment of the patient-Adult & Pediatric

Module II :

Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB.

Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP.

Module III :
Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulization, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning.

Module IV :
Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.

Module V :
Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, the neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.

Module VI :
Physiotherapy assessment and management of Obstructive lung conditions
Physiotherapy assessment and management of Restrictive lung conditions.

Module VII
Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.

Module VIII
- Management of breathlessness.
- Pulmonary Rehabilitation.
- Physiotherapy following Lung surgeries
- Respiratory failure – Oxygen Therapy and Mechanical Ventilation.

Module IX
- Physiotherapy management following cardiac surgeries.
- Cardiac Rehabilitation.
- Physiotherapy management following PVD.

Module X

- Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.
- Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes.
- Home program and education of family members in patient care.
- Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.

Practical

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Reference Books:

1. Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
2. Cash`s text book in General Medical & Surgical conditions for Physio therapists
3. Chest Physical therapy & Pulmonary rehabilitation-by Donna Frownfilter
4. Cardiopulmonary Physical therapy by Irwin Scott

Fourth Year
Physiotherapy in Sports
Paper-III

Subject code: BPT 403

Course Objectives: This course will help the students to learn about sports injuries and to prevent them on and off the field.
Provide the basic ideas about the assessment and management of sports injuries.

Module I

Pre-exercise evaluation
Sporting emergencies and on field assessment,
Principles of management of soft and hard tissue injuries

Module II

- Fitness testing
- Strength training for children & adolescents
- Environmental effects on training
- Exercise testing

Module III

Physiological effects of exercise on body systems –

- Muscular system,
- Endocrine system,
- Cardio-respiratory system,
- Nervous system

Module IV

- Principles of injury prevention
- Principles of training & Rehabilitation in sports injuries
- Risk factors in sports (intrinsic & extrinsic)

Module V

- Nutrition in sports
- Diet planning
- Pre game meal
- Carbohydrate loading & bicarbonate loading

Module VI

- Sports Psychology, Spirit & moral values,
- Doping in sports & performance enhancing drugs.
- Special aids in performance
- Protective equipment used in sports

Module VII

Measurement of fitness components and sports skills

- Measurement of muscular strength
- Measurement of muscular endurance
- Measurement of flexibility
- Determination exercise endurance

Module VIII

Sports injuries

- Spine – PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI Joint dysfunction
- Hip – Muscle strain, Piriformis syndrome, ITB syndrome, osteitis pubis
- Knee – menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, Biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome
- Leg & ankle – shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, Plantar fascitis, turf toe syndrome
- Head & face – Maxillo-facial injuries, helmet compression syndrome

Module IX

Sports injuries

- Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries
- Elbow – tennis elbow, golfer's elbow
- Wrist and hand – carpal tunnel syndrome, gamekeeper's thumb

Module X

Sports in Special age groups:

- Female athletic triad
- Younger athlete- Musculo-skeletal problems, management, children with chronic Illness and nutrition
- Older athlete- Physiological changes with aging, benefits, risks of exercise in Elderly, exercise prescription guidelines for elderly

Practical

Various Physiotherapy modalities and treatment techniques for above mentioned conditions should be demonstrated and practice by the students.

Reference Books:

1. Principles of sports medicine by Brukner & Karim.
2. Athletic Injuries in sports by Magee.
3. Physical Therapies in Sports and Exercise by Kolt, G.S and Mackler.
4. Sports Injuries: Diagnosis and Management by Norris, C.M.
5. Orthopedic Physical Rehabilitation by Brotzman.
6. Sports Injuries: Diagnosis and Management by Garrick, J.G
7. Fundamentals of Sport Injuries and management Anderson, M.K.
8. Sport Injuries, Fu, and Stone.
9. Athletic Injuries and Rehabilitation James E.Z.
10. Running Injuries Guten, Gray N.
11. Soft Tissues: Trauma and sports Injury, Mclatchie, and Lennox.
12. Evaluation of Orthopedic and Athletic Starkey, and Ryan.

Fourth Year
Community based Rehabilitation & Bioengineering
Paper-IV

Subject code: BPT 404

Course Objectives:

- The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention.
- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

Module I :

Rehabilitation: Definition, Types
Community: Definition of Community, Multiplicity of Communities, The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community oriented programme, Community participation and mobilization

Module II :

Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR

Module III :

- Principles of Community based Rehabilitation. W.H.O.`s policies-about rural health care concept of primary /tertiary health centers-district hospitals etc-Role of P.T.-Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped.

- Planning and management of CBR Programmes, CBR Programmed planning and management, Ownership and Governance, Decentralization and CBR, Management of CBR, Programmed sustainability, Communication and Coordination, Community participation, mobilization and awareness, CBR programme influence on promoting and developing public policies

Module IV :

- Disability: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Disability in developed countries, Disability in developing countries. Disability Surveys: Demography. Screening: Early detection of disabilities and developmental disorders, Prevention of disabilities- Types and levels

- Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versusQualitative data, Uses of evaluation findings

Module V :
Role of Social work in CBR: Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation

Module VI :
- Role of Government in CBR: Laws, Policies, Programmes, Human Rights Policy, Present rehabilitation services, Legal aspects of rehabilitation
- Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies
- National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, World bank.

Module VII :
- National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker
- Extension services and mobile units: Introduction, Need, Camp approach

Module VIII :
- Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assisstive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuromusculoskeletal and cardiothoracic disabilities.

- Screening and rehabilitation of paediatric disorders in the community: Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioural disorders, Immunization programmes, Early intervention in high risk babies, Genetic counselling

Module IX :
Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services

Module X :
Industrial Health & Ergonomics - Occupational Hazards in the industrial area accidents due to
1. Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing, radiation,
2. Chemical agents-Inhalation, local action, ingestion,
3. Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses per hierarchy
4. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management relaxation modes.

Module XI: Bioengineering

- Principles of Orthotics
- Types, indications, contra indications assessment (check out), Uses and fitting- region wise, Upper extremity, lower extremity and spine
- Fabrication of simple splints and assistive & adaptive devices for upper and lower extremity – indications and applications
- Principles of Prosthetics
- Types, indications, contraindications, assessment check out, uses and fitting - region wise, upper extremity, lower extremity Prosthesis.

Practical:

- Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening,
- Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, paediatric, gynecological and geriatric problems in community,
- Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Reference Books:

1. Rehabilitation Medicine by Howard A Rusk.
2. Rehabilitation Medicine by Joel A De lisa
3. Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz F. A. Davis.
4. Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting - Tuner, Forster & Johnson – Churchill Livingstone
5. Hand Splinting – Wilson – W. B. Saunders.
6. Orthotics in Rehabilitation : Mckee and Morgan – F. A. Davis

Fourth Year
Professional Ethics & Administration
Paper-V

Subject Code: BPT 405

Course Objectives:

The student will be able to learn about the basic ethical principles applied Physiotherapy practices and the code and rules of professional conduct. Besides ethical principles the students will get to know about the basic idea of administrative practices done in Physiotherapy or multi-speciality hospitals

Module I :
History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, enforcing standards in health profession-promoting quality care.

Module II :
Constitution & Functioning of the Indian association of Physical therapy and World confederation of Physical therapy (WCPT) and DCPTOT

Module III :
1. Professionalism in physiotherapy-Accountability, altruism, compassion/caring, excellence, integrity, professional duty, social responsibility.
2. Professional code of conduct (APTA)- attitude, therapist patients relationship, confidentiality, patients autonomy, professional responsibility, practices, endorsement of products/services, consumer protection, pro bono service etc.
3. Standards of professional Practice- ethical and legal consideration, administration of physical therapy service, patient/client management, education & research.

Module IV :
Malpractice and negligence, Legal aspects: Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action

Module V : Administration
1. Introduction: Branches of administration, Nature and scope of administration, How to be an
2. Effective administrator, Planning hospital administration as part of a balanced health care program.
3. Principles of hospital administration and its applications to physiotherapy.
4. Planning and organization: Planning cycle, Principles of organizational charts, Resource and
5. quality management, Planning change -innovation
6. Financial issues including budget and income generation
7. Hospital administration: Organization, Staffing, Information, Communication, Coordination,
8. Cost of services, Monitoring and evaluation.
9. Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources.

Reference Books:

1. Medical Ethics by C M Francis
2. Francis C M – Hospital Administration
3. Davies, R and Macaulay, BMC – Hospital Planning and Administration
4. Consumer Protection Act – 1986, Government of India, New Delhi.
5. Ethical Decision Making in Therapy Practice (Skills for Practice Series) by Julius Sim
6. Documentation for Rehabilitation: A Guide to Clinical Decision Making by Lori Quinn and James Gordon
7. Expertise in Physical Therapy Practice by Gail M. Jensen, Jan M. Gwyer , Laurita

Fourth Year
COMPUTER APPLICATIONS
(Non-University)

Code BPT-407

Subject Descriptions:

The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under the subject are as follows:

Module I Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.

Module II Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).

Module III Processor and memory: The Central Processing Unit (CPU), main memory.

Module IV Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.

Module V Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).

Module VI Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

Module VII Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

Module VIII Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Module IX Introduction of Operating System: introduction, operating system concepts, types of operating system.

Module X Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

Module XI Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet. Application of Computers in clinical settings.

Practical:

Practical on fundamentals of computers –
Learning to use MS office: MS word, MS PowerPoint, MS Excel.
To install different software.
Data entry efficiency

Reference Books:

1. V. Rajaraman: Fundamentals of Computers, Prentice Hall of India, 2002
2. R. Hunt, J. Shelley: Computers and Commonsense, Prentice Hall of India, 2002

3. A. Leon, M. Leon, Fundamentals of Information Technology, Leon Vikas, 2002
4. MS Office 2007.
5. Ajay Gaur : SPSS