

**SYLLABUS AND BYELAWS GOVERNING  
BACHELOR OF PHYSIOTHERAPY PROGRAMME**

**BPT**

**(I- IV YEAR)**

**(2017-2018)**

**CENTRE FOR PHYSIOTHERAPY AND REHABILITATION SCIENCES**

**JAMIA MILLIA ISLAMIA**  
**(A CENTRAL UNIVERSITY) New**  
**Delhi-110025**

The curriculum and syllabus of the Bachelor of Physiotherapy is designed as per the regulatory framework of Delhi Council of Physiotherapy and Occupational Therapy. The programme focuses on the basic medical sciences and physiotherapy management of different health conditions. Clinical training is an integral component of teaching to enhance the understanding about the patient care. In addition to the physiotherapy education the curriculum focuses on the skill development of the students with courses on communication and computer education.

## OBJECTIVES

To prepare highly skilled and efficient physiotherapists who have a thorough knowledge of the theoretical and practical aspects of the field.

### THE PROGRAMME

- a. Name: Bachelor of Physiotherapy
- b. Nature: Regular full time
- c. Duration: Four and half years course (four year course followed by six months compulsory internship)
- d. Pattern: Annual system
- e. Eligibility criteria for Admission:
  - Educational: A candidate seeking admission to the BPT programme must have passed from board of school examination Jamia/ CBSE or equivalent (recognized by Jamia Millia Islamia) with biology, physics, chemistry securing at least 50 % marks in aggregate of PCB
- f. Commencement: July/ August
- g. Mode of admission: Written test (10+2 standard physics, chemistry and biology)
- h. Total seats: 40
- i. Span period: Not more than seven years

### THE CURRICULUM

- a. Duration of the course: 4 ½ year
- b. Total theory papers: 25
- c. Total practical: 17
- d. Total Research project: 01
- e. Internship: six months duration.



## **Bachelor in Physiotherapy (BPT) Programme**

### **About the BPT Programme**

The Bachelor in Physiotherapy shall be a regular full-time programme. The total duration of the programme shall be of four and half years, which includes four years of teaching, practicals, community/field visits and research project, followed by six months compulsory Internship.

### **Examination Rules - BPT**

Annual examination of theory and practical shall be conducted at the end of each session as outlined below:

- a) Mode:        Theory paper     : Written only  
                  Practical         : Written, Demonstration and viva-voce
- b) Duration: Theory             : 03 hours
- c) Examiners:  
                  Theory                 : 01 (either internal or external. However, if in any paper two different subjects are covered, more than one examiner may be appointed. Practical/viva-voce: 2 (one internal and one external)

### **Evaluation**

The BPT programme will comprise the following: Theory Courses, Practicals, Research Projects, Clinical Training, and Community and Field Visits. For various components, the weight age of marks for evaluation will be as follows:

#### **For Theory Courses**

Internal Assessment: 25% of allocated marks and Annual Examination 75% of allocated marks

#### **For Practical/Research Project**

Internal Assessment: 50% of allocated marks and Annual Examination 50% of allocated marks

There will be no evaluation for Clinical Training, and Community and Field Visits.

### **Pass Percentage**

A candidate will be declared to have passed a course if he/she has secured the minimum percentage of marks in each of the courses, as specified here under:

- (i) 40% in Internal Assessment,
- (ii) 50% in Annual Examination,
- (iii) 50% in the aggregate of Internal Assessment and Annual Examination.

### **Promotion**

- a. For a student of the 1st year, who is detained due to shortage of attendance, the provisions of Ordinance 5 (V) (academic) Para No. 5.1 and 5.2 shall apply respectively.
- b. A student will be promoted from the 1st year to 2nd year if he/she has cleared at least two-third (2/3rd) of the total number of the Theory and Practical Courses combined of the 1st year.
- c. A student will be promoted from the 2nd year to 3rd year if he/she has cleared all Practical Courses and 4/5th of the Theory Courses of the 1st year and at least two-third (2/3rd) of the total number of the Theory and Practical Courses combined of the 2nd year.

- d. A student will be promoted from the 3rd year to 4th year if he/she has cleared all the Practical Courses of the 1st year and 2nd year,  $\frac{4}{5}$ th of the Theory Courses of the 2nd year, and two-third ( $\frac{2}{3}$ rd) of the total number of the Theory and Practical Courses combined of the 3rd year.
- e. If a candidate is unable to clear the required number of courses in the 1st year/<sup>2</sup>nd year/3rd year, as the case may be, he/she shall be declared as failed. However, such a student may appear as an ex-student in the ensuing annual examination.
- f. An ex-student will be required to appear only in such courses in which he/she has failed to obtain the minimum passing marks.

*Note: In case the value of  $\frac{2}{3}$ rd or  $\frac{4}{5}$ th of the number of courses in the above comes out to be a non-integer, it will be rounded off. For example, if the value comes out as 3.4, the rounded value will be 3. On the other hand, if the value is 2.5 or more, it will be rounded to 3.*

**Revised Syllabus of BPT w.e.f 2017-2018  
YEAR- I**

**IA: Internal Assessment Marks; AE: annual examination Marks**

Course Code	Subject	IA	AE	Marks	Hours
BPT 101	Human Anatomy	30	90	120	125
BPT 102	Human Physiology	30	90	120	125
BPT 103	Biochemistry and Microbiology	25	75	100	100
BPT 104	Psychology and Sociology	25	75	100	100
BPT 105	Exercise Therapy I	25	75	100	100
BPT 106	Electrotherapy I	25	75	100	100
BPT 107	Computer Application and Communicative English	25	75	100	100
BPT 108P	Anatomy Practical	25	25	50	50
BPT 109P	Physiology Practical	25	25	50	50
BPT 110P	Biochemistry and Microbiology Practical	25	25	50	75
BPT 111P	Exercise Therapy I Practical	50	50	100	100
BPT 112P	Electrotherapy I Practical	50	50	100	100
<b>Grand Total</b>		<b>360</b>	<b>730</b>	<b>1090</b>	<b>1125</b>

**Total 1125 Hours**

**YEAR - II**

Course Code	Subjects	IA	AE	Marks	Hours
BPT 201	Pathology	25	75	100	75
BPT 202	Pharmacology	25	75	100	75
BPT 203	General Medicine and Surgery	25	75	100	100
BPT 204	Neuroscience & Psychiatry	25	75	100	100
BPT 205	Orthopaedics and Sports Medicine	25	75	100	100
BPT 206	Biomechanics and Kinesiology	25	75	100	100
BPT 207	Exercise Therapy II	25	75	100	100
BPT 208	Electrotherapy II	25	75	100	100
BPT 209P	Clinical Viva I (BPT 201,203,204)		100	100	
BPT 210P	Clinical Viva II (BPT 205)		50	50	
BPT 211P	Exercise Therapy II Practical	100	100	200	175
BPT 212P	Electrotherapy II Practical	100	100	200	175
<b>Grand Total</b>		<b>400</b>	<b>950</b>	<b>1350</b>	<b>1250</b>

**Total 1250 Hours**

### YEAR - III

Course Code	Subject	IA	AE	Marks	Hours
BPT 301	Cardiopulmonary Medicine and Surgery	25	75	100	100
BPT 302	Physiotherapy in Orthopaedics and Rheumatology	30	90	120	125
BPT 303	Physiotherapy in General Medicine and Surgery	25	75	100	100
BPT 304	Physiotherapy in Sports Medicine and fitness	25	75	100	100
BPT 305	Bioengineering and Ethics	25	75	100	100
BPT 306P	Physiotherapy in Orthopaedics and Rheumatology Practical	100	100	200	100
BPT 307P	Physiotherapy in General Medicine and Surgery Practical	100	100	200	100
BPT 308P	Physiotherapy in Sports Medicine and Fitness Practical	100	100	200	100
BPT 309P	Clinical Viva III (BPT 301)		50	50	
	<b>Total</b>	<b>430</b>	<b>740</b>	<b>1170</b>	<b>825</b>
	Clinical Training I				300
Grand Total Hours					1125

**Total 1125 Hours**

### YEAR - IV

Course Code	Subject	IA	AE	Marks	Hours
BPT 401	Research Methodology and Biostatistics	25	75	100	50
BPT 402	Physiotherapy in Cardiopulmonary conditions	25	75	100	100
BPT 403	Physiotherapy in Neurological conditions	25	75	100	100
BPT 404	Physiotherapy in Community based Rehabilitation	25	75	100	100
BPT405	Environmental Sciences and Business Administration	25	75	100	75
BPT406P	Physiotherapy in Cardiopulmonary conditions Practical	100	100	200	100
BPT407P	Physiotherapy in Neurological conditions Practical	100	100	200	100
BPT408P	Physiotherapy in community based Rehabilitation practical	50	50	100	100
BPT409P	Project Work	50	50	100	100
	<b>Total</b>	<b>425</b>	<b>675</b>	<b>1100</b>	<b>825</b>
	Clinical Training II				500
Grand Total Hours					1325

**Total 1325 Hours**

### INTERNSHIP

A candidate shall undergo full time (950 hours) supervised Physiotherapy clinical practice for not less than six months in institutions/ hospitals / centre recognized by Jamia Millia Islamia

## BPT I Year

### BPT 101 - HUMAN ANATOMY

**Course Description:** This course involves detail study of microscopic, macroscopic and surface anatomy of various systems of the body with particular emphasis on the musculoskeletal, neurological and cardiopulmonary system

**Course Objective:** The students should be able to describe the structure and function of various system of the body with emphasis on musculoskeletal, neurological and cardiopulmonary systems as they relate to physiotherapy

#### Course Outcomes

On completion of this subject, the students will be able to Identify all gross anatomical structures, particular emphasis will be placed on description of bones, joints, muscles, brain, cardio-pulmonary and nervous systems as these relate to the application of Physiotherapy.

### Unit I

1. Introduction:
  1. Definition of anatomy and its sub-divisions
  2. Names, regions, cavities and systems of the body.
  3. Anatomical positions and anatomical terms.
2. Cell & Tissue (Histology), Anatomical Nomenclature, Structure of Cell, Reproduction of Cell, Tissue & its types and functions.
3. Osteology (in detail)
  1. Terminology
  2. Development and growth of bone (ossification)
  3. Blood & nerve supply
  4. Bones: type & structure
  5. Surface anatomy
4. Arthrology
  1. Definition and classification.
  2. General features of all the type of joints.
  3. General description about movements at all the joints.
5. Myology
  1. Muscle and its classification
  2. Tendon, ligament, aponeurosis & fascia
  3. Features and description of all the muscle types.
  4. Anatomical space, anterior and posterior triangle of the neck, popliteal triangle, scalene triangle etc
6. Embryology
  1. Ovum, spermatozoa, fertilization and formation of the germ layers & their derivations.
  2. Formation of all the structure (brief) **Unit**

### II

1. Osteology
  1. Mandible
  2. Bones of the skull
  3. Spine
2. Soft parts
  1. Muscle of the face and neck with their nerve and blood supply and action
  2. Intraocular muscle Salient features of eye & internal ear,



3. Pres para vertebral muscle, muscles of anterior abdominal wall and intervertebral disc

3. Neuro & Anatomy

1. Classification of nervous systems & its parts
2. Gross & minute structure of nerve tissue
3. Cranial nerves
4. Central nervous system

1. Position, structure & blood supply of Brain, Cerebral hemispheres, cortical areas, Basal ganglia, Thalamus & hypothalamus, internal capsule & corpus callosum, Brainstem, Cerebellum
2. Pyramidal & extra pyramidal tracts
3. Ventricles, CSF & its circulation
4. Blood circulation in the brain
5. Meninges
6. Limbic system
7. Spinal cord & its blood supply
8. Ascending & descending tracts

5. Peripheral Nervous System

1. Illustration & formation of different plexus (in detail)
2. Description of Course, Branches, Relation & Distribution of each peripheral nerve
3. Nerve including muscle & continuous innervations,
4. Autonomic Nervous System

**Unit III**

Upper limb anatomy

1. Osteology  
Scapula, Clavicle, Humerus, Radius, Ulna, Carpal bones, Metacarpal Bones, Phalanges
2. Soft Parts  
Pectoral Region, Axilla, Front of arm, Back of Arm, Cubital Fossa, Front of Forearm, Back of forearm, Palm and Dorsum of Hand, Fascia, Nerve Vessel & Lymphatic Drainage of Upper Limb, Arches of Hand, Skin of Palm & Dorsum
3. Arthrology  
Shoulder Girdle, Elbow Joint, Superior and inferior Radio-ulnar Joint, Wrist and Hand joints.

**Unit IV**

Lower limb anatomy

1. Osteology  
Pelvis, Femur, Tibia, Fibula, Tarsal bones, Metatarsal Bones, Phalanges
2. Soft Part  
Gluteal Region, Front and Back of Thigh, Medial Side of Thigh, Anterior & Posterior Compartment of Leg, Sole of The Foot, Fascia, Nerve, Vessel & Lymphatic Drainage of Lower Limbs, Venous Drainage & Arterial Supply of Lower Limb, Arches of Foot, Skin of Foot

3. Arthrology  
Pelvic Girdle, Knee Complex, Superior & Inferior Tibiofibular Joint, Ankle Complex, Joints of the Foot.

## Unit V

1. Cardiovascular System
  1. Heart - Position, relationship, covering, description of external & internal structure.
  2. Blood & nerve supply of the heart.
  3. Position, distribution and branches of principle vessels from & to the heart.
  4. Structure of blood vessels, position, general distribution and branches of major arteries and veins.
  5. Lymphatic Systems (brief)
2. Respiratory System
  1. Position, gross & fine structure of lungs & plurae & respiratory passages.
  2. Broncho pulmonary segments.
  3. Blood & nerve supply of lungs.
  4. Various principles involved in the respiration
3. Thorax.
  1. Osteology – sternum & ribs
  2. Soft parts – muscle, ligaments etc of the thorax.
4. Digestive Systems (Brief)
5. Endocrine Systems (Brief)
6. Urogenital Systems (Brief)

### Essential Readings

1. Gray's Human anatomy
2. Human anatomy vol 1&2 - B.D Chaurasia
3. Surface Anatomy – Derek'o Field

### Suggested Readings

1. Clinical anatomy for medical students- Snell
2. Clinically oriented anatomy-L Keith, Moorie
3. Textbook of anatomy with colour atlas Vol-I, II&III- Inderbir singh
4. Cunnigham's manual of Practical anatomy- G J Romanes
5. Anatomy and Physiology for Physiotherapist – Inderbir Singh

## BPT 102- HUMAN PHYSIOLOGY

**Course Description:** This course involves detail study of physiology of various system of the body at a Microscopic, macroscopic level with particular emphasis on the musculoskeletal, neurological, cardiopulmonary and endocrine system

**Course Objective:** The students should be able to describe the structure and function of various system of the body with emphasis on musculoskeletal, neurological and cardiopulmonary systems as they relate to physiotherapy

## Course Outcomes

On completion of this subject, the students will be able to understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular, musculo-skeletal and nervous systems. Demonstrate an understanding of elementary human physiology and Bio-Chemistry. Understand how abnormal Physiology affects human function and dysfunction of the human body.

### Unit I

1. Functional system of the cell: Cell and its functions, functional morphology  
Extracellular fluid and intracellular fluid
2. Gastrointestinal System: motility, nervous control, digestion and Absorption functions

### Unit II

1. Membrane, Nerve & Muscle Physiology:
  1. Transport of substances through the cell membrane
  2. Membrane potentials and action potentials
  3. Contraction of skeletal muscle: Molecular mechanics of muscle contraction, energetic of muscle contraction
  4. Neuro Muscular junction in muscle, excitation-contraction coupling
  5. Contraction and excitation of smooth muscles.
2. Cardiovascular System:
  1. Cardiac muscle, cardiac cycle, regulation of heart pumping
  2. Rhythmical excitation of the heart: specialized excitatory and conductive systems of the Normal ECG lead, methods of recording ECG
  3. Basic theory of circulatory function, interrelationships among pressure, flow and resistance, vascular distensibility, arterial pressure pulsation, veins another function, control of blood flow, humoral and nervous regulation of circulation
  4. Venous return, arterial pressure and their regulations.

### Unit III

1. Blood Cells, Immunity and blood clotting:  
RBC, destruction of RBC, Anaemia & Polycythemia, resistance of body to infection, properties of different types of WBC's, Innate & acquired immunity, Lymphocytes, blood groups, Blood clotting
2. Kidney and Body Fluids
  1. Body fluid compartment: ECF, ICF, interstitial fluid, Edema
  2. Urine formation by the kidneys
  3. Integration of renal mechanisms for control of blood volume and ECF volume.
  4. Renal regulation of acid-base balance.
3. Respiration:
  1. Mechanics of pulmonary ventilation, pulmonary volumes and capacities.
  2. Alveolar ventilation, functions of the respiratory passageways.
  3. Pulmonary circulation
  4. Principles of gas exchange transport of oxygen and carbon dioxide in the blood
  5. Regulation of respiration.

### Unit IV

Endocrinology and reproduction

1. Hormone types, secretion, transport and clearance from blood,

- mechanism of Hormone action
- 2. Pituitary, thyroid, adrenal cortex, insulin, parathyroid, reproductive hormones
- 3. Puberty, menarche, menopause, pregnancy, lactation

#### Unit V

##### Nervous System

- 1.Sensory receptors
- 2.Neuronal circuits for processing information.
- 3.Somatic sensations
- 4.Cortical sensation.
- 5.Cortical and brain stem control of motor function
- 6.Cerebellum, basal ganglia, motor control integration of the many parts of the total motor control system
- 7.States of brain activity: sleep, brain waves, epilepsy
- 8.Intellectual function of brain learning and Memory
9. Autonomic nervous system

#### Unit VI

##### Aviation, space and deep sea diving physiology:

1. Effect of Low oxygen pressure on the Body, Mountain Sickness
2. Effects of Acceleratory Forces, Artificial climate, Weightlessness in Space
3. Effects of High Partial Pressure of Gases on the Body, Hyperbaric Oxygen Therapy.

#### Essential Readings:

1. Guyton and Hall. Textbook of Medical Physiology 12th Edition John E. Hall
2. Ganong's Review of Medical Physiology, 24th Edition. Kim E. Barrett, Susan M. Barman, Scott Boitano, Heddwyn L. Brooks ISBN: 9780071780032 / 0071780033
- 3.Vander's Human Physiology 14th Edition by Eric Widmaier and Hershel Raff and Kevin Strang
4. Tortora's Principles of Anatomy and Physiology, 15th Edition, Gerard J. Tortora, Bryan H. Derrickson ISBN: 978-1-119-40006-6 May 2017

#### Suggestive Reading

1. Essentials of Medical Physiology 6<sup>th</sup> Edition by K Sembulingam
2. Textbook of Physiology (Set of 2 Volumes) 6th Edition A. K. Jain

### BPT 103 - BIOCHEMISTRY AND MICROBIOLOGY

**Course Description:** This course involves a study of the basic principles of the metabolism of carbohydrate, protein, fat minerals, vitamins and essential enzymes. The role of these in the functioning of human body will be discussed

**Course Objective:** At the end of course the students should be able to describe basic principles of genetics and normal functioning of different components of food, enzymes,

**Course Outcomes:** On completion of this subject, the students will be able to demonstrate comprehensive understanding of biochemistry and microbiology. Acquire the knowledge in biochemistry that is required to be practiced in community and at all levels of health care system. Demonstrate an understanding of microbiology of common diseases that therapists would encounter in their daily practice.

## SECTION A: BIOCHEMISTRY

1. Living Matter and cell ultrastructure
  1. Biochemical characteristics of living matter
  2. Review of sub cellular organelles and cell types
2. Vitamin and Mineral Metabolism  
Water soluble vitamins, Fat soluble vitamins, Hypo and hyper vitaminosis, Macro minerals, Essential trace elements,
3. Enzymes  
Definition and classification with examples, Factors affecting enzyme action, Brief study of enzyme, Inhibition, clinical importance of enzymes
4. Carbohydrates  
Classification, physiologically important carbohydrates and derivatives, Metabolism
5. Lipids  
Classification, physiologically important lipids and derivatives, Metabolism, fatty acids
6. Metabolic homeostasis  
Metabolic role of organs, Homeostasis of carbohydrates, lipids and nitrogen, Regulation of appetite, energy expenditure and body weight, biochemical mediators of obesity, hypothalamic integration of hormonal signals
7. Nucleic acids: Brief overview of the structure of RNA and DNA including nucleotides
8. Techniques in biochemistry  
Principle and applications of gel, ion exchange, Affinity, Thin layer and Gas chromatography, HPLC, Electrophoresis, Homogenization, Differential Centrifugation PCR, Ligation and transformation, Western blotting, Enzyme Kinetics, ELISA

### Essential Readings

1. Murray- Harper's biochemistry, 28th Edition (LANGE Basic Science). by Robert Murray
2. Thomas M Delvin- Textbook of Biochemistry with Clinical Correlations, Sixth Edition.
3. Lehninger- principles of Biochemistry
4. Stryer- Textbook of Biochemistry

### Suggestive Readings

1. Das- biochemistry, 14<sup>th</sup> edition ISBN: 9789380599175
2. Lippincott's Illustrated Reviews Biochemistry Paperback – 2017 by Ferrier
3. Textbook of Biochemistry for Medical Students Paperback – 2016 by Vasudevan DM

## SECTION B: MICROBIOLOGY

1. Basic concepts and tools in Microbiology:
  - History of microbiology
  - Spontaneous Generation
  - Biogenesis
  - Germ theory of diseases
  - Koch's postulates
  - The microscope
    - Microscopy (Light and electron)
    - Preparation & staining of specimens
2. Bacterial morphology, taxonomy, nutrition, growth and control:
  1. Bacterial size, shape, arrangement,

2. Structures- structure external to cell wall,
3. Structure and chemical composition of cell wall.
4. Bacteriological media,
5. Physical conditions required for growth, mode of cell division, and growth curve.
6. Physical agents: heat, radiations, filtration, desiccation.
7. Chemical agents: phenolics, halogens, alcohols, aldehydes, heavy metals, and gaseous sterilizing agents.
8. Diseases caused by aerobic bacteria: diphtheria, tuberculosis and leprosy etc.
9. Diseases caused by anaerobic bacteria: tetanus, gas gangrene and botulism etc.
10. Diseases caused by fungi: Candidiasis and Ringworm etc.
11. Diseases caused by viruses: Poliomyelitis, Rabies and AIDS etc.
12. Immunology:
  - a. Immunity
  - b. antigen
  - c. antigen- antibody interaction
13. Complement systems, Immune response and hypersensitivity.

#### **Essential Readings:**

1. Pelczar, M.J., Chan, E.C.S. and Kreig, N.R. Microbiology. 5th ed New Delhi, Tata Mc Graw Hill Publishing Co, Ltd.1998.
2. Joanne Willey, Linda Sherwood, Chris Woolverton. Prescott/Harley/Klein's Microbiology. McGraw Hill professional, 2007
3. R. Ananthanarayan, C.K. Jayaram, Paniker. Text book of microbiology, 4<sup>th</sup> ed Orient Longman.1990.

#### **Suggestive Reading**

1. James C.E Underwood, Simon S Cross. General and Systematic Pathology. 5th Revised ed, London Churchill Livingstone, 2009
2. Edward C. Klatt, Vinay Kumar. Robbins and Cotran. Review of Pathology, 2nd Revised ed, London, Saunders, 2004
3. Harsh Mohan. Text book of pathology. 6<sup>th</sup> ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2010.
4. Coleman, R.M. Fundamental Immunology, 6<sup>th</sup> ed. Mc Graw-Hill. 1992

### **BPT 104 - PSYCHOLOGY AND SOCIOLOGY**

**Course Description:** The course involves a description of some psychological parameters especially as they relate to physiotherapeutic practice and it will introduce students to the basic sociological concepts, principles and social process, social institutions and the various social factors affecting the family in rural and urban communities will be studied.

**Course Objective:** The students will be able to apply some general psychological principles when dealing with patients and they will be able to demonstrate and understanding of the role of sociocultural factors on health and disease and related to physiotherapy.

**Course Outcomes:** On completion of this subject, the student will be able to recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical surgical patients/conditions. Understand the elementary principles of behaviour for applying in the therapeutic environment. Understand the concept of stress and its relationship to health, sickness and one's profession.

## SECTION A: PSYCHOLOGY

### Unit I

1. Introduction to Psychology: Nature, Branches, Methods
2. Learning: Nature, Theories- classical and operant conditioning, insight learning.
3. Emotions: Nature and relationship with autonomic nervous systems, Theories of emotions. James-Lange, Cannon-Bard theory, Schachter- Singer theory
4. Memory: Types, Forgetting, Causes, Attention and perception, Nature, Principles of grouping, Depth perception.
5. Stress: Meanings, Physiological response to stress, Coping strategies.
6. Intelligence: Nature, Factor theories, Process theory
7. Altered state of consciousness: Dream, Hypnosis, Sleep

### Unit II

1. Introduction: Difference between normal and abnormal behaviour, Paradigms- biological, psychoanalytical learning, cognitive, humanistic, Existential
2. Anxiety Disorders: Phobias, Panic disorder, generalized anxiety disorder, Obsessive-Compulsive Disorder
3. Somatoform Disorders: Conversion disorder, Somatomization disorder
4. Dissociative Disorders: Depersonalization disorder, Dissociative amnesia, Dissociative fugu, Dissociative identity disorder
5. Mood Disorders: Unipolar disorder, Bipolar disorder
6. Schizophrenias and Delusional Disorders
7. Disorders of Childhood: Attention deficit / hyperactivity disorders, Learning disabilities, Mental retardation.
8. Substance Abuse: Etiology of substance abuse and dependence, Alcohol abuse, Nicotine and Cigarette smoking, Marijuana, Sedatives, Stimulants.
9. Old age and Brain Disorders: Delirium dementia
10. Psychologically based therapies: Psychodynamic, Behavior therapy, Cognitive behaviour, Emotion therapy, Humanistic-existential therapy.

### Essential Readings:

1. Morgan C.T. And King R.A.(1986) Introduction to Psychology 7 Edn. (Tata Mc. Grew Hill Publication
2. Davison, G.E. Neal. J.M. & Kring, A.M. (2004). Abnormal Psychology. New York: John Wiley & Sons,
3. Alloy, L.B., Riskind, J.H. & Minoy, M.J. (2006) Abnormal Psychology: Current Perspectives. New Delhi; Tata McGraw Hill.

### Suggestive Reading

1. Baron, R.A. (2001). Psychology. 5<sup>th</sup> ed. New Delhi; Pearson Education Aisc.
2. Carson, R.C. Butcher, J.N & K. Mineka S. (1998). Abnormal Psychology & Modern Life. 10<sup>th</sup> ed. New York: Longman.

## SECTION B: SOCIOLOGY

### Unit I

The discipline of Sociology

- a. Definition, sociology as a science
- b. Basic concepts and social structure
- c. Institutions and Agencies

### Unit II

Society, Culture and Health

- a. Defining the concepts and approaches to health
- b. Society, Culture and health Care System
- c. Major determinants of health, home treatment, beliefs and practices affecting therapy

### Unit III

Health and Disability

- a. Disability- a social perspective
- b. Gender and disability
- c. Access to public health care and livelihood

### Unit IV

Development and Social problems

- a. Concepts and models of social developments
- b. Social problems of development

### Essential Readings:

1. Megre – Sociology Drydon Press Illinois.
2. Social Problems in India by Ram Ahuja

### Suggestive Readings:

1. Sachdeva, & Bhushan – An Introduction to Sociology – Allahabad, Kitab Mahal Ltd.
2. Madan – India Social Problem Vol. 1. – Madaras Allied Publication – 1973
3. Kuppaswamy-Social Changes in India – New Delhi, Vikas Publications, 1973
4. Bharucha Erach-The Biodiversity of India, Mapin publishers
5. Cunningham WP-Environmental Encyclopedia, Jaico paul house

## BPT 105 - EXERCISE THERAPY- I

**Course Description:** This course involves a study of the basic physical principles as they relate to the application of exercise therapy

**Course Objective:** The students should be able to explain the rationale for prescription of safe and effective exercises

**Course Outcomes** On completion of this subject, the students will be able to Learn the principles, technique and effects of exercise as a therapeutic modality in the restoration of physical function. Analyse the various types of therapeutic exercises, movements and demonstrate different techniques and describe their effects. Practice different exercise therapy techniques and gain confidence in performing these skills before implementing the same on the patients so that high quality patient care is ensured. Practice various assessment strategies like Goniometer, Tone assessment, Muscle power assessment etc for detailed learning.



## **Unit I**

The control of human movement

(All the topics will be covered with suitable examples from physiotherapy)

### **1. Mechanical Basis of Movement**

Motion and its laws, Force and force systems, torque and angle of pull, Work, energy and power, Friction,

1. Elasticity: Definition, Stress and strain, Hooke's law, springs and their properties, Application of springs
2. Simple machine and its types and application
3. Fluid mechanics  
Hydrostatics and dynamics (definition and characteristics), Archimedes's principle, Properties of water Pressure, buoyancy & thrust (definition, characteristics and effects on motion under water) Laws of flotation, apparent loss of weight, Movement of body in water and its equilibrium, Bernoulli's theorem
4. Gravity: Centre of gravity, Line of gravity, Role in human body and movement, Effect of all of them
5. Equilibrium: Types & effects. Supporting bases, Factors affecting equilibrium, Stability and its effect

### **2. Skeletal Basis of Movement:**

Planes and axis, Joints and their classification, Degree of freedom, Link segment mode, Range of movement, Surface anatomy of joints

### **3. Musculoskeletal Basis of Movement**

Macro and Microscopic Structure of Muscle and its classification, Muscle tension, Classification and characteristics of muscle fiber, Group action of Muscles  
Types and mechanism of Muscle contraction, ranges of Muscle work, Pattern and rhythm of Movements, Muscular weakness and paralysis, Prevention of muscle wasting

### **4. Neuro Physiological basis of Movement (Brief overview of all the topics)**

Structure of nervous system, Stretch Reflex, Muscle spindle, Role of vestibular system in movement, Sensory aspects of motor system, Plastic adaptation of nervous system

## **Unit II**

### **1. Classification of Exercise**

Describe in brief the exercises which are classified according to the following:  
Movement performed, Muscle contraction produced, Muscle work undertaken, Source of energy, Kinetic chain

### **2. Fundamental and derived positions**

Definition and classification, Description and muscle work, Effects and uses, Importance, advantages and disadvantages

### **3. Active movement**

Principle and classification, Indication and contraindication, Advantages and disadvantages, Effects, uses and Precautions, Application of techniques, Home programme of exercises for various joints and muscles, various types of resistance and resisted exercise.

### **4. Passive movements**

Principle and classification, Indication and contraindication, Advantages and disadvantages, Effects, uses and Precautions, Application of techniques.

### **5. Flexibility**

Properties of contractile tissue, Definition, classification and factors affecting flexibility, Principles of flexibility training, Advantages and disadvantages of flexibility training, Passive stretching-definition, classification and factors affecting flexibility, goals, procedures, precautions, Indications and contraindications of stretching, Relaxation and inhibition in preparation for stretching, Techniques of stretching, muscle length testing.

6. Relaxation

Muscle spasm and describe relaxation, muscle fatigue, tension, Techniques of relaxation (local and general), Effects, uses and clinical application, Indication and contraindication.

7. Biomechanical modalities

Introduction, Brief outline about their application

### Unit III

1. Goniometry

Goniometry and its type, Principles, techniques & applications of goniometry, Testing positions & measurement of ROM of the joints of upper limb, lower limb, Trunk & head & neck

2. Suspension Therapy

Principle, Techniques of application, Indication, contraindication and use of suspension therapy, Precautions, Effects & uses

3. Hydrotherapy

Principles, techniques and application, basic principles of fluid mechanics, Physiological and therapeutic effects, Indications and contraindications, Operational skills and patient preparation.

#### Essential Readings:

1. Practical Exercise therapy- Margaret Hollis and Phyl Fletcher- 4<sup>th</sup> ed. Blackwell Scientific Publications
2. Therapeutic exercises. Foundations and Techniques-7<sup>th</sup> ed. Kisner & Colby F.A Davis
3. Principles of Exercise Therapy-Gardiner-CBS Delhi.

#### Suggested Readings:

1. Therapeutic Massage by A.G. Sinha, Jay Pee Publications, Delhi
2. Textbook of Therapeutic Exercises- S Lakshmi Narayana, Jaypee Brothers

### BPT 106- ELECTROTHERAPY-I

**Course Description:** This course involves a study of the basic electro-physical principles as they relate to the application of physical agents and electrotherapy

**Course Objective:** The students should be able to explain the rationale for the use of safe and effective physical agents and modalities

**Course Outcomes:** On completion of this subject, the students will be able to know the principles, technique and effects of electrotherapy as a therapeutic modality in the restoration of physical function in condition like nerve injuries. List the indications and contraindications of various types of electrotherapy, demonstrate different techniques and describe their effects. Aware of the construction, Biophysical principles and effects, dangers, safety measures, judicial use, appropriate methods of application, contraindications of the various modalities

## **Unit I**

1. Electrical activities in the human body; Muscles, Nerves
2. Application of energy to the human body
3. Basic guidelines of application of electrotherapy
4. Thermal regulation & its mechanism in human body

## **Unit II**

### 1. Current

1. Electrical phenomenon & electrical field
2. Current, voltage, resistance, amplitude, frequency, phase, impedance, static electricity, electromotive force (emf)
3. Electrical circuit
4. Types of current: a.c, p.c & d.c. current
  - a. Disability- a social perspective
  - b. Gender and disability
  - c. Access to public health care and livelihood
5. Conductors, semiconductor, insulators, rheostats, potentiometers, ammeters, oscilloscopes.
6. Mains supply, fuses, power plugs, switches.
7. Electric shock & it's management

### 2. Electromagnetism:

1. Magnetism. Magnetic field, magnetic field line, magnetic flux, magnetic flux density, e.m.f, properties of a magnet, electro magnetron effects of electrical current
2. Electromagnetic spectrum: Laws governing radiation, electromagnetic field, environmental currents and field, risk factors on prolonged exposure to e.m. field
3. Electromagnetic Conduction, lenz's law, electronic circuits- oscillators, pulse generators

### 3. Mechanical waves

Ultrasound, intensity, reflection attenuation

### 4. Thermal energy

Specific heat, modes of heat transfer, latent heat, conductors and non conductors, physical effects of heat, energy conversions, thermometer & thermography

### 5. Basic electrical components

1. Transformer: types, construction, working, functions
2. Capacitor: capacitance of a capacitor, types, electric field of a capacitor, charging & discharging of a capacitor,
3. Thermionic valve
4. Semi-conductors: types, transistor

### 6. Devices for regulation of current

Rheostat- construction, types

## **Unit III**

### 1. Introduction

1. Definition and classification of physical agents
2. History of use of physical agents
3. Role in patient care of physical agents
4. General effects of physical agents
5. General contraindication and guidelines of physical agents

## 2. Superficial Thermal Agents

### 1. Cryotherapy

Effects & uses, Indications & contraindications, Methods of application, Dangers & Precautions

### 2. Superficial Heat (paraffin wax bath, hot packs, contrast bath,) Types, Effects & uses, Indications & Contraindications, Methods of application, Dangers & Precaution

## 3. Electro Magnetic Radiations

### 1. LASER

Physical properties, Production, Effects & uses, Indications & contraindications, Dosimetry, Methods of application, Selection, Dangers & precautions, Documentation

### 2. Infrared therapy

Principle and classification, Physiological and therapeutic effects and uses, Indication and contraindication, Dangers and precautions, Application of technique

### 3. Ultraviolet therapy

Principle and classification, Physiological and therapeutic effects and uses, Indication, contraindication, Dangers and Precautions and application of Techniques.

## Essential Readings:

1. S. Kitchen, Bazin .Clayton's Electrotherapy, 10th ed, London, W.B. Saunders 1995 (ISBN 07020 1762 0374.)
2. Cromwell-Physical therapy instrumentation- 2<sup>nd</sup> ed.
3. Hillary Wordsworth and App Shanmugham- Electrophysical agents in physiotherapy- Therapeutic and diagnostic
4. John Low Ann Reed Electrotherapy Explained: Principles and Practice 4th ed . Butterworth Heinmann. 2006 (ISBN:10:0750688432, ISBN:13-978-0-7506-8843-7)

## Suggested Readings:

1. Kandhpur -Handbook of Biomedical instrumentation
2. Sedha-Applied Electronics
3. Bhargava- Basic Electronics
4. Cameroon-Physical agents in rehabilitation

## **BPT-107- COMPUTER APPLICATION AND COMMUNICATIVE ENGLISH**

**Course Objective:** Students should be able to understand the basic computer applications and should be able to communicate well

### **Course Outcomes**

On completion of this subject, the students will be able to appreciate the role of computer technology. Focus on computer organization, computer operating system and software, and MS Windows, Word processing, Excel data worksheet and PowerPoint presentation. Student will be able to the course is designed to enable students to enhance ability to comprehend spoken and written English, required for effective communication in their professional work. To speak and write grammatically correct English, to develop writing skills, to understand and express meaningfully the prescribed text, to develop spoken English.

## SECTION A: COMPUTER APPLICATION

### Unit I

Computer Systems as Information Processing System: Different Type of Computer Hardware; CPU, Input Devices, Storage Devices Communication Devices Configuration of hardware devices and their applications.

### Unit II

1. Basic idea of Local Area Network (LAN) and Wide Area Network (WAN), E-mail Internet browsing, Multimedia.
2. Introduction to Operating System: Software needs, operating systems, application software, programming language
3. Windows  
Windows explorer, print manager, control panel, paint brush, calculator, desktop, my computer, setting, find, Run.

### Unit III

Introduction and working with Ms- Word in Ms-office: Word basic commands, Formatting-text and documents, sorting and tables, working with graphics; Introduction to mail merge

### Unit IV

Working with excel-formatting, Functions, chart features, workings with graphics in excel, using worksheets a database.

### Unit V

Presentation with Power Point: Power point Basics, creating presentation the easy way; working with graphics in power-point; show tie, sound effects and animation effect. MS- Access: Creating Table, Query, Report, establish relation among various table.

### Essential Readings:

1. Mansfield, Ron: The Compact Guide to Microsoft office: BPB Publication, Delhi
2. O Brian, J.A: Management Information System, Tata McGraw Hill, New Delhi

## SECTION- B: COMMUNICATIVE ENGLISH

### Unit I

1. English grammar
  1. Articles, Preposition, Tenses, Voice, Direct and Reported Speech
2. Vocabulary
  1. Common Vocabulary, Word Often Confused, Some Common Errors

### Unit II

Paragraph Writing – Process Writing, Descriptions Summarizing and Writing in brief of Medical passages, Note- taking Exercise, Formal Correspondence (Letter and application)-Application for job, for higher studies- Letter to The Editor, Ordering Equipments, and Requesting for Information

### Unit III

Spoken English: Communicative Skills, Discussion Sessions, Dialogue Sessions

### Essential Readings:

1. Wren and Martin- Grammar and composition
2. A.S Meyers- Letters for all occasions

**PRACTICALS**  
**BPT 108P-HUMAN ANATOMY PRACTICAL**

1. Surface Anatomy; To Study, Identify and Mark the Surface Landmark on Human Body
2. Demonstration and learning of the Muscles of Trunk, Lower and Upper Intermitted and Face on a dissected Human Body.
3. Demonstration and learning of the Muscle & Bones of the Human Body with Special Emphasis on Origin & Insertion of Muscle and Ligaments.
4. Demonstration and practice of Anatomy of Joints of Upper and Lower Extremities and Vertebral Column on a Dissected Human Body.
5. Demonstration and learning of Anatomy of CNS & ANS on A Dissected Human Body.
6. Demonstration and learning of The Gross Anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital Systems on a Dissected Human Body

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

**BPT 109P - PHYSIOLOGY PRACTICAL**

1. Identification of blood cells and differential counts.
2. Total WBC count.
3. Total R.B.C. count
4. Haemoglobin estimation
5. Blood group determination
6. Bleeding time and clotting time.
7. Graphic analysis of a) skeletal muscle properties- pre after load- fatigue- sterling law  
b) Cardiac muscle properties: effect of acetylcholine & adrenaline.
8. Pulse Rate, Heart Rate and Measurement of Blood Pressure: Effects of change in posture and exercises.

**BPT 110 P - BIOCHEMISTRY AND MICROBIOLOGY PRACTICAL**

**Biochemistry Practical:**

1. Carbohydrate metabolism, testing, disorders
2. Kidney function, testing, disorders
3. Protein nitrogen substances, testing, disorders
4. Liver function, testing, disorders
5. Lipid metabolism, testing, disorders

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

**Microbiology Practical**

1. Media, sterilisation and disinfection
2. Preparation of culture media, Pouring a plate
3. Storage of media, Sterilisation vs disinfection
4. Sterilisation using the autoclave/pressure cooker
5. Sterilisation of equipment and materials
6. Inoculation and other aseptic procedures Essential points, Using a wire loop
7. Using a pipette, Flaming the neck of bottles and test tubes

8. Working with bacteria and yeast Streak plate
9. Pour plate, Using a spreader, Spread plate,
10. Testing sensitivity to antimicrobial substances

#### **BPT 111P- EXERCISE THERAPY-I PRACTICAL**

1. Demonstration and practice of the mechanical principles applied in physiotherapy like the force, torque and centre of gravity etc
2. Demonstration and practice of different types of levers in human body.
3. Demonstration and practice of different types of levers and pulleys used in Physiotherapy
4. Demonstration and practice of various planes and axis in human body with movement descriptors
5. Demonstration and practice of various types of muscle contraction in human body
6. Demonstration of various biomechanical modalities used in the physiotherapy clinic
7. Demonstration and practice of various relaxation techniques.
8. Demonstration and practice of various Goniometry techniques for all the joints of the human body.
9. Demonstration and practice of various suspension therapy techniques

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

#### **BPT 112P- ELECTROTHERAPY I - PRACTICAL**

1. Demonstration and application of diode and triode valves, transistors, ammeter, Voltmeter, Galvanometer, Rheostat, Resistance box, Transformer, e.t.c
2. Demonstrations and learning of circuits in electrotherapy modalities.
3. Demonstration of safety devices used in physiotherapy clinics. E.g. fuse, switches, earthing
4. Demonstration of ultrasound equipment testing, functioning and usage
5. Introduction to the Physical agents in a physiotherapy clinic
6. Demonstration and practice of application of following superficial heating Modalities Hydrocollatoral pack, paraffin wax bath,
7. Demonstration and practice of the application of Cryotherapy used in the Physiotherapy clinics
8. Demonstration and application of contrast bath
9. Demonstration and application of fluidotherapy
10. To study and practice the application of LASER used in the physiotherapy clinics
11. Hydrotherapy Patient preparation and Operational skills.

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

**BPT- II Year**  
**BPT 201- PATHOLOGY**

**Course Description:** The course introduces to general and systemic pathology.

**Course Objective:** The course enables the students to understand about underlying pathology of various disorders in human beings.

**Course Outcomes:** On completion of this subject, the students will be able to learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy. Demonstrate an understanding of the pathology of common diseases that therapists would encounter in their daily practice.

**Unit I**

General Pathology:

1. Introduction: Concepts of disease, Classification of lesions, Definition & Branches.
2. Inflammation: General features, Vascular changes & cellular events, Chronics & acute inflammation Mediators of inflammation (Including AIDS),
3. Cell Injury, death & adaptation: Definition & etiology (Irritants), Mechanisms of cell injury, death and adaptation, Classification, Cellular aging, Cellular adaptation to growth & its indicators, Apoptosis
4. Tissue & cell Repair: Normal growth, Repair of bone, Repair of wound, Repairs of other structures, Pathology in Repair
5. Haemodynamic disorders: Odema, Thrombosis, Embolism, Infarction, Shock, Hyperemia & congestion.
6. Blood & Lymph Disorders: Anemia- Definition, classification and types, Leukemia: Definition, classification, etiology, lab investigations- blood & marrow Pictures, Hemorrhagic disorder, Splenomegaly, Deficiency of Factor VIII & IX, Polycythemia, Lymphangitis & lymph edema
7. Neoplasm: Definition, classification, nomenclature and characteristics, Aetiology & agents causing neoplasm, Biology of neoplastic growth & neoplasm immunology.

**Unit II**

Systemic Pathology

1. Cardiovascular system; Rheumatic Heart Disease, Myocardial Infarction, Pericardial Heart Disease, Congenital Heart Disease, Ischemic Heart Disease, Response Of Vascular Walls To Injury, Hypertension, Varicose vein
2. Respiratory system: Restrictive Lung Diseases, Pulmonary Infections, Pleural Disorders – Pneumothorax, haemothorax, pleural Effusion etc. Carcinomas, Congenital anomalies, Pulmonary vascular diseases – ARDS, embolism, hemorrhage and infarction, Hypertension Pulmonary.
3. Nervous system: Meningitis, Encephalitis, Neoplasm's (Brief), Cerebrovascular disease, Demyelinating Disease, Alzheimer's Disease, Muscular Dystrophy, Disorders of Neuromuscular Junction, G.B. Syndrome.
4. Endocrine System: Hypo & Hyperpituitarism, Hypo & Hyperthyroidism, Casing's Syndrome, Diabetes
5. Alimentary system: Peptic Ulcer, Carcinoma of Stomach, Celebrative Lesion of Intestine, Liver, biliary system & pancreas, Cirrhosis, Hepatitis, Jaundice, Hepatic Failure, Pancreatitis
6. Urinary system: Glomerular Diseases, Nephritis, Renal Failure, Cholilithiasis.



7. Skeletal and Integumentary System: Polymyositis, VIC, Bones & Joints, Osteomyelitis, Arthritis, Gout, Vitiligo, Psoriasis, SLE, Acne

#### **Essential Readings:**

1. James C.E Underwood, Simon S Cross. General and Systematic Pathology. 5th Revised ed, London Churchill Livingstone , 2009 (ISBN-10: 0443068887,ISBN-13: 9780443068881)
2. Edward C. Klatt, Vinay Kumar. Robbins and Cotran Review of Pathology, 2nd Revised ed, London, Saunders, 2004 (ISBN-10: 0721601944,ISBN-13: 9780721601946)

#### **Suggested Readings**

1. Harsh Mohan. Text book of pathology. 6<sup>th</sup> ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2010. (ISBN: 978-81-8448-702-2).

### **BPT 202- PHARMACOLOGY**

**Course Description:** The course introduces to general and systemic pharmacology,

**Course Objective:** The course enables the students to understand about various drugs used in different medical condition, its mechanism of action and adverse reactions.

**Course Outcomes:** On completion of this subject, the students will be able to possess a relevant knowledge in basic principles of pharmacology and its recent advances Understand the basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy Understand the general principles of drug action and the handling of drugs by the body. Understand the contribution of both drug and physiotherapy factors in the outcome of treatment.

#### **Unit I**

General pharmacology: Introduction, Pharmacokinetics, Routes of administration, dosage forms and new drug delivery systems, Mechanism of drug action, Bioassay, Drug toxicity, Therapeutic index., Factors modifying drug response, Pharmacogenetics and teratogenicity, Drug interaction, Clinical examination of drugs, rational drug use and essential drugs, Adverse drug reactions, Drug dependence

#### **Unit II**

Systemic Pharmacology

1. Drugs acting on autonomic nervous system: Adrenergic drugs, Adrenergic blockers, Cholinergic drugs and blockers.
2. Drugs acting on central nervous system: General anaesthetics and preanaesthetic medication, Sedatives and hypnotics, Antiepileptic drugs, Opioid analgesics, Local anaesthetics, Skeletal muscle relaxants, Psychedelic agents
3. Drugs acting on respiratory System: Pharmaco-therapy of CHF, Pharmaco-therapy of bronchial asthma.
4. Drugs acting on cardio vascular system: Pharmaco- therapy of CHF, Pharmaco-therapy of hypertension, Antiarrhythmic drugs, Anti-anginal and vasodilators drugs, Pharmacotherapy of shock., Hypolipidaemic agents
5. Drugs acting on renal system: Diuretics and anti diuretics
6. Drugs acting on gastro-intestinal tract: Drugs acting on Gastro-intestinal tract
7. Nonsteroidal anti-inflammatory drugs

### Unit III

Antibiotics and chemotherapeutic agents: Introduction to chemotherapeutic agents.

1. Antibiotics
2. Antifungal antibiotics.
3. Antiviral agents
4. Chemotherapy of: TB and Leprosy, Malaria, amoebiasis and helminthiasis, Cancer, STD

### Unit IV

1. Antacoids: Histamine and antihistamine, 5 HT and its antagonists, Angiotensin, kinin and prostaglandins.
2. Hormones and related drugs, Thyroid and anti- thyroid drugs, Insulin and oral hypoglycemic agents, Adrenal and cortical hormones, Androgens and anabolic steroids
3. Miscellaneous: Drugs for gout and rheumatoid arthritis, Heavy metals and antagonists, Immunosuppressants, Blood and blood forming agents, Antiseptics and disinfectants.

#### Essential Readings:

1. Harold Karant , Denis Grant. Principles of Medical Pharmacology, 7<sup>th</sup> ed. Canada Saunders, 2007 (ISBN: 978-0-7796-9945-2)
2. K.D. Tripathi. Essentials of Medical Pharmacology. 6<sup>th</sup> ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2008. (ISBN:978-81-8448-085-6).
3. Udayakumar. Text book of pharmacology for physiotherapy. 1<sup>st</sup> ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2004. (ISBN:81-8061-278-3).

#### Suggested Readings:

1. Ramesh Pharmacology for physiotherapist. 1<sup>st</sup> ed. New Delhi, Jaypee Brothers. Medical Publishers (P) Ltd.2004. (ISBN:81-8061-343-7).
2. Laurence Brunton John Lazo Keith Parker, Goodman & Gilman's The Pharmacological Basis of Therapeutics.11<sup>th</sup> ed. Mcgraw Hill publications.
3. J. H. Gaddum. Gaddum's Pharmacology. Oxford University Press.1985.
4. John Christian Krantz. Krantz and Carr's Pharmacologic principles of medical practice. 8th ed. Baltimore Williams & Wilkins (ISBN 10: 0683002929)

## BPT203 - GENERAL MEDICINE AND SURGERY

**Course Description:** The course introduces to principles of general medicine and Surgery with emphasis medical and surgical management of common disorders of systems of body.

**Course Objective:** The course enables the students to understand about the causes of disorders of different systems of body and enable to understand the principles behind the management of disorders related to above said areas.

**Course Outcomes:** On completion of this subject, the students will be able to demonstrate a general understanding of the diseases that therapists would encounter in their practice. Understand the etiology and pathology, the patient's symptoms and the resultant functional disability. Understand the limitations imposed by the diseases on any therapy

## SECTION A: GENERAL MEDICINE

### Unit I

Etiology, symptoms and signs along with management of the following diseases.

1. Infections: Bacterial – tetanus, typhoid, rheumatic fever, diphtheria etc. Viral – herpes simplex and zoster, measles, hepatitis, HIV, varicella and influenza, Protozoal – Filariasis, malaria and amoebiasis etc.
2. Disease of blood
3. Diseases of liver.
4. Diseases of alimentary tract.
5. Diseases of renal and reproductive system
6. Nutritional and metabolic diseases: Balanced diet, Protein caloric malnutrition, Avitaminosis, Diabetes Mellitus, Obesity, Hyper and Hypothyroidism, Calcium homeostasis, Gigantism and acromegaly, Disturbances in water, electrolyte and acid base balance.

### Unit II

1. Dermatology: Environmental hazards, immunologically mediated skin disorders, Psoriasis, Leprosy, HIV and syphilis, Acne, Trophic ulcers, Local, fungal, parasitic and viral infections, Rheumatology related skin diseases
2. Oncology. Classification and characteristics of common tumors- their complications and management.
3. Emergency medicine: Coma, Cerebral hypoxia, Drug overdose, Poisoning, Tetanus, Renal failure, Choking
4. AIDS

### Unit III

Paediatrics: General growth pattern, Paediatric assessment and its normal parameters, learning disorders (brief), Problems in emotional development – nail biting, thumb sucking, bed wetting, aggressive and harmful behaviour, bleeding disorders.

## SECTION B: GENERAL SURGERY

### Unit I

A. General Surgery.: General scheme of case taking, Wound healing and wound management, Incision and its types, Anaesthesia and its complication (brief overview), Burns- classification, complication, management and reconstructive surgery, Skin grafts, flaps and cosmetic surgery, Arterial and venous disorders, Hernia – its types and managements, Abdominal surgery.

### Unit II

- A. Ophthalmology
- B. ENT.

### Unit III

- A. Obstetrics and gynaecology.
  1. Anatomy and physiology of female reproductive system,
  2. Pregnancy and labor.
  3. Menstruation and its disorder.
  4. Prenatal and postnatal care.
  5. MTP and birth control techniques.
  6. Prolapsed uterus and incontinence
  7. Term, newborn and low birth weight baby.
  8. PID
  9. Neoplasm

10. Surgical treatment of obstetric and gynaecological conditions.

**Essential Readings:**

1. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston. Davidson's Principles and Practice of Medicine. 21<sup>th</sup> ed Churchill Livingstone, 2010 (ISBN: 9780702030857)
2. Anthony S. Fauci, Eugene Braunwald, Dennis L. Kasper, Stephen L. Hauser, Dan L. Longo, J. Larry Jameson, Joseph Loscalzo. Harrison's Principles of Internal Medicine, 17th ed. McGraw Hill Professional, 2008 (ISBN: 0071466339 / 9780071466332)
3. Michael Swash, Michael Glynn. Hutchinson's Clinical Methods. An Integrated Approach to Clinical Practice. Saunders, 2007 (ISBN-13: 978-0-7020-2799-4, ISBN-10: 0-7020-2799-5)

**Suggestive Readings**

1. Krishna Das. Text book of medicine. 5<sup>th</sup> ed New Delhi, Jaypee Brothers Medical Publishers(P) Ltd. 2009 (ISBN: 81-8061-615-0)
2. Thappa Essentials in Dermatology. 2<sup>nd</sup> ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd. 2005 (ISBN: 978-81-84448-558-5).
3. Aggarwal Emergency Medicine. 1<sup>st</sup> ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd. 2005 (ISBN: 81-8061-558-8).
4. S. Das. A concise textbook of surgery. 5th ed. S Das Publications.
5. Norman S. Williams, Christopher J.K. Bulstrode, P. Ronan O'Connell. Bailey and Love's Short Practice of Surgery 25<sup>th</sup> ed, Hodder Arnold, 2008 (ISBN13: 9780340939321, ISBN10: 034093932X)

**BPT 204 - NEUROSCIENCE & PSYCHIATRY**

**Course Description:** The course introduces to principles of clinical neurosciences and psychiatry with emphasis on surgical and medical management of common disorders of nervous system and psychiatric disorders.

**Course Objective:** The course enables the students to understand about the causes of nervous system and psychiatric disorders and enables to understand the medical and surgical management of nervous system and psychiatric disorders.

**Course Outcomes:** On completion of this subject, the students will be able to understand the basic neurological conditions which commonly cause disability and their management. Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various Neurological Conditions.

**Unit I**

1. Introduction to psychiatry; Brief history, Psychotherapeutic team, Causes of mental disturbance and its gross system, Psychiatric examination, Normal mental health.
2. Methods of treatment: Drug therapy, Psychotherapy, Biofeedback, Behaviour therapy, ECT.
3. Clinical syndromes: Psychoneurosis- its type and their management, Psychosis, Organic brain syndrome, Drug dependence and alcoholism, psychosomatic illness, Pediatric psychiatry (Brief)

## Unit II

1. Introduction to neurosciences: Overview of neuroanatomy and neurophysiology, Neurological assessment, Principles of clinical and differential diagnosis and prognosis of neurological disorders, First aid and management of head and spinal cord trauma.
2. CNS.
  1. Aetiopathogenesis, clinical and surgical management of the following conditions: Cerebral palsy, CVA and TIA, TBI, Cerebeller disorders
  2. Infections: Meningitis, Encephalitis, Poliomyelitis.
  3. Movement disorders: Parkinsonism, Dystonia, Chorea, Tremors and writer's cramp, Ataxia.
  4. Congenital anomalies: Hydrocephalus, Spina bifida.
3. Neoplasm.
4. Diseases of blood vessels.
5. Spinal cord and roots: Compressive, Non-compressive, Trauma.
6. Dementia.

## Unit III

1. Multifocal neurological diseases: Infections, Demyelinating diseases, Drug induced neurological syndromes Metabolic Encephalitis, Nutritional disorders, Non metastatic manifestation of neoplasm, Degenerative disorders, Neurocutaneous syndrome.
2. Peripheral nerve and muscle: Neuropathies including GB syndrome, Plexus syndromes Myopathies. Myasthenia gravis, Mitochondrial disorders, Disorders of autonomic nervous system, Polymyositis, Localization and management of peripheral nerve injuries, Pain management, Bladder, bowel and sexual dysfunctions

### Essential Readings:

1. Brain. Aids to the Examination of the Peripheral Nervous System, 4th Revised ed, London. Saunders(W.B.) 2000 (ISBN-10:0702025127 ,ISBN-13: 9780702025129)
2. Geraint Fuller, Neurological Examination Made Easy, 4th Revised ed, London, Churchill Livingstone,2008 (ISBN-10: 0443069646, ISBN-13: 9780443069642).
3. Allan Ropper,Daryl R Gress. Neurological and Neurosurgical Intensive Care, 4th Revised ed Philadelphia, Lippincott Williams and Wilkins, 2003(ISBN-10: 0781731968 ISBN-13: 9780781731966)
4. Roger Barker, S Barasi,. Neuroscience at a Glance, 2nd Revised ed, Oxford, Blackwell Publishing Ltd 2003(ISBN-10: 1405111240, ISBN-13: 9781405111249)
5. Michael Donaghy, Brain's Diseases of the Nervous System,11<sup>th</sup> ed,Oxford university press,2001 (ISBN-10: 0192626183 ,ISBN-13: 9780192626189)

### Suggested Reading:

1. Kumar Neurosurgery review.1<sup>st</sup>ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2009.(ISBN:978-81-8448-652-0).
2. Ahuja.A short text book of psychiatry, 6<sup>th</sup> ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2009.(ISBN:81-8061-871-4).
3. Ananth Psychopharmacologic treatment of psychiatric disorders. 1<sup>st</sup>ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2007.(ISBN:81-71779-649-4)

4. Michael Gelder, Nancy Andreasen, Juan Lopez-Ibor, John Geddes. New Oxford Textbook of Psychiatry 2<sup>nd</sup> ed, Oxford University press, 2009 (ISBN: 978-0-19-920669-8)
5. Hadi Manji, Sean Connolly, Neil Dorward, Neil Kitchen, Amrish Mehta, Adrian Wills. Oxford Handbook of Neurology. Oxford university press, 2006 (ISBN: 978-0-19-8509738)

## **BPT 205 - ORTHOPEDICS AND SPORTS MEDICINE**

**Course Description:** The course introduces to general orthopedics, traumatology and sports medicine, with emphasis on medical and surgical management of the above said fields.

**Course Objective:** The course enables the students to understand about the mechanism of injuries in orthopedics and should be able to understand the management orthopedics, traumatology and sports related injuries, with emphasis on medical and surgical management.

### **Course Outcomes**

On completion of this subject, the students will be able to Understand the basic orthopaedic conditions which commonly cause disability and their management. Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various Orthopaedic Conditions. Assess and provide physiotherapeutic techniques in Sports conditions for relief of pain, relaxation, conditioning and posture.

### **Unit - I**

#### **A. Introduction to Orthopaedics**

- a) Introduction to orthopedic terminologies.
- b) Clinical Orthopaedic examination.
- c) Radiological and imaging techniques.
- d) Devices used in Orthopaedic surgery.

#### **B. Traumatology: Definition, classification, pathogenesis, investigation, differential diagnosis, treatment and complication of the following.**

1. Fractures and dislocations.
2. Fracture and soft tissue healing.
3. Clinical features of Orthopaedic injury.
4. Principals of treatment and management of complication of fractures and dislocations.
5. Upper limb trauma: Soft tissue injury, Bony injuries, Joint injuries.
6. Lower limb trauma: Soft tissue injury, Bony Injury, Joint Injury
7. Spinal trauma
8. Polytrauma
  1. Nerve injury
  2. Vascular injury

### **Unit - II**

Principles, indication and contraindication of following surgical procedures.

1. Arthrodesis and arthroplasty.
2. Osteoplasty
3. Spinal stabilizations.
4. Limb lengthening and reattachments.
5. Tendon surgeries.

6. Muscle surgeries.
7. Nerve surgeries.
8. Joint replacement.

### **Unit - III**

Developmental disorders of bone.

1. Congenital deformities: CTEV, CDH, Foot arch deformities, Limb deficiency, Arthrogyriposis multiplex congenital, Spinal bifida, Sprengel's shoulder, Torticollis, Osteogenesis imperfect, Spinal deformities, Coxavara
2. Bone and joint neoplasm: Osteoma, Osteosarcoma, Osteoclastoma, Ewing's tumor, Multiple myeloma, Secondary tumors
3. Bone and joint infections: Osteomyelitis, Tuberculosis, Leprosy, Septic arthritics
4. Arthritis: Osteoarthritis, Rheumatoid arthritis, Psoriatic arthritis, miscellaneous arthritis conditions Gout, Pseudo gout

### **Unit - IV**

Regional Orthopaedics

1. Shoulder: Rotator cuff injury, Periarthritis, Adhesive capsulitis, Bursitis, etc
2. Elbow: Tennis and Golfers elbow, recurrent ulnar nerve slipping, Pulled elbow, etc
3. Wrist and hand: Ganglion, Dequervians syndrome, Trigger thumb and finger, CTS, Dupuytren's contracture, Flexor and extensor tendon injuries, RA hand, Burned hand, Mallet finger
4. Hip: Slipped epiphysis, AVN, Hip OA
5. Knee Deformities: Osgood schlatter's disease, loose bodies, Anterior knee pain, Chondromalacia patella, Bursitis, Plica, OA Knee
6. Foot and Ankle: Anterior foot pain, Child foot pain, Heel pain, Tarsal tunnel syndrome, Trophic ulcers, OA Foot
7. Spine; Thoracic inlet syndrome, Torticollis, PIVD, Spondylolisthesis, Strain, Lumbar canal stenosis, Spondylitis, Pott's spine, Ankylosing spondylitis

### **Unit - V**

1. Peripheral nerve injury: Classification of nerve injury, Brachial plexus Musculocutaneous nerve injury, Radial nerve injury, Medial nerve injury, Ulnar nerve injury, Femoral nerve injury, Sciatic nerve injury.
2. Neuromuscular disorders: Poliomyelitis, Myopathies, Leprosy, Cerebral palsy

### **Essential Readings:**

1. Jayant Joshi and P Kothwal. Essential Orthopaedics and applied physiotherapy – India, Elsevier, 1999 (Reprint-2008, ISBN-978-81-8147-215-1)
2. David Hamblen, Hamish Simpson. Adams's outline of fractures- 12<sup>th</sup> ed, Philadelphia. Churchill Livingstone, 2007 (ISBN-13: 978-0-443-10297-4, ISBN-10: 0-443-10297-X)
3. David Hamblen , Hamish Simpson Adams's outline of orthopaedics. Churchill Livingstone, 2009, (ISBN-13: 978-0-7020-3061-1, ISBN-10: 0-7020-3061-9)
4. J. Maheswari. Essential Orthopaedics, 3rd ed, New Delhi, Mehta Publishers, 2002 (ISBN: 81-88039-00-04)
5. David J. Magee, Orthopedic Physical Assessment; 5th Revised ed, London, Saunders, 2008, (ISBN-10: 0721605710 , ISBN-13: 9780721605715)

## Suggested Readings

1. Louis Solomon, David J Warwick. Apley's Concise System of Orthopaedics and Trauma, 3<sup>rd</sup> Revised ed, London, Hodder Arnold.2003(ISBN-10: 0340809841,
2. Fred R.T Nelson, Carolyn Taliaferro Blauvelt. A Manual of Orthopaedic Terminology. 7<sup>th</sup> Revised ed, St Louis, Mosby, 2007 (ISBN-10: 0323045030)
3. Terry Malone, Thomas McPoil. Orthopedic and Sports Physical Therapy. St. Louis,3<sup>rd</sup> Revised ed, Mosby ,1997(ISBN-10: 0815158866,ISBN-13: 9780815158868)
4. Ronald McRae. Clinical Orthopaedic Examination, 6<sup>th</sup> ed, Churchill Livingstone, 2010(ISBN:9780702033933)
5. Graham Apley, Louis Solomon. Physical Examination in Orthopaedics, Hodder Arnold Publications ,1997(ISBN: 13: 9780750617666)

## BPT 206 - BIOMECHANICS AND KINESIOLOGY

**Course Description:** The course introduce to the biomechanical principles related to human movements and causes of movements.

**Course Objective:** The course enables the students to understand the causes of normal and abnormal movements in human beings.

### Course Outcomes

On completion of this subject, the students will be able to analyze normal human movement from a global perspective, integrating biomechanics, muscle mechanics and motor control theory. Experience quantitative methods of movement analysis using various methods. Apply the analytic methods to specific example of normal human motor performance. Use these methods for evaluation and treatment of disorders of the musculoskeletal system.

### Unit I

#### 1. Mechanics

1. Definition and general principles.
2. Force, axis, planes, equilibrium, various laws, friction, etc.
3. Introduction to kinesiology
4. Kinetics and kinematics.
5. Human movements and their Significance-Analysis, body links, chain system.
6. Mechanics: Laws, simple mechanics, applications etc.
7. Determination of:
  - a. Centre of gravity.
  - b. Resultant force
  - c. Magnitude of friction
  - d. Mechanical advantage of machines.
8. Correlation of muscle and joint with laws of mechanics, force and simple mechanics, (levers, pulley, springs etc)

#### 2. Gait and posture.

##### 1. Gait

1. Definition and description of normal gait.
2. Determinants of gait.
3. Spatial – temporal parameters.
4. Gait deviations.



2. Posture
  1. Definition, types of posture and factors responsible for postural control.
  2. Factors responsible for static and dynamic posture.
  3. Analysis of posture
  4. Abnormal posture.

## **Unit II**

1. Muscle structure and function.
  1. Elements of muscle.
  2. Types of muscle- Spurt, shunt, tonic and phasic muscles.
  3. Factors affecting muscle functions- location, types of joint, sensory receptors etc.
  4. Muscle function- mobility and stability
  5. Muscle contraction- process, types, load, angular velocity, voluntary control and torque.
  6. Isokinetic exercises
2. Joint structure and function
  1. Principles of joint design of human joint. Tissues present in a joint.
  2. Description, classification, function, chains, range of motion, injury and disease of joint
  3. Axis of motion, plane of movement, degree of freedom, distinguishing features and stability factors of joint.
3. Ligament and tendon mechanics.
  1. Structure, composition, and mechanical properties.
  2. Muscle tendon properties.
  3. Changes with aging, exercise and immobilization in ligaments and tendons.
4. Bone mechanics.
  1. Structure, composition and mechanical properties
  2. Changes with ageing, exercise, and immobilization in bones.

## **Unit III**

1. The shoulder complex.
  1. Structural components and their significance.
  2. Articular surface, ligaments, accessory joint structures and range of motions,
  3. Contributions of each joint in mobility of shoulder complex
  4. Articulation – mobility and stability factors.
  5. Scapulthoracic rhythm
  6. Muscles and movements.
  7. Restriction, limitations and deficits and their effects on shoulder functions.
2. The elbow complex
  1. Articulations, joint capsules, ligaments, muscles etc.
  2. Axis of motion, range of motion, muscle action.
  3. Mobility and stability of elbow complex.
  4. Effects of injury and resistance to forces.
3. The wrist and hand complex.
  1. Joints and ligaments of the wrist and hand.
  2. Muscles, movements, range of motion, axis and plane of all movements.
  3. Functional positions of wrist and hand
  4. Prehensions, power, cylindrical, spherical and hook grasp.

5. Precision, handling, pad to pad, tip to tip, and pad to side prehension.
4. The hip complex.
  1. Articulation, ligaments, movements.
  2. Axis, plane and range of movement.
  3. Tilt, rhythm and contribution of each joint of hip complex.
  4. Pelvic motions rotation, tilt etc.
  5. Reduction of weight on shifting- using cane in weakness and bony deformities
5. The knee complex.
  1. Structural description in details.
  2. Movement- axis, plane, freedom, range etc
  3. Articulations and their contribution in mobility and stability of knee complex.
  4. Weight transfer in normal and abnormal conditions
  5. Effect of injury and other pathological conditions on the knee efficiency.
6. The ankle joint.
  1. Articulations, joint capsules, ligaments, muscles etc.
  2. Axis of motion, range of motion, muscle action.
  3. Mobility and stability of ankle joint.
  4. Effects of injury and resistance to forces.
7. The vertebral column:
  1. Articulations, ligaments, muscles, vertebrae, I.V. disc etc.
  2. Factors of stability and mobility of vertebral column.
  3. Regional structure of cervical, dorsal, lumbar and sacral vertebrae.
  4. Effect of injury or developmental anomalies of vertebrae.
  5. Regional characteristics- curves, rhythms, movements, rotations etc.
  6. Biomechanics of spine.

### **Essential Readings**

1. Pamela K Levangie, Cynthia C Norrin. Joint structure and Function: A comprehensive analysis .1<sup>st</sup> ed. Philadelphia F.A. Davis.2206(ISBN:81-8061-693-2)
2. Laura K. Smith, Elizabeth Lawrence Weiss, L. Don Lehmkuhl. Brunnstrom's Clinical Kinesiology, 5<sup>th</sup> ed, F.A.Davis 11996 (ISBN-13: 978-0-8036-7916-0,ISBN-10: 0-8036-7916-5).
3. Nancy Hamilton, Wendi Weimar, Kathryn Luttgens. Kinesiology: Scientific Basis of Human Motion,11<sup>th</sup> ed ,Mcgraw Hill publications,2008.( ISBN: 9780071259514).
4. Nihat Ozkaya,Margerata, Nordin.Fundamentals of bionmecahnics. Equilibrium,motion and deformation.2<sup>nd</sup> ed.Springer.1999(ISBN.0-387-98283-3).
5. Margerata Nordin,Victor H .Frankel .Basic biomechanics of muscular and skeletal system.3<sup>rd</sup> ed.Baltimore Lippincott Williams and Wilkins.2001.(ISBN:0-683-30247-7).
6. John V. Basmajian. Muscles alive: their functions revealed by electromyography.4<sup>th</sup> ed. Williams & Wilkins.1978 (ISBN-13: 9780683004137 ISBN: 0683004131)

## **BPT 207 - EXERCISE THERAPY II**

**Course Description:** The course introduces to principles of exercise therapy and its application in Physiotherapy practices.

**Course Objective:** The course enables the students to understand about the various techniques used in exercise therapy and its application.

### **Course Outcomes**

Understand principles and procedures, indications, contraindications and precautions, appropriate methods of application of each of the assessment strategy and treatment techniques hands on and on models. Communicate with the patient in a professional and ethical manner.

### **Unit -I**

1. Manual Muscle testing
  1. Concept, Introduction, significance and limitation of manual muscle testing.
  2. Grading systems.
  3. Principles and application techniques of muscle testing.
  4. Testing position of various muscles.
2. Muscle re-education
  1. Concept, introduction, significance and limitation of re-education.
  2. Various reduction techniques and facilitating methods.
  3. Re-education of muscle through grade I-V.
  4. ADL-Re education
  5. PNF-Conceptual framework, principles, indications, contraindications, effects and uses
3. Balance and Coordination
  1. Review of normal balance and co-ordination control mechanism.
  2. Etiopathogenesis of neuromuscular in co-ordination and balance problems.
  3. Balance-static and dynamic.
  4. Technique for regaining balance
  5. Technique for coordination.
4. Motor learning and motor control
  1. Introduction to motor learning: Motor skills, Motor performance, Measurement of motor performance.
  2. Introduction to motor control theories, Application, Learning environment, learning of skill. Instruction and augmented feedback. Practice conditions.

### **Unit II**

1. Strength and endurance.
  1. Definition, classification and factors affecting strength and endurance.
  2. Principles of strength training.
  3. Advantages and disadvantages.
  4. Physiological aspects of strength training.
  5. Methods used for strength training.
  6. Clinical examples of strength training.
  7. Plyometric training.
  8. Endurance training.

### **Unit III**

1. Gait
  1. Centre of gravity and line of gravity in detail

2. Normal gait- Definition, description, alignments of joints, alignment of LOG and COG in all phases, Muscle work, ROM changes, determinants, time and distance parameters, gait deviations, types, assessments, etiogenesis and management.

2. Posture

1. Definition, classification and normal control mechanism.
2. Abnormal posture-types, Assessment, etiogenesis and management.

3. Walking aids

1. Definition and classification
2. Preparation and measurement
3. Application
4. Advantages and disadvantages
5. Clinical examples with their uses.

**Unit IV**

1. Soft tissue mobilization

1. Principles and classification
2. Indications, contraindication and uses.
4. Effects and uses
5. Precautions

**Unit V**

1. Traction

1. Rationale, Indications and contraindications, Techniques, Effects and uses

2. Manual Therapy.

1. Joint Mobility-Factors affecting and general techniques to increase joint mobility, General mobilization techniques, their effects and uses, indication, contraindication and precautions, various schools of thought of manual therapy (Brief)

3. Mat activities

1. Principles, Application, Effects and uses.

4. Gymnasium: Introduction to the gym equipments, Types of Gym & gym equipments  
Placement and setup of gym equipments

**Essential Readings:**

1. Margaret Hollis, Phyl Fletcher-Cook. Practical exercise therapy 4<sup>th</sup> ed.- India, Blackwell Scientific Publications.(ISBN:0-632-04973)
2. John V Basmajian, Wolf Therapeutic Exercises. 4<sup>th</sup> ed. Lippincott Williams and Wilkins.1984. (ISBN-13: 9780898746419 ISBN: 0898746418)
3. Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise: Foundations and Techniques, 5th ed. FA Davis ,2007(ISBN-13: 978-0-8036-1584-7,ISBN-10: 0- 8036-1584-1)
4. Susan B O'Sullivan. Thomas J Schmitz. Physical Rehabilitation. Assessment and treatment. 5<sup>th</sup> ed. FA Davis(ISBN-9780803612471)
5. A.G.K. Sinha. Principles and practices of therapeutic massage 2<sup>nd</sup> ed. Jay Pee Publications, New Delhi.2010(ISBN:978-81-8448-831-9)
6. Voss & Knott's Proprioceptive Neuromuscular Facilitation. Lippincott Williams & Wilkins, 1991. (ISBN-10: 0397548605 ISBN-13: 978-0397548606)

### **Suggested Readings:**

1. Florence Peterson Kendall, Elizabeth Kendall McCreary, Muscles: Testing and Function, with Posture and Pain, 5<sup>th</sup> ed. Lippincott Williams and Wilkins.2005(ISBN-10: 0-7817- 4780-5 ISBN-13: 978-0-7817-4780-6)
2. Michelle H. Cameron. Physical Agents In Rehabilitation: From Research To Practice.3<sup>rd</sup> ed.Saunders. 2008(ISBN: 9781416032571)
3. Helen Hislop, Jacqueline Montgomery. Daniels and Worthingham's muscle testing.8<sup>th</sup> ed Saunders.2007. (ISBN-13: 978-1-4160-6617-0)
4. Susan S Adler, Dominiek Beckers, Math Buck.PNF in practice, An illustrated guide.3<sup>rd</sup> ed. Springer.2008(ISBN:978-3-540-73901-2)
5. Gardiner M.D. The Principles of Exercise Therapy. India. CBS, 2005. (ISBN: 9788123908939).
6. Pamela K Levangie ,Cynthia C Norkin. Joint structure and Function: A comprehensive analysis 1<sup>st</sup> ed. Philadelphia F.A. Davis.2206(ISBN:81-8061-693-2)

### **BPT 208- ELECTROTHERAPY II**

**Course Description:** The course introduces to principles of electrotherapeutics and its application in physiotherapy practices.

**Course Objective:** The course enables the students to understand about the various electrotherapy modalities used in physiotherapy and its application

#### **Course Outcomes**

On completion of this subject, the students will be able to Know the principles, technique and effects of electrotherapy as a therapeutic modality in the restoration of physical function in conditions. List the indications and contraindications of various types of electrotherapy, demonstrate different techniques and describe their effects. Utilize Contemporary and recent methods and to select the most appropriate method to moderate and alleviate pain for patients. Practice towards Scientific excellence.

#### **Unit I**

1. Low frequency currents
  1. A brief overview of nerve muscle physiology
  2. Concept and introduction to AC, DC and modified currents such as ultrareiz, didynamic.
  3. Production of all type of low frequency currents.
  4. Physiological and therapeutic effects of low frequency currents
  5. Indications and contraindications techniques and parameters of muscle testing and treatment by all types of low frequency currents
  6. Specialized techniques like Faradic foot bath, Faradism under pressure, iontophoresis and muscle re-education
  7. Electro diagnosis -FG Test, SD Curve
2. TENS
  1. Theories of pain and its control
  2. Effects and uses of TENS.
  3. Indications and contraindications
  4. Dosimetry
  5. Dangers and precautions
  6. Techniques

3. Medium frequency currents
  1. Introduction and principles
  2. Physiological, therapeutic effects and uses
  3. Indications and contraindications
  4. Dosimetry
  5. Dangers and precautions
  6. Techniques

## **Unit II**

### **High frequency therapy**

1. Short wave diathermy
  1. Definition and classification
  2. Physiological and therapeutic effects and uses
  3. Indications and contraindications
  4. Dosimetry
  5. Dangers and precautions
  6. Techniques
2. Micro wave diathermy
  1. Definition and classification
  2. Physiological and therapeutic effects and uses
  3. Indications and contraindications
  4. Dosimetry
  5. Dangers and precautions
  6. Techniques
3. Long wave diathermy

## **Unit III**

1. Ultrasound
  1. Definition and classification
  2. Physiological and therapeutic effects and uses
  3. Indications and contraindications
  4. Dosimetry
  5. Dangers and precautions
  6. Techniques
2. Advanced Electrotherapy:
  1. Computerization of modalities
  2. Combination of different modalities.
  3. Progression of parameters.
  4. Selection and combination of parameters.
  5. Combination therapy
    1. Principles
    2. Uses and indications of ultrasound with electrotherapy.
    3. Uses and indications of laser with electro therapy
    4. Uses and indications of ultrasound with laser and electro therapy.
    5. Uses and indications of microwave with traction.
    6. Shock wave therapy

### **Essential Readings:**

1. John Low Ann Reed Electrotherapy Explained: Principles and Practice 4th ed  
 .Butterworth Heinmann.2006 (ISBN:10:0750688432,ISBN:13-978-0-7506-8843-7)

2. S.Kitchen, Bazin .Clayton's Electrotherapy, 10th ed, London,W.B. Saunders1995 (ISBN 07020 1762 0374.)
3. Justus F. Lehmann Lehmann Therapeutic heat and Cold. 4<sup>th</sup> ed Williams & Wilkins. 1990(ISBN- 10: 0683049089,ISBN-13: 978-0683049084)
4. Joseph Kahn, Principles and Practice of Electrotherapy. 4<sup>th</sup> ed. Churchill Livingstone, 2000. (ISBN-10: 0443065535 ISBN-13: 978-0443065538)
5. Steven L. Wolf. Electrotherapy. Churchill Livingstone (ISBN-10:0443081468, ISBN-13 9780443081460)

**Suggested Readings:**

1. John Low Ann Reed. Physial Principles Explained, Butterworth-Heinemann, 1994. ( ISBN 0750607483 )
2. Nelson Currier. Clinical Electrotherapy Mcgraw-hill/appleton & Lange,1978 (ISBN: 0838512623 ISBN-13: 9780838512623, 978-0838512623)
3. Meryl Roth Gersh Electrotherapy in Rehabilitation. F. A. Davis Company1992 (ISBN-10: 0803640250 ISBN-13: 978-0803640252)
4. Susan L. Michlovitz Thermal agents in Rehabilitation 3<sup>rd</sup> edition, F. A. Davis, 1996 (ISBN-10: 0803600445, ISBN-13: 978-0803600447)

**PRACTICALS**

**BPT 209P- CLINICAL VIVA I (BPT 201, BPT203, BPT204)**

The students will be assessed about their understanding of practical aspects taught in BPT 201 and history taking, evaluation, medical and surgical treatment plan for patients of relevant diseases and disorders taught in BPT 203, BPT 204

**BPT 210P- CLINICAL VIVA II (BPT 205)**

The students will be assessed about history taking, evaluation and treatment planning for patients of relevant diseases and disorders taught in BPT 205.

**BPT 211P- EXERCISE THERAPY II PRACTICAL**

**Unit I**

1. Manual Muscle testing
  1. Grading Systems
  2. MMT of muscles around, Shoulder, Elbow, Wrist and hand, Hip, Knee Foot and Ankle, Trunk, Face
2. Muscle re-education
  1. Techniques
  2. Equipments
3. Muscle Strength Training.
  1. Different protocols of strength training
  2. Calculation of repetition maximum
  3. Methods to measure changes in muscle response in to muscle strengthening
  4. Plyometric training
4. Endurance training
  1. Techniques
  2. Application.

5. Balance and Coordination
  1. Assessment of balance and coordination
  2. Methods to improve balance and co-ordination.
6. Proprioceptive neuromuscular facilitation (PNF)
  1. Patterns
  2. Techniques

## **Unit II**

1. Gait
  1. Observational gait analysis
  2. Methods to study temporal and spatial parameters
  3. Assessment of gait deviations and its management.
2. Posture
  1. Analysis
  2. Correction of abnormal posture.
3. Walking aids
  1. Measurement of walking aids
  2. Pre-training
  3. Training
  4. Precautions

## **Unit III**

1. Soft tissue mobilization
  1. Techniques and application
  2. Patient preparation
  3. Precautions

## **Unit IV**

1. Traction
  1. Different methods of traction application
  2. Dosimetry
2. Manual Therapy: Joint Mobilization Techniques (Glides)
  1. Shoulder
  2. Elbow
  3. Wrist and hand
  4. Hip
  5. Knee
  6. Ankle and foot.
3. Therapeutic Gymnasium:
  1. Introduction to various equipments used in gymnasium and its operation.
4. Mat activities
  1. Techniques
  2. Application.

## **Essential Readings:**

1. Margaret Hollis, Phyl Fletcher-Cook. Practical exercise therapy 4<sup>th</sup> ed.- India, Blackwell Scientific Publications.(ISBN:0-632-04973)
2. Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise: Foundations and Techniques, 5th ed.FA Davis ,2007(ISBN-13: 978-0-8036-1584-7,ISBN-10: 0- 8036-1584-1)



3. Susan B O'Sullivan, Thomas J Schmitz. Physical rehabilitation. Assessment and treatment. 5<sup>th</sup> ed. FA Davis (ISBN-9780803612471)
4. Gardiner M.D. The Principles of Exercise Therapy. India. CBS, 2005. (ISBN: 9788123908939).

**Suggested Readings:**

1. Pamela K Levangie, Cynthia C Norrin. Joint structure and Function: A comprehensive analysis 1<sup>st</sup> ed. Philadelphia F.A. Davis. 2006 (ISBN: 81-8061-693-2)
2. Florence Peterson Kendall, Elizabeth Kendall McCreary, Muscles: Testing and Function, with Posture and Pain, 5<sup>th</sup> ed. Lippincott Williams and Wilkins. 2005 (ISBN-10: 0-7817-4780-5 ISBN-13: 978-0-7817-4780-6)
3. Michelle H. Cameron. Physical Agents In Rehabilitation: From Research To Practice. 3<sup>rd</sup> ed. Saunders. 2008 (ISBN: 9781416032571)

**BPT 212P - ELECTROTHERAPY II PRACTICAL**

1. Demonstration of electrical modalities functioning and usage
2. Demonstration and practice of various motor points' stimulations
3. Demonstration and practice of therapeutic application of different low frequency currents.
4. Demonstration and application of reaction of degeneration, SD curves plotting.
5. Demonstration and practice of the therapeutic application of following modalities:
  1. Shortwave diathermy
  2. Ultrasound
  3. Electrical muscle stimulator
  4. Interferential currents
  5. TENS
  6. Ultraviolet rays
  7. Infrared rays
  8. Microwave

## **BPT- III Year**

### **BPT 301 - CARDIOPULMONARY MEDICINE AND SURGERY**

**Course Objective:** The students will be able to understand the basic cardiorespiratory conditions which commonly cause disability and their management. Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various cardiorespiratory Conditions.

#### **Course Outcomes**

On completion of this subject, the students will be able to understand the basic cardio respiratory conditions which commonly cause disability and their management. Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various cardiorespiratory Conditions.

#### **Unit I**

1. Brief anatomy and physiology of cardiovascular system.
2. Methods of evaluation and investigation of cardiovascular diseases e.g. auscultation, ECG, Echocardiography, TMT, Coronary angiography, Myocardial perfusion scan (MPS) (thallium scan) Cardiac computerised tomography (CT) Cardiac Magnetic Resonance Imaging (MRI)
3. Cardiovascular system diseases  
Definition, Aetiopathogenesis, investigation, clinical features, assessment and management of the following conditions: Congenital heart diseases: ASD, VD, PDA, Fallot's tetralogy Ischemic heart diseases, Cardiac failure, Rheumatic fever, Hypertension, Endocarditis, Cardiac muscle disorder, Cardiac neoplasm, Peripheral vascular diseases.

#### **Unit II**

1. Brief anatomy and physiology of pulmonary system.
2. Methods of evaluation and investigations of pulmonary diseases e.g. radiograph, auscultation, PFT, ABG etc.
3. Pulmonary system diseases and disorders. COPD, Obstructive pulmonary diseases, Infections, Neoplasm, Interstitial pulmonary diseases, Diseases of nasopharynx, larynx and trachea, Diseases of pleura, diaphragm and chest wall, chest deformities, Respiratory failure.

#### **Unit III**

1. Introduction: Types of incision, pre and post operative assessment, management and Complications of cardiothoracic surgery.
2. Cardiac surgery: Indication, contraindications, incision, pre and post-operative management and complications of the following: Valvotomy and valve replacement. Open heart surgery/ cardiac bypass surgery, Surgery on pericardium & Heart transplantation Operations of congenital disorders, Pacemaker implantation & Coronary angioplasty. Balloon angioplasty and vascular surgery, Surgery of arteries and veins.
3. Thoracic surgery:
  - a) Clinical features and management of: Rib fracture, Flail chest. & Stove in chest, Pneumothorax & Haemothorax, Lung contusion and laceration, Injuries to vessels and bronchus.
  - b) Site of incision, pre and post operative management and complications and their management of Lobectomy, Pneumonectomy, segmentectomy, Pleuro-pneumonectomy, Thoracoplasty, Decortication, thoracotomy and tracheostomy.

- c) Carcinoma of lung
- 4. Describe the following in details: Management of endotracheal tubes, Tracheal suction, weaning the patient from ventilator, Extubation and post-extubation care.
- 5. Describe the principles of cardiopulmonary resuscitation, cardiac massage, artificial respiration, defibrillators and their use.

**Unit IV**

- 1. Emergency medicine: Methods of evaluation and monitoring, Ventilators and medical gas therapy, Effects of anesthesia on cardiopulmonary system, Acute respiratory failure, Acute cardiac failure, CPR

**Essential Readings:**

- 1. Aaronson, Philip I.; Ward, Jeremy. The Cardiovascular System at a Glance (At a Glance) Blackwell Publishing Ltd (Oxford); 3rd Revised edition 2007
- 2. Varun Bhargava.; Cardiology Clinical Practice, Ganga Publications 1<sup>st</sup> edition
- 3. Harrison's Principles of Internal Medicine, 17th Edition: McGraw-Hill
- 4. Essentials of Clinical Cardiology. By John F. Stapleton. F.A. Davis Company, Philadelphia, 1983
- 5. Richard Fraser, Nestor Muller, Neil Colman, P. Pare, Fraser And Pare's Diagnosis of Diseases of The Chest, Hardbound. 4<sup>th</sup> edition.

**Suggested Readings**

- 1. Peter Libby; Robert O. Bonow, Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, 2-Volume Set, Publisher: Saunders Format
- 2. Joseph G. Murphy; Edited by: Margaret A. Lloyd Mayo Clinic Cardiology: Concise Textbook, Third Edition, Publisher: Informa Healthcare Pub Date: 11/2006

**BPT 302: PHYSIOTHERAPY IN ORTHOPEDICS AND RHEUMATOLOGY**

**Course Objective:** The students will be able to integrate the knowledge gained by the students in clinical orthopaedics with skills gained to apply these in clinical situation of dysfunction and musculo - skeletal pathology.

**Course Outcomes:** On completion of this subject, the students will be able to integrate the knowledge gained by the students in clinical orthopaedics with skills gained to apply these in clinical situation of dysfunction and musculo-skeletal pathology. Identify disability due to musculo- skeletal dysfunction, set treatment goals and apply their skills gained in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function.

**Unit I**

- 1. Introduction
  - 1. Assessment of the patient
  - 2. Setting of treatment goals and plans
  - 3. Principles and concepts of assessment: Patient history, Observation, Examination (SOAP format)
  - 4. Role of Diagnostic tools
  - 5. Gait and Posture assessment

**Unit II**

- 1. General physiotherapy approach towards trauma
- 2. Effect of therapeutic modalities in various traumatic conditions
- 3. Classification of fractures and dislocation.

4. Fractures and soft tissue healing.
5. Principles of treatment and complication management of fractures, dislocations and soft tissue injuries
6. Signs, symptoms, common sites, assessment and physiotherapeutic management of the following:
  - a. Upper limb trauma: Soft tissue injury, Bony injuries, Joint injuries.
  - b. Lower limb trauma: Soft tissue injury, Bony injuries, Joint injuries.
  - c. Spinal trauma

#### **Unit III**

General Pre and post operative assessment and management of common surgeries like: Arthrodesis and Arthroplasty, Osteotomy, Spinal stabilizations, Limb lengthening and reattachments, Tendon surgeries, Muscle surgeries, Nerve surgeries

#### **Unit IV**

1. Developmental disorders of bone; Signs, symptoms, assessment and physiotherapeutic management of the following congenital deformities: CTEV, CDH, Foot arch deformities, Limb deficiency, Arthrogyrosis multiplex congenital, Spinal bifida, Sprengel's shoulder, Torticollis, Osteogenesis imperfect, Spinal deformities, Coxavara
2. Signs, symptoms, common sites, assessment and physiotherapeutic management of the following Bone and joint infections; Osteomyelitis, Tuberculosis, Leprosy, Septic arthritis.
3. Signs, symptoms, common sites, assessment and physiotherapeutic management of the following Rheumatological conditions: Osteoarthritis, Rheumatoid arthritis, Fibromyalgia, Gout, Psoriatic arthritis, Pseudo gout, Miscellaneous arthritis conditions

#### **Unit V**

Review of the condition, assessment, management and treatment goals and plans for the following conditions:

1. Shoulder: Rotator cuff injury, Periarthritis, Adhesive capsulitis, Bursitis etc
2. Elbow; Tennis and Golfers elbow, Recurrent ulnar nerve slipping, Pulled elbow etc
3. Wrist and hand: Ganglion, Dequervians, Trigger thumb and finger, CTS, Dupuytren's contracture, Flexor and extensor tendon injuries, RA hand, Burned hand, Mallet finger
4. Hip: Slipped epiphysis, AVN, Hip OA
5. Knee: Deformities, Osgood schlatter's, Loose bodies, Anterior knee pain, Chondromalacia patella, Bursitis OA Knee
6. Foot and Ankle: Anterior foot pain, Heel pain, Tarsal tunnel syndrome, Trophic ulcers  
Spine: Thoracic outlet syndrome, Torticollis, PIVD, Spondylolisthesis, Strain, Lumbar canal stenosis, Spondylitis, Ankylosing Spondylitis

#### **Essential Readings**

1. Orthopaedic Physical Therapy. 4th Edition. Authors: Robert Donatelli Michael Wooden. ISBN: 9781455757022
2. Cash's Textbook of Orthopaedics and Rheumatology for Physiotherapists by Patricia A. Downie; Edition: 1st; ISBN13:9780723418330; Publisher: Jaypee Brothers
3. Manual mobilization of extremity joints by Fredy Kaltenborn, Maitland. Vol. 1: The Extremities, 8th Edition.
4. Therapeutic Exercise by Kolby and Kisner
5. Therapeutic Exercises by O'Sullivan
6. Taping Techniques – Rose Mac Donald

## **Suggested Readings**

1. Neural tissue mobilization -Butler.
2. Zulunga et al. Sports Physiotherapy-W.B.Saunders.
3. Brokner and Khan, Clinical sports medicine -McGraw Hill
4. Reed Sports injuries, Assessment and Rehabilitation- W.B. Saunders.
5. Gould: Orthopedic sports physical therapy

## **BPT 303 - PHYSIOTHERAPY IN GENERAL MEDICINE AND SURGERY**

**Course objective:** The students will be able to understand the anatomy, physiology and various conditions in Medicine relevant to Physiotherapy

**Course Outcomes:** On completion of this subject, the students will be able to understand the anatomy, physiology and various conditions in Medicine relevant to Physiotherapy. Assess and provide physiotherapeutic techniques in Obstetrics and Gynaecological conditions for relief of pain, relaxation, conditioning and posture

### **Unit I**

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following Condition

1. Transplantation: Liver, Kidney
2. Nutritional and metabolic disorders; Balanced diet, Protein caloric malnutrition, Diabetic mellitus, Obesity, Osteoporosis, Other nutritional disorders
3. Physiotherapeutic techniques: Postural drainage, Manual techniques (percussion, vibration, shaking), Breathing exercises  
Forced expiratory techniques
  - a) Coughing
  - b) Huffing
  - c) Supported coughing

### **Unit II**

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following conditions

1. Dermatology: Assessment of skin condition, Psoriasis, Leprosy, Syphilis, Acne, Leucoderma, Aplopacia
2. Oncology; Classification and characteristics of common tumors- their complications and management, Mastectomy.
3. AIDS
4. Edema: Definition, types, factors controlling tissue fluid circulation, cause of edema, physiotherapy assessment and management of edema,
5. Inflammation: Signs of inflammation, stages and their physiotherapy management
6. Gangrene: Types and their physiotherapy management

### **Unit III**

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following conditions

1. Paediatrics: Brief overview of General growth pattern, Paediatric assessment and its normal parameters, Birth trauma, Learning disorders (brief), Obesity, Diabetes, Bleeding disorders, Pre term babies with high risk infants, Congenital and acquired structural deformities

## **Unit IV**

Pre and post physiotherapy management and complications and their management of the following Surgeries.

1. General surgery: General scheme of case taking, Incision and its types, Anaesthesia and its complication (brief overview), Hernia – its types and managements, Abdominal surgeries, Nephrectomy, Colostomy, Cystectomy., Colectomy, Prostatectomy
2. Obstetrics and Gynaecology: Clinical anatomy of Pelvic floor, Prenatal and postnatal programs, Relaxation, Postural training, Pelvic floor stretching and strengthening exercises, Physiotherapy during labor, Post natal exercise programme after normal labor /labor with invasive procedures, Uro-genital dysfunction, P.T. Management-Menopause De conditioning, PT. management- common gynecological surgeries, Role of PT clinical reasoning for application of electro therapeutic modalities in obstetric and gynaecological conditions.

## **Unit V**

Review of pathological changes and principles of pre and post operative management by physiotherapy of the following conditions.

1. Wounds: Normal wound healing, Abnormal wound healing and chronic wound, Examination, Evaluation, Diagnosis, Prognosis and Physiotherapy Intervention, Pressure ulcers
2. Burns and Plastic Surgery: Skin anatomy and burn wound pathology, Classification of burn injury, Complication of burn injury, Burn wound healing, Medical and surgical management of burn, Physiotherapy management, Skin graft and flaps

### **Essential Readings**

1. Paz, Jaime C.; West, Michele, Acute Care Handbook for Physical Therapists 3<sup>rd</sup> edition, Saunders, London
2. Chest Physiotherapy in intensive care Unit – Mackenzie et al Williams and Wilkins.
3. Cash text books of General medical and surgical conditions for physiotherapist, Downie -Jaypee Brother
4. Tidys Physiotherapy by Porter, 15<sup>th</sup> edition. Paperback ISBN: 9780702043444-Elsevier
5. P saunder's manual of physiotherapy. ISBN/ISSN. 0721636713.
6. Therapeutic Exercise by Kolby and Kisner
7. Therapeutic Exercises by O'Sullivan

### **Suggested Readings**

1. Physiotherapy in Gynaecological and Obstetrical conditions by Poldon- 2<sup>nd</sup> ed. ISBN 9780750622653- Jaypee

## **BPT 304 - PHYSIOTHERAPY IN SPORTS MEDICINE AND FITNESS**

**Course description:** This subject provides an opportunity for the study and application of the components of sports medicine including but not limited to: sports medicine related careers, prevention of athletic injuries, recognition, evaluation, and immediate care of athletic injuries, rehabilitation and management skills, taping and wrapping techniques, emergency procedures, nutrition, sports psychology, therapeutic modalities, and therapeutic exercise.

**Course outcome:** Assess and provide physiotherapeutic techniques in Sports conditions for relief of pain, relaxation, conditioning and posture. Students will be able to recognize, evaluate, and provide immediate care to athletic injuries, rehabilitation

**Unit 1 Sports Medicine Team Members**

The student understands what sports medicine is and what the responsibilities are of the various professionals involved. Emphasis to be placed upon:

1. Sports Medicine Team Model
2. Various Sports medicine organizations
3. Athletic training facility and rules of operation

**Unit II Introduction to Sports Sciences**

1. Nutritional Considerations- Significance of prevent meal and eating disorders
2. Protective Sports Equipment-Relevance of protective equipments in sports
3. Environmental Factors & Sports Performance-Climatic variations and sports performance
4. Body Composition & Sports Performance: Concept and significance of various body composition techniques in sports
5. Special Considerations- Female Athlete, Strength and endurance considerations for adolescent non athletic population

**Unit III Preventive Aspects of Sports Injury**

Injuries occur and successful rehabilitation is significant to achieve sporting excellence. Emphasis to be placed upon:

1. Different causes for sports injury
2. Principles of training, methods and exercise prescription
3. Exercise consideration Special Population: Hypertension, Diabetes Mellitus and other life style disorder
4. Basic Concept of periodization in sports
5. Pre-participation Athlete Evaluation
6. Therapeutic and preventive interventions- Taping, Sports Massage Bandaging and wrapping techniques, Cryotherapy etc.
7. Emergency Care & On field Injury Assessment and management
8. Psychological Aspects of Sports Injury

**Unit IV Sports Traumatology and Management**

1. Physiotherapeutic Aims and objectives for an injured athlete
2. Decision making and safe return to play criteria
3. Introduction to sports injury: Common etiology, investigation and diagnosis
4. Common Sports Injuries involving:
  1. Spine Injury Patterns, Assessment and Management of common spinal injuries in sports
  2. Shoulder Joint Complex-Rotator Cuff Injuries in throwing athletes, Fractures of GI Joint Complex- Conservative, Surgical Management and Return to sports criteria for different sports, Design of prevention models etc.
  3. Elbow Joint, Wrist Joint and Hand Complex- Overuse Injuries, Biomechanical Errors, Conservative, Surgical Management and Return to sports criteria for different sports
  4. Hip, Pelvis and thigh, Knee Joint Complex- Ligamentous and meniscal injury patterns in different sports, Conservative, Surgical Management and Return to sports criteria for different sports injuries
  5. Foot and Ankle Joint Complex: Conservative, Surgical Management and Return

to sports criteria for different sports

**Unit V** An introduction to exercise and sports physiology

1. Cardio respiratory function and performance
2. Cardiovascular control during exercise
3. Respiratory regulation during exercise
4. Cardio respiratory adaptation to training

**Unit VI** Physical fitness

1. Concept of health and physical fitness
2. Assessment of coordination, speed, accuracy of performance.
3. Ergogenic aids and performance

**Essential Readings**

1. Taping Techniques – Rose Mac Donald
2. Zuluaga et al. Sports Physiotherapy- W.B. Saunders.
3. Brukner and Khan, Clinical sports medicine McGraw Hill
4. Reed Sports injuries, Assessment and Rehabilitation W.B. Saunders.
5. Gould: Orthopedic sports physical therapy Mosby
6. C Norris Sports injuries Diagnosis and Management
7. Principles of athletic training- William Prentice
8. Rehabilitation techniques in Sports medicine- William Prentice
9. Psychological dynamics of Sports Exercise- Diane L.Gill, Kavon Williams, Human Kinetics
10. Physiology of sport and Exercise. Jack H. Wilmore

**BPT 305 - BIOENGINEERING AND ETHICS**

**Course Objective:** This paper aims to study the technology- Related Assistance or any item piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities

**Course Outcomes:** On completion of this subject, the students will be able to apply the analytic methods to specific example of normal human motor performance and learn about the ethics of Practicing Physiotherapy as a profession

**SECTION A: BIOENGINEERING**

1. Introduction: Definition, Terminology, Basic principles, Materials used.
2. Psychological aspects of prosthesis and orthosis
3. Prescription of orthosis
4. Indications, check outs and details of upper limb orthosis
5. Indications, check outs and details of lower limb orthosis
6. Indications, check outs and details of spinal orthosis.
7. Prescription of prosthesis
8. Indications, check outs and details of upper limb prosthesis.
9. Indications, check outs and details of lower limb prosthesis.
10. Foot wear modification
11. Design and construction of adaptive devices. (Brief)
12. Amputations.
  1. Classification.



2. Indication and contraindication.
3. Techniques.
4. Preoperative and postoperative treatment
5. Complication, prevention of complications and treatment.

### **Essential Readings**

1. Hand splitting Wilson-WB Saunders.
2. Atlas of Limb Prosthetics. American Academy of Orthopedic surgeon Mosby -2<sup>nd</sup> edition.
3. Atlas of Orthotics – American academy of orthopedic surgeon mosby -2<sup>nd</sup> ed
4. Krusen’s Handbook of Physical medicine and rehabilitation Kottke and Lehman W.B. Saunders- 3<sup>rd</sup> ed. ISBN-10: 0721655017
5. Cook AM, Hussey SM. Assistive technologies: principles and practice. Baltimore: Mosby; 1995.

### **Suggestive Readings**

1. Technology Related Assistance for Individuals with Disabilities Act of 1988, 29 U.S.C. § 2202 (West, 1988)

### **SECTION B: ETHICS**

1. History of physiotherapy
2. Philosophy of physiotherapy
3. Major ethical principles applied to moral issues in health care
4. Rules of professional conduct and scope of practice
5. Relationship with patient
6. Relationship with the profession
7. Confidentiality and responsibility
8. Professional and government licensing accreditation and education standards.
9. Laws and legal concepts
10. Outline legal aspects related to rehabilitation
  1. Medico legal cases
  2. Workman compensation
  3. Insurance facilities other financial benefits available for the disability
  4. Law protection from malpractice claim
  5. Consumer protection act. Liability and documentation
11. Constitution and functions of the Indian association of Physiotherapists
12. Functioning of the World Confederation of Physical therapy (W.C.P.T and its various branches special interest groups (brief)
13. Role of WHO and WCPT.
14. Outline safety precautions in Physiotherapy.

### **Essential Readings**

1. Essentials of community physiotherapy & ethics 2015 By Prof. (dr.) Rajendra Rajput

## PRACTICALS

### **BPT 306P - PHYSIOTHERAPY IN ORTHOPEDICS AND RHEUMATOLOGY PRACTICAL**

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 302

### **BPT 307P - PHYSIOTHERAPY IN GENERAL MEDICINE AND SURGERY PRACTICAL**

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 303

### **BPT 308P - PHYSIOTHERAPY IN SPORTS MEDICINE AND FITNESS PRACTICAL 1.**

Taping techniques and procedures for joints- Therapeutic and Prevent

- a. Shoulder Joint Complex
- b. Elbow Joint Complex
- c. Knee Joint Injuries
- d. Ankle Joint Injuries
2. Pre participation Screening and Evaluation for athletes of different sporting backgrounds
3. Assessment of Body Composition:
  - a. Skinfold Measurement with Herpenden Skinfold Caliper
  - b. Determination of Body Frame and size
  - c. Determination of Fat Free Mass using Bioelectrical Impedance analysis
4. Differentiation between characteristics of footwear with respect to sports- Running Shoe, training shoe, walking shoe and prescriptive strategies.
5. Prepare an assessment and exercise prescription plan for injured athletes.
6. Assessment of Health Related and skill related Fitness:
  - a. Agility- Ilionais Agility Test, 505 Agility Test, ZigZag Test, Figure of 8 test, Line drill and 3-cone drill test, Edgren Side Step test etc.
  - b. Mobility and balance: Modified Sit and reach test, Standing Stork test, Static Flexibility test- Ankle, Hip and Trunk, Shoulder etc., Functional Balance Test
  - c. Strength and Power Testing: Hand Grip strength test, Biceps Curl test, Squats test, Carioca Drill Test, Hexagon Test
  - d. Coordination testing in sports
  - e. Reaction time test
  - f. Aerobic Endurance Testing
  - g. Lower Extremity Anaerobic Power Testing- Lower Extremity Functional test, 300m Sprint, running based anaerobic test
  - h. Upper Extremity Testing: Functional Throwing performance index (FTPI), SidearmMedicine ball throw, Medicine Ball toss

### **BPT 309P - CLINICAL VIVA III (BPT301)**

The students will be assessed about history taking, evaluation and treatment planning for patients of relevant diseases and disorders taught in BPT301

## **BPT-IV Year**

### **BPT 401- RESEARCH METHODOLOGY AND BIOSTATISTICS**

**Course Description:** This course involves description of principles for conducting research and ethics for dealing with patients.

**Course Objective:** The students will be able to understand the principles of research, biostatistics and follow the ethical principle for treating the patients.

#### **Course Outcomes**

On completion of this subject, the students will be able to apply the principles of research and biostatistics to health practice including the design and implementation of health related research studies. Plan and execute a research study, including clinical trials. Use / organize bio-statistical analysis using computers and software and prepare reports papers. Critically evaluate research activities. Make recommendations on policy and procedures. Plan and conduct an educational session / programme.

#### **Unit I**

1. Introduction: Importance of research in physiotherapy, Research ethics, Clinical issues in research, elements of informed consent, Structure of research proposal
2. Research methodology, Research problems, questions and hypotheses, Review of literature, Measurement; Principles of measurement reliability and validity, Experimental sampling and design, Descriptive research

#### **Unit II**

##### **Biostatistics**

1. Definition and Scope
2. Collection of Data
3. Sampling methods
4. Variable: Discrete and continuous.
5. Presentation of Data: Classification and tabulation.
6. Diagrams and graphs: Bar, pie, Histogram, line graph
7. Concept of statistical population and sample characteristics of frequency distribution.

#### **Unit III**

Measures of Central tendency: Mean, Median, Mode & Weighted Arithmetic Mean

Measures of Dispersion: Range, Quartile deviation, Mean deviation & Standard deviation

Correlation and Regression.

#### **Unit IV**

Test of significance, T-test, chi square test, test homogeneity, ANOVA

#### **Essential Readings:**

1. Mahajan BK, Methods in Biostatistics Edn: 7<sup>th</sup> ed. Jaypee Brothers Medical Publishers (P) Ltd 2010. ISBN: 978-81-8448-713-8
2. Irfan A Khan, Atiya Khanum. Fundamentals of Biostatistics edn:4<sup>th</sup> Ukaaz. Publications
3. Carolyn M. Hicks Research Methods for Clinical Therapists: Applied Project Design and Analysis edn.1<sup>st</sup> 2009, Churchill Livingstone ISBN13: 9780702029981
4. Physical Rehabilitation Assessment and Treatment- Sullivan and Schrnitz F.A. Davis.

5. Krusen's Handbook of Physical medicine and rehabilitation Kottke and Lehman w.B. Saunders.
6. Tidy's Physiotherapy, Paperback ISBN: 9780702043444 , 15<sup>th</sup> edition. Editor: Stuart Porter

## **BPT 402 - PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS**

**Course description:** This course involves a description of the assessment and treatment of patients with cardio pulmonary conditions

**Course objectives:** The student will be able to conduct a safe and effective treatment of patient with cardio pulmonary conditions

### **Course Outcomes**

On completion of this subject, the students will be able to Integrate the knowledge gained by the students in clinical cardio respiratory conditions with skills gained in exercise therapy electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to cardio respiratory pathology. Use physiotherapeutic measures as preventive restorative Rehabilitative purposes for pulmonary / cardiac patients. Identify cardio-respiratory dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore cardio-respiratory function.

### **Unit I (Physiotherapy Techniques)**

1. Review of basic anatomy and physiology of cardiovascular and pulmonary system.
2. Principles and techniques of physiotherapy in diseases of cardiovascular and pulmonary origin.
  1. Breathing exercises
  2. Inspiratory muscle training
  3. PNF respiration.
  4. Humidification and aerosol therapy
  5. Ventilators
  6. Airway clearance devices: Flutter, Thera PEP, Acapella, High frequency chest wall oscillation (HFCWO), Intrapulmonary percussive ventilation (IPV), Insufflation/exsufflation- assisted cough, IPPB
  7. Airway clearance techniques: Postural Drainage & Manual Techniques, ACBT, AD, Manual and Ventilation, Hyperinflation, Suctioning
  8. Selection of airway clearance technique
  9. Positioning and Mobilization

### **Unit II (Cardiovascular Physiotherapy)**

1. Assessment of cardiovascular system
2. Investigative procedures
3. Cardiac rehabilitation and secondary prevention
4. Etiopathogenesis, clinical and physiotherapy management of the following conditions: Congenital heart diseases: ASD, VD, PDA, Fallot's tetralogy, Ischemic heart diseases, Cardiac failure, Rheumatic fever, Hypertension, Endocarditis, Cardiac muscle disorder, Cardiac neoplasm, Peripheral vascular diseases.

**Unit III (Pulmonary Physiotherapy)**

- A. Assessment of pulmonary system
- B. Pulmonary rehabilitation
- C. Investigative procedures
- D. Etiopathogenesis, clinical and physiotherapy management of the following conditions:  
Obstructive pulmonary diseases, Infections, Neoplasm, Interstitial pulmonary diseases, Diseases of nasopharynx, larynx and trachea, Diseases of pleura, diaphragm and chest wall, Chest deformity

**Unit IV (Physiotherapy in Cardiovascular and Pulmonary Surgeries)**

Introduction, Types of incision, pre and post-operative assessment, management and complications of cardiothoracic surgery

1. Cardiac surgery: Indication, contraindications, incision, pre and post-operative management and complications of the following: Valvotomy and valve replacement, Open heart surgery/ cardiac bypass surgery, Surgery on pericardium, Operations of congenital disorders, Heart transplantation, Pacemaker implantation, Coronary angioplasty, Balloon angioplasty and vascular surgery, Surgery of arteries and veins.
2. Thoracic surgery: Pre and post-operative management and complications of: Rib fracture, Flail chest, Stove in chest, Surgery of the pleura, Pneumothorax, Haemothorax, Lung contusion and laceration, Injuries to vessels and bronchus., Lung transplantation, Intercostals catheters (chest tubes), Lobectomy, Pneumonectomy, segmentectomy, Thoracoplasty, Lung Volume Reduction surgery, VATS
3. Physiotherapy in intensive care Unit: Assessment of critically ill patient in the ICU, Monitoring and interpreting medical investigations, Mechanical ventilation: implications for physiotherapy, Respiratory failure. Physiotherapeutic technique used in ICU,
4. Cardiopulmonary exercise testing and prescription

**Essential readings**

1. Pryor, Jennifer A.; Prasad, Ammani S. Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics (Physiotherapy Essentials) 4th edition, 2008, Churchill Livingstone (London) (ISBN-10: 0080449859 ISBN-13: 9780080449852)
2. Downie PA. Cash's Text books of general medical and surgical conditions for physiotherapists, Jaypee Brothers.
3. Downie PA. Cash's Text books of chest heart and vascular Disorders for physiotherapist, Japee Brother.
4. Corne, Jonathan. Chest X-Ray Made Easy (Made Easy) 3rd Revised edition, 2009, Churchill Livingstone (London) (ISBN-10: 0443069220 ISBN-13: 9780443069222)

**Suggested Readings:**

1. Hampton, John R. The ECG Made Easy, 2008, Churchill Livingstone (London) (ISBN-10: 0443068178 ISBN-13: 9780443068171)
2. West, John B. Pulmonary Physiology and Pathophysiology: An Integrated, Case-based Approach, Lippincott Williams and Wilkins (Philadelphia); 2nd Revised edition,
3. ACSM Guidelines for Exercise testing and Prescription ACSM Williams and Wilkins.
4. Cash text books of General medical and surgical conditions for physiotherapist Downie Jaypee Brother
5. Donna Frownfelter & Elizabeth dean. Cardiovascular and pulmonary physical therapy evidence and practice, 4<sup>th</sup> edn. Mosby.

6. Smith, Mandy; Ball, Valerie Cardiovascular/Respiratory Physiotherapy 1998, Mosby (London), ISBN-10: 0723425957 ISBN-13: 9780723425953)
7. Porter, Stuart. Tidy's Physiotherapy (Physiotherapy Essentials), 14th revised edition, 2008 Churchill Livingstone (London); (ISBN-10: 0443103925, ISBN-13: 9780443103926)

### **BPT 403 - PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS**

**Course objective:** The course deals with physiotherapeutic management of neurological conditions

#### **Course Outcomes**

On completion of this subject, the students will be able to integrate the knowledge gained by the students in Clinical Neurology, with the skills gained in exercise therapy, electrotherapy and massage. Apply these in clinical situations of dysfunction due to pathology in the nervous system. Identify disability due to neurological dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore neurological Function.

#### **Unit I**

1. Neurological Assessment and Neurophysiotherapy techniques
  1. Assesment of CNS in adults and Children
  2. Assessment of PNS
2. Techniques in Neurological Physiotherapy
  1. NDT.
  2. Roods.
  3. PNF
  4. Motor relearning programme.
  5. Biofeedback
  6. FES

#### **Unit II**

Aetiopathogenesis, Clinical manifestations and management of

1. Neuromuscular Diseases
  1. Motor-neuron diseases.
  2. Disorders of peripheral nerves.
  3. Disorders of cranial nerves.
  4. Myopathies.
2. Infections Disorders of Nervous system.
  1. Encephalitis
  2. Meningitis.
  3. Poliomyelitis
3. Demeylinating disorders of CNS.
  1. Multilpe Sclerosis
4. Neoplasm of Nervous system.
  1. Brain Tumor
  2. Spinal Tumors.
5. Congenital and Developmental anomalies of nervous system.
  1. Neural tube defects and hydrocephalus.

2. Congenital Myopathies
6. Metabolic, toxic and disorders of nervous system
  1. Nutritional deficiencies.
  2. Toxin and drug induced nervous system damage
7. Cerebellar Disorders.
  1. Hereditary
  2. Acquired
8. Movement disorders
  - Parkinsons Disease
9. Cerebrovascular accident.
10. Spinal cord Injury.
11. Traumatic brain injury.
12. Cerebral Palsy.
13. Vestibular disorders.
14. Disorders of autonomic nervous system.
15. ICU management of neurologically impaired.
16. Pre and post-operative physiotherapy management of:
  1. Nerve repair.
  2. Tumour Surgery of brain and spinal cord.
17. Nutritional deficiency affecting nervous system
18. Toxins and Drug induced Nervous system Pathology

### **Unit III**

1. Principles of physiotherapy management of psychiatric patients.
2. Physiotherapy management of psychiatric patients.

### **Essential Readings:**

1. Cash's text book for Physio Therapist in Neurological Disorders – Jaypee bros Publication
2. Proprioceptive Neuro Muscular facilitation by Herman Kabat
3. Practical physical therapy. Margaret Hollis
4. PNF in Practice by Alder and Alder
5. Therapeutic Exercise by O'Sullivan
6. Right in the Middle by Patricia Davis
7. Stroke Rehabilitation by Nervous system.
8. Restoration of Motor functions in stroke patient: A physiotherapist approach Johnstone Churchill Livingstone

## **BPT 404 - PHYSIOTHERAPY IN COMMUNITY BASED REHABILITATION**

**Course description:** The course introduces to concept on preventive and rehabilitative aspects in community.

**Course objective:** Concept of team approach in rehabilitation, Formulation of appropriate goals in treatment and rehabilitation in the community

**Course Outcomes:** On completion of this subject, the students will be able to understand the effects of the environment and the community dynamics on the health of the individual.

Demonstrate an understanding of the influence of social and environmental factors on the health of the individual and society. Be aware of the physical, social, psychological, economic, and environmental health determinants of health and disease. Apply the clinical skills to recognize and manage common health problems including their physical, emotional and social aspects at the individual, family and community levels and deal with public health emergencies.

**Unit I: Community Medicine**

1. Introduction to community medicine
2. Concepts of Health & Illness
3. Healthcare system
4. Screening for a health conditions

**Unit II: Preventive medicine and Public Health practice**

1. Communicable diseases
2. Maternal and child health (MCH)
3. Geriatrics
4. Disaster Management
5. Concept & philosophy of public health
6. Public health law and concept of social security
7. International health and role of international agencies.

**Unit III: Health Education**

1. Health Education:
2. Role of health education in rehabilitation services

**Unit IV: Community Rehabilitation**

1. Disability and Rehabilitation
2. Introduction to Rehabilitation Medicine
3. Rehabilitation
  1. Multidisciplinary approach
  2. Rehabilitation approaches
  3. Socio-legal aspects Rehabilitation
  4. National and international agencies in rehabilitation
  5. Barriers in rehabilitation
  6. Community Based Rehabilitation
  7. Vocational Rehabilitation
4. Rehabilitation in special cases:
  1. Visual, Speech, Communication & Hearing impairment.
  2. Physically challenged.
  3. Mentally challenged.
  4. Psychiatry & De-addiction Syndromes.
  5. Behaviour and Learning problems.
  6. Role of Tele rehabilitation & Assistive technology
  7. Geriatric rehabilitation
  8. Paediatric rehabilitation



#### **Unit V: Occupational Health & Ergonomics**

1. Occupational hazards
2. Occupational Stress & Work management
3. Returning the worker to productivity
4. Occupational Ergonomics

#### **Essential Readings**

1. Textbook of Community Medicine: Preventive and Social Medicine by Lal Adarsh Pankaj Sunder
2. Disabled Village Children: A Guide for Community Health Workers, Rehabilitation Workers, and Families 2nd Edition by David Werner
3. Park's Textbook of Preventive and Social Medicine- 25<sup>th</sup> edition

### **BPT405 - ENVIRONMENTAL SCIENCES AND BUSINESS ADMINISTRATION**

**Course Description:** This course will deal with studying the impact of environmental sciences and business administration in relation to Physiotherapy.

**Course Outcomes:** Demonstrate an understanding of the influence of social and environmental factors on the health of the individual and society. Be aware of the physical, social, psychological, economic, and environmental health determinants of health and disease.

#### **SECTION A- ENVIRONMENTAL SCIENCES**

##### **Unit I**

##### **Environmental Pollution**

Definition, causes, effect and control measures of pollution air, water, soil, marine, oil, thermal, radiation, heavy metal, gases particulate matter, pesticide, solid waste (urban and rural), solvents, drugs and noise.

##### **Unit II**

##### **Absorption, Distribution, Elimination and Organ Toxicology**

Membrane coefficient, Mechanism of absorption, Rate of penetration, Routes of absorption of toxicants in human (oral, pulmonary, dermal) Air-water, Octanol-water, Lipid-water, Particle-water partitioning, Renal, Hepatic, Respiratory. Alimentary, Dermal, Cellular, Sex linked elimination of toxicants, Target organ toxicity (Hepato, Neuro, Nephro, Reproductive)

##### **Unit III**

Bioaccumulation, Biomagnifications, Biodegradable & non biodegradable substances, Acute and chronic toxicity, Dose- response relationship, LD 50 & LC 50, Environmental, Forensic, Food, Clinical toxicology, Food additives, Indoor and outdoor pollutants, Occupational hazard, Biological warfare and chemical warfare, Infectious and medical waste, Drugs of abuse, pollutants in cosmetics, Additive, synergistic, Antagonistic effects.

#### **SECTION B: BUSINESS ADMINISTRATION**

##### **1. General Administration**

1. Planning and organization, planning cycle, principles of organization  
Charts, Resources and quality management, planning change
2. Financial issue including budget and income generation
3. Hospital management: Hospital organization, Staffing, Information communication and coordination with physiotherapy, Services of hospital, Cost of service, Monitoring, Evaluation

##### **2. Self Management: Preparing for first job, Time management, Career development, Sale of goods and services, Profession of services and advertising**

3. Administration of the Department:
  1. Describe methods of administration in a Physiotherapy department
    - a. Records their purpose e.g. attendance, statistics, inventory stock
    - b. Maintenance of records e.g. Methods of community and institutional based department (CBR and IBR)
    - c. Referrals – purposes and types of referral
  2. Administration of the following:
    - a. Store keeping materials, inventory records, purchase ordering petty cash accounting
    - b. General maintenance of equipment, furniture, building costing, of splints/aids, equipment/articles, made in physiotherapy.
    - c. Describe and Demonstrate
      1. Types of correspondence
      2. Methods of filling
      3. Describe methods for care of equipment and materials
      4. Discuss budgeting including items for an annual budget
      5. Discuss considerations for constructions of a new department, and modification of an old department including
        - a. Space requirement
        - b. Allotment of space e.g. suitability for access, plumbing requirements and circulation of air
      6. Plan assessment forms e.g. pre vocational ADL hand function and higher functions for initial evaluation and progress recording.

### Essential Readings

1. Environmental Science by Y.K. Singh
2. A Text Book of Environmental Science by Arvind Kumar
3. Physical Therapy Administration and Management by Robert J. Hickock

## PRACTICALS

### BPT406P - PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS PRACTICAL

**Course description:** This course involves a description of the assessment and treatment of patient with cardio pulmonary conditions

**Course objectives:** the student will be able to conduct a safe and effective treatment of patient with cardio pulmonary conditions

1. The students will be shown patients of relevant diseases and disorders for:
  - a) History taking of the conditions of patients.
  - b) All the basic physiotherapeutic intervention pertaining to the subject
  - c) Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 402
2. Demonstration, application and Interpretation of ECG
3. Interpretation of arterial blood gas disorders
4. Demonstration, application and Interpretation of PFT
5. Demonstration, application and Interpretation of chest x-ray

6. Demonstration, and Interpretation of auscultation: breath sounds, added sounds, vocal resonance, heart sounds
7. Demonstration and application airway clearance techniques
8. Demonstration and application of airway clearance devices
9. Demonstration and application techniques of breathing exercises
10. Demonstration setting up of invasive and non invasive ventilators
11. Demonstration and practice of various cardiopulmonary exercise testing and prescription
12. Demonstration and application of monitoring devices in ICU
13. Demonstration and interpretation of cardiopulmonary exercise testing
14. Demonstrate and practice of CPR.

### **BPT407P - PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS PRACTICAL**

**Course Objectives** description: This course involves a description of the assessment and treatment of patient with neurological conditions

**Course Outcome:** the student will be able to conduct a safe and effective treatment of patient with neurological conditions

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 403

### **BPT408P - PHYSIOTHERAPY IN COMMUNITY BASED REHABILITATION PRACTICAL**

Students will visit community based rehabilitation centre, leprosy centres, primary health care centres, polio centres, old age homes and various other rehabilitation centres

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the Conditions listed in BPT 404

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### **BPT409P - PROJECT WORK**

**Course Objective:** This will give the students a background on research methods and recent advances

**Course Content:** Project will be a clinical assignment on given topic or condition. This may be done in the form of a literature review.

The student will collect review of literature, design a research methodology, perform data collection, statistical analysis and present a written dissertation. The student will submit to the University a written dissertation / case study report through institution of study. The student will be expected to submit above project work / case study report at the commencement of Fourth year of the four and half years B.P.T. degree course.

1. Project will be typed 30-40 pages
2. Cover page- Title, Student's Name, Roll No. Supervisor's Name, Student's Declaration (Inside).
3. Attach 5 published research articles/papers
4. Contents- Introduction, ROL, case study, discussion of the five published papers included for review, conclusion
5. Referencing as per APA Format

**Examination:** Students will present their project in front of internal and external examiners followed by viva-voice

### **CLINICAL TRAINING II**

Course Objective: the students will be able to conduct assessment diagnosis, goal formulation, treatment plan formulation, and execution of therapeutic skills

Course Content: the students will be posted in the department of physiotherapy and they will learn the assessment, diagnosis, and physiotherapy treatment of patients visiting the department.

Examination: There will be no examination but the clinical skill and knowledge gained by the student will be examined in other concerned practical subjects

### **INTERNSHIP**

The students will undergo a six months (26 weeks) compulsory rotatory internship after the final year.

Examination, for candidate declared to have passed the examination in all subjects of BPT programme offered by the centre.

Internship should be done in a teaching hospital recognized by the university limited to within Delhi/NCR only. The internship should cover clinical branches concerned with physiotherapy such as orthopaedics, cardiopulmonary including ICU, neurology, neurosurgery, paediatrics, general medicine, general surgery, obstetrics and gynaecology both inpatient and outpatient services.

No candidate shall be awarded bachelor of physiotherapy degree without successfully completing six months of internship.



