

SYLLABUS FOR BPT

(Bachelor of Physiotherapy)

Programme Code: BPT

(Four years and six months)

2024-2025

INDEX (BACHELOR OF PHYSIOTHERAPY)

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PROGRAMME NAME: Bachelor of Physiotherapy (BPT)**I. Program Outcomes (PO)**

Students who complete four and half year's undergraduate program in Physiotherapy would earn a Bachelor of Physiotherapy (BPT) degree. The learning outcomes that a student should be able to demonstrate on completion of a degree level program include academic, personal, behavioral, entrepreneurial and social competencies. It is expected that a student completing a particular course must have a level of understanding of the course and its sub-areas in consonance with the learning outcomes mentioned at the end of that course. Program learning outcomes include Physiotherapy specific skills, generic skills, transferable global skills and competencies that prepare the student for employment, higher education, and research thereby developing students as contributing members for overall benefit to the society.

The program learning outcomes relating to BPT degree program are summarized below:

PO-1	To demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-workers at work place.
PO-2	To demonstrate and relate moral, ethical values and legal aspects concerned with Physiotherapy management
PO-3	To demonstrate academic skills and knowledge related to understanding the structure and function of human body and applied anatomy, physiology in physiotherapy practice.
PO-4	To outline and implement Physiotherapy management by co-relating assessment and examination skills of clinical Courses like Orthopedics, General Surgery, Medicine, Neurology, Pediatrics, Dermatology & Gynecology & Obstetrics, Community Medicine and Sociology.
PO-5	To describe and analyze concepts of energy conservation, global warming and pollution and justify optimal use of available resources.
PO-6	To demonstrate ability of critical thinking, scientific enquiry, experiential learning, personal finance, entrepreneurship and managerial skills related to task in day-to-day work for personal & societal growth.
PO-7	To demonstrate and apply basic computer applications for data management, data storage, generating databases and for research purposes.

II. Program Specific Outcomes (PSO) for Bachelor of Physiotherapy Program

PSO-1	Acquire, assess, apply and integrate new knowledge, learn to adapt to changing circumstances and ensure that patients receive the highest level of professional care.
PSO-2	Establish the foundations for lifelong learning and continuing professional development through attendance in various seminars, CMEs and conferences.
PSO-3	Function effectively as a mentor and teacher contributing to the appraisal, assessment and review of colleagues, providing effective feedback, and taking advantage of opportunities to develop these skills.
PSO-4	Analyze the roles and expertise of health care professionals and social workers in the context of working and functioning as a multidisciplinary team for the delivery of safe and high-quality care.
PSO-5	Explain the scientific basis for common musculoskeletal, neurological, cardio-respiratory, women's health related, geriatric and sports related disorders, compare and contrast Physiotherapy treatment techniques applicable in relevant case scenarios.
PSO-6	Justify selection of appropriate clinical examination technique or tools and investigation procedure for common clinical conditions and critically analyze clinical findings and plan appropriate rehabilitation goals for common disorders and design management protocols.
PSO-7	Examine the role of environmental and occupational hazards in ill-health and discuss ways to mitigate their effects.
PSO-8	Critically appraise the results of relevant qualitative and quantitative studies as reported in scientific literature and outline the ethical issues involved in clinical research.
PSO-9	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding.
PSO-10	Demonstrate confidentiality, use data protection legislation and codes of practice in all dealings with information.

Scheme of Examination

BACHELOR OF PHYSIOTHERAPY (BPT)

BPT- Part-I (First Year)

Subjects	Subject Code	Marks		Internal Assessment		Total Marks	Teaching Hours	
		Theory	Practical	Theory	Practical		Theory	Practical
Anatomy	BPT-101	75	75	25	25	200	225	100
Physiology	BPT-102	75	75	25	25	200	225	100
Biochemistry	BPT-103	75	--	25	--	100	100	--
Electrotherapy-I	BPT-104	75	75	25	25	200	125	200
Exercise Therapy-I	BPT-105	75	75	25	25	200	125	200
Compulsory Punjabi (Lazmi Punjabi)	BPPB-1101	75	--	25	--	100	100	--
Basic Punjabi (Mudhli Punjabi)	BPPB-1102							
Punjab History & Culture	BPHC-1125							
Problem of Drug Abuse: Management and Prevention	ZDA101	--	--	--	--	100	50	--

BPT- Part-II (Second Year)

Subjects	Subject Code	Marks		Internal Assessment		Total Marks	Teaching Hours	
		Theory	Practical	Theory	Practical		Theory	Practical
Pathology & Microbiology	BPT-201	75	--	25	--	100	200	--
Pharmacology	BPT-202	75	--	25	--	100	100	--
Electrotherapy-II	BPT-203	75	75	25	25	200	100	200
Exercise Therapy-II	BPT-204	75	75	25	25	200	100	200
Biomechanics	BPT-205	75	--	25	--	100	100	--
Psychology	BPT-206	75	--	25	--	100	150	--
Sociology & Community Health	BPT-207	75	--	25	--	100	100	--
Environmental Study	ESL-225	--	--	--	--	100	60	--

BPT- Part-III (Third Year)

Subjects	Subject Code	Marks		Internal Assessment		Total Marks	Teaching Hours	
		Theory	Practical	Theory	Practical		Theory	Practical
Orthopedics	BPT-301	75	75	25	25	200	150	50
General Medicine	BPT-302	75	75	25	25	200	100	50
PT in Ortho Conditions	BPT-303	75	75	25	25	200	100	100
PT in Medical Conditions- I	BPT-304	75	75	25	25	200	100	100
Research Methodology & Biostatistics	BPT-305	75	--	25	--	100	100	--
Neurology	BPT-306	75	75	25	25	200	100	100
Soft Skills	BPHY-1101	50	25	25		100	60	
Clinicals	BPT-307	--	75	--	25	100	--	400

BPT- Part-IV (Fourth Year)

Subjects	Subject Code	Marks		Internal Assessment		Total Marks	Teaching Hours	
		Theory	Practical	Theory	Practical		Theory	Practical
General Surgery	BPT-401	75	75	25	25	200	100	50
Community Physiotherapy & Rehabilitation	BPT-402	75	75	25	25	200	100	100
Pediatrics & Geriatrics	BPT-403	75	75	25	25	200	100	50
PT in Medical Conditions-II	BPT-404	75	75	25	25	200	100	100
PT in Surgical Conditions	BPT-405	75	75	25	25	200	100	100
Rehabilitation, Organization and Administration	BPT-406	75	--	25	--	100	150	--
Computer Applications	CS-PYSIO 411	--	40	--	10	50	--	50
Clinicals	BPT-407	--	75	--	25	100	--	400

BACHELOR OF PHYSIOTHERAPY (PART-I)**BPT-101: Anatomy****Credit Hours (Per week): Theory: 7, Practical: 3****Total Hours: (Theory: 225, Practical: 100)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To make students well versed with knowledge of anatomy of human body, different organs, tissues and cells.
2. Student gets in depth knowledge of structure and function of human body in general with an emphasis on different movements produced by different muscles.
3. Knowledge about muscle origin, insertion, action, innervation and blood supply is imparted.
4. Knowledge about nerve innervation and blood supply to different organs and bones is also given.

COURSE CONTENTS:**Section-I****General Introduction:**

1. **Histology**-Cell, tissues of the body, epithelium, connective tissue, cartilage, bone, lymph, muscle, nerve etc.
2. **Osteology**-Formation, function, growth and repair of bones.
3. **General Embryology**-Ovum, spermatozoas, fertilization, differentiation, development of various systems and foetal circulation.

Section-II**Systems of Human body (a brief Outline):**

1. **Blood Vascular System** – Arteries, capillaries, veins, heart, lymphatic system.
2. **Respiratory System** – Anatomy of upper and lower respiratory tract including nose, larynx, trachea, bronchi, pleura and lungs.
3. **Digestive System** – Anatomy of the gastro-intestinal tract.
4. **Urogenital System** – Anatomy of Urinary system, male and female reproductive system.

5. **Endocrine System** – The various organs and production of hormones including definition, structures in general, control of secretions and role of hypothalamus.

6. **Integumentary System**

7. **Surface Anatomy**

Section-III

Neuro-anatomy: Microscopic and gross study of:-

1. Peripheral Nerves	15. Rhinencephalon
2. Neuromuscular Junction	16. Lateral ventricles
3. Sensory End Organs	17. Meninges
4. Spinal Cord Segments & Areas	18. Bloody supply of the brain
5. Brainstem	19. Internal Capsule
6. Cerebellum	20. Visual radiation
7. Inferior colliculi	21. Auditory radiation
8. Superior Colliculi	22. Thalamocortical radiations
9. Diencephalon	23. Pyramidal systems
10. Hypothalamus	24. Extra-pyramidal systems
11. Epithalamus	25. Sympathetic system
12. Thalamus	26. Para-sympathetic system
13. Cerebral hemispheres	27. Crainal nerves
14. Corpus striatum	

Section-IV

Upper Extremity

1. **Osteology**

- Outline the anatomical features, attachments, ossification and side determination of the bones of U/L : Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges

2. **Myology**

- Fascia and Muscles of front and back of upper arm: origin, insertion, nerve supply and action.
- Muscles of front and back of forearm: origin, insertion, nerve supply and action.
- Mention the small muscles of hand with their origin, insertion, nerve supply and action.
- Identify the nerves of upper units and mention their position course, relations and distribution.
- Detail explanation of joints of upper limb: shoulder guide, Shoulder joint, Elbow, Wrist and joints of hand.
- Indicate the blood vessels of upper limb and mention their position course, relations, distribution and main branches.
- Lymphatic damage of upper limb
- Applied anatomy of all structures of U/L

Section – V**Regional Anatomy**

Detailed explanation of the following with their applied anatomy.

- Pectoral Region
- Scapular Region
- Cubital Fossa
- Axilla
- Insatiate formation of Brachial Plexus
- Spaces of the hand

Section – VI**TRUNK-THORAX ABDOMEN****1. Osteology:**

- Vertebral columns: Identify the parts of typical vertebra and state the main features, attachments and ossification.
- Intervertebral disc and mention its part.
- Ribs: Parts and main features of typical rib and define true, false and floating ribs.
- Sternum: State the parts and anatomical features.

2. Myology:

- Fascia and muscles of back
- Fascia and muscles connecting U/L with vertebral column: origin, insertion, nerve supply, action.
- Intercostal muscles and diaphragm: origin, insertion, nerve supply and action.
- List layers of anterior abdominal wall and mention its origin, insertion, nerve supply and action of these muscles.
- Fascia and muscles of post abdomen. Wall: origin, insertion, nerve supply and action.

3. Joints of Thorax

Identify the various joints and explain in detail:

- Manubriosternal joint
- Costo vertebral joint
- Costo transverse joint
- Costo Chondral joint
- Chondro sternal joints
- Inter vertebral joint
- Movements of vertebral column
- Respiratory movements

4. Mention the course and branches and nerves, blood vessels and lymphatic drainage of trunk-thorax-abdomen.

- Lumbar Plexus: Position, formation and branches.

- Rectus sheath: formation and contents.
- Contents of vertebral canal
- Intercostal space and its contents
- Diaphragm-structures passing through it.
- Applied Anatomy of structures of trunk – thorax – abdomen

Section – VII

PELVIS

- Features of pubic symphysis and sacroiliac joints.
 - Muscles of pubic floor and mention their attachments, action and nerve supply.
 - Difference between male and female pelvis.
 - Main features of subdivision, boundaries, walls and floor of pelvis.
- Urogenital diaphragm (outlines only)
- Applied anatomy of plexus
 - Lymphatic damage
 - Nerve supply
 - Sacral Plexus
 - Mention the blood vessels of the region with course, variations, distribution and main branches.

Section – VIII

LOWER EXTREMITY

1. Osteology:

- Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot

2. Myology:

- Fascia and muscles in front of thigh: Origin, Insertion, Nerve Supply, Action
- Fascia and muscles of medial side of thigh: Origin, Insertion, Nerve Supply, Action
- Fascia and muscles of back of thigh
- Fascia and muscles of gluteal region
- Fascia and muscles of front of leg and dorsum of foot
- Fascia and muscles of lateral side of leg
- Fascia and muscles of back of leg and role of foot
- Detailed explanation of joints of Lower Leg: Pelvic Girdle, Hip, joint, Knee joint, Ankle joint, joints of foot.
- Identify the nerves of Lower Leg and mention their position course, relations distribution
- Indicate the blood vessels of Lower Leg a mention their position course, relation, distribution and main branches.
- Lymphatic drainage of Lower Leg
- Explain femoral triangle and subsartorial canal.
- Popliteal fossa
- Anatomy of structures of Lower Leg

Section – IX

Radiological Anatomy: Radiographic appearance of Musculoskeletal system of Upper limb, Lower limb, Spine.

Anatomy Practical:**Marks: 75**

1. Surface Anatomy: To study, identify and mark the surface land marks on human body.
2. To study the muscles of trunk, lower and upper extremities and face on a dissected human body.
3. To study the Bones of Human Body with special emphasis on origin and insertion of muscles and ligaments.
4. To study the anatomy of joints of upper and lower extremities and vertebral column on models, charts and CDs.
5. To study the anatomy of C.N.S and P.N.S on models, charts and Cds
6. To study the gross anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital system on models, charts and Cds

BOOKS RECOMMENDED:

1. L. Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2. Inderbir Singh, Textbook of Anatomy with Colour Atlas–Vol. 1, 2, 3 Jaypee Brothers
3. B.D. Chaurasia, Human Anatomy–Volume 1, 2, 3 CBS Publishers & Distributors.
4. McMinn's Last's Anatomy–Regional and applied, Churchill Livingstone.
5. McMinn's et al–A Colour Atlas of Human Anatomy, Mosby.
6. Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.
7. Inderbir Singh, A Textbook on Human Neuro Antomy, Jaypee Brothers.
8. Snell-Clinical Anatomy-Lippincott

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Understand the importance of learning human anatomy in physiotherapy.
CO-2	Understand the application of anatomy in medical field and communicate effectively using correct terminology.
CO-3	Identify different bones, muscles and their attachments.
CO-4	Correlate theoretical anatomy in various clinical conditions.
CO-5	Easily do assessment of human body during physical examination.

BACHELOR OF PHYSIOTHERAPY (PART-I)**BPT-102: Physiology****Credit Hours (Per week): Theory: 7, Practical: 3****Total Hours: (Theory: 225, Practical: 100)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. It aims to teach students about basic unit of life that is cell, its different types, their structure, function and body fluid composition.
2. A detailed study of blood, its composition, coagulation, blood groups, and related clinical conditions.
3. Students acquire the knowledge of physiological function of various system of human body- musculoskeletal, neuro motor, cardio-respiratory, endocrine, uro-genital, reproductive, digestive and excretory along with alterations in function with aging.

COURSE CONTENTS:**Section – I****General Introduction:**

1. **Cell Introduction:** Outline of basic concepts of cell structure, functions of components and transport across membranes
2. **Skin:** Functions, blood flow and temperature regulation.
3. **Blood and Lymph:** Cell renewal system, haemoglobin, erythrocyte granulocyte, lymphocyte, coagulation, regulation of hydrogen within concentration of body fluids, fluid distribution and exchange.

Section – II**Physiology of the systems of the body:**

1. **Digestion:** Control of food and water intake and secretion and absorption movements of the alimentary canal.

2. **Circulation:** Cardio-vascular system, mechanical and electro-physiological activity of the heart, regulation of heart, coronary circulation, haemodynamics, circulation through brain, skin and skeletal muscle.
3. **Excretion:** Renal functions including formation of Urine & Micturition.
4. **Respiration:** Respiratory gases, pulmonary gas exchange, control and mechanics of breathing, hypoxia, asphyxia, dyspnoea, oxygen therapy and resuscitation.
5. **Endocrine System:** Outline of various hormones and their actions, pituitary gland, thyroid, parathyroid, adrenal glands & Gonads.
6. **General Metabolism:** Carbohydrate, Protein & Fat Metabolism.

Section – III **Neuro – Physiology**

1. Neuron: Properties and functions.
2. Action Potential
3. Special properties of nerve trunks and tracts.
4. Motor units.
5. Reflex physiology
6. Synapse and synaptic transmission.
7. Supraspinal Control.
8. Cerebellum and basal ganglia
9. Autonomic nervous system.
10. Somatic sensation.
11. Pain
12. Taste, Olfaction, Auditory and Vision.
13. Neuro physiological psychology.

Section – IV **Muscle Physiology**

Gross and Microscopic

1. Structure and function of Muscle tissue – skeletal and cardiac.
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle contraction.

Section – V **Physiology of exercise and work**

1. Neuromuscular activity, human movement, physiological mechanism in movement behaviour, strength, endurance, analysis of movement.
2. Circulatory and respiratory response to exercise including effects on the heart blood circulation, body fluid changes, pulmonary ventilation, gas exchange and transport, etc.
3. Effects of exercise and work on other body functions.

4. Metabolic and environmental aspects of exercise and work – metabolism, energy requirement, efficiency of muscular work, nutritional aspects, heat and body temperature regulation & environmental factors.
5. Effects of Exercise training – endurance, fatigue and recovery.
6. Fitness and health – age, sex, body type, race, stress and medical aspects of exercise

PHYSIOLOGY PRACTICAL

Marks: 75

To study the following Physiological Phenomena:

1. Identification of blood cells and different counts.
2. W.B.C. Count.
3. R.B.C. Count.
4. Haemoglobin percentage and colour index.
5. E.S.R. and Blood groups.
6. Bleeding time and clotting time.
7. Respiratory efficiency tests.
8. Artificial respiration and C.P.R.
9. Pulse rate, Heart rate and measurement of Blood Pressure.
10. Respiratory rate and Auscultation.
11. Normal E.C.G.
12. Reflexes – Superficial Deep.
13. Sensations.
14. Tests for functions of Cerebrum.
15. Tests for functions of Cerebellum.

BOOKS RECOMMENDED:

1. Text book of Medical Physiology–Arthur Guyton (Mosby.)
2. Text book of Physiology–Anand & Manchanda, Tata McGraw Hill.
3. Human Physiology – Vol. 1 & 2, Chatterjee. CC, Calcutta. Medical Allied.
4. Concise Medical Physiology. Chaudhari, S.K, New Central Agency, Calcutta.
5. Principles of Anatomy and Physiology. Tortora & Grabowski–Harper Collins.
6. Text book of Practical Physiology – Ghai – Jaypee.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Correlate theoretical and clinical physiology.
CO-2	Understand the physiological functioning of different systems and look for any abnormality or restriction in its normal functioning example gastrointestinal disorders.
CO-3	Outline the physiology involved in different metabolic processes taking place inside the body and resulting in energy production and usage by body.
CO-4	Knows about physiology and chemical processes involved in muscle contraction.

BACHELOR OF PHYSIOTHERAPY (PART-I)**BPT-103: Biochemistry****Credit Hours (Per week): 4****Total Hours: 100****M. Marks: 100****Theory: 75****Internal Assessment: 25****Time: 3 Hrs.****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. It aims to impart information related to organic chemistry that is required for further studies.
2. It gives introduction to various nutrients, their structure and function i.e. carbohydrates, fats, proteins, vitamins and minerals, nucleic acids and enzymes.
3. Teaches what causes imbalance of nutrients, what imbalance can lead to and how to correct it.
4. Student will get to know the formation and fate of biomolecules (carbohydrates, proteins, fats, minerals and vitamins) present in food.
5. Covers biochemical, cellular, biological, and microbiological processes, chemical reactions in prokaryotic and eukaryotic cells.

COURSE CONTENTS:**Section – I**

1. **Biophysics:** Concepts of pH and buffers, acid base equilibrium osmotic pressure and its physiological applications.
2. **Cell:** Morphology, structure & kinetics of cell, cell membrane, Nucleus, chromatin, Mitochondria, Endoplasmic Reticulum, Ribosomes, DNA & RNA
3. **Water and Electrolyte:** Fluid compartment, daily intake and output sodium and potassium metabolism.
4. **Connective Tissue:** Mucopolysaccharide connective tissue proteins, glycoproteins.
5. **Nerve Tissue:** Composition, chemical mediators of Nerve activity.
6. **Isotopes:** Isotopes and their role in treatment and diagnosis of diseases.

Section – II

1. **Carbohydrates:** Definition, functions, sources, classifications, Monosaccharides, Disaccharides, Polysaccharides, mucopolysaccharide and its importance.
2. **Lipids :** Definition, function, sources, classification, simple lipid, compound lipid, derived lipid, unsaturated and saturated fatty acid, Essential fatty acids and their importance, Blood lipids and their implications, cholesterol and its importance.
3. **Proteins:** Definition, sources, kinetics, classification, simple protein conjugated protein, derived proteins, properties and varieties of proteins.

Section -III

1. **Enzymes:** Definitions, classification, mode of action, factor affecting enzyme action, clinical importance of enzyme.
2. **Vitamins:** Classification, fat soluble vitamins, A, D, E & K, water soluble Vit. B complex & C, Daily Requirements, Physiological functions and diseases of Vitamin deficiency.
3. **Nutrition:** Dietary requirements & Balanced diet.
4. **Hormones:** Functional aspects of Hormones: insulin, Glucagon Thyroid and Parathyroid hormones, cortical & sex hormones.

Section – IV

1. **Bioenergetics:** Concept of free energy change, Exogenic and endogenic reactions, concepts regarding energy rich compounds, Respiratory chain and Biological oxidation.
2. **Carbohydrate Metabolism:** Glycolysis, HMP shunt pathway, TCA cycle, glycogenesis, glycogenolysis, Glucogenesis, Maintenance of Blood Glucose, interconversions of different sugar.
3. **Lipid Metabolism:** Fatty acid oxidation, Fatty acid synthesis, Metabolism of cholesterol, Ketone bodies.
4. **Protein Metabolism:** Transamination, Transmethylation, Deamination, Fate of ammonia, urea synthesis and synthesis of creatine.

BOOKS RECOMMENDED:

1. Text book of Biochemistry - Chatterjee M.N.– Jaypee Brothers.
2. Text book of Biochemistry for Medical Students - Vasudevan D.M. - Jaypee Brothers.
3. Clinical Biochemistry – Metabolic & Clinical aspects - Marshall & Bangert – Churchill Livingstone.
4. Biochemistry Southerland – Churchill Livingstone

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Tell about various biomolecules (carbohydrates, proteins, fats, minerals and vitamins) present in human body and why they are essential and their function.
CO-2	Tell their normal levels in body fluids required for proper functioning and their abnormal levels to understand the disease process.
CO-3	Understand what cause increase or fall in the amount of biomolecules, what are its effectson body and ways to correct it.
CO-4	Understand and describe in detail the biochemical aspect of muscle contraction.
CO-5	Understand and describe basal metabolic rate and the factors affecting it.

BACHELOR OF PHYSIOTHERAPY (PART-I)**BPT-104: Electrotherapy – I****Credit Hours (Per week): Theory: 4, Practical: 6****Total Hours: (Theory: 125, Practical: 200)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To cover the basic principles of physics on which medical equipments used in physiotherapy are based or work upon i.e. principles and laws of physics in the field of currents, sound waves, heat, electromagnetic spectrum and radiations, their effects and application in physiotherapy.
2. To describe to the students main electrical supply, electric shock and its prevention, skin resistance and various media which reduce or enhance skin resistance towards current.
3. To teach how to identify and describe common electrical components like transistors, valves, capacitors, transistors, etc.
4. To teach about superficial thermal agents and usage as per clinical condition.
5. To learn about currents, different types and different parameters related to them.

COURSE CONTENTS:**Section – I****Physical Principles:**

- a) Structure and properties of matter – solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity.
- b) Structure of atom, molecules, elements and compounds. Electron theory, static and current electricity.
- c) Conductors, Insulators, Potential difference, Resistance & Intensity.
- d) Ohm's Law – Its application to AC & DC currents.
- e) Rectifying Devices – Thermionic Valves, Semiconductors, Transistors, Amplifiers,

- f) Transducers Oscillator circuits.
- g) Capacitance, condensers in DC and AC Circuits.
- h) Display devices & indicators – analogue & digital.

Effects of Current Electricity:

1. Chemical effects – Ions and Electrolytes, Ionisation, Production of a E.M.F. by chemical actions.
2. Magnetic effects, Molecular Theory of Magnetism, Magnetic fields, Electromagnetic Induction.
3. Milliampmeter and Voltmeter, Transformers and Choke Coil. Thermal Effects – Joule's Law and Heat production.
4. Physical Principles of Sound and its Properties.
5. Physical Principles of Light and its Properties.
6. Electromagnetic Spectrum – Biophysical Application.

Section – II**1. Electrical supply:**

- a) Brief outline of main supply of electric current.
- b) Dangers – short circuits, electric shocks.
- c) Precautions – safety devices, earthing, fuses etc.
- d) First aid & initial management of electric shock

Section – III**Low Frequency Currents:**

1. Introduction to Direct, Alternating & Modified Currents.
2. Production of direct current – Physiological and Therapeutic Effects of Constant Current, Anodal and Cathodal Galvanism, Ionisation and their Application in Various Conditions.
3. Iontophoresis – Principles of Clinical Application, Indication, Contraindication, Precaution, Operational Skills of Equipment & Patient Preparation.
4. Modified Direct Current – various pulses, duration and frequency and their effect on Nerve And Muscle tissue. Production of interrupted and surged current & their effects.
5. Modified Direct Current – Physiological and therapeutic effects, principles of clinical application, indications, contra indications, precautions, operational skills of equipment & patient preparation.

6. Transcutaneous Electrical Nerve Stimulations (TENS):

- a) Types of Low Frequency, pulse widths, frequencies & intensities used as TENS applications.
- b) Theories of pain relief by TENS.
- c) Principle of clinical application, effects & uses, indications, contraindications, precautions, operational skills of equipment & patient preparation.

Section – IV**Electrical Reactions and Electro – diagnostic tests:**

Electrical Stimuli and normal behavior of Nerve and muscle tissue.

Types of lesion and development of reaction of degeneration.

Faradic – Intermittent direct current test.

S.D. Curve and its application.

Chronaxie, Rheobase & pulse ratio.

Section – V

1. Infra red rays – Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation.

2. Ultra – Violet Rays (UVR):

a) Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation.

b) Dosimetry of UVR.

Section – VI

Superficial heat – Paraffin wax bath, moist heat, electrical heating pads.

a) Mechanism of production.

b) Mode of heat transfer.

c) Physiological & therapeutic effects.

d) Indications, contraindications, precautions, operational skills of equipment & patient preparation.

Electrotherapy – I Practical

Marks: 75

1. To study the basic operation of electric supply to the equipment & safety devices.
2. To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self.
3. To locate and stimulate different motor points region wise, including the upper & lower limb, trunk free.
4. Therapeutic application of different low frequency currents Faradic foot bath, Faradism under pressure, Ionotophoresis.
5. To study the reactions of degeneration of nerves, to plot strength duration curves.
6. To find chronaxie and Rheobase.
7. To study a hydrocollator unit, its operations and therapeutic application of Hot packs – region wise.
8. To study the various types of Infrared lamps and their application to body region wise.
9. To study a paraffin wax bath unit, its operation and different methods of application – region wise.
10. To study the different types of Ultra violet units, their operation, assessment of test dose and application of U.V.R. – region wise.
11. To study a TENS Stimulator, its operation and application – region wise.

BOOKS RECOMMENDED:

1. Electrotherapy Explained: Principles & Practice – Low & Reed – Butterworth Heinemann.
2. Clayton's Electrotherapy, (9th Ed.) Forster & Palastanga Bailliere Tindall.
3. Therapeutic Heat and Cold – Lehmann – Williams & Wilkins.
4. Principles and Practice of Electrotherapy – Kahn – Churchill Livingstone

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Knowledge about various types of therapeutic currents and its physiological, therapeutic effects gained.
CO-2	Knowledge about pain and pain modulation mechanism gained.
CO-3	Knowledge about different types of low and medium frequency currents. Its indication, contraindication, method of application gained.
CO-4	Practical application of electrotherapy modalities for various conditions gained.

BACHELOR OF PHYSIOTHERAPY (PART-I)**BPT-105: Exercise Therapy – I****Credit Hours (Per week): Theory: 4, Practical: 6****Total Hours: (Theory: 125, Practical: 200)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. It aims to teach about terminology related to exercising.
2. Impart information regarding techniques, general areas of application, assessment and importance of exercise therapy.
3. Describe anatomical position, different planes and derived positions, analysis of joint motion muscle work and neuro-muscular co-ordination.
4. Classify movements- active, passive, active-assisted, resisted and understands the application in different conditions.
5. Study principles, indications, contraindications, effects and uses of various types of exercise therapy.

COURSE CONTENTS:**Section – I**

- Introduction to Exercise therapy, Principles, techniques and general areas of its application, Assessment & its importance.
- Description of fundamental starting positions and derived position including joint positions, muscle work, stability, effects and uses.
- Introduction to Movements including analysis of joint motion, muscle work and Neuro – muscular co – ordination.
- Classification of movements – Describe the types, technique of application, indications, contraindications, effects and uses of the following:
 - a) Active movement
 - b) Passive movement
 - c) Active assisted movement
 - c) Resisted movement

Section – II

Suspension therapy: To study the principles, techniques of applications, indications, Contraindications, precautions, effects and uses of Suspension Therapy

Section – III**Relaxation**

1. Describe relaxation, muscle fatigue, muscle spasm and tension (mental & physical).
2. Factors contributing to fatigue & tension.
3. Techniques of relaxation (local and general).
4. Effects, uses & clinical application.
5. Indications& contraindications.

Section – IV**Therapeutic Gymnasium**

1. Setup of a gymnasium & its importance.
2. Various equipment in the gymnasium.
3. Operational skills, effects & uses of each equipment.

Practical:**M. Marks: 75**

- 1) To study the position of joints, muscle work, and stability of various fundamental and derived positions.
- 2) To study the different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements.
- 3) To practice the various types of suspension therapy and its application on various parts of body – region wise.
- 4) To study & practice local & general relaxation techniques.
- 5) To study the structure & function along with application of various equipment in a gymnasium.

BOOKS RECOMMENDED:

1. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications.
2. Therapeutic Exercises - Basmajian - Williams and Wilkins.
3. Therapeutic Exercises Foundations and Techniques - Kisner and Colby -F.A. Davis.
4. Proprioceptive Neuromuscular Facilitation - Voss et al - Williams and Wilkins.
5. Principle of Exercise Therapy -Gardiner - C.B.S. Delhi.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Knowledge of fundamentals of muscle and joint function.
CO-2	Have knowledge regarding basic mechanical principles of exercising and effect of different types of exercise on overall health and body and on particular target organ.
CO-3	Demonstrate and describe the changes taking place in major organs of the body while exercising i.e. changes to heart rate, breathing and alike.
CO-4	Have knowledge and skills for overcoming, controlling or reducing the physical strain of exercise on different organs.
CO-5	Have knowledge and skills for operating therapeutic modalities required in restoration of physical function.
CO-6	Be able to describe the physiological and therapeutic effect of various movements and demonstrate various anatomical planes and axes.

Bachelor of Physiotherapy
Part-I
Course Code: BPPB-1101
lwzml pMjwbl

Credit & Marks Distribution and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			L	T	P	Theory	IA			
lwzml pMjwbl BPPB-1101	100	4	4	0	0	75	25	3Hours	Class 12th pass in any stream	Studied Punjabi upto 10th Standard

<p>kors dw audyS Course Objective</p> <ul style="list-style-type: none"> • ividAwrQIAW ivc swihqk ruclAW pYdw krnw[• ividAwrQIAW ivc swihqk smJ ivksq krnl[• pMjwbl BwSw Aqy gurmuKl ilpl dy ieiqhws qy ivkws qoN jwxU krwawuxw[<p>pwT-kRm nqljy Course Outcomes (COs)</p> <ul style="list-style-type: none"> • ividAwrQIAW nUM pMjwbl swihq dIAW iBMn-iBMn vMngIAW dy AiDAYn dw mOkw imlygw[• auh pMjwbl swihq dIAW mOilK rcnwvW dw AiDAYn krngy[• auh pMjwbl BwSw, ivAwkrn, pMjwbl BwSw dl Dunl ivauNq dw igAwn hwsL krngy[• ividAwrQI ic`TI-p`qr rwhIN d&qrl kMm-kwj bwry muhwrq hwsL krngy[
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AMk-vMf Aqy pRliKak lei hdwieqW

islybs dy cwr Bwg hn pr pRSn-p`qr dy pMj Bwg hoxgy[pihly Bwg ivc 1.5-1.5 (fyF-fyF) AMk dy AiQ-sMKyp (Objective Type) 10 pRSn pu`Cy jwxgy jo ik swry islybs ivcoN hoxgy[islybs dy bwkl cwr BwgW ivc 02-02 lyK numw pRSn pu`Cy jwxgy[hryk Bwg ivcoN 01-01 pRSn krnw lwzml hovygw[hryk pRSn dy brwbr 15 AMk hoxgy[pypr sY`tr jykr cwhy qW pRSnW dl vMf A`goN v`D qoN v`D cwr aup-pRSnW ivc kr skdw hY[

not: ieMtrnl AsY`smYnt 25 AMkW dl hY[ies pypr dy ku`l AMk 75+25= 100 hn[

pwT-kRm

Bwg-pihlw

swihq dy rMg, fw. mihl isMG (sMpw.), rvl swihq pRkwSn, AMimRqsr[

Bwg pihlw - kivqw Aqy khwxl, fw. mihl isMG Aqy fw. Awqm rMDwvw (sih sMpw.)

(kivqw Bwg ivcoN pRSMg sihq ivAwikAw/ivSw-vsQ[khwxl Bwg ivcoN swr/ivSw-vsQ)

Bwg-dUjw

swihq dy rMg, fw. mihl isMG (sMpw.), rvl swihq pRkwSn, AMimRqsr[

Bwg dUjw- vwrqk Aqy ryKw-ic`qr, fw. primMdr isMG, fw. BuipMdr isMG, fw. kuldIp isMG iF`loN (sih sMpw.)

(vwrqk Bwg ivcoN swr/ivSw-vsQ[ryKw-ic`qr Bwg ivcoN swr/nwiek ibMb)

Bwg-qljw

(a) pYrHw rcnw

(A) pYrHw pVH ky pRSnW dy auæqr

(e) d&qrl ic`TI p`qr

Bwg-cOQw

(a) pMjwbl BwSw Aqy gurmuKl ilpl: inkws qy ivkws

(A) BwSw vMngIAW: BwSw dw tkswll rUp, BwSw Aqy aup-BwSw dw AMqr, pMjwbl aup-BwSwvW dy pCwx-icMnH

(e) pMjwbl Dunl ivauNq: aucwrn AMg, aucwrn sQwn qy ivDIAW, svr, ivAMjn, sur

Bachelor of Physiotherapy
Part-I

BPPB-1102
muFII pMjwbl
(In Lieu of Compulsory Punjabi)

Credit & Marks Distribution and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam
			L	T	P	Theory	IA	
muFII pMjwbl BPPB-1102	100	4	4	0	0	75	25	3Hours

kors dw audyS Course Objective	pwT-kRm nqljy Course Outcomes (COs)
<ul style="list-style-type: none"> • ividAwRQI nUM Su`D pMjwbl pVHnw-ilKxw isKwauXw[• pMjwbl BwSw dIAW ivAwkrnk bwriKIAW qoN jwxU krwauXw[• Su`D sMcwr nUM ivksq krnw[<ul style="list-style-type: none"> • ividAwRQI pMjwbl BwSw Aqy gurmuKI ilpl dl isKlweI ivc muhwrq hwsI krngy[• auh pMjwbl BwSw ivc muhwrnl, lgW-mwqrW, svr Aqy ivAMjn dl pCwx Aqy vrqoN duAwrw smJ nUM ivkisq krngy[• pMjwbl Sbd-joVW dl jwxkwrl hwsI krky ividAwRQI Su`D pMjwbl ilKx-pVHn dy smr`Q hoxgy[• auh pMjwbl BwSw dy ivAwkrn pRbMD dl jwxkwrl hwsI krngy[

AMk vMf Aqy pRliKak lel hdwieqW

islybs dy cwr Bwg hn pr pRSn-p`qr dy pMj Bwg hoxgy[pihly Bwg ivc 01-01 AMk dy Aiq-sMKyp au`qr vwly (Objective Type) 11 pRSn pu`Cy jwxgy jo ik swry islybs ivcoN hoxgy[pRSn p`qr dy dUsry Bwg ivc, islybs dy pihly Bwg ivcoN drimAwnl p`Dr dy iqMn pRSn pu`Cy jwxgy (ijMnHW nUM pypr sY`tr aup BwgW ivc vl vMf skdw hY) ienHW ivcoN koel do pRSn h`l krny hoxgy[hryk pRSn dy brwbr 8-8 AMk hoxgy[iesy qrHW pRSn p`qr dy qlsry Bwg ivc iqMn pRSn pu`Cy jwxgy ijMnW ivcoN do pRSn h`l krny hoxgy[hryk pRSn dy brwbr 8-8 AMk hoxgy[Bwg cOQy ivc pMj pRSn pu`Cy jwxgy[ijMnW ivcoN cwr pRSn h`l krny hoxgy[hryk pRSn dy brwbr 4-4 AMk hoxgy[Bwg pMjvYn ivc iqMn pRSn pu`Cy jwxgy[ijMnW ivcoN do pRSn krny lwzml hoxgy[hryk pRSn dy brwbr 8-8 AMk hoxgy[

not: ieMtrnl AsY`smYnt 25 AMkW dl hY[ies pypr dy ku`l AMk 75+25 = 100 hn[

pwT-kRm
Bwg-pihlw

(a) pMjwbl BwSw qy gurmuKI ilpl:

nwmkrx qy sMKyp jwx-pCwx: gurmuKI vrXmwIw, A`Kr kRm, svr vwhk (a, A, e), lgW-mwqrW, pYr ivc ibMdl vwly vrn, pYr ivc pYx vwly vrn, ibMdl, it`pl, A`Dk

(A) gurmuKI AwrQogrWPI Aqy aucwrn: svr, ivAMjn: muFII jwx-pCwx Aqy aucwrn, muhwrnl, lgW-mwqrW dl pCwx

Bwg-dUjw

(a) pMjwbl Sbd-joV: mukqw (do A`KrW vwly Sbd, iqMn A`KrW vwly Sbd), ishwrI vwly Sbd, ibhwrI vwly Sbd, AONkV vwly Sbd, duLYNkV vwly Sbd, IW vwly Sbd, dulwvW vwly Sbd, hoVy vwly Sbd, knOVy vwly Sbd, lgwKr (ibMdl, it`pl, A`Dk) vwly Sbd

(A) Suæ`D-ASu`D Sbd

Bwg-qljw

(a) pMjwbl Sbd-bxqr: DwqU, vDyqr (Agyqr, mDyqr, ipCyqr)

(A) pMjwbl Sbd-pRkwr: sMXukq Sbd, smwsl Sbd, dojwql Sbd, dohry/duhrukql Sbd Aqy imSrq Sbd

Bwg-cOQw

in`q vrqoN dl pMjwbl Sbdwvll: Kwx-plx, swkwdwrl, ru`qW, mhlinAW, mOsm, bjæwr, vpwr, DMidAW nwl
sMbMiDq

BPHC-1125: PUNJAB HISTORY & CULTURE (From Earliest Times to 1000 A.D.)
(Special Paper in lieu of Punjabi compulsory)
(For those students who are not domicile of Punjab)

Time: 3 Hours

Credit Hours (per week): 04
Total Hours: 100
M. Marks: 100
Theory: 75
Internal Assessment: 25

Instructions for the Paper Setters:-

The examiner will set 8 questions, two from each Unit. The candidate will attempt one question from each unit and the fifth question may be attempted from any Unit. Answer to each question will be in about 1000 words. Each question will be of 15 marks.

Note: The Medium of Instruction is English.

Course Objectives: The main objective of this course is to familiarize the students who are not domicile of the Punjab with the history and culture of the Punjab. It aims to describe different sources and physical features of the Punjab in Ancient period. It intends to provide knowledge of social, economic, religious and political life of people of the Punjab from Indus Valley Civilization to 1000 A.D. It also discusses the teachings and impact of Jainism and Buddhism in the Punjab.

UNIT-I

1. Physical Features of the Punjab and their impact.
2. Sources of Ancient Punjab History.
3. Harappan Culture: Principal places, town planning, features of social and economic life, religion, causes of disappearance.

UNIT-II

4. The Indo- Aryans: Original home and settlement in Punjab, political organization, social, religious, and economic life during the Rigvedic Age.
5. Impact of Buddhism and Jainism in the Punjab.
6. Political condition of the Punjab on the eve of Alexander's Invasions, account of the invasions and their impact.

UNIT-III

7. The Punjab under Chandra Gupta Maurya and Ashoka.
8. The Kushans and their contribution to Punjab.
9. The Punjab under the Vardhana Emperors.

UNIT-IV

10. The Punjab from 7th Century to 1000 A.D. (Survey of Political History)
11. Development of Education and Literature in the Punjab upto 1000 A.D.
12. Development of Art and Architecture up to 1000 A.D.

Suggested Readings:-

1. L. Joshi (ed), *History and Culture of the Punjab*, Art-I, Patiala, 1989 (3rd edition)
2. L.M. Joshi and Fauja Singh (ed), *History of Punjab*, Vol.I, Patiala, 1977.
3. BudhaParkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma, *Life in Northern India*, Delhi, 1966.

COURSE OUTCOMES (CO):**After completion of the course, the students will be able to learn:**

- CO-1: The sources and physical features of ancient Punjab.
- CO-2: Social, economic, religious life of the Harrapan civilization and Vedic-Aryans.
- CO-3: Teachings and impact of Jainism and Buddhism in the Punjab.
- CO-4: Language, literature, art and architecture of Ancient Punjab.
- CO-5: Political, Social, Religious, Economic and Cultural life of the people of the Punjab under the Maurayan, Kushana, Gupta and Vardhana Emperors.

S. No.	Course Code	Course Title	Credits			Total Credit	Period/wk.	Max. Marks	Total Marks
			L	T	P				
		Value Added Course							
1	ZDA101	Drug Abuse: Problem, Management and Prevention	2	-	-	2	2	100	100NC

Course Code: ZDA101**Course Title: PROBLEM OF DRUG ABUSE: MANAGEMENT AND PREVENTION (Compulsory)****Credit Hours (per week): 02****Time: 3 hours****Max. Marks: 100****Instructions for the Paper Setters:**

- 1) There will be a total of 9 questions of which 5 are to be attempted.
- 2) Question 1 is compulsory and having 20 short answer type questions (1 mark each).
- 3) The remaining 8 questions (20 marks each) shall include 2 questions from each unit. Candidates shall be required to attempt 4 questions, one from each unit. Preferably, the question should not be split into more than two sub-parts.

Course Objectives: The course aims to

CO-1.	Generate the awareness against drug abuse.
CO-2.	Describe a variety of models and theories of addiction and other problems related to substance abuse.
CO-3.	Describe the behavioral, psychological, physical health and social impact of psychoactive substances.
CO-4.	Provide culturally relevant formal and informal education programs that raise awareness and support for substance abuse prevention and the recovery process.
CO-5.	Describe factors that increase likelihood for an individual, community or group to be at risk of substance use disorders.
CO-6.	Describe the role of family in the prevention of drug abuse.
CO-7.	Describe the role of school and teachers in the prevention of drug abuse.
CO-8.	Emphasize the role of media and educational and awareness program.
CO-9.	Provide knowhow about various legislation and Acts against drug abuse.

Course Contents:**UNIT-I**

- **Meaning of Drug Abuse**

- (i) Meaning, Nature and Extent of Drug Abuse in India and Punjab.
- (ii) Consequences of Drug Abuse for:
 - Individual : Education, Employment and Income.
 - Family : Violence.
 - Society : Crime.

Nation : Law and Order problem.

UNIT-II

- **Management of Drug Abuse**

- (i) Medical Management: Medication for treatment and to reduce withdrawal effects.
- (ii) Psychiatric Management: Counselling, Behavioral and Cognitive therapy.
- (iii) Social Management: Family, Group therapy and Environmental Intervention.

UNIT-III

- **Prevention of Drug abuse**

- (i) Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.
- (ii) School: Counseling, Teacher as role-model. Parent-teacher-Health Professional Coordination, Random testing on students.

UNIT-IV

- **Controlling Drug Abuse**

- (i) Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program
- (ii) Legislation: NDPS act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

References:

1. Ahuja, Ram (2003), Social Problems in India, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Gandotra, R. and Randhawa, J.K. 2018. *voZrl d[otos'A (BPky'oh) gqpzXB ns o'eEkw.* Kasturi Lal& Sons, Educational Publishers, Amritsar- Jalandhar.
4. Inciardi, J.A. 1981. *The Drug Crime Connection.* Beverly Hills: Sage Publications. 23
5. Randhawa, J.K. 2018. *Drug Abuse-Management and Prevention.* Kasturi Lal& Sons, Educational Publishers, Amritsar- Jalandhar.
6. Kapoor. T. (1985) *Drug epidemic among Indian Youth,* New Delhi: Mittal Pub.
7. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention,* Jaipur: Rawat Publication.
8. *National Household Survey of Alcohol and Drug abuse.* (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
9. Sain, Bhim 1991, *Drug Addiction Alcoholism, Smoking obscenity* New Delhi: Mittal Publications.
10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab: A Sociological Study.* Amritsar: Guru Nanak Dev University.
11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers:* Delhi: Shipra. 12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation,* Cambridge University Press.

12. World Drug Report 2010, United Nations office of Drug and Crime.
13. World Drug Report 2011, United Nations office of Drug and Crime.

COURSE OUTCOMES: The students will be able:

CO-1.	To describe issues of cultural identity, ethnic background, age and gender in prevention, treatment and recovery.
CO-2.	To describe warning sign, symptoms, and the course of substance use disorders.
CO-3.	To describe principles and philosophy of prevention, treatment and recovery.
CO-4.	To describe current and evidenced-based approaches practiced in the field of addictions.
CO-5.	To understand the importance of family and its role in drug abuse prevention.
CO-6.	To understand the role of support system especially in schools and inter-relationships between students, parents and teachers.
CO-7.	To understand impact of media on substance abuse prevention.
CO-8.	To understand the role of awareness drives, campaigns etc. in drug abuse management.
CO-9	To learn about the Legislations and Acts governing drug trafficking and Abuse in India.

BACHELOR OF PHYSIOTHERAPY (PART-II)
BPT-201: Pathology & Microbiology

Credit Hours (Per week): 6**Total Hours: 200****M. Marks: 100****Theory: 75****Internal Assessment: 25****Time: 3 hrs****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To impart knowledge about terminology used in pathology, its aims and objectives.
2. To study microbiology through classification of micro-organisms, infections spread by them, prevention and control through disinfection and sterilization.
3. To deeply study about causative organisms, mode of transmission, pathogenesis, prevention and diagnostic tests of various infectious diseases.
4. To study etiology, pathogenesis and general features of diseases related to blood, bloodvessels, heart, respiratory system, bones, muscles and nervous system.
5. To understand about the knowledge of pathology, microbiology including immunity, virology, antiseptics and allergy.

COURSE CONTENTS:**Section – I****Pathology (Part 1) General Pathology**

1. Aims and objectives of the study of pathology. Meaning of terms, etiology, pathogenesis and lesions.
2. Causes of disease .cell injury – causes of cell injury features of cell injury mechanism of cell injury – hypoxia, free radical injury. Necrosis and gangrene.
3. Inflammation–definition, events of acute inflammation, chemical mediator of inflammation, morphological types of acute inflammation, chronic inflammation, difference between acute and chronic inflammation.
4. REPAIR–primary healing, secondary healing, factors affecting healing and repair healing of skin, muscle and bone.
5. Fluid and hemodynamic derangements–oedema, hyperemia, Haemorrhage, shock, embolism, thrombosis, infarction

6. Immunity—natural and acquired. Immunological mechanisms of tissue injury, hypersensitivity reactions, general features of autoimmune diseases and immunodeficiency diseases.
7. Neoplasia: characteristic of benign and malignant tumors, grading and staging of malignant tumors, a brief outline of the carcinogenic agents and methods of diagnosis of malignancy and general effects of malignancy on the host
8. Nutritional Disorders: deficiency disorders (protein deficiency, vitamin deficiency (A,B,C,D,E) causes , features , a brief outline of the methods of diagnosis (details not required).

Part 2

Systemic pathology: a brief outline of etiology, pathogenesis and general features of disease of the following systems. (The morphology, microscopic details and details of diagnostic procedures are not required).

1. Blood: disorders of RBC, WBC, platelets
2. Blood Vessels: atherosclerosis, thromboangitis obliterance, varicose vein, DVT, thrombophlebitis, lymphoedema.
3. Disease of heart: congestive cardiac failure, ischemic heart disease, rheumatic heart disease, infective heart disease (pericarditis, myocarditis, endocarditis)
4. Respiratory System: Pneumonias, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma, Tuberculosis.
5. Joints disorders: Arthritis- types and their features.
6. Bone Disorders: osteoporosis, Paget's disease, osteogenesis imperfecta, osteomyelitis, tumors—osteosarcoma, chondrosarcoma, Ewing's sarcoma, multiple myeloma (a brief outline)
7. Muscles: muscular dystrophy, myasthenia gravis.
8. Nervous System: meningitis, encephalitis, vascular diseases of brain, poliomyelitis, nerve injuries

Section – II

Microbiology

Part–I

1. An introduction to microbiology, Classification of microorganisms,
2. Infection – types, source, portals of entry, spread.
3. Prevention and control of infection, Disinfection and antiseptics Sterilization

Part–II

An outline of the following infectious diseases with respect to the causative organism, mode of transmission, pathogenesis, prevention, and diagnostic tests (details of the execution and interpretation of the tests not required)

Chicken Pox, Measles, Mumps, Influenza, Diphtheria, Whooping Cough, Tetanus, Tuberculosis, Leprosy, Rubella, Cholera, Gastroenteritis, Food Poisoning, Hepatitis, AIDS, Typhoid, Rabies, STD, Ameobiasis Kalaazar, Malaria, Filaria.

BOOKS RECOMMENDED:

1. Robbins Pathological Basis of Disease - Cotran, Kumar & Robbins - W.B. Saunders.

2. General Pathology - Walter & Israel - Churchill Livingstone.
3. Muirs Textbook of Pathology - Anderson - Edward Arnold Ltd.
4. Text book of Pathology - Harsh Mohan - Jaypee Brothers.
5. Pathology: Implications for Physical Therapists - Goodmann and Boissonnault - W.B. Saunders.
6. Essential of Medical Microbiology - Bhatia & Lal - Jaypee Brothers.
7. Medical Microbiology - Mims - Jaypee Brothers.
8. Microbiology: An Introduction for the Health Sciences – Ackerman and Richards - W.B. Saunders Co.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Different infections and their causative organism with treatment of that infection, how to reduce the risk and spread of infection.
CO-2	Signs and symptoms of various pathologies, any red flags for an ailment.
CO-3	Immunological and deficiency disorders, their effect on body, when to seek help of other health provider and investigations required for diagnosis
CO-4	Correlate normal and disturbed morphology of different organ systems in different diseases and their clinical significance and understand how a pathology affects the concerned tissue/organ and its effect on other major systems of the body, how repair occurs and normal function is restored
CO-5	Aetiology and pathogenesis of infectious and non-infectious diseases and their clinical relevance.
CO-6	Understand how to protect themselves and their patients from infections during interactions and therapy sessions

BACHELOR OF PHYSIOTHERAPY (PART-II)

BPT-202: Pharmacology

Credit Hours (Per week): 4

Total Hours: 100

M. Marks: 100

Theory: 75

Internal Assessment: 25

Time: 3 hrs

Instructions for paper setters and students:

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. It aims to cover the basic knowledge of pharmacology including administration, physiologic response and adverse effects of drugs under normal and pathologic conditions.
2. The students are taught about various kinds of drugs acting on different systems of body for instance CNS, respiratory system, cardiovascular system, endocrine system and so on.
3. Impart knowledge regarding chemotherapeutic agents and drugs for pain management.

COURSE CONTENTS:

Section – I

1. General action of drugs.
2. Drug allergy and idiosyncrasy.
3. Drug toxicity
4. Metabolic fate of drug
5. Methods of administration
6. Chemical character of drugs
7. Drugs acting on respiratory system
8. Vitamins

Section – II

1. Drugs acting on Central nervous system – anaesthetics, alcohols, alkaloids, narcotics, antipyretics, hypnotics, sedatives, anticonvulsants, stimulants, psychotherapeutics. (brief description)

2. Drugs acting on peripheral nervous system – stimulating and inhibiting cholinergic and anticholinergic activity.
3. Drugs acting on neuromuscular junction and muscles
4. Drugs for pain management.

Section – III

1. Hormones and drugs affecting endocrine functions
2. Drugs acting on cardiovascular system- (antianginal drugs, Drugs for MI, Brief outline of drugs for CHF, antihypertensive drugs).
3. Chemotherapeutic agents- Modern antibiotics, antitubercular drugs, antiamoebic drugs etc.

BOOKS RECOMMENDED:

1. Pharmacology and Pharmacotherapeutics - R.S. Satoskar – Popular Publications, Bombay.
2. The Pharmacologic Principles of Medical Practice - Krantg & Jelleff - Calcutta Scientific Book Agency.
3. Pharmacology - Praseem K. Das. – Churchill Livingstone
4. Essential of Medical Pharmacology - K.D. Tripathi - Jaypee Brothers

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Becomes well aware about pharmacological effects, route of administration, formulations, indications, contra-indications, adverse reactions and precautions if any about different drugs used by patients.
CO-2	Understand the contribution of both drug and physiotherapy protocol in the outcome of physiotherapy treatment.
CO-3	Can identify if the pharmacological effect of a drug interferes with therapeutic effect of physiotherapy and vice-versa.
CO-4	With better clarity about action and effect of drug, while reading patient files in hospital environment will be able to understand why a particular drug is being used in the clinical conditions on the basis of knowledge regarding action of drug.

BACHELOR OF PHYSIOTHERAPY (PART-II) BPT-203: Electrotherapy – II

Credit Hours (Per week): Theory: 4, Practical: 6

Total Hours: (Theory: 100, Practical: 200)

M. Marks: 200

Time: 3 hrs

Theory: 75, Practical: 75

Internal Assessment: 50 (Th-25; Pr-25)

Instructions for paper setters and students:

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

14. To recall neuro-muscular physiology and use it to understand effects and working of electrical stimulator.
15. To study about production of high frequency currents and medium frequency currents.
16. To study electro-diagnosis, its principles, instrumentation and techniques of electromyography (EMG) and nerve conduction study (NCS).
17. To study instrumentation, principles of working, merits and demerits, indications and contra-indications and patient preparation for various electrotherapy modalities.

COURSE CONTENTS:

SECTION – I

1. Review of Neuro – muscular Physiology including effects of electrical stimulation.
2. Physiological responses to heat gain or loss on various tissues of the body.
3. Therapeutic effects of heat, cold and electrical currents.
4. Physical principles of Electro – magnetic radiation.
5. Physics of sound including characteristics and propagation.

SECTION – II

1. **High frequency currents (S.W.D. and M.W.D.)** – Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
2. (a) **Medium frequency currents (Interferential Therapy)** – Conceptual framework of medium frequency current therapy, production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
(b) **Di-Dynamic Currents, Russian Current** – Production, types, therapeutic uses and contraindications of Russian currents and dynamic currents.

3. **High frequency sound waves (Ultrasound)** – Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.

SECTION – III

1. **Therapeutic light in Physiotherapy (LASER)** – Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.

2. **Therapeutic cold (Cryotherapy)** – Sources, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, application techniques and patient preparation.

3. **Traction-** principles, physiological & therapeutic effects classification, types, indications, contraindications, techniques of application, operational skills & precautions

4. **Therapeutic mechanical pressure (Intermittent compression therapy)** – Principle, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, operational skills and patient preparation.

SECTION – IV

1. **Electro – diagnosis** – Instrumentation, definition & basic techniques of E.M.G. and E.N.G.

2. **Bio–feedback** – Instrumentation, principles, therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation

Electrotherapy – II (Practical)

Marks: 75

1. To study a short wave diathermy unit, its operation and different methods of application – region wise.
2. To study a Micro wave diathermy unit, its operation unit, its operation and different methods of application – region wise.
3. To study an Ultrasound unit, its operation and different methods of application – region wise.
4. To study a Laser unit, its operation and different methods of application – region wise.
5. To study various forms of therapeutic cold application region wise including – ice, cold packs, vapour coolant sprays, etc.
6. To study a Intermittent therapy unit, its operation and different methods of application – region wise.
7. To study a Interferential pneumatic therapy unit, its operation and different methods of application – region wise.
8. To observe various Electro – myography (EMG) procedures.
9. To observe various Electro – neurography (ENG) procedures.
10. To study a Bio feedback unit, its operation and different methods of application – region wise.
11. To study & practice various traction techniques, including manual and mechanical Procedures.

BOOKS RECOMMENDED:

1. Electrotherapy Explained: Principles & Practice Low & Reed – Butterworth Heinmann.
2. Clayton’s Electrotherapy (10th edition) – Kitchen & Bazin – W.B. Saunders.
3. Therapeutic Heat and Cold Lehmann – Williams & Wilkins.

4. Principles and Practice of Electrotherapy – Kahn – Churchill Livingstone.
 5. Electrotherapy: Clinics in Physical Therapy – Wolf – Churchill Livingstone

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Be able to easily apply different electrotherapy modalities because of knowledge of their working, techniques of application, patient preparation, in what conditions to apply and when to avoid, safety measure to be followed and any dangers involved.
CO-2	Acquire the skill of application of electrotherapeutic modalities for assessment and treatment.
CO-3	Student starts understanding how to develop a patient-therapist relationship and handles patients well.
CO-4	Know the importance of following all the standards and safety guidelines while application of electrical modalities and outcome for failing to do so.
CO-5	Understands importance of patient positioning before beginning any treatment – for safety reason, his own as well as patient’s comfort and the range of movement and limitation to movement that a wrong positioning may provide.
CO-6	Can plan treatment protocol recommending exercises and modalities through the knowledge gained so far.

BACHELOR OF PHYSIOTHERAPY (PART-II)

BPT-204: Exercise Therapy – II

Credit Hours (Per week): Theory: 4, Practical: 6

Total Hours: (Theory: 100, Practical: 200)**M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To recall surface landmarks such as bony prominences and their relationship with underlying structures.
2. To study physiological and therapeutic effects, indications and contra-indications for therapeutic exercises.
3. To study how to assess and evaluate a patient for exercise program, prepare assessment perform, make diagnosis and prognosis.
4. To study exercises for normal persons to maintain overall fitness.

COURSE CONTENTS:**Section – I****Therapeutic Exercises**

1. Principle, classification, techniques, physiological & therapeutic effects, indications & contraindications of therapeutic exercises.
2. Assessment & evaluation of a patient (region wise) to plan a therapeutic exercise program.
3. Joint Mobility – Etiogenesis of Joint stiffness, general techniques of mobilization, effects, indications, contraindications & precautions.
4. Muscle Insufficiency – Etiogenesis of muscle insufficiency (strength, tone, power, endurance & volume), general techniques of strengthening, effects, indication, contraindications & precautions.
5. Neuromuscular Inco-ordination – Review normal neuromuscular coordination, Etiogenesis of neuromuscular in co-ordination & general therapeutic techniques, effects, indications, contraindications & precautions.
6. Functional re-education – General therapeutic techniques to re-educate ADL function.

Section – II**Posture, Balance, Gait:**

1. Normal Posture – Overview of the mechanism of normal posture.
2. Abnormal Posture – Assessment, Types, etiogenesis, management, including therapeutic exercises.

3. Static and Dynamic Balance – Assessment & management including therapeutic exercises.
4. Gait – Overview of normal gait & its components. Gait deviations - Assessment, Types, etiology, management, including therapeutic exercises.
5. Types of walking aids, indications, effects & various training techniques.

Section – III

Manual Muscle Testing

- a) Principles and application techniques of Manual muscle testing.
- b) Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk etc.

Section – IV

Goniometry

Goniometers and its types:

- a) Principles, techniques and application of Goniometry.
- b) Testing position, procedure and measurement of R.O.M. of the joints of upper limbs, lower limbs and trunk.

Section – V

Soft Tissue Manipulation (Therapeutic Massage)

- a) History, various types of soft tissue manipulation techniques.
- b) Physiological effects of soft tissue manipulation on the following systems of the body; Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism.
- c) Classify, define and describe: - effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc.
- d) Preparation of patient: Effects, uses, indications and contraindications of the above manipulation.

Section – VI

Hydrotherapy:

1. Basic principles of fluid mechanics, as they relate to hydrotherapy.
2. Physiological & therapeutic effects of hydrotherapy, including joint mobility muscle Strengthening & wound care etc.
3. Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation.

Section – VII

Special Techniques:

18. Introduction to special mobilization & manipulation techniques, effects, indications & contraindications.
19. Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions.
20. Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises.
21. Group Theory – Types, advantages & disadvantages.
22. Exercises for the normal person – Importance and effects of exercise to maintain optimal health & its role in the prevention of diseases. Types, advantages, disadvantages, indications, contraindications & precautions for all age groups.

23. Introduction to Yoga – Conceptual framework, various “asanas”, the body – mind relationship, effects & precautions.
24. Role of muscle energy technique.
25. Introduction to common ailments: Respiratory disorders, Cardiovascular disorders, Endocrine & Metabolic disorders and Obstetrics & Gynecological disorders in the light of Yoga Management

Exercise Therapy – II (Practical)

Marks: 75

1. To practice all soft tissue manipulative techniques region wise – upper limb, lower limb, neck, back and face.
2. To practice the measurement of ROM of joints – upper limb, lower limb & trunk.
3. To practice the grading of muscle strength region wise – upper limb, lower limb and trunk.
4. To practice assessment & evaluative procedures, including motor, sensory, neuromotor coordination, vital capacity, limb length & higher functions.
5. To study & practice the various techniques of mobilization of joints region wise.
6. To study & practice the various techniques of progressive strengthening exercises of muscles region wise.
7. To study & practice the use of various ambulation aids in gait training.
8. To assess & evaluate ADL's and practice various training techniques.
9. To study & practice mat exercises.
10. To assess & evaluate normal & abnormal posture & practice various corrective techniques.
11. To assess & evaluate equilibrium / balance & practice various techniques to improve balance.
12. To study the structure & functions of hydrotherapy equipments & their applications.
13. To study & practice various group exercise therapies.
14. To practice & experience effects of basic yoga “asanas”.
15. To study, plan & practice exercise programmes for normal persons of various age groups.

BOOKS RECOMMENDED:

1. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications.
2. Therapeutic Exercises - Basmajian - Williams & Wilkins.
3. Therapeutic Exercises Foundations and Techniques - Kisner & Colby -F.A. Davis.
4. Proprioceptive Neuromuscular Facilitation - Voss et al - Williams and Wilkins.
5. Principle of Exercise Therapy - Gardiner - C.B.S. Delhi.
6. Orthopaedic Physical Therapy - Woods - Churchill Livingstone.
7. Manipulation and Mobilisation Extremities and Spinal Techniques - Edmond - Mosby.
8. Aquatic Exercise Therapy - Bates and Hanson-W.B. Saunders.
9. Manual Examination and Treatment of Spine and Extremities - Wadsworth - Lippincott.
10. Hydrotherapy: Principles and Practices - Champion - Butterworth Heinmann.
11. Muscle testing and functions - Kendall - Williams & Wilkins.
12. Daniels and Worthingham's - Muscle Testing - Hislop & Montgomery - W.B. Saunders.
13. Measurement of Joint Motion: A Guide to Goniometry - Norkins & White - F.A. Davis.
14. . Beard's Massage - Wood – W. B. Saunders

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Be well aware of therapeutic movement, its effects and know how, when and when not to apply to enable better function.
CO-2	Have basic understanding of patient-centered care and knows its importance in physiotherapy.
CO-3	Be able to understand the complexity of human movement.
CO-4	Demonstrate and apply various types of exercise to restore physical function on self and peers keeping in mind the principles of exercise.
CO-5	Practice different techniques of varied exercise therapies and gain confidence in performing these skills before implementing them on patients so that high quality patient-care is ensured.
CO-6	Recall the effect of exercise on different body systems when designing a treatment protocol.

BACHELOR OF PHYSIOTHERAPY (PART-II)

BPT- 205: Biomechanics

Credit Hours (Per week): 4

Total Hours: 100**M. Marks: 100****Theory: 75****Internal Assessment: 25****Time: 3 hrs****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study basic terminology of biomechanics and mechanics such as motion, forces, Newton's laws, gravity, equilibrium and so on.
2. To recall muscle contraction and muscle work and study how different components work with each other in producing a movement; group action of muscles.
3. To understand kinetic chain, types and application
4. To recall joint classification and study joint structure, function and range of motion.
5. To study biomechanics of different joints.
6. To study static and dynamic stabilizers of joints
7. To study posture, factors affecting, postural deviations, causes, effects on other structures and their correction.

COURSE CONTENTS:**Section – I****Mechanics**

- a) Introduction to mechanics including motion, forces, parallel forces system
- b) Newton's law of motion, concurrent force systems – composition forces, muscle action line etc.
- c) Centre of Gravity, line of gravity, stability and equilibrium.
- d) Introduction to Bio-Mechanics and terminology.

Section – II**Joint Structure and Function:**

- a) Basic principles of Joint design and a human joint.
- b) Tissues present in human joint including fibrous tissue, bone cartilage and connective tissue.
- c) Classification of joints.
- d) Joint function, Kinematics chains and range of motion.
- e) Recall anatomy and study the biomechanics of the spine, shoulder girdle, joints of the upper extremity, pelvic girdle and the joints of the lower extremity.

Section – III**Muscle Structure and function:**

- a) Mobility and stability functions of muscle.
- b) Elements of muscle structure and its properties.
- c) Types of muscle contractions and muscle work.
- d) Classification of muscles and their functions.
- e) Group action of muscles, Co-ordinated movement.

Section – IV**Posture & Gait:**

- a) Posture – Definition, factors responsible for posture, relationship of gravity on posture.
- b) Postural imbalance – factors responsible for imbalance in Static and dynamic positions including ergonomics.
- c) Description of Normal gait, determinants of gait, spatio temporal features and analysis.
- d) Gait deviations – Types, Causative factors and analysis

Practical:**Marks: 75**

5. To study the effects of forces on objects.
6. To find out the C.G. of an object.
7. To identify axis and planes of motion at the joints of spine, shoulder girdle, joints of upper extremity, Pelvic girdle and joints of lower extremity.
8. To study the different types of muscle contraction, muscle work, group action of muscles of coordinated movements.
9. Analysis of Normal posture respect to L.O.G. and the optimal position of joints in anteroposterior and lateral views.
10. Analysis of normal gait and measurement of spatio temporal features.

BOOKS RECOMMENDED:

1. Joint Structure and Function – A Comprehensive Analysis - Norkins & Levangie - F.A. Davis.
2. Measurement of Joint Motion – A Guide to Goniometry - Norkins & White - F.A. Davis.
3. Brunnstrom's Clinical Kinesiology - Smith et al - F.A. Davis.
4. Basic Biomechanics Explained - Low & Reed - Butterworth Heinmann.
5. Kinesiology: Applied to Pathological Motion - Soderberg Lippincott.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Analyze human movement from a global perspective, integrating biomechanics, muscle mechanics and motor control theory.
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CO-2	Analyze restriction in muscle movement, trick movement, use of another muscle to do a desired movement.
CO-3	Understand and demonstrate open and closed kinetic chains and their importance which will help him to incorporate these into his practice.
CO-4	Assess gait pattern, any deviations from normal and their correction.
CO-5	Understand and demonstrate qualitative and quantitative methods of movement analysis.
CO-6	Acquire knowledge of joint and muscle response to varied movements for efficacy in therapeutic application.

BACHELOR OF PHYSIOTHERAPY (PART-II)**BPT-206: Psychology**

Credit Hours (Per week): 4

Total Hours: 150

M. Marks: 100

Theory: 75

Internal Assessment: 25

Time: 3 hrs

Instructions for paper setters and students:

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To introduce terminology of psychology, different schools, methods and branches of psychology.
2. To study about heredity and environment and their effects on personality, physical characteristics, intelligence, and nature.
3. To study development and growth behaviour during different stages of life – infancy, childhood, adulthood, middle age and old age.
4. To study about counselling, its principles, difference from guidance, personality qualities of counsellors.
5. To understand emotional and psychological needs of geriatric and paediatric patients.
6. To study and apply various conditioning and learning principles to modify patient behaviour.
7. To learn different personality styles of patients.

COURSE CONTENTS:

Section – I General Psychology

1. Definition of Psychology: Definition of psychology, information in relation to following schools methods and branches.
 - a. Schools: Structuralism, functionalism, behaviourism psychoanalysis, gestalt psychology.
 - b. Methods: Introspection, observation, inventory and experimental method.
 - c. Branches: General, child, social, abnormal, industrial, clinical, counseling, educational.
2. Development and Growth Behavior: Infancy, childhood, adolescence, adulthood, middle age, old age.
3. Intelligence: Definitions, IQ, Mental Age, List of various intelligence tests – WAIS, WISC, Bhatia's performance test, Raven's Progressive Matrices test.
4. Motivation: Definitions: Motive, drive, incentive and reinforcement, Basic information about primary needs: hunger, thirst, sleep, elimination activity, air, avoidance of pain, attitude to sex. Psychological Needs: Information, security, self-esteem, competence, love and hope.

5. Emotions: Definitions: Differentiate from feelings, physiological changes of emotion, Role of RAS, hypothalamus, cerebral cortex, sympathetic nervous system, adrenal gland, heredity and emotion, Nature and control of anger, fear and anxiety.

6. Personality: a) Definition, Role of heredity, family and culture in personality development.

b) Basic concepts of Freud: unconscious, conscious, Id, ego and superego, List and define the oral, anal and phallic stages of personality development, list and define the 8 stages as proposed by Erikson, 4 concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.

c) Personality assessment: interview, standardized, non-standardized. Exhaustive, and stress interviews, list and define inventories BAI, CPI and MMPI, projective test: Rorschach, TAT and sentence completion test.

7. Learning: Definition: List the laws of learning as proposed by Thorndike. Types of learning: Briefly describe classical conditioning, operant conditioning, insight, observation and Trial and Error type, list the effective ways to learn: Massed Vs. Spaced, Whole Vs. Part, Recitation Vs. Reading, Serial Vs. Free Recall, knowledge of results, Association, Organization, Mnemonic methods, incidental Vs. Intentional learning, role of language.

8. Thinking: Definition, concepts, creativity, steps in creative thinking, list the traits of creative people, delusions.

9. Frustration: Definition, sources, solution, Conflict; Approach – approach, Avoidance – avoidance, and approach – avoidance, solution.

10. Sensation, Attention and Perception a) List of Senses: Vision, Hearing, Olfactory, Gustatory and cutaneous sensation, movement, equilibrium and visceral sense. Define attention and list factors that determine attention: nature of stimulus, intensity, colour, change, extensity, repetition, movement, size, curiosity, primary motives.

b) Define perception and list the principles of perception: Figure ground, constancy, similarity, proximity, closure, continuity, values and interests, past experience, context, needs, moods, religion, sex and age, and socioeconomic status.

c) Define illusion and hallucination. d) List visual, auditory, cutaneous, gustatory and olfactory hallucination.

11. Democratic and Authoritarian Leadership: Qualities of leadership: Physical factors, intelligence, self-confidence, sociability, will and dominance. Define attitude. Change of attitude by: Additional information, changes in-group – affiliation, enforced modification by law and procedures that affect personality. (Psychotherapy, Counseling and religious conversion).

12. Defence Mechanisms of the Ego: Denial, rationalization, projection, reaction formation, identification, repression, emotional insulation, undoing, interjection, acting out, depersonalization.

Section – II Health Psychology

1. Psychological Reactions of a Patient: Perceived susceptibility, perceived seriousness, perceived benefits, Psychological reactions of a patient during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional over reactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope.

2. Reactions to Loss: Reactions to loss, death and bereavement shock and disbelief, development of awareness, restitution, resolution. Stages of acceptance as proposed by Kubler – Ross.

3. Stress: Physiological and Psychological relation to health and sickness: psychosomatic, professional stress burnout.
4. Communication: a) Types verbal, non-verbal, elements in communication, barriers to good communication, developing effective communication, specific communication techniques. b) Counseling: Definition, Aim, differentiate from guidance, principles in counseling and personality qualities of counselors.
5. Compliance: Nature, factors, contributing to non – compliance, improving compliance.
6. Emotional Needs: Emotional needs and psychological factors in relation to unconscious patients, handicapped patients, bed – ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputations, disfigurement, head injury, degenerative disorders, parkinsonism, leprosy, incontinence and mental illness.
7. Geriatric Psychology: Specific psychological reactions and needs of geriatric patients.
8. Pediatric Psychology: Specific psychological reactions and needs of pediatric patients.
9. Behavior Modifications: Application of various conditioning and learning principles to modify patient behaviours.
10. Substance Abuse: Psychological aspects of substance abuse: smoking, alcoholism and drug addiction.
11. Personality Styles: Different personality styles of patients.
12. Health beliefs, Behavior and Behavior change: Stages of change model, The health action process approach (HAPA), The Health belief model, Reasoned action and planned behavior.

BOOKS RECOMMENDED:

1. Introduction to Psychology - Mums - I.D.P. Co.
2. Foundation of Psychology - Weld - Publishing House, Bombay.
3. Introduction to Social Psychology – Akolkar – Oxford Publishing House.
4. Psychology and Sociology – Applied to Medicine – Porter & Alder - W.B. Saunders.
5. Behavioural Sciences for Medical Undergraduates – Manju Mehta - Jaypee Brothers.
6. Elementary Psychology - Mohsin - Moti Lal Banarsi Dass, Delhi.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical surgical conditions.
CO-2	Perform psychosocial assessment of patients in various developmental stages.
CO-3	Understand the concept of stress and its relationship to health, sickness and one's profession.
CO-4	Find reasons for non-compliance among patients and improving compliance behavior.

BACHELOR OF PHYSIOTHERAPY (PART-II)

BPT-207: Sociology & Community Health**Credit Hours (Per week): 4****Total Hours: 100****M. Marks: 100****Theory: 75****Internal Assessment: 25****Time: 3 hrs****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. It aims to introduce the student to basic sociological concepts, principles and social processes, social institutions in relation to individual, family and community along with various social factors affecting rural and urban communities.
2. Teaches about the concept of culture, its components and impact on human behaviour, culture induced sickness/disease.
3. Throws light on various social problems such as population explosion, poverty, alcoholism and so on.
4. Describes the role of social worker and importance of social security.
5. Describes community health and rehabilitation of various medical conditions along with their prevention, compares community based rehabilitation and institution based rehabilitation.

COURSE CONTENTS:

1. **Introduction:** Definitions of sociology, sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.
2. **Sociology & Health:** Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people.
3. **Socialization:** Meaning of socialization, influence of social factor on personality, socialization in hospitals, socialization in the rehabilitation of patients.
4. **Social Groups:** Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospitals and rehabilitation settings.

5. **Family:** Influence of family on human personality, discussion of changes in the functions of a family, influence of family on the individual's health, family and nutrition, the effects of sickness on family, and psychosomatic disease.

6. **Community:** Concept of community, role of rural and urban communities in public health, role of community in determining beliefs, practices and home remedies in treatment.

7. **Culture:** Components of culture. Impact of culture on human behavior, cultural meaning of sickness, response & choice of treatment (role of culture as social consciousness in moulding the perception of reality), culture induced symptoms and disease, sub – culture of medical workers.

8. **Caste System:** Features of modern caste system and its trends.

9. **Social Change:** Meaning of social change, factors of social change, human adaption and social change, social change and stress, social change and deviance, social change and health programmes, the role of social planning in the improvement of health and in rehabilitation.

10. **Social Control:** Meaning of social control, role of norms, folkways, customs, morals, religion, law and other means of social control in the regulation of human behavior, social deviance and disease

11. **Social Problems of the Disabled:** Consequences of the following social problems in relation to sickness and disability; remedies to prevent these problems:

- a) Population explosion
- b) Poverty and unemployment
- c) Beggary
- d) Juvenile delinquency
- e) Prostitution
- f) Alcoholism
- g) Problems of women in employment

12. **Social Security:** Social security and social legislation in relation to the disabled.

13. **Social Worker:** The role of medical social worker.

Community Health:

14. Introduction to Community Health, community and rehabilitation.

15. Community based rehabilitation in relation to different medical and surgical conditions e.g. Cholera, Typhoid, Diptheria, Leprosy, Poliomyelitis, HIV & AIDS, Hepatitis etc.

Prevention of diseases at different levels.

16. Community based rehabilitation vs. institutional based rehabilitation – comparison and different aspects. Community resources and their uses.

BOOKS RECOMMENDED:

1. Mcgee - Sociology - Drydon Press Illinois.
2. Kupuswamy - Social Changes in India - Vikas, Delhi.
3. Ahuja - Social Problems - Bookhive, Delhi.
4. Ginnsberg - Principles of Sociology - Sterling Publications.
5. Parter & Alder - Psychology & Sociology Applied to Medicine - W.B. Saunders.
6. Julian - Social Problems - Prentice Hall.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Demonstrate an understanding of the role of socio-cultural factors as determinants of health and behaviour in health and sickness.
CO-2	Understand the role of family and community in the development of behaviours.
CO-3	Develop a holistic outlook toward the structure of society and community resources.
CO-4	Identify the subtle influence of culture in the development of human personality, the role of beliefs and values as determinants of individual and group behaviour
CO-5	Understand the social and economical aspects of a community that influence the health of the people.
CO-6	Learn to assess social problems and participate in social planning.

BACHELOR OF PHYSIOTHERAPY (PART-II)**Course Code: ESL-225**

Course Title: Environmental Studies (Compulsory)**Credit Hours (Per Week): 2****Total Hours: 60****M. Marks: 100**

Instructions for Paper Setters: The question paper will consist of three sections. Candidate will be required to attempt all the sections. Each unit of the syllabus should be given equal weightage of marks. Paper to be set in English, Punjabi and Hindi.

Section–A (30 Marks): It will consist of eight short answer type questions. Candidates will be required to attempt six questions, each question carrying five marks. Answer to any of the questions should not exceed two pages.

Section–B (40 Marks): It will consist of six questions. Candidates will be required to attempt four questions, each question carrying ten marks. Answer to any of the questions should not exceed four pages.

Section–C (30 Marks): It will consist of three questions. Candidate will be required to attempt two questions only of fifteen marks each. Answer to the question should not exceed 5 pages.

COURSE OBJECTIVES:

CO-1	The main goal of Environmental studies is to create the environmental awareness to create a safe, green and sustainable environment.
CO-2	To make aware students about the importance of nature and natural resources.
CO-3	To stress upon the usage of alternative and green sources of energy.
CO-4	To create awareness regarding environmental pollution, its causes and effects and preventive measure to control the different types of pollution.
CO-5	To make students aware of Biodiversity – role, importance, values and its conservation.
CO-6	Growing human population – causes and concern
CO-7	Role of National Service Scheme (NSS) – a volunteer organization, in making up a better environment. Road safety (Traffic) rules.

COURSE CONTENTS:**Unit-I**

The multidisciplinary nature of environmental studies: Definition, scope & its importance. Need for public awareness.

- a) **Natural resources:** Natural resources and associated problems. **Forest resources:** Use of over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- b) **Water resources:** Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

- c) **Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- d) **Food resources:** World food problems, change caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problem, salinity, case studies.
- e) **Energy resources:** Growing of energy needs, renewable and non-renewable energy resources, use of alternate energy sources, case studies.
- f) **Land resources:** Land as a resource, land degradation, soil erosion and desertification.
- g) Role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles.

Ecosystem:

Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids.

Introduction, types, characteristic features, structure and function of the following ecosystems:

- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit-II**Biodiversity and its Conservation:**

Definition: Genetic, species and ecosystem diversity, Biogeographical classification of India.

Value of Biodiversity: Consumptive use; productive use, social, ethical, aesthetic and option values. Biodiversity of global, National and local levels, India as mega-diversity nation "Hot-spots of biodiversity.

Threats to Biodiversity: Habitat loss, poaching of wild life, man wildlife conflicts Endangered and endemic species of India.

Conservation of Biodiversity: *In situ* and *Ex-situ* conservation of biodiversity

Environmental Pollution:

Definition, Causes, effects and control measures of:

- a) Air Pollution
- b) Water Pollution
- c) Soil Pollution
- d) Marine Pollution

e) Noise Pollution

f) Thermal Pollution

g) Nuclear Hazards

Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.

Role of an individual in prevention of pollution.

Pollution case studies Disaster Management: Floods, Earthquake, Cyclone and Landslides

Unit-III

Social Issues and Environment:

- From unsustainable to sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act
- Air (prevention and Control of Pollution) Act
- Water (prevention and Control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

Human population and the environment

- Population growth, variation among nations
- Population explosion-Family welfare programme
- Environment and human health
- Human rights
- Value education
- HIV/AIDS
- Women and child welfare
- Role of information technology in environment :and human health
- Case studies

- Road Safety Rules & Regulations: Use of Safety Devices while Driving, Do's and Don'ts while Driving, Role of Citizens or Public Participation, Responsibilities of Public under Motor Vehicle Act, 1988, General Traffic Signs
- Accident & First Aid: First Aid to Road Accident Victims, Calling Patrolling Police & Ambulance

Unit-IV

National Service Scheme

- **Introduction and Basic Concepts of NSS:** History, philosophy, aims & objectives of NSS; Emblem, flag, motto, song, badge etc.; Organizational structure, roles and responsibilities of various NSS functionaries.
- **Health, Hygiene & Sanitation:** Definition, needs and scope of health education; Food and Nutrition; Safe drinking water, water borne diseases and sanitation (Swachh Bharat Abhiyan); National Health Programme; Reproductive health.
- **Entrepreneurship Development:** Definition & Meaning; Qualities of good entrepreneur; Steps/ ways in opening an enterprise; Role of financial and support service Institutions.
- **Civil/Self Defense:** Civil defense services, aims and objectives of civil defense; Needs for self-defense training.

Field Visits:

- Visit to a local area to document environmental assets—river / forest / grassland / hill / mountain.
- Visit to a local polluted site—Urban / Rural / Industrial / Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems—pond, river, hill slopes, etc.
- Contribution of the student to NSS/any other social cause for service of society.

Note: In this section the students will be required to visit and write on the environment of an area/ ecosystem/village industry/disaster/mine/dam/agriculture field/waste management/hospital etc. with its salient features, limitations, their implications and suggestion for improvement.

References/Books:

1. Agarwal, K. C. 2001. Environmental Biology, Nidhi Publications Ltd. Bikaner.
2. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
3. Down to Earth, Centre for Science and Environment, New Delhi.
4. Jadhav, H. & Bhosale, V. M. 1995. Environmental Protection and Laws. Himalaya Pub.
5. Joseph, K. and Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
7. Kaushik, A. & Kaushik, C. P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
8. New Age International (P) Ltd, New Delhi.
9. Miller, T. G. Jr. 2000. Environmental Science, Wadsworth Publishing Co.

10. Sharma, P. D. 2005. Ecology and Environment, Rastogi Publications, Meerut.
11. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex, Amritsar
12. Kanta, S., 2012. Essentials of Environmental Studies, ABS Publications, Jalandhar.

COURSE OUTCOMES (CO):

CO-1	To learn about the sustainable environment.
CO-2	To gain the knowledge about the judicious use of natural resources for a green environment.
CO-3	To know about the causes of different forms of pollution and their control measures.
CO-4	To know about the importance of green programs like <i>vana mahotasava</i> to promote afforestation.
CO-5	To know about the meaning of Biodiversity and its role in environment.
CO-6	To know the family (welfare) planning programs, role of NSS and road safety rules.

BACHELOR OF PHYSIOTHERAPY (PART-III)
BPT-301: Orthopaedics

Credit Hours (Per week): Theory: 5, Practical: 2

Total Hours: (Theory: 150, Practical: 50)

M. Marks: 200

Time: 3 hrs

Theory: 75, Practical: 75

Internal Assessment: 50 (Th-25; Pr-25)

Instructions for paper setters and students:

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To introduce students to basic terminology related to orthopaedics, clinical examination of an orthopaedic patient, effectively read an x-ray and other imaging techniques.
2. Recall anatomy of bones especially long bones of limbs.
3. To study non-operative management of various orthopaedic conditions.
4. To study operative treatment options and their principles, indications and contra-indications.
5. To study common musculoskeletal problems and their clinical manifestations. Apply and demonstrate the various treatment options for the same.

COURSE CONTENTS:

Section – I

1. **Introduction to Orthopaedics:** Introduction to orthopaedic terminology. Types of pathology commonly dealt with, clinical examination, common investigations X- rays & imaging techniques and outline of non – operative management.

2. **Principles of Operative Treatment:** List indications, contraindication and briefly outline principles of: Arthrodesis, Arthroplasty, Osteotomy, Bonegrafting, Tendon – Transfers and Arthroscopy.

3. **Sprains and Muscle Strains:** List common sites of sprains and muscle strains and describe the clinical manifestations and treatment. Viz. tennis elbow, golfer's elbow, Dequervan's disease, tenosynovitis, trigger finger, carpal tunnel syndrome and plantar fasciitis.

4. **Sports Injuries:** Injuries related to common sports their classification and management.

Section – II

1. **Fractures and Dislocations:** General Principles, outline the following:

- i) Types of Fractures including patterns. Open and closed fractures and fracture – dislocations.
- ii) Differences between dislocation & subluxation.

- iii) General & Local signs & symptoms of fractures & dislocation.
- iv) Principle of management of fractures & dislocations.
- v) Prevention & treatment of complication including: Fracture – disease, Volkmann’s ischaemic contracture, Sudeck’s Atrophy, Carpal Tunnel Syndrome. Myositis ossificans and shoulder – hand syndrome.
- vi) Fracture healing.

2. Upper Limb Fractures & Dislocations:

- a) Enumerate major long bone fractures and joint injuries.
- b) Briefly describe their clinical features, principles of management and complications.

3. Lower Limb Fractures & Dislocations:

- a) Enumerate major long bone fractures and joint injuries.
- b) Briefly describe their clinical features, principles of management and complication.

4. Spinal Fractures and Dislocations: Outline the mechanism, clinical features, principles of management and complications of spinal injuries.

5. Recurrent Dislocations: Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and patella.

Section – III

1. Amputations:

- a) Classify amputations. List indication for surgery,
- b) Outline pre-operative, operative and prosthetic management.
- c) Outline prevention and treatment of complications.

2. Bone & Joint Infections: Outline the etiology, clinical features, management and complications of septic arthritis osteomyelitis, Tuberculosis (including spinal T.B.).

3. Bone Joint Tumors: Classify and outline the clinical features, management and complications of the following (benign / malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing’s sarcoma, multiplemyeloma).

Section – IV

1. Chronic Arthritis: Outline of pathology: clinical features, mechanism of deformities, management and complications of Rheumatoid arthritis. Osteoarthritis of major joints and spine, Ankylosing spondylitis.

2. Neck & Back Pain, Painful Arc Syndrome, Tendonitis, Facitis & Spasmodic Torticollis. Outline the above including clinical features and management.

3. Spinal Deformities: Classify spinal deformities and outline the salient clinical features, management and complications of Scoliosis, Kyphosis and Lordosis.

Section – V

1. Poliomyelitis: Describe the pathology, microbiology, prevention, management and complications of polio. Outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfers and corrective surgery.

2. **Congenital Deformities:** Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (radial club hand and femoral, tibial and fibula deficiencies meningomyelocele, Arthrogyphosis multiplex congenitiae and Osteogenesis imperfecta.
3. **Peripheral Nerve Injuries:** Outline the clinical features and management, including reconstructive surgery of:
 - a) Radial, Median and Ulnar Nerve Lesions.
 - b) Sciatic and Lateral Popliteal Lesions.
 - c) Brachial Plexus injuries including Erbs, Klumpke's and crutch palsy
4. **Hand Injuries:** Outline of clinical features, management and complications of: Skin and soft tissue injury, tendon injury, bone and joint injury.
5. **Leprosy:** Outline of clinical features, management and complications of neuritis, muscle paralysis, tropic ulceration and hand & feet deformities.

BOOKS RECOMMENDED:

1. Watson – Zones, Fractures and Joint Injuries – Wilson – Churchill Livingstone.
2. Clinical Orthopaedic Examination – Mcrae – Churchill Livingstone.
3. Concise System of Orthopaedics and Fractures – Apley – Butterworth Heinmann.
4. Outline of Fractures – Adam – Churchill Livingstone.
5. Outline of Orthopaedics – Adam – Churchill Livingstone.
6. Physical Examination in Orthopaedics – Apley – Butterworth Heinmann.
7. Clinical Orthopaedics Diagnosis – Pandey & Pandey – Jaypee Brothers.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Examine and assess an orthopedic patient.
CO-2	Read and interpret investigations, radiological tests of spine and extremities and other imaging tests.
CO-3	Correlate the radiological findings with clinical findings.
CO-4	Understand and clinically apply principles of management in various deformity cases alongwith the related splinting and techniques of splinting.
CO-5	Understand and demonstrate traction application in fracture cases.
CO-6	Understand and apply orthopedic management in geriatric patients suffering from anymusculoskeletal or orthopedic condition.

BACHELOR OF PHYSIOTHERAPY (PART-III)

BPT-302: General Medicine

Credit Hours (Per week): Theory: 4, Practical: 2

Total Hours: (Theory: 100, Practical: 50)

M. Marks: 200

Time: 3 hrs

Theory: 75, Practical: 75

Internal Assessment: 50 (Th-25; Pr-25)

Instructions for paper setters and students:

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study modes of transmission of communicable diseases spread by various micro-organisms such as bacteria and viruses.
2. To study metabolic and deficiency diseases
3. To study disorders taking place due to hormonal imbalance.
4. To study diseases and infections of all the systems of body.

COURSE CONTENTS:

Section – I

1. Introduction to modes of transfer of communicable diseases & general preventive measures.
2. **Bacterial Diseases:** Tuberculosis, Leprosy, Rheumatic fever, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentery and Measles.
3. **Viral Diseases:** Herpes – simplex and zoster, Varicella, Measles, Mumps, Hepatitis B & C, AIDS & influenza.
4. **Metabolic and Deficiency Diseases:** Diabetes, Anemia, Vitamin & Nutritional Deficiency diseases, diseases of the endocrine glands.

Section – II

1. **Diseases of Respiratory System:** Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis, Bronchial Pneumonia, lung abscess, Emphysema, Empyema, Paralysis of diaphragm & vocal cords, chronic infection of larynx and trachea, Abnormalities of trachea, infract of lungs, chronic passive congestion, chronic obstructive pulmonary disease, chest wall deformities.
2. **Diseases of Circulatory System:** Thromobsis, Embolism, Gangrene, Valvular diseases, Hemorrhage, Heart Malformation, various diseases of arteries, diseases of blood forming organs, Anoemia, Leukaemia, Leucocytosis, Peripheral Vascular diseases, diseases of the lymphatic systems. Diseases of

the heart – Hypertension, Hypotension, Aortic aneurysm, Endocarditis, Pericarditis, Aortic Regurgitation, Cardiac failure, coronary heart diseases, congenital heart malformation and its manifestation.

Section – III

1. **Diseases of Digestive Systems:** Pharyngitis, spasm of the Oesophagus, Diverticulum stenosis, Gastric ulcer, Hematemesis, Pyloric stenosis, Dyspepsia, Vomiting, Diarrhoea, Duodenal ulcer etc.
2. **Disease of Liver:** Jaundice Cirrhosis of liver, Abscess of liver, Ascitis.
3. **Diseases of Kidney:** Polyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi.

Section – IV

Diseases of Skin:

1. Characteristics of normal skin, abnormal changes, types of skin lesions.
2. **Conditions** – Leprosy, Acne, Boil, Carbuncles, Impetigo, Infections of skin, Herpes, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbances, Warts, Corn, Defects in Pigmentation, Psoriasis, Leucoderma, Fungal infections, Alopecia, Dermatitis, Eczema, Skin – allergies, Venereal diseases.

Section – V

Psychiatry:

1. Introduction: Definition, defence mechanism, symptomatology, types & causes of mental disorders, psychosomatic disorders.
2. **Disorders:**
 - a) Psychosis – Schizophrenia (including paranoid), maniac depressive psychosis, involvement psychosis.
 - b) Psychoneurosis – Anxiety, hysteria, anxiety states, neurasthesis, reactive depression, obsessive compulsive neurosis.
 - c) Organic reaction to – toxins, trauma & infection.
 - d) Senile dementia.
3. **Mental retardation** – Definition, causes manifestation and management.
4. **Therapies:**
 - a) Psychotherapy – Group therapy, Psychodrama, behaviour modification, family therapy, play therapy, psychoanalysis, hypnosis.
 - b) Drug therapy
 - c) Electro convulsive therapy

BOOKS RECOMMENDED:

1. Davidson's Principles and Practices of Medicine - Edward - Churchill Livingstone.
2. Hutchinson's Clinical Methods - Swash - Bailliere Tindall.
3. A Short Text Book of Medicine - Krishna Rao - Jaypee Brothers.
4. A Short Text Book of Psychiatry - Ahuja Niraj - Jaypee Brothers.

COURSE OUTCOMES (CO):

By the end of this session, the students will be able to-

CO-1	Be able to communicate with medical personnel and others using medical terminology.
CO-2	Know about causative organisms involved in various infections and steps to limit their spread.
CO-3	Will be well versed in providing first aid and has skills for basic life support.
CO-4	Understands the underlying etiology, pathology, clinical features and management of various diseases and disorders of different systems of human body.
CO-5	Will be well-versed with chart-reviewing, documentation and formulating appropriate intervention as per the medical condition.
CO-6	Has an overall knowledge of use and effects of various drugs in each medical condition and effects of drugs ingestion just before therapy.

BACHELOR OF PHYSIOTHERAPY (PART-III)

BPT-303: Physiotherapy in Orthopaedic Conditions

Credit Hours (Per week): Theory: 4, Practical: 4

Total Hours: (Theory: 100, Practical: 100)

M. Marks: 200

Time: 3 hrs

Theory: 75, Practical: 75

Internal Assessment: 50 (Th-25; Pr-25)

Instructions for paper setters and students:

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. Recall orthopaedic condition before beginning physiotherapy related to that condition.
2. Recall therapeutic gymnasium and electrotherapeutic modalities, their principles and working, indications and contra-indications.
3. Focuses on teaching how to maximise functional independence and make a person independent in performing his activities of daily living.
4. To study fracture healing, factors affecting union and practise ways of immobilisation.
5. To study physiotherapy management of fracture cases of upper limb, lower limb and spine.

COURSE CONTENTS:

Section - I

Introduction Brief review of the following surgical condition and various physiotherapeutic modalities, aims, means and technique of physiotherapy should be taught.

Traumatology General physiotherapeutic approach for the following conditions:

Fracture and dislocations; Classification and type of displacement, method of immobilisation, healing of fractures and factors affecting union, non union, delayed union etc. common sites of fractures.

Specific fractures and their complete 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.

Section - II

Surgical procedures; Pre and post operative management of common corrective procedure like arthroplasty, arthrodesis, osteotomy, tendon transplants, soft tissue release grafting, including

polio residual paralysis and leprosy deformities corrections.

Injuries; Soft tissue injuries, synovitis, capsulitis, Volkmann's ischemic contracture etc. tear of semilunar cartilage and cruciate ligaments of knee, meniscectomy, patellectomy, internal derangement of knee.

Amputation; level of amputation of upper limb and lower limb, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training etc

Deformities; congenital torticollis and cervical rib, CTEV, Pes cavus, pes planus and other common deformities.

Acquired – Scoliosis, kyphosis, lordosis, coxa vara, genu valgum, genu varum and recurvatum.

Section - III

Degenerative and infective conditions: osteoarthritis of major joints, spondylosis, spondylitis, spondylolisthesis, PIVD, Periarthritis of shoulder, Tuberculosis of spine, bone and major joint, perthes disease. Rheumatoid arthritis, Ankylosing spondylitis etc. and other miscellaneous orthopaedic conditions treated by physiotherapy.

Principles of sports physiotherapy – causes of sports injury, prevention of sports injuries, management of acute sports injury, common occurred injuries. Role of physiotherapist in sports, principle & advanced rehabilitation of the injured athlete.

Practical

Marks: 75

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 text book of Orthopaedics and Rheumatology for Physiotherapists – Downie - Jaypee Brothers.
2. Tidy's Physiotherapy - Thomson et al -Butterworth Heinmann.
3. Essentials of orthopaedics and applied physiotherapy – Joshi and Kotwal - B.L. Churchill Livingstone.
4. Tetraplegia & Paraplegia - Bromley - W.B. Saunders.
5. Orthopaedic Physiotherapy - Donatelli & Wooden - W.B. Saunders.
6. Rheumatological Physiotherapy - David - Mosby.
7. Orthopaedic Physiotherapy - Tids well - Mosby.
8. Physiotherapy for Amputee - Engstrom & Van de van - Churchill Livingstone.
9. Sports Injuries: Diagnosis and Management - Norris Butterworth Heinmann

COURSE OUTCOMES (CO):

By the end of this course, the student will be able to-

CO-1	Prepare a day wise physiotherapy progression treatment/protocol and efficiently implement on affected patient.
CO-2	Plan and execute short and long term goals with emphasis on relief of pain.
CO-3	Assess, identify and analyze neuro-motor and psychosomatic dysfunction in terms of alteration in tone, power, co-ordination, involuntary movements and sensations.
CO-4	Can prepare and implement pre and post operative management of common corrective procedures.
CO-5	Incorporates his knowledge of anatomy, biomechanics and orthopedics while assessing a patient.
CO-6	Knows and can confidently plan and implement physiotherapy protocol in soft tissue injuries such as ligament tear and repair.

BACHELOR OF PHYSIOTHERAPY (PART-III)

BPT-304: Physiotherapy in Medical Condition-I**Credit Hours (Per week): Theory: 4, Practical: 4****Total Hours: (Theory: 100, Practical: 100)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. Recall pathology, etiology and course of the condition before beginning its physiotherapy management.
2. To study about inflammation and odema along with its conservative treatment and management.
3. To study physiotherapy treatment in different types of orthopedic conditions.
4. To study conservative treatment and how physiotherapy can aid in recovery of patients suffering from skin conditions and sexually transmitted diseases.
5. Group therapy, recreational activities, dance therapy, yoga, meditation and other psychotherapies to help patients with psychiatric disorders.

COURSE CONTENTS:

Section – I
General Medicine

Review of the Pathological and principles of management by Physiotherapy to the following conditions:

1. Inflammation – acute, chronic and suppurative.
2. Oedema – Traumatic, obstructive, Paralytic, Oedema due to poor muscle and laxity of the fascia.
3. Arthritis and Allied Conditions (in details):
 - a) Osteo – arthritis – generalised, Degenerative and traumatic, Spondylosis and disorders.
 - b) Rheumatoid Arthritis, Still's disease, infective Arthritis.
 - c) Spondylitis, Ankylosing Spondylitis.
 - d) Nonarticular Rheumatism – Fibrositism, Myalgia, bursitis, Periarthritis etc.
4. Common conditions of Skin – Acne, Psoriasis, Alopecia, Leucoderma, Leprosy, Sexually transmitted diseases.
5. Deficiency diseases – Rickets, Diabetes, Obesity, Osteoporosis and other deficiency disorders related to Physiotherapy.

6. Psychiatric Disorders – Psychosis, Psychoneurosis, Senile dementia.

Section – II Respiratory

- 1) Review of mechanism of normal respiration.
- 2) Chest examination, including auscultation, percussion.
- 3) Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various respiratory disorders.

Review of pathological changes and principle of management by physiotherapy of the following conditions:

- 1) Bronchitis, Asthma, Lung abscess, Bronchiectasis, Emphysema, COPD.
- 2) Pleurisy and Empyema, Pneumonia.
- 3) Bacterial Disease.
- 4) Rheumatic fever, Carcinoma of respiratory tract.
- 5) Paralysis of diaphragm & vocal cords.
- 6) Chest wall deformities.

Section – III Cardiovascular

- 1) Review of anatomy & physiology of the cardiovascular system.
- 2) Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various cardiovascular disorders.
- 3) Review of pathological changes and principle of management by physiotherapy of the following conditions:

Thrombosis, Embolism, Buerger's diseases, Arteriosclerosis, Thrombophlebitis, Phlebitis, Gangrene, Congestive Cardiac failure. Hypertension, Hypotension, aneurysm.

BOOKS RECOMMENDED:

1. Cash Textbook of General Medical and Surgical Conditions for Physiotherapists – Downie - Jaypee Brothers.
2. Essentials of Cardiopulmonary Physical Therapy - Hillegass & Sadowsky - W.B. Saunders.
3. Cash Textbook of Chest, Heart and Vascular Disorders for Physiotherapists - Downie - J.P. Brothers.
4. The Brompton Guide to Chest Physical Therapy.
5. Cardiopulmonary Physical Therapy - Irwin and Tecklin - Mosby.
6. Cardiovascular / Respiratory Physiotherapy - Smith & Ball - Mosby.
7. ACSM Guidelines for Exercise Testing and Prescription - ACSM - Williams and Wilkins.
8. Chest Physiotherapy in Intensive Care Unit - Mackenzie et al - Williams and Wilkins

COURSE OUTCOMES (CO):

By the end of this course, student will be able to-

CO-1	Effectively prepare, plan and implement a physiotherapy treatment protocol.
CO-2	Easily measure patient vitals, chart his recovery and plan day-wise physiotherapy progression.
CO-3	Be able enough to perform chest examination, auscultation and interpret the findings.
CO-4	Read and interpret report of invasive and non-invasive investigations for various medical conditions.
CO-5	Be able to perform chest physiotherapy competently.
CO-6	Apply physiotherapy management in patients suffering from any form of the arthritis, conditions affecting vertebral column and complications of deficiency disorders and make progression in exercise difficulty level as per patient cooperation and recovery.

BPT- 305: Research Methodology and Biostatistics**Credit Hours (Per week): 3****Total Hours: 100****M. Marks: 100****Theory: 75****Internal Assessment: 25****Time: 3 Hrs.****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study importance of research in clinical practise.
2. To learn scientific approach to research, characteristics, purposes and limitations.
3. To study ethical issues in research and elements of informed consent.
4. To study structure of a research proposal and how to do literature review.
5. To throw light on principles of measurement, reliability and validity.
6. To study experimental sampling and design and steps involved in a descriptive research.
7. To learn how to calculate mean, median, mode of a given sample, T- tests, range, variance, mean deviation, standard deviation and coefficient of variance.
8. To study analysis of variance and quantitative and quantitative observations.
9. To learn about graphical representation of data.
10. To study frequency distribution and about correlations and solving the mathematical problems along with.
11. Trains new graduates the fundamentals of reading and understanding research methods, design and statistics.

COURSE CONTENTS:**Section – I**

1. Introduction: Importance of research in clinical practice, scientific approach, characteristics, Purposes and limitations.
2. Ethical issues in research, elements of informed consent.
3. Structure of a research proposal.

Section – II

1. Research Question including literature review.
2. Measurement: Principles of measurement, reliability and validity.
3. Experimental sampling and design.
4. Descriptive research.

Section – III**Biostatistics:**

1. Descriptive statistics
2. Comparison of means, T – tests.
3. Analysis of Variance.
4. Qualitative and quantitative observations, Measures of Central Tendency – Arithmetic Mean, Median and Mode, Position of averages and graphical representation of data.
5. Measures of dispersion – range, variance, mean deviation, standard deviation and co eff. of variation.
Frequency distribution
6. Correlations

BOOKS RECOMMENDED:

1. Methods in Biostatistics – Mahajan - J.P.
2. Statistics in Medicine - Colton - Little Brown, Boston.
3. Research for Physiotherapist: Project Design and Analysis - Hicks - Churchill Livingstone.
4. Biostatistics: The manual for Statistical methods for use in health and nutrition - K.V. Rao- J.P.
5. Research methods in Behavioural Sciences - Mohsin - Orient Publication

COURSE OUTCOMES:

By the end of this session, a student will be able to-

CO-1	Decide according to need and objective about which types of test or measure of central tendency to be applied to a given data.
CO-2	Describe the importance of research work in the field of physiotherapy and use of biostatistics.
CO-3	Acquire the skills for reviewing literature, formulating a hypothesis, collecting data and writing a research proposal.
CO-4	Describe the steps involved in physiotherapy research process.
CO-5	Plan a study choosing appropriate design for a given problem according to objective.
CO-6	Follow the ethical guidelines for a researcher and maintain ethical standards while subject examination, tests, statistical analysis and research publication.

BACHELOR OF PHYSIOTHERAPY (PART-III)**BPT-306: Neurology****Credit Hours (Per week): Theory: 4, Practical: 4****Total Hours: (Theory: 100, Practical: 100)****M.****Marks: 200****Time: 3 hrs****Practical: 75****Theory: 75,****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. Recall basic neuroanatomy and neurophysiology.
2. To learn how to assess and examine a neurological patient.
3. To learn basic principles of managing and handling a neurological patient.
4. To learn first aid and management of patients with head injury and spinal cord injury.
5. To study etiology, clinical features and management of congenital and childhood disorders.
6. To learn about causes, clinical features and management of cerebrovascular accidents.
7. To study etiology, clinical features and management of different types of neuropathies.

COURSE CONTENTS:**Section – I**

1. **Neuroanatomy:** Review the basic anatomy of the brain and spinal cord including: Blood supply of the brain and spinal cord, anatomy of the visual pathway, connections of the cerebellum and extrapyramidal system, relationship of the spinal nerves to the spinal cord segments, long tracts of the spinal cord, the brachial and lumbar plexus and cranial nerves.
2. **Neurophysiology:** Review in brief the Neurophysiological basis of: tone and disorders of the tone and posture, bladder control, muscle contraction, movement and pain.

3. Assessment and evaluative procedures for the neurological patient.
4. Review of the principles of the management of a neurological patient.

Section – II

Briefly outline the etiogenesis, clinical features and management of the following Neurological disorders: -

1. Congenital and childhood disorders – Cerebral palsy, Hydrocephalus and Spina Bifida.
2. Cerebrovascular accidents – General classification, thrombotic, embolic, haemorrhagic & inflammatory, strokes, gross localisation and sequelae.
3. Trauma – localization, first aid and management of sequelae of head injury and spinal cord injury.
4. Diseases of the spinal cord – Craniovertebral junction anomalies, Syringomyelia, Cervical and lumbar disc lesions, Tumors and Spinal arachnoiditis.
5. Demyelinating diseases (central and peripheral) – Guillain – Barre syndrome, Acute disseminated encephalomyelitis, Transverse myelitis and Multiple sclerosis

Section -III

Briefly outline the etiogenesis, clinical features and management of the following Neurological disorders: -

1. Degenerative disorders – Parkinson’s disease and dementia.
2. Infections – Pyogenic Meningitis sequelae, Tuberculous infection of central nervous system and Poliomyelitis.
3. Diseases of the muscle – Classification, signs, symptoms, progression and management.
4. Peripheral nerve disorders – Peripheral nerve injuries, Entrapment neuropathies and Peripheral neuropathies.

Section – IV

1. Epilepsy – Definition, classification and management.
2. Myasthenia Gravis - Definition, course and management.
3. Intracranial Tumors – Broad classifications, signs and symptoms.
4. Motor neuron disease - Definition, classification and management.
5. Cranial nerve – Types of Disorders, clinical manifestation & management.

Section – V

1. Introduction to neuropsychology.
2. General assessment procedures and basic principles of management.

BOOKS RECOMMENDED:

1. Brain's Diseases of the Nervous System - Nalton – ELBS.
2. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone.
3. Principles of Neurology - Victor – McGraw Hill International edition.
4. Davidson's Principles and Practices of Medicine - Edward - Churchill Livingstone

COURSE OUTCOMES (CO):

By the end of this session, student will be well versed with-

CO-1	Assessment and examination procedure and performance of a neurological patient.
CO-2	Understanding of neurological conditions occurring in different age groups because of trauma, toxins, hypo or hyper-production/secretion of essential chemicals and other causes, clinical features and their management.
CO-3	Knowledge of different types of management of neurological conditions – operative, non-operative and physiotherapy management and can apply the physiotherapy treatment in patients with neurological dysfunction.
CO-4	Integrating the knowledge of neuro-anatomy, neuro-physiology, electrotherapy, exercise-therapy and neurology to efficiently practise in clinical neurology.
CO-5	Can interpret nerve function tests, radiological and other lab tests.
CO-6	Restoring neurological function through planning and implementation of skills gained through vast knowledge of exercise-therapy, electrotherapy and treatment goals.

BACHELOR OF PHYSIOTHERAPY (PART-III)
BPHY-1101: Soft Skills

Time: 3 hrs

Credit Hours (Per week): 4
Total Hours: 60
M. Marks: 100
Theory: 50, Practical: 25
Internal Assessment: 25

COURSE OBJECTIVES:-

- The soft skills training provides strong practical orientation to the students and helps them in building and improving their skills in communication,
- It also helps in effective use of English, business correspondence, presentations, team building, leadership, time management, group discussions, interviews, and inter- personal skills.
- This training also helps students in career visioning and planning, effective resume writing and dealing with placement consultants and headhunters.
- To inculcate innovative and critical thinking among the students.
- To provide knowledge of multifarious opportunities in the field of this programme.

INSTRUCTIONS FOR THE PAPER SETTERS:-

1. There will be total 5 questions.
2. The first question will be set from the whole syllabus. It will consist of 15 questions out of 18 which a candidate has to answer in one or two sentences.
3. The other four questions will be set from remaining four units. Two questions from each unit with internal choice. Each question carries 15 marks. Questions may be subdivided into parts (not exceeding four).

COURSE CONTENT:

SECTION-A

Personal Skills: Knowing oneself- confidence building-defining strengths- thinking creatively- personal values-time and stress management.

Social Skills: Appropriate and contextual use of language- non-verbal communication- interpersonal skills- problem solving.

SECTION-B

Personality Development: Personal grooming and business etiquettes, corporate etiquette, social etiquette and telephone etiquette, role play and body language.

SECTION-C

Presentation skills: Group discussion- mock Group Discussion using video recording - public speaking.

SECTION-D

Professional skills: Organizational skills- team work- business and technical correspondence- job oriented skills-professional etiquettes.

PRACTICAL /ORAL TESTING**PRACTICAL TRAINING****Marks: -25**

Self-introduction, Greeting , See and Tell Competition, Presentation, Cue Cards, Mock interviews, Loud Reading , Situational Conversation, Extempore, Group Discussions, Telephone interviews, Role Play, Situational Conversations, Call Centre Training.

1. Oral exam to be conducted based on topics of practical training.
2. Internal and external examiner to be set for the conduct of the examination.

REFERENCES:-

- SOFT SKILLS, 2015, Career Development Centre, Green Pearl Publications.
- Covey Sean, Seven Habits of Highly Effective Teens, New York, Fireside Publishers, 1998.
- Carnegie Dale, How to win Friends and Influence People, New York: Simon & Schuster1998
- Communicative English Grammar Geoffrey Leach Rutledge
- Spoken English P.V.Dhamija Tata Mc Graw Hill

COURSE OUTCOMES: The completion of this course enables students to:

CO-1	Identify common errors in language and rectify them.
CO-2	Develop and expand oral skills through controlled and guided activities.
CO-3	Develop coherence, cohesion and competence in oral discourse through intelligible pronunciation.
CO-4	Develop the ability to handle the interview process confidently and learn the subtle nuances of an effective group discourse.
CO-5	Communicate contextually in specific and professional situations with courtesy.

BACHELOR OF PHYSIOTHERAPY (PART-III)**BPT-307: Clinicals****Credit Hours (Per week): 12****Total Hours: 400****M. Marks: 100****Practical: 75****Internal Assessment: 25****COURSE OBJECTIVES:**

1. To give students practical exposure of hospital set up.
2. To make students observe practically how physiotherapy works in multispecialty hospital.
3. Students will be taught how to make their own case studies and present them in front of experts for feedback.
4. To keep record of the work done by the students to narrate entrants and as a college valued documents for further recognitions.

COURSE CONTENTS:**Section I: Case Presentation**

The students will have to present at least two case studies in the form of power point presentation.

Section II: Clinical Posting

The students will have to visit various hospitals of Amritsar for their clinical postings scheduled by the department. The students must maintain a continuous record of case studies assessed by them daily throughout the session in a logbook.

COURSE OUTCOMES (CO):

By the end of this course, student will-

CO-1	Students will be fully equipped with handling patients practically in viewpoint of approaching them and make a provisional diagnosis and plan a physiotherapy treatment protocol.
CO-2	Students will be having skills how to present case studies, scientific papers and journals in front of experts in the field.
CO-3	Students will be able to leave their valuable work done in their postings to hospitals and leave subject matter for new entrants as they work as mentors for their juniors.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-401: General Surgery****Credit Hours (Per week): Theory: 4, Practical: 2****Total Hours: (Theory: 100, Practical: 50)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. Introduce to principles of surgery and complications of surgery.
2. To study about types, clinical features, pathology and management of shock.
3. Recall blood groups, matching and clotting from physiology and learn about bloodtransfusion, indications and complications.
4. To study about principles of anaesthesia, types and procedure of administration.
5. To study deeply about wound healing, scar formation, wound infection and their management.
6. To study burns, types, clinical features, calculating percentage of burn, complications of burncases and its management.
7. To learn about skin grafting, hand infections and general injuries and their management.
8. To learn about incisions for surgeries and aftercare of incision site.
9. To study general, thoracic and cardiac surgeries.

COURSE CONTENTS:**Section – I**

1. Introduction to principles of surgery and its procedure.
2. Shock – definition, types, clinical feature, pathology & management.
3. Haemorrhage – common sites, complication, clinical features & management.
4. Blood Transfusion – Blood group matching, indication & complication.
5. Anaesthesia – Principles of anaesthesia, types & procedure.

Section –II

1. Wounds, Tissue repair, Classification – Acute Wounds, Chronic wounds, Scars & their Management.
2. Wound infections: - Psychology and manifestation, Types of infections & their Management.
3. Tumors and Ulcers: -
 - a) Tumors – Types & Management.
 - b) Ulcers – Types & Management.
4. Burns – Causes, Classification, Clinical features & Management.
5. Skin Grafting – Indications, Types & Procedures.
6. Hand Infections – Types & Management.
7. General Injuries – Types & Management.

Section – III

1. Complications of Surgery.
2. Abdominal Surgery – Types of Incisions & common surgical procedures.
3. Thoracic and Cardiac Surgery – Types of incisions & common surgical procedures.

Section – IV

Obstetrics & Gynaecology:

1. Pregnancy, stages of labour & its complications, indications & types of surgical procedures.
2. Gynaecological disorders – Salpingitis, parametritis, retro-uterus, prolapse of uterus, pelvic inflammatory diseases, urinary incontinence.

Section – V

Ophthalmology:

1. Common inflammations and other infections of eye.
2. Ptosis
3. Blindness – common causes & management.
4. Refractions – testing, errors & remedies
5. Strabismus – types, features & corrective measures.

Section – VI

Ear, Nose & Throat (ENT)

1. Introduction – Outline mechanism of audition, olfaction & speech.
2. Classify causes of hearing impairment, assessment techniques, conservative & surgical management.

3. Hearing Aids – types & indications.
4. Outline common ENT infections & lesions, which affect hearing, breathing, speech & their management.
5. Outline the function of vestibular organ, its common disorders & their management.

BOOKS RECOMMENDED:

1. Baily and Love - Short Practice of Surgery - Mann and Rains - H.K. Levis Publications, London.
2. Undergraduate Surgery - Nan - Academic Publishers, Calcutta.
3. Textbook of Surgery - Gupta R.L. - Jaypee.
4. Principles and Practices of Trauma Care - Kocher - Jaypee.
5. Clinical Methods - S. Das - Calcutta.

COURSE OUTCOMES (CO):

By the end of this course, student will be able to-

CO-1	Describe the effects of surgical trauma and anaesthesia.
CO-2	Describe surgical procedures for various diseases of different organs and clinically evaluate the patient's condition.
CO-3	Interpret test reports for various invasive and non-invasive procedures done for investigations.
CO-4	Understands the mental condition of a post-operative patient, co-operates with him and helps in alleviating pain on priority basis.
CO-5	Communicate patiently and softly along with counselling the patient regarding positive aspect of surgical procedure and role of physiotherapy in overall recovery.
CO-6	Understands the role of physiotherapist as a member of multi-disciplinary team for promotion of health and recovery of a patient.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-402: COMMUNITY PHYSIOTHERAPY & REHABILITATION****Credit Hours (Per week): Theory: 4, Practical: 4****Total Hours: (Theory: 100, Practical: 100)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study about surveillance, monitoring and screening in occupational health and its importance at work place, ethical guidelines to follow in health examination at work place.
2. The student will be able to have a community based perspective with Physiotherapeutic approach.

COURSE CONTENTS:**Unit-I**

- Surveillance, Monitoring & Screening in Occupational Health
- Types & purposes of work place health examination
- Ethical Issues in health examination in the work place
- Work Disability
- Definition
- Causes & Prevention
- Management

Unit-II

- Ergonomics & Work related Musculoskeletal disorders
- Fatigue
- Chronic work related musculoskeletal disorders
- Occupational low back pain
- Management of Work related Musculoskeletal disorders
- Role of physiotherapy in occupational disorders

Unit-III

- Industrial Hygiene
- Recognition of Occupational & Environmental Hazards
- Hazard Evaluation
- Hazard Control

Unit-IV

- Women's Occupational Health Problem
- Musculoskeletal disorders
- Stress

Unit-V

- Community Obstetrics
- Social Obstetrics
- Maternal & Child Health
- Health indicators
- Goals of MCH services
- Role of Physiotherapy in women health related disorders

Unit-VI

- Nutrition in Public Health & Preventive Medicine
- Nutritional deficiencies: Causes & Consequences
- Dietary Recommendations
- Nutritional disorders in women

Unit-VII

- Family Planning Programs & Practices
- Goals
- Policies & Laws
- Effects
- Family Planning Problems in Public Health

Unit–VIII

- Health Problems of the Aged due to
- Ageing
- Illness
- Psychological causes
- Physiotherapy approach to Geriatric Conditions

UNIT- IX

- Legal issues in medico-legal action
- Consumer protection act
- Code of ethics, social and medical policy in Physiotherapy

BOOKS RECOMMENDED:

1. Waqar Naqvi, Physiotherapy in community health and Rehabilitation, JP Brothers, 1st Ed, 2011.
2. S.Pruthvish, Community-Based Rehabilitation of persons with disabilities, JP Brothers, 1st Ed, 2006.
3. Mutani, Principles of Geriatric Physiotherapy, Jaypee, 1st Ed, 2008.
4. William Mc Ardle, Essentials of exercise physiology, Lippincott, 3rd Ed, 2006.

COURSE OUTCOMES (CO):

CO-1	Understand the concept of health care and management issues in health services.
CO-2	Help a student to inculcate leadership qualities in their profession and take responsibility for guiding people regarding social and health issues.
CO-3	Improve their performance as a physiotherapist and as human through better understanding of human emotions, feelings and behavior and health services at different levels of community.
CO-4	Ability to develop behavioral skills and humanitarian approach while communicating with patients, patient caregivers, society and co-workers to promote individual and community health.
CO-5	Learn, understand and implement ethical guidelines regarding patient privacy in the clinical settings.
CO-6	Aware people about family planning and different policies and schemes of Indian government related to it.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT- 403: Paediatrics & Geriatrics****Credit Hours (Per week): Theory: 4, Practical: 2****Total Hours: (Theory: 100, Practical: 50)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study assessment and examination procedure in paediatric and geriatric patient and preparing a performa.
2. To gain knowledge about development of a normal child, its neuromotor, physical, cognitive, intellectual and social aspects.
3. To study congenital and acquired musculoskeletal, cardio-pulmonary and neurological disorders focussing on the causes, clinical features and management.
4. To study causes, clinical features and management of hereditary disorders.
5. To study management of injuries and accidents in paediatric patient
6. To study surgical interventions, indications for surgery in a paediatric patient.
7. To study different changes taking place as age advances.
8. To gain knowledge about effects of imbalanced dietary requirements on health of an elderly and its management.
9. To study dementia and other depressive and psychological disorders in the elderly, their causes and management.

COURSE CONTENTS:**Section – I
Paediatrics:**

1. Review normal foetal development & child birth, including assessment of a neonate.
2. Development of a normal child – neuromotor, physical growth, cognitive, intellectual, social etc.
3. The examination & assessment of a pediatric patient.
4. Congenital & acquired musculo skeletal disorders – etiogenesis, clinical manifestation & principles of management.
5. Congenital & acquired Cardio - pulmonary disorders – etiogenesis, clinical manifestation & principles of management.
6. Congenital & acquired neurological disorders (CNS& PNS) – etiogenesis, clinical manifestation & principles of management.
7. Hereditary disorders - etiogenesis, clinical manifestation & principles of management.
8. Nutritional Vitamins Deficiency & Development Disorders – etiogenesis, clinical manifestation & principles of management.
9. Burns, Injuries & accident – Types & principles of management, including preventive care.
10. Surgical intervention – Indications & common surgical procedure.

**Section – II
Geriatrics:**

1. Normal aging – definition, the anatomical, physiological and cognitive changes related to aging.
2. Epidemiology and socio- economic impact of aging.
3. The examination & assessment of a geriatric patient.
4. Musculoskeletal disorders – etiogenesis, clinical manifestation & principles of management.
5. Cardiopulmonary disorders – etiogenesis, clinical manifestation & principles of management.
6. Neurological disorders (CNS & PNS) – etiogenesis, clinical manifestation & principles of management.
7. Diet & Nutritional requirement of the elderly. Nutritional disorders & their management.
8. Burns, Injuries & accident as related to the elderly & preventive care.
9. Dementia – Types and principles of management.
10. Overview of depressive disorders in the elderly

BOOKS RECOMMENDED:

1. Nelson's Textbook of Paediatrics - Behrman & Vaughan - W.B. Saunders.
2. Textbook of Paediatrics - Parthsarthy - Jaypee.
3. The Short Textbook of Paediatrics - Gupte - Jaypee.
4. Geriatric Physical Therapy - Guccione - Mosby.
5. Motor Assessment of the Developing infant - Piper & Davrah - W.B. Saunders.

COURSE OUTCOMES (CO):

By the end of this course, student will be able to-

CO-1	Will be able to describe normal development and growth of a child through explanation and assessment of milestones at various months and years of age.
CO-2	Knows and can explain to parents or care givers of a child about importance of immunisation, breast feeding and mental growth of a child.
CO-3	Acquires the skill of clinical examination/assessment of a neonate/child with respect to neurological, musculoskeletal, cardiac and respiratory function.
CO-4	Can check for signs and symptoms for nutritional deficiencies in paediatric as well as geriatric patients.
CO-5	Can describe surgical interventions done for various anomalies in paediatric patient and their post-operative management.
CO-6	Acquires the skill of clinical assessment of an elderly.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-404: Physiotherapy in Medical Conditions - II****Credit Hours (Per week): Theory: 4, Practical: 4****Total Hours: (Theory: 100, Practical: 100)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study assessment and evaluation of a neurological; paediatric and geriatric patient.
2. To gain knowledge about various invasive and non-invasive investigations used in diagnosis of a neurological patient.
3. To learn and practise physiotherapy management in various neurological disorders.
4. To learn and practise physiotherapy management in traumatic head and spinal cord injury.

COURSE CONTENTS:**Section-I
Neurology**

1. Examination of Neurological disorders and principles of treatment.
2. Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various neurological disorders.
3. Review of pathological changes and principle of management by physiotherapy of the following conditions:
 - a) Hemiplegia, Paraplegia, Tabes dorsalis, cerebellar ataxia, extra pyramidal lesions, Gullian Barre Syndrome, Parkinsonism.
 - b) Disseminated sclerosis, Amyotrophic lateral sclerosis, Siringomyela subacute combined degeneration of cord motor neuron disease.
 - c) Peripheral Nerve and cranial Nerve lesions.
 - d) Neuritis and Neuralgia – Brachial, sciatic etc.

- e) Infections – Poliomyelitis, meningitis, Encephalitis, Polyneuritis Transverse myelitis.
- f) Traumatic head injuries and spinal cord injury.

Section – II Paediatrics

- A. Review of the examination & assessment of a Paediatric patient.
- B. Review of pathological changes and principle of management by physiotherapy of the following conditions:
 - 1) Common congenital & acquired musculo skeletal disorders.
 - 2) Common congenital & acquired neurological disorders (CNS & PNS).
 - 3) Common heredity disorders.
 - 4) Common nutritional, metabolic & vitamin deficiency disorders.
 - 5) Cerebral palsy, myopathy and muscular dystrophies.

Section – III Geriatrics

- A. Review of the examination & assessment of a Geriatric patient.
- B. Review of pathological changes and principle of management by physiotherapy of the following conditions:
 - 1) Musculo skeletal disorders.
 - 2) Cardiopulmonary disorders.
 - 3) Neurological disorders (CNS & PNS).
 - 4) Injuries & accidents specific to the aged.

Section- IV Motor learning

- i) Introduction to motor learning**
 - a) Classification of motor skills.
 - b) Measurement of motor performance.
- ii) Introduction to motor control**
 - a) Theories of motor control.
 - b) Applications.
- iii) Learning Environment**
 - a) Learning of Skill.
 - b) Instruction & augmented feedback.
 - c) Practice conditions

Practical**Marks: 75**

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

BOOKS RECOMMENDED:

1. Cash's Textbook of Neurology for Physiotherapists - Downi - J.P. Brothers.
2. Adult Hemiplegia – Evaluation & Treatment - Bobath - Oxford Butterworth Heinmann.
3. Neurological Rehabilitation – Carr & Shepherd -Butterworth Heinmann.
4. Tetraplegia & Paraplegia – A Guide for Physiotherapist - Bromley - Churchill Livingstone.
5. Neurological Physiotherapy – A Problem Solving Approach - Susan Edwards - Churchill Livingstone.
6. Neurological Rehabilitation - Umpherd - Mosby.
7. Geriatric Physical Therapy - Gucciona - Mosby.
8. Motor Assessment of Developing Infant - Piper & Darrah - W.B, Saunders.
9. Paediatric Physical Therapy - Teckling - Lippincott.
10. Treatment of Cerebral Palsy and Motor Delay - Levitts - Blackwell Scientific Publications, London.
11. Aging the Health Care Challenge - Levis - F.A. Davis.
12. Physiotherapy in Paediatrics - Shepherd - Butterworth Heinmann
13. Motor Control: Theory and Practical Applications Shumway - Cook & Wallcott - Lippincott.

COURSE OUTCOMES (CO):

By the end of this course, student will have-:

CO-1	Skills for assessment and evaluation of a neurologic patient, paediatric patient and geriatric patient.
CO-2	Ability to plan realistic goals based on knowledge of prognosis of the disease and prescribe appropriate, safe evidence based physiotherapy intervention with clinical reasoning.
CO-3	Knowledge of the importance of infection control and risk while treating neurological, paediatric and geriatric patients.
CO-4	Developed psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation and prioritize his problems.
CO-5	Ability to select timely physiotherapy intervention to reduce morbidity and suitable for patient problems and based on best available evidence.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-405: Physiotherapy in Surgical Conditions****Credit Hours (Per week): Theory: 4, Practical: 4****Total Hours: (Theory: 100, Practical: 100)****M. Marks: 200****Time: 3 hrs****Theory: 75, Practical: 75****Internal Assessment: 50 (Th-25; Pr-25)****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study pre and post operative physiotherapy management in surgeries of **thoracic** region, abdominal, gynaecology and obstetrics surgeries.
2. To study antenatal and post natal physiotherapy management.
3. To learn the role of physiotherapy and physiotherapist in ENT surgeries.
4. To study physiotherapy protocol after organ transplants.
5. To study physiotherapy management after reconstructive surgeries for burns, wounds, ulcers, and consequent contractures and deformities.
6. To study pre and post-operative physiotherapy management for surgeries of cranium, brain, spinal cord, after traumatic head injuries and peripheral nerves.

COURSE CONTENTS:**SECTION – I****Thoracic Surgery**

Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions:

- 1) Lobectomy, Pneumonectomy, Thoracotomy, Thoracoplasty, Endoscopy & eye hole surgeries.
- 2) Corrective surgeries of congenital heart defects, angioplasties, blood vessel grafting, open heart surgeries & heart transplant.

SECTION – II
General, Gynaecology and Obstetrics and ENT

Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions:

- 1) Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder etc.
- 2) Common operation of reproductive system, including surgical intervention for child delivery. Ante natal & post natal, physiotherapy
- 3) Common operations of the ear, nose, throat & jaw as related to physiotherapy.
- 4) Common organ transplant surgeries – heart, liver, bone marrow etc.

SECTION – III
Wounds, Burns & Plastic Surgery

Review of pathological changes and principle of pre and post-operative management by Physiotherapy of the following conditions:

- 1) Wounds, ulcers, pressure sores.
- 2) Burns & their complications.
- 3) Common reconstructive surgical proceedings of the management of wounds, ulcers, burns & consequent contractures & deformities.

SECTION – IV
Neurosurgery

Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions:

- 1) Common surgeries of the cranium & brain.
- 2) Common surgeries of vertebral column & spinal cord.
- 3) Common surgeries of peripheral nerves.
- 4) Surgical interventions in traumatic head injuries.

SECTION – V
ICU (Intensive Care Unit) and Ventilation

- 1) Intensive Therapy – Clinical Management
- 2) Intensive Therapy – Apparatus (Ventilations, Tubes, Humidifiers etc.)
- 3) Intensive Therapy – Adult Patient
- 4) Paediatric & Neonatal Intensive Therapy

BOOKS RECOMMENDED:

1. Cash Textbook of general medical and surgical conditions for physiotherapists – Downie- Jaypee Brothers.
2. Cash textbook of heart, chest and vascular disorders for physiotherapists – Downie – Jaypee Brothers.
3. Brothers.
4. Principles and practices of cardiopulmonary physical therapy – Frown Felter – Mosby.
5. Chest physiotherapy in intensive care unit – Mackenzie – Williams & Wilkins.
6. Restoration of Motor Functions in stroke patient: A Physiotherapist Approach – Johnstone – Churchill Livingstone.
7. Churchill Livingstone.
8. Physiotherapy in obstetrics and gynaecology – Polden – F.A. Davis.

COURSE OUTCOMES (CO):

By the end of this course, student will be able to-

CO-1	Skills for assessment and evaluation of a post-operative patient.
CO-2	Knowledge of the importance of infection control and risk while treating post-operative patients.
CO-3	Plan and execute short and long term goals for physiotherapy management based on patient health, co-operation and assessment.
CO-4	Ability to plan realistic goals based on knowledge of prognosis of the disease and prescribe appropriate, safe evidence based physiotherapy intervention with clinical reasoning.
CO-5	Prepare and execute day-wise post operative physiotherapy intervention after surgical procedures.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-406: Rehabilitation, Organization and Administration****Credit Hours (Per week): 5****Total Hours: 150****M. Marks: 100****Theory: 75****Internal Assessment: 25****Time: 3 hrs****Instructions for paper setters and students:**

Section-A (10 Marks): There will be 10 questions of one mark each. All questions are compulsory. The questions may be short answer type or objective type. The answer should not exceed 50 words. The questions should be equally distributed in whole syllabus.

Section-B (50 Marks): It consists of eight questions. Each question carries 10 marks. The candidate will have to attempt any five questions. The questions should be equally distributed in whole syllabus.

Section-C (15 Marks): It consists of two questions. Each question carries 15 marks. The candidate will have to attempt any one question.

COURSE OBJECTIVES:

1. To study role of rehabilitation in a patient's life.
2. To study framework for rehabilitation using International Classification of Functioning, Disability and health (ICF) model.
3. To learn about different models for rehabilitation and disability.
4. To learn about causes of disability especially locomotor disability, its effects on individual, his family and society.
5. To learn about preventing disability and acquiring skills to manage it.
6. To emphasize on community based rehabilitation (CBR) and different rehabilitation programmes.
7. To learn about different governmental schemes and policies to help people with disabilities.
8. To learn details and working of orthotics and prosthetics and making of splints for upper and lower extremity.
9. To learn about assessment of mentally subnormal, their identification and classification; causes for mental retardation and principles for management, role of rehabilitation including vocational training and home exercise programme.

COURSE CONTENTS:**SECTION – I**

1. Conceptual framework of rehabilitation, roles of rehabilitation team members, definitions and various models of rehabilitation
2. Epidemiology of disability with emphasis on locomotor disability, its implications – individual, family, Social, economic and the state.
3. Preventive aspects of disability and organizational skills to manage it.
4. Community Based Rehabilitation and outreach programmes to rehabilitate persons with disabilities living in rural areas.
5. Statutory provisions, Schemes of assistance to persons with disability.
6. Role of N.G.Os in rehabilitation of the persons with disabilities.
7. Basic principles of administration and finance including personnel management and budget preparation and procurement etc.

SECTION – II

1. Principles of Orthotics – types, indications, contra-indications, assessment (check out), uses and fitting – region wise.
2. Fabrication of simple splints and self help devices for upper and lower extremity – indications and application.
3. Principles of Prosthetics – types, indications, contra-indications, assessment (check out), uses and fitting – upper and lower extremity.

SECTION – III

1. Principles and mechanisms of Communication including speech and hearing.
2. Common disorders of speech and hearing – etiology, clinical features, assessment and principles of management.
3. Principles in the management of vocational problems, including evaluation and vocational goals for people with disability.
4. Principles of rehabilitation Nursing, including function of Nursing personnel and Nursing practice in rehabilitation.

SECTION – IV

1. Identification, assessment and classification of mentally subnormal.
2. Etiogenesis and principles of management including prevention.
3. Rehabilitation of the mentally subnormal, including vocational training & a home education programme.

SECTION – V

1. Definition, scope & importance of Activities of Daily Living (ADLs).
2. The teaching and training of (a) wheel chair activities, (b) bed activities (c) transfer activities (d) Locomotor activities (e) self care activities, such as toilet, eating, dressing etc.
3. Principles of occupational therapy including evaluation and goals for people with disability.

BOOKS RECOMMENDED:

1. Physical Rehabilitation – assessment & Treatment – Sullivan & Schmitz – F.A. Davis.
2. Occupational Therapy and Physical dysfunction: Principles, Skills & Practices – Turner, Foster & Johnson – Churchill Livingstone.
3. Hand Splitting – Wilson – W.B. Saunders.
4. Orthotics in Rehabilitation: Splinting the hand and the boby – Mckee & Morgan – F.A. Davis.
5. Atlas of Limb Prosthetics – American Academy of Orthopaedic Surgeon – Mosby.
6. Atlas of Orthotics – American Academy of Orthopaedic Surgeon – Mosby.
7. Krusen’s Handbook of Physical Medicine & Rehabilitation – Kottke & Lehmann – W.B. Saunders.
8. Willard and Spackman’s occupational therapy – Neistadt & Crepeau – Lippincott

COURSE OUTCOMES (CO):

On completion of this subject, the students will be able to-

CO-1	Understand their role in the management of the disability within the rehabilitation team. Understand the concept of team approach in rehabilitation.
CO-2	Observe and identify the diagnostic features in physical conditions.
CO-3	Understand the medical and surgical aspects of disabling conditions
CO-4	Identify the residual potentials in patients with partial or total disability (temporary or permanent).
CO-5	Formulate appropriate goals (long & short term) in treatment & rehabilitation
CO-6	Prescribe, check - out and train the uses of various rehabilitation aids.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**CS-PYSIO 411: Computer Applications**

Credits			Max. Marks	Practical Marks	Internal Assessment
L	T	P	50	40	10
0	0	2			

Time: 3 Hours

Note: 1. Medium of Examination is English Language.

2. Only Practical examination will be conducted for this paper.

COURSE OBJECTIVES:

1. To familiarize the various parts of computer.
2. To study application of computers in different fields.
3. To recall the evolution of computers through various generation.
4. To acquire the knowledge of working of input and output devices.
5. To impart the knowledge of operating system and its types.
6. Hands on practice of MS office software.

COURSE CONTENTS:

1. To study the various components of a personal computer.
2. To have working knowledge of hardware and software.
3. To practice the operational skills of common computer applications, including word processing & spreadsheet software.
4. To have a basic knowledge of utility of multi-media.

To learn skills of web surfing–For literature, researches relevant to the field of medicine

COURSE OUTCOMES (CO):

At the end of the course students will be able to:

CO-1	Gain insight of working of input and output devices.
CO-2	Develop skills of working with spread sheets.
CO-3	Possess the knowledge of importance of operating system in computer.
CO-4	Understands the concept of storing of data in memory and its types.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-407: Clinicals****Credit Hours (Per week): 12****Total Hours: 400****M. Marks: 100****Practical: 75****Internal Assessment: 25****COURSE OBJECTIVES:**

1. To give students practical exposure of hospital set up.
2. To make students observe practically how physiotherapy works in multispecialty hospital.
3. Students will be taught how to make their own case studies and present them in front of experts for feedback.
4. To keep record of the work done by the students to narrate entrants and as a college valued documents for further recognitions.

COURSE CONTENTS:**Section I: Case Presentation**

The students will have to present at least two case studies in the form of power point presentation.

Section II: Clinical Posting

The students will have to visit various hospitals of Amritsar for their clinical postings scheduled by the department. The students must maintain a continuous record of case studies assessed by them daily throughout the session in a logbook.

COURSE OUTCOMES (CO):

CO-1	Students will be fully equipped with handling patients practically in viewpoint of approaching them and make a provisional diagnosis and plan a physiotherapy treatment protocol.
CO-2	Students will be having skills how to present case studies, scientific papers and journals in front of experts in the field.
CO-3	Students will be able to leave their valuable work done in their postings to hospitals and leave subject matter for new entrants as they work as mentors for their juniors.

BACHELOR OF PHYSIOTHERAPY (PART-IV)**BPT-IV (Practical Schedule)**

General Surgery – Practical including evaluation, clinical diagnosis and treatment for the condition covered in general surgery.

Community Physiotherapy & Rehabilitation: Practical includes community work based on different work places.

Neurology-Practical including evaluation, clinical diagnosis and treatment for the conditions covered in neurology.

Paediatrics & Geriatrics- Practical including evaluation, clinical diagnosis and treatment for the conditions covered in Paediatrics & Geriatrics.

Physiotherapy in Medical Conditions-II - Practical for the evaluation, diagnosis and treatment for the various medical conditions including the physiotherapeutic approaches and the use of various modalities.

Physiotherapy in surgical Conditions- Practical for the evaluation, diagnosis and treatment for the various surgical conditions including the physiotherapeutic approaches and the use of various modalities.

Computer Applications: Practical examination covering the various components of computers, hardware and software knowledge, common computer applications, multimedia, utility and the skills of web surfing.

INTERNSHIP

1) The students require to undergo six months compulsory internship training after they have successfully completed and passed the final examination of BPT-4th year. It is mandatory for the students to cover all the clinical branches concerned with physiotherapy at multispecialty hospitals providing extensive exposure of the following fields:

- Neurology – Neurology IN patient, Neurosurgery, NS-ICU
- Orthopedics and Trauma Ward
- Cardiothoracic and Intensive care unit
- Respiratory Care Unit
- Pediatrics Unit
- Gynaecology Unit
- Burns & Plastic Surgery Unit

2) Students undergoing internship will have to prepare an internship project during the internship training and will submit the same at the end of the training as a mandatory requirement for the degree of BPT.