

**SYLLABUS & SCHEME OF EXAMINATION**  
**BACHELOR OF PHYSIOTHERAPY (BPT)**  
**4 Years and 6 Months Degree course**  
**(Academic Session 2021-22)**

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**Institute of Paramedical Science and Research,  
Jiwaji University, Gwalior (M.P.)-India**

  
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**About the course**

Bachelor of Physiotherapy is an undergraduate professional program that teaches about physical movement and channelizing it to avoid disability and ailments of movement. It is a part of rehabilitative medicine and focuses on massages, physical therapy, and exercises to improve, cure injuries, deformities and diseases. Physiotherapy doesn't rely on drugs and medicine unlike the traditional branches of medicine. Instead, it uses Physical Treatment to improve the situation.

**Scope:**

There is a wide scope for Physiotherapy in the future. Candidate can go with specializations in the fields of geriatrics, cardiorespiratory, geriatrics, orthopedics & neurology.

**Objective of the courses -**

- This course will allow the students:
  - a) To acquire adequate knowledge of basic medical subjects and to develop skills and techniques of therapeutic exercise and therapeutic modalities so that they can manage various medical/ surgical conditions of patients.
  - b) To acquire skills in management, research and teaching as well as guidance and counseling of patients.
  - c) To acquire proper attitude for compassion and concerns for patients and welfare of physically handicapped in the community.
  - d) To practice moral and ethical values with regard to physiotherapy.
- The training of the candidate registering for Bachelor of Physiotherapy course is aimed to develop skill in all diagnostics/ therapeutics tests and their interpretation on the modern hospital laboratory.

**Eligibility for admission: --**

- The candidate must have passed 10 +2 and should obtain 50% marks in aggregate of Physics, Chemistry and Biology (P. C. B.).
- In case of S. C. / S. T. / O. B. C. candidate 5% marks relaxation will be given for the admission in above said course.

  
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- Weightage will be given as per university rules.
- Number of seats will be 20 in each course.

**Age limit for admission**

The minimum age for admission shall be 17 years on 31 December of academic year of admission.

1. Selection of candidate will be purely on merit (on the basis of marks obtained in qualifying examination).
2. For degree examination, candidates who have attended 75% in all theory classes and 85% in practical can only appear in university examination.
3. Revaluation & retotaling both shall be allowed as per university rules.

**Regulation**

- In order to pass the examination, it is mandatory to obtain 50% marks in theory and practical examination separately. The viva and the sessional marks are to be added to the theory marks.
- Other rules regarding conduct of examination will be as per university regulation/ordinance.
- The medium of examination shall be English.

**The examination pattern for B. P. T.**

- There will be two internal exams and one final exam in each year. Main exam to be held in April/May.
- Students who have failed in first year will not be allowed to attend the classes of second year until and unless he/she has passed in all subjects of first year. But in case of second and third year, student is allowed to attend higher classes, but he/she is eligible to appear in higher class exam only when he/she has passed all subjects of the previous year.
- There will be two examiners including one external and internal for both theory and practical examinations.
- The examiner who evaluates the theory copies preferably should be appointed as external for practical examination for said course.
- sessional exams will be conducted twice in an academic year (once in six months period).

  
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**SCHEME of EXAMINATION**  
**BACHELOR IN PHYSIOTHERAPY (BPT)**  
**BPT-1<sup>st</sup> Year**

S. No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
PHYTH 101	Human Anatomy	20	20	10 0	20	40	200
PHYTH 102	Human Physiology	20	20	10 0	20	40	200
PHYTH 103	Fundamental of Biomechanical Modalities	20	20	10 0	20	40	200
PHYTH 104	Principles of Bioelectrical Modalities	20	20	10 0	20	40	200
PHYTH 105	Psychology & Sociology	20	--	80	--	--	100
<b>Total Max. Marks</b>							<b>900</b>

**N.B.-** Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

**Passing Marks:** - A candidate must obtain 50% in aggregate with a minimum of 50% in theory including viva and minimum 50% in practical.

  
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## The pattern of university theory examination

The pattern of university theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	20	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100



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## B.P.T. FIRST YEAR

### PHYTH 101: HUMAN ANATOMY

Total No. of Teaching Hours: - 200

Theory -140 Hrs. & Practical / Laboratory- 60 hrs.

#### Course Objectives:

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

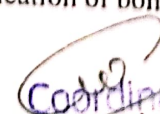
#### Course Contents:

##### A. General Anatomy:

- 1) Introduction to Anatomy, terms and terminology
- 2) Regions of Body, cavities and Systems outline.
- 3) Surface anatomy – Musculo-skeletal and cardiopulmonary
- 4) Cell Structure and function of cell organelles (Brief outline only).
- 5) Connective tissue & its modification, tendons, membranes, Special connective tissue.
- 6) Bone structure, blood supply, growth, ossification, and classification.
- 7) Muscle classification, structure and functional aspect.
- 8) Nerve – structure, classification, microscopy with examples.
- 9) Neurons, classification with examples. Simple reflex arc.
- 10) Parts of a typical spinal curve/Dermatome
- 11) Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.
- 12) Circulatory system – major arteries and veins of the body, structure of blood vessels
- 13) Lymphoid system – circulation + function, lymphoid organs- and their structure & functions.

##### B. Upper extremity:

- 1) Bony architecture
- 2) Joints – structure, range of movement
- 3) Muscles – origin, insertion, actions, nerve supply
- 4) Major nerves – course, branches and implications of nerve injuries
- 5) Development of limb bones, muscles and anomalies
- 6) Radiographic identification of bone and joints

  
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Lower Extremity:

- 1) Bony architecture
- 2) Joints – structure, range of movement
- 3) Muscles – origin, insertion, actions, nerve supply
- 4) Major nerves – course, branches and implications of nerve injuries
- 5) Development of limb bones, muscles and anomalies
- 6) Radiographic identification of bone and joints

D. Spine:

- 1) Back muscles - Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply.
- 2) Vertebral column – Structure & Development, Structure & Joints of vertebra
- 3) Radiographic identification of bone and joints

E. Thorax:


- 1) Thoracic cage
- 2) Pleural cavities & pleura
- 3) Lungs and respiratory tree
- 4) Heart and great vessels
- 5) Diaphragm

F. Head and neck:

- 1) Cranium
- 2) Facial Muscles
- 3) Structure of eyeball in brief and extra ocular muscles, visual pathway
- 4) Ear and auditory pathway
- 5) Triangles of Neck, boundaries and contents
- 6) Tongue – parts, extrinsic and intrinsic muscles, motor and sensory nerves, gustatory pathway
- 7) Pharynx
- 8) Larynx

G. CNS:

- 1) Central nervous system – disposition, parts and functions
- 2) Cerebrum
- 3) Cerebellum
- 4) Midbrain & brain stem

  
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- 5) Blood supply of brain & its applied anatomy
- 6) Spinal cord- anatomy, blood supply, nerve pathways
- 7) Pyramidal, extra pyramidal system
- 8) Thalamus, hypothalamus
- 9) Ventricles of brain, CSF circulation
- 10) Development of nervous system & defects (Brief Description)
- 11) Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution and palsies)
- 12) Sympathetic nervous system, its parts and components (Brief Description)
- 13) Parasympathetic nervous system (Brief Description).

H. Endocrine system – Pituitary, Thyroid, parathyroid (Brief Description)

I. Embryology in brief of neuromuscular tissue

J. Abdomen (Brief descriptions only):

- a. Boundaries , Muscles of abdominal wall
- b. Division of Abdominal cavity
  - i. Pouch of Douglas
  - ii. Morrisons pouch

K. Pelvis

- 1) Pelvic floor, innervations
- 2) Bony Pelvis


L. Digestive system (Liver & pancreas, Alimentary canal)

M. Urinary system – Kidney, Ureter, bladder, urethra

N. Genital system – Male and Female

### **Kinesiology**

- 1. Basic Concepts
- 2. Muscular system
- 3. Joints
- 4. Musculoskeletal system
- 5. Principles of Motion
- 6. Principles of force and work
- 7. Basics of the development of motor skill
- 8. Principles of stability
- 9. Postural principles

  
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## PRACTICALS


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

### PRACTICAL EXAMINATION

Students will be assessed by viva based examination upon learning in theory, demonstration of bones, and joints, muscles, nerves and major viscera.

#### Books Recommended for Readings:

1. Chaurasia, B D Human Anatomy: Regional and CBS, New Delhi Latest 3V
2. Chaurasia, B D Human Osteology CBS, New Delhi Latest
3. Singh, Inderbir Text Book of Anatomy: With Color Atlas Jaypee, New Delhi Latest 3V
4. Singh, Inderbir Text Book of Neuroanatomy Jaypee, New Delhi Latest
5. Singh, Inderbir Text Book of Human Osteology Jaypee, New Delhi Latest
6. Datta, A.K. Essentials of Human Anatomy: Neuroanatomy Current Book, Calcutta, Latest
7. Datta, A.K. Essentials of Human Anatomy: Thorax and Abdomen Current Book, Calcutta, Latest
8. Williams, Peter L Gray's Anatomy: Anatomical Basis of Churchill Livingstone, New York, Latest
9. McMinn, M. H. Colour Atlas of Human Anatomy Mosby-Wolfe, London-Latest
10. Snell, Richard S Clinical Anatomy for Medical Students Little- Brown, Boston-Lates

  
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PHYTH 102: HUMAN PHYSIOLOGY

Total No. of Teaching Hrs: - 200

Theory -140 Hrs. & Practical / Laboratory- 60 Hrs.

Course objectives:

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

Note: Group discussions, seminars and tutorial will be on the topics covered in didactic lectures.


Course Contents:

1. GENERAL PHYSIOLOGY

- 1) Structure of cell membrane
- 2) Transport across cell membrane
- 3) Functional morphology of the cell
- 4) Intercellular communication
- 5) Homeostasis

2. CARDIOVASCULAR SYSTEM

- 1) General introduction of cardiovascular systems.
- 2) Structure and properties of Cardiac muscle.
- 3) Dynamics of blood & lymph flow
- 4) Anatomical, biophysical consideration of arterial, arteriolar & capillary venous level, Lymphatic circulation
- 5) Cardiac cycle and Heart sounds, Mechanical events of Cardiac cycle, Cardiac output, its regulation.
- 6) Origin and spread of cardiac excitation
- 7) Basic idea of Electrocardiogram and Interpretation of normal Electrocardiogram.
- 8) Cardiac output and cardiac failure.
- 9) Venous return,
- 10) Heart rate and its regulation.
- 11) Structure and organization of vascular tree.
- 12) Arterial blood pressure and pathophysiology of Hypertension.
- 13) Characteristic of Coronary circulation and pathophysiology of Coronary artery disease

  
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- 14) Capillary circulation and physiological basis of Edema.
- 15) Local & systemic regulatory mechanisms of CVS, humeral & neural
- 16) Patho-physiology of Shock.
- 17) Cerebral, coronary, splanchnic, skin, Placental & Fetal circulation

### 3. RESPIRATORY SYSTEM

- 1) Functional anatomy of Respiratory System, Physiological anatomy of lungs, mechanics of respiration
- 2) Mechanics of breathing: Mechanism of inspiration and Expiration, intra-pleural and intra-alveolar pressures, Compliance, Surfactant, Air-way resistance and work of breathing
- 3) Pulmonary circulation, Respiratory membrane and Gas exchange in lungs
- 4) Composition of gases and Partial pressures.
- 5) Oxygen and Carbon-dioxide transport.
- 6) Other function of respiratory system
- 7) Lung Volumes, Capacities and Lung function tests.
- 8) Neural and Chemical control of breathing.
- 9) Regulation of respiratory activity, non-chemical influences on respiratory activity
- 10) Physio-clinical aspects of Dyspnoea, Apnoea, Asphyxia, Hypoxia, Cyanosis, Breath holding, high and Lowatmospheric pressures.

### 4. CARDIO RESPIRATORY ADJUSTMENTS IN HEALTH & DISEASE

- 1) Exercise, high altitude, deep sea diving
- 2) Hypoxia, hypercapnia, hypocapnia, oxygen treatment
- 3) Asthma, emphysema, artificial respiration

### 5. BLOOD


- 1) W.B.C., R.B.C., Platelets formation & functions
- 2) Plasma, Blood Groups
- 3) Haemostasis, Immunity

### 6. RENAL SYSTEM

- 1) Functions of Kidney, Formation of Urine, Glomerular filtration rate, clearance, Tubular function
- 2) Water excretion, concentration of urine-regulation of Na, Cl, K excretion
- 3) Physiology of urinary bladder, Micturition- Neurogenic bladder.

### 7. DIGESTIVE SYSTEM.

- 1) Digestion & absorption of nutrients
- 2) Gastrointestinal secretions & their regulation
- 3) Functions of (a) Saliva, (b) Gastric juice, (c) Pancreatic juice (d) Succus entericus, (e) Bile.

  
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4) Movements of G.I.T.

5) Functions of Liver & Exocrine Pancreas

## 8. NERVE - MUSCLE AND SYNAPTIC & JUNCTION TRANSMISSION

1) Nerve – General Concept

2) Nerve cell – structure

3) Genesis of resting membrane potential & Action potential

4) Their ionic basis, All or None phenomenon

5) Ionic basis of nerve conduction

6) Classification & types of nerve fibre

7) Mixed nerves & compound action potential

8) Concept of nerve injury & Wallerian degeneration

9) Muscle properties and functions

10) Electric & Mechanical responses & their basis

11) Concept of isometric & isotonic muscle contraction

12) Electrical events in postsynaptic neurons

13) Inhibition & facilitation at synapses

14) Chemical transmission of synaptic activity

15) Principal neurotransmitter system

16) Neuromuscular junction, structure & events occurring during excitation

## 9. NERVOUS SYSTEM (descriptive)

1) Organization of Nervous system.

2) Neuron and Neuralgia

3) Synapse: Properties and Synaptic transmission.

4) Reflex arc, its components, properties, type and neurological impairments.

5) General sensations and their properties.

6) Ascending tracts of the Spinal cord and effects of their lesions.

7) Pain and physiological Analgesia.

8) Motor neurons, Descending tracts and their applied aspects.

9) Regulation of Muscle Tone by Spinal and Supra-spinal mechanism.

10) Function of Brain -stem, Cerebellum, Basal Ganglia and Motor cortex.

11) Control of Voluntary movement

12) Regulation of posture and equilibrium, vestibular apparatus.

13) Broad functions of Thalamus, Hypothalamus, Major lobes of Cerebral cortex and Ascending

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## Reticular

14) Activation System

15) Limbic System

16) Learning, memory, speech and conditional reflexes.

- a. Reflexes, monosynaptic, polysynaptic, withdrawal reflex
- b. Properties of reflexes
- c. Sense organ, receptors, electrical & chemical events in receptors
- d. Ionic basis of excitation
- e. Sensory pathways for touch, temperature, pain, proprioception, others
- f. Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions & clinical aspects
- g. Autonomic nervous system & Hypothalamus
  - i. Functioning of Autonomic Nervous System with special reference to micturition, defecation and labour
  - ii. Higher neural regulation of ANS.

## 10. HIGHER FUNCTIONS OF NERVOUS SYSTEM

- 1) Learning & memory, neocortex,
- 2) Limbic functions, sexual behavior, fear & rage, motivation

## 11. SPECIAL SENSES

- 1) Functional anatomy of the Eye
- 2) Optics of Vision
- 3) Retinal Function
- 4) Visual Pathways
- 5) Mechanism of Hearing.
- 6) Sensation of Taste and Smell.

## 12. ENDOCRINE

1. Role of Hypothalamus as an endocrine gland.
2. Functions and hypo & hyper secretion of hormones of-
  - a. Pituitary
  - b. Thyroid
  - c. Parathyroid
  - d. Adrenal
  - e. Endocrine part of pancreas.



### 13. REPRODUCTIVE SYSTEM

- 1) Male & female reproductive system
- 2) Spermatogenesis, Functions of Testosterone.
- 3) Ovarian and Menstrual Cycle and their hormonal control.
- 4) Hormones of Ovary and their functions.
- 5) Physiological basis of Fertilization, Implantation, Pregnancy, Parturition and Lactation.
- 6) Contraception.

### 14. EXERCISE PHYSIOLOGY

- 1) Effects of acute & chronic exercises
- 2) Oxygen/CO<sub>2</sub> transport – O<sub>2</sub> debt.
- 3) Effects of Exercises on muscle strength, power, endurance, B.M.R., R.Q.- hormonal & metabolic effects respiratory & cardiac conditioning.
- 4) Aging.
- 5) Training, fatigue & recovery.
- 6) Fitness- related to age, gender, & body type

### 15. SKIN AND BODY TEMPERATURE REGULATION

1. Functional anatomy of the Skin and its function
2. Different mechanisms involved in body temperature regulation.
3. Physiological basis of Pyrexia and Hypothermia

## PRACTICALS

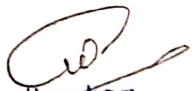
1. Examination of pulse, B.P., respiratory rate, & measure study the effect of posture & exercise.  
Recording of arterial blood pressure – effects of change in posture & exercise on A.B.P

### 2. Stethography

- Effect of deglutition.
- Effect of voluntary hyperventilation
- Effect of exercise.

Spirometry to measure various lung capacities & volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometry (demonstration only)

- Spirometry : Lung volumes and capacities
- Clinical examination of
  1. Respiratory system

  
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2. Cardiovascular system
3. Central Nervous system.
4. Special Senses.
5. Estimate of Haemoglobin, T.R.B.C., T.W.B.C. count (demonstration only) ,Study of Graphs
6. Blood indices, Blood grouping, Bleeding & Clotting time (demonstration only]
7. Skeletal muscles

o Simple muscle twitch

- o Effect of increasing strength on SMT.
- o Effect of increasing load on SMT.
- o Effect of pre load & after load (Starling's law).
- o Effect of temperature.
- o Effect of two successive stimuli.
- o Effect of fatigue.
- o Effect of multiple stimuli & tetanus.

3. Cardiac muscles

- o Simple MVO Cardiogram.
- o Effect of temperature on the myo-cardiogram.
- o Effect of drugs.
- o All or none law.
- o Staircase phenomenon.

4. Physiology Fitness

- o Breath holding
- o mercury column test,
- o Cardiac efficiency test – Harvard step test – Master step test

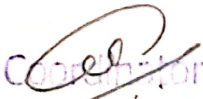
### PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory. Demonstration of measurements of pulse, BP

#### Suggested Readings:

1. Chatterji, C. C., Human Physiology Medical Allied,
2. Keele, Cyril A, Samson Wright's Applied Physiology, Oxford University Press
3. Bijlani, R L, Understanding Medical Physiology, Oxford University Press
4. Guyton, A.C. and Hall, J. E., Textbook of Medical Physiology, W. B. Saunders, Singapore

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## BPT FIRST YEAR

### PHYTH 103: FUNDAMENTALS OF BIOMECHANICAL MODALITIES

Total No. of teaching Hrs.- 160

Theory- 100 Hrs. & Practical-60 Hrs.

#### Course Objectives:

This course will enable the student to understand the basic principles of Physics, Biomechanics & exercise therapy, basic principles and application of soft tissue manipulation

#### Course Contents:

All topics are for a brief description only

1. Mechanics - Definition of mechanics and Biomechanics
2. Force - Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle
3. Momentum - principles, and practical application
4. Friction
5. Gravity - Definition, line of gravity, Centre of gravity
6. Equilibrium - Supporting base, types, and equilibrium in static and dynamic state
7. Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body.
8. Pulleys - system of pulleys, types and application
9. Elasticity - Definition, stress, strain, Hooke's Law.
10. Springs - properties of springs, springs in series and parallel, elastic materials in use
11. Aims and scope of various biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, Balancing board, springs, weights.
12. Normal Posture - definition & description, static and dynamic, alignments of various joints, centre of gravity, planes & muscular moments, and Analysis of posture
13. Movements - Anatomical definition and description, Movements and exercise as therapeutic modality and their effects, Physiological reaction of exercise.
14. Traction - Rationale, Technique, indications & contra-indications.
15. Normal Gait - definition & description, alignments, center of gravity during gait cycle, planes & muscle acting mechanisms, pattern, characteristics Normal gait cycle, time & distance parameters, & determinants of Gait.
16. Starting positions - Description and muscle work, Importance of fundamental and derived types,

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

## PRACTICALS

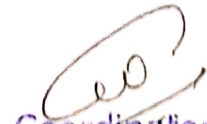
- Demonstration of Biomechanical principles
- Study of structure, function and application of various Biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights, etc. Study of structure, function and application of suspensions,
- Demonstration and practice of soft tissue manipulative techniques-
  - Normal gait and posture
  - Starting and derived positions
  - Spinal mechanical traction

## PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory, demonstrations of various biomechanical modalities, suspensions, and manipulative techniques learned.

### Suggested Readings:

1. Hollis, M. and Cook; P.F., Practical Exercise Therapy CBS, New Delhi, Latest Edition
2. Gardiner, Dena; Principles of Exercise Therapy CBS, New Delhi, Latest Edition
3. Lippert, Lynn; Clinical Kinesiology for Physical Therapy, Jaypee New Delhi, Latest Edition
4. Pagliarulo, M.A.; Introduction to Physical Therapy Mosby, London, Latest Edition
5. Jones, Human Movement Explained; Butterworth Heine, Latest Edition.
6. Joint's structure and functions, by Cynthia C, Norkin, jaypee brothers.

  
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## BPT FIRST YEAR

### PHYTH 104: PRINCIPLES OF BIOELECTRICAL MODALITIES

Total No. of teaching Hrs.- 160

Theory- 100 Hrs. & Practical-60 Hrs.

#### Course Objectives:

This course will enable the student to understand the basic electricity, electronics, equipment and their application in Electrotherapy.

#### Course Contents:

##### Section – A: FUNDAMENTALS OF MEDICAL ELECTRONICS & MAGNETISM

1. DC Currents -Modern concept of electricity: current, static electric charge, charging of an object, potential and capacitance, potential difference and EMF
2. A. C. currents: Sinusoidal wave form, frequency, wavelength, Amplitude and phase of a sine wave, Average
3. Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm 's law, resistance in series and parallel
4. Capacitors: Electric field around a capacitor, charging and discharging of capacitor, types of capacitor with application of each in Physiotherapy department
5. Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department
6. Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention
7. Magnetism: Magnetic - non-magnetic substances and their properties, properties of magnet, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism, magnetic effects of electric current, Electromagnetic induction, Lenz's law, Inductor and Inductance, types of inductor, reactance and impedance.

##### Section – B: ELECTRONIC DEVICES

1. Thermionic Valves: Thermionic emission, Diode and Triode valves and their characteristics, Cathode Ray Oscilloscope
2. Semiconductor Devices: Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices. Basing of Diode and their characteristics, Light Emitting Diodes, Advantage of semiconductor devices over thermionic valve
3. Electronic Circuits: Rectifiers, Wheat stone bridge & smoothing circuits, Oscillators and its types.
4. A.C. and D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters,
5. Introduction to Therapeutic Energies – Thermal, Mechanical, Electrical,

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Electromagnetic and magnetic - Definition, description, Electromagnetic spectrum, physiological effects, pathological effects and dangers

### Section – C: BIOELECTRICAL MODALITIES

6. Medical Instrumentation for Physical Therapy: Brief description of generation, circuit diagrams and testing
7. Low frequency currents, Direct currents, medium frequency currents
8. Short wave Diathermy-continuous and pulsed
9. Microwave Diathermy
- 11., Ultrasound
12. Action-therapy – Infrared- Types of generators, UVR-generators, types, dosimetry and LASER-Productions & instrumentation, classification and physiological effects.

**Note: Emphasis is given only to generation circuit diagram and testing of the various electrotherapy apparatus.**

### PRACTICALS

- Demonstration of Bioelectrical principles
- Demonstration of electrotherapy instruments, principles of their functioning, usage, and safety implications for human beings

### PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory and demonstration of various components of the equipment.

### Suggested Readings:

1. Froster, A. and Palastanga, N.; Clayton 's Electrotherapy: Theory and Practice AITBS, Delhi
2. Jhon, Low and Ann, Reed; Electrotherapy Explained: Principles Butterworth Heine, Oxford
3. Nelson, R.M. and Currier, D.P.; Clinical Electrotherapy Appleton and Lange
4. Chemeron, M.H.; Physical Agents in Rehabilitation, W B Saunders, London

  
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## BPT FIRST YEAR

### PHYTH 105: PSYCHOLOGY & SOCIOLOGY

Total No. of Hrs.: - 160

Theory -100 Hrs. & Practical / Laboratory- 60 hrs.


#### Course Objectives: -

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

#### Course Contents: -

#### SECTION: A- PSYCHOLOGY

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

  
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Anxiety Disorders -

- a) Phobias, panic disorder,
- b) Generalized Anxiety disorder,
- c) Obsessive Compulsive Disorder,
- d) Post –traumatic stress disorder

19. Somatoform and Dissociate Disorders -

- a) Conversion Disorder,
- b) Somatization Disorder,
- c) Dissociate Amnesia & Dissociate Fugue

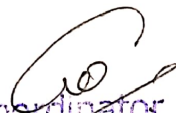
20. Personality Disorder

21. Patho-physiological Disorders – stress and health

22. Severe psychological disorders – Mood disorders, psychosis

**Suggested Readings:**

1. Morgon, Clifford T; Introduction to Psychology Tata Mcg. Hill, Delhi
2. Farnald, L.D. Introduction to Psychology AITBS, Delhi
3. Korchin, Sheldon J.; Modern Clinical Psychology: Principals, CBS, New Delhi
4. McDavid, J.W. and Harari, H.; Social psychology: Individuals, Groups, Societies CBS, New Delhi
5. Davison, G.C. and Neale, J.M.; Abnormal Psychology Jhon Wiley, New York
- 6 . Mehta, Manju; Behavioral Sciences in Medical Practice, Jaypee, New Delhi

  
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A-Introduction

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

professionals.B-Social Factors in Health and Disease:

1. The meaning of Social Factors.
2. The role of Social factors

and illness.C-Socialization:

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

D. Social Groups:

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

E- Family:

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

F-Community:

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

G-Culture and Health:

1. Concept of culture
2. Cultures and Behavior
3. Cultural meaning of sickness
4. Culture and health