



**ACADEMIC REGULATIONS –  
BACHELOR**

**OF**

**PHYSIOTHERAPY (B. PT)  
PROGRAMME (4½ years Degree Course)**

**FACULTY OF MEDICINE**

**WITH EFFECT FROM ACADEMIC YEAR  
2019-2020**



**FIRST YEAR BPT**

## Paper I: HUMAN ANATOMY

**Subject Code: PT0101**

**Theory: 150 Hours**

**Practical: 100 Hours**

### Method of Assessment: Written, Practical and Oral

**Course Description:** It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies. Studies are concerned with the topographical and functional anatomy of the limbs and thorax. Particular attention is paid to the muscles, bones and joints of the regions. The abdomen, pelvis, perineum, head and neck and central nervous system (CNS) are studied with particular reference to topics of importance to physiotherapists. The study of the CNS includes detailed consideration of the control of motor function.

S. No	Description of topics	Hours
<b>Basic Structure – Not for Exam</b>		
<b>1.</b>	<b>HISTOLOGY</b>	<b>5</b>
1.1	General Histology & basic tissues of body	
1.2	Cell, Epithelium, Connective tissues, Cartilage, bone, muscular tissues, Nervous tissue, lymphoid tissue, skin & appendages	
<b>2.</b>	<b>EMBRYOLOGY</b>	<b>4</b>
2.1	Ovum, Spermatozoa, Fertilization and formation of germ layers	
2.2	Development of skin, fascia, blood vessels and lymphatics	
2.3	Development of bones and muscles	
2.4	Development of neural tubes and spinal cord	
2.5	Development of brain and its structures	
<b>Detailed structural anatomy</b>		
<b>1.</b>	<b>MUSCULOSKELETAL ANATOMY – GENERAL</b>	<b>10</b>
1.1	Anatomical terminologies, Positions, planes and axes	
1.2	Osteology - Bone composition, functions, Classification, surface landmarks	
1.3	Arthrology - Joint Classification, structure, movements, blood supply and nervous supply	
1.4	Myology – Types of muscles and its functions	
<b>2.</b>	<b>MUSCULOSKELETAL ANATOMY – REGIONAL</b>	
<b>2.1</b>	<b><i>Upper Extremity</i></b>	<b>25</b>
2.1.1	Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals and Phalanges	
2.1.2	Arthrology: Shoulder complex, Elbow joint, Radioulnar joint, Wrist Joint, Carpometacarpal joints, Metacarpophalangeal joints, intercarpal joints and phalangeal joints	
2.1.3	Myology: Origin, insertion, nerve supply and action of muscles that	

	move the shoulder, elbow, wrist and hand joints along with scapular muscles	
2.1.4	Structural anatomy of pectoral region, axilla, cubital fossa, palm, arches of the hand, blood vessels of arm, forearm and hand, lymphatic drainage of upper extremity	
<b>2.2</b>	<b><i>Lower Extremity</i></b>	<b>25</b>
2.2.1	Osteology: Pelvic bones, femur, Patella, Tibia, Fibula, Tarsals, Metatarsals and Phalanges	
2.2.2	Arthrology: Hip complex, knee complex, ankle joint, tibiofibular joints, intertarsal joints, metatarsophalangeal joints and phalangeal joints	
2.2.3	Myology: Origin, insertion, nerve supply and action of muscles that move the hip, knee, ankle and foot joints, pelvic floor muscles	
2.2.4	Structural anatomy of pelvic region, femoral triangle, inguinal region, popliteal fossa, foot, arches of foot, blood vessels of foot, lymphatic drainage of lower extremity	
<b>2.3</b>	<b><i>Trunk &amp; Spine</i></b>	<b>20</b>
2.3.1	Osteology: Cervical, Thoracic, Lumbar, Sacral and coccygeal vertebrae, Ribs and sternum	
2.3.2	Arthrology: Intervertebral joints, joints of thoracic cage	
2.3.3	Myology: Origin, insertion, nerve supply and action of muscles that move the spinal column and thoracic region	
2.3.4	Structural anatomy of intervertebral disc	
<b>2.4</b>	<b><i>Head &amp; Neck</i></b>	<b>10</b>
2.4.1	Osteology: Bones of the skull, facial bones and Mandible	
2.4.2	Arthrology: Joints of the skull and facial bones	
2.4.3	Myology: Origin, insertion, nerve supply and action of muscles of the face and neck	
2.4.4	Structural anatomy of the triangles of neck	
<b>3.</b>	<b>NEURO ANATOMY</b>	<b>25</b>
3.1	Classification of Nervous system	
3.2	Nerve structure and classification	
3.3	Neuron structure and classification	
3.4	Parts of spinal nerve	
3.5	Simple reflex arc	
3.6	Central Nervous system	
3.6.1	Parts of CNS	
3.6.2	Brain – Anatomy and blood supply of Cerebrum, Cerebellum, mid brain and brainstem, medulla oblongata, Pyramidal and extrapyramidal system, Thalamus and Hypothalamus	
3.6.3	Structural anatomy of meninges	
3.6.4	Structural anatomy of ventricles (Brief) and CSF circulation	

3.6.5	Spinal Cord – Anatomy, blood supply and pathways	
3.7	Cranial nerves – Course, function and testing	
3.8	Sympathetic and parasympathetic system	
3.9	Peripheral nervous system	
<b>4.</b>	<b>CARDIOVASCULAR ANATOMY</b>	<b>6</b>
4.1	Structural anatomy of veins, arteries and capillaries	
4.2	Heart – internal and external features, blood supply	
4.3	Conductive system of heart	
4.4	Lymphatic circulation, lymph nodes	
<b>5.</b>	<b>RESPIRATORY ANATOMY</b>	<b>6</b>
5.1	Structural anatomy of upper and lower respiratory tracts	
5.1.1	Nasal air passages, Trachea, Lungs, pleura, bronchial tree, bronchopulmonary segments	
5.1.2	Diaphragm – Origin, insertion, nerve supply, action	
5.2	Mechanism of respiration	
5.3	Accessory muscles of respiration	
<b>6.</b>	<b>ANATOMY OF DIGESTIVE ORGANS</b>	<b>3</b>
6.1	Components of the digestive system	
6.2	Divisions of the Abdominal cavity, Surface anatomy	
6.3	Muscles of abdominal wall	
6.4	Digestive organs (Brief)	
<b>7.</b>	<b>ANATOMY OF ENDOCRINE SYSTEM</b>	<b>6</b>
7.1	Structural anatomy of endocrine glands	
<b>8.</b>	<b>URINARY AND REPRODUCTIVE ANATOMY</b>	<b>5</b>
8.1	Structural anatomy of urinary system and organs	
8.2	Structural anatomy of genital system of male and female	

### Recommended Books:

1. Human Anatomy - B.D. Chaurasia
2. Textbook of Anatomy - Inderbir Singh
3. Handbook of Osteology - Poddar
4. Neuroanatomy – Vishram Singh
5. Principles of Anatomy and Physiology – Tortora
6. Cunningham’s Manual of Practical Anatomy
7. Anatomy and Physiology – Smout & McDowell
8. Gray’s Anatomy
9. Clinical Anatomy for Medical Students - Richard Snell

## QUESTION PAPER PATTERN FOR THEORY EXAMINATION

<b>Section – I: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
<b>Section – II: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

### **PRACTICAL (100 Hours)**

- ✓ Identification of dissected parts of Upper extremity, lower extremity, thoracic, abdominal viscera and brain including muscles and nerves (**60 Hours**)
- ✓ Identification of bones and joints – articulated and disarticulated (**20 Hours**)
- ✓ Demonstrate and practice of Surface Anatomy of bones, ligaments, muscles, nerves of body (**20 Hours**)

### **PRACTICAL EXAM FORMAT**

1. Spots (**10 x 3 = 30 marks**)
  - a. 10 spots based on
    - i. Bones
    - ii. Organs – Only Brain, Heart, Kidney and Lungs
2. Journal of Anatomy (**5 marks**)
3. Viva on structural anatomy of bones, muscles, nerves and organs (Only Brain, Heart, Kidney and Lungs) (**45 marks**)

## Paper II: HUMAN PHYSIOLOGY

Subject Code: PT0102

Theory: 150 Hours

Practical: 50 Hours

### Method of Assessment: Written, Practical and Oral

**Course Description:** At the end of the course the student will be able to explain the normal functioning of all the organ systems and their interaction for well co-ordinated total body functions with special reference to musculoskeletal, nervous, cardio-respiratory, female urogenital system and alteration in functions of organs due to aging, analyze physiological responses & adaptation to environmental stresses with special emphasis on physical activity and temperature. Acquire the skill of basic clinical examination with special emphasis to peripheral and central nervous system, cardio-vascular and respiratory system, exercise tolerance.

S. No	Description of topics	Hours
<b>Basic Structure – Not for Exam</b>		
<b>1.</b>	<b>GENERAL PHYSIOLOGY</b>	<b>5</b>
1.1	Cell, Organelles – Structure and Function	
1.2	Structure of cell membrane	
1.3	Transport mechanisms across cell membrane	
1.4	Body fluids – Composition	
<b>1.</b>	<b>BLOOD</b>	<b>10</b>
1.1	Composition and functions	
1.2	Plasma - composition and functions	
1.3	Plasma proteins – Types and functions	
1.4	RBC, WBC, Platelets – Structure, formation and functions	
1.5	Lymph-Composition, Circulation and functions	
1.6	Hemoglobin – Structure and functions	
1.7	Anemia – Types	
1.8	Hemostasis, blood coagulation mechanisms, disorders in coagulation	
1.9	Bleeding time, clotting time, ESR and blood indices	
1.10	Blood grouping, Rh Factor – Types and Significance	
<b>2.</b>	<b>CARDIOVASCULAR SYSTEM</b>	<b>20</b>
2.1	Structure and functions of arteries, arterioles, capillaries and veins	
2.2	Structure, properties and function of heart, heart valves, blood and nerve supply of heart	
2.3	Conducting system of the heart	
2.4	Cardiac Cycle – Description of phases	
2.5	Heart sounds – Types, characteristics and identification	
2.6	Cardiac output, Stroke Volume, Heart Rate, Blood pressure, Peripheral vascular resistance– Definitions, normal values, regulations and variations	
2.7	Basic understanding of Electrocardiography	

<b>3.</b>	<b>RESPIRATORY SYSTEM</b>	<b>20</b>
3.1	Structure and functions of upper and lower Respiratory tracts including nasal passages, trachea, bronchi, bronchioles and alveoli	
3.2	Primary and accessory muscles of respiration	
3.3	Neural and chemical regulation of respiration	
3.4	Mechanism of respiration	
3.5	Gaseous exchange in respiration	
3.6	Pulmonary function tests, Spirometry, lung volumes and capacities	
3.7	Anatomical and Physiologic dead space	
3.8	Pulmonary circulation	
3.9	Hypoxia, Asphyxia, Cyanosis – Description and types	
3.10	Artificial Respiration	
<b>4.</b>	<b>NERVE AND MUSCLE PHYSIOLOGY</b>	<b>20</b>
4.1	Nerves - Structure and function, classification, properties	
4.1.1	Neurophysiology of nerve injuries and classification of nerve injuries	
4.2	Muscle – Classification, Structure and properties	
4.2.1	Contractile mechanism of muscles, excitation – coupling reactions	
4.2.2	Motor Unit, neuromuscular junction, muscle tone, Fatigue	
<b>5.</b>	<b>DIGESTIVE SYSTEM</b>	<b>10</b>
5.1	Digestive Organs - Structure and function of stomach, pancreas, liver, gall bladder and intestine	
5.2	Salivary secretions and gastric juices – Functions and regulation	
5.3	Mastication and swallowing – Stages and mechanism	
5.4	Digestion and absorption of nutrients	
<b>6.</b>	<b>EXCRETORY SYSTEM</b>	<b>15</b>
6.1	Excretory organs - Structure and function of kidneys, nephrons and Juxta medullary apparatus	
6.2	Renal blood flow and regulation	
6.3	Formation of Urine, Glomerular Filtration Rate (GFR)	
6.4	Regulation of water excretion from body	
6.5	Structure and function of urinary bladder	
6.5.1	Types of bladder in pathological conditions	
6.6	Mechanism of defecation	
6.7	Skin and temperature regulation	
<b>7.</b>	<b>SPECIAL SENSES</b>	<b>5</b>
7.1	Vision – Structure and functions of eye ball and its components	
7.1.1	Visual Pathways, visual reflexes, adaptation to light and dark	
7.1.2	Pathology of vision	
7.2	Hearing - Structure and function of external, middle and inner ear	
7.2.1	Auditory pathway and testing of hearing	
7.2.2	Pathology of hearing	
7.3	Taste - Structure and function of tongue	

7.3.1	Gustatory pathway and testing for taste	
7.3.2	Pathology of taste	
7.4	Smell - Structure and function of nose	
7.4.1	Olfactory pathway and testing of olfaction	
7.4.2	Pathology of olfaction	
7.5	Touch - Structure and function of skin	
7.5.1	Sensory pathway, superficial reflexes, types of sensation	
7.5.2	Sensory affection in pathological conditions	
<b>8.</b>	<b>ENDOCRINE SYSTEM</b>	<b>15</b>
8.1	Physiology and classification of Endocrine glands and hormones	
8.2	Functions, classification and regulation of secretion of hormones – Pituitary, Thyroid, Parathyroid, Adrenal, Gonads and Pancreas	
<b>9.</b>	<b>NERVOUS SYSTEM</b>	<b>25</b>
9.1	Physiology and classification of nervous system	
9.2	Structure and function of Brain	
9.2.1	Structure and function of Cerebral cortex, Sensory and motor Homunculus	
9.2.2	Structure and function of Corpus Callosum	
9.2.3	Structure and function of Basal Ganglia	
9.2.4	Structure and function of Thalamus and Hypothalamus	
9.2.5	Structure and function of Brain Stem – Pons, Midbrain and Medulla Oblongata	
9.2.6	Structure and function of Cerebellum	
9.2.7	Structure and function of Limbic system	
9.3	Structure and function of Spinal Cord	
9.3.1	Spinal nerves, Reflex arc and monosynaptic reflexes	
9.4	Structure and functions of Peripheral nerve	
9.5	Ascending and descending pathways	
9.6	Structure and functions of ventricles	
9.6.1	Cerebrospinal Fluid – Formation, composition, circulation and functions	
9.7	Upper and lower motor neurons - Functional significance	
9.8	Structure and function of Cranial nerves and their examination	
9.9	Postural and Equilibrium mechanisms	
9.10	Autonomic nervous system – Functions	
9.11	Neurophysiology of Pain – Pain pathways, Gate control theory of pain and pain modulation	
<b>10.</b>	<b>REPRODUCTIVE SYSTEM</b>	<b>5</b>
10.1	Male - Functions of testes, pubertal changes in males, testosterone - action and regulations of secretion	
10.2	Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone - action and regulation	

### Recommended Books:

1. Human Physiology - Chatterjee
2. Concise Medical Physiology - Chaudhuri
3. Human Physiology - Sembulingam
4. A Textbook of Practical Physiology - Ghai C L
5. Practical physiology - Vijaya Joshi
6. Samson and Wright's Applied Physiology
7. Textbook of Medical Physiology - Guyton & Hall
8. Principles of Anatomy & Physiology - Tortora

### QUESTION PAPER PATTERN FOR THEORY EXAMINATION

<b>Section – I: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
<b>Section – II: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

## **PRACTICAL (50 Hrs)**

- ✓ Demonstration of RBC, WBC, Platelet count, ESR, Bleeding and clotting time, Hemoglobin estimation and blood grouping **(10 Hrs)**
- ✓ Identification of graphs displaying properties of muscles, lung volumes and capacities and ECG wave forms **(5 Hrs)**
- ✓ Practical application of clinical examination of Health-related Physical Fitness – Cardiovascular endurance, Muscular Endurance, Muscular strength, Flexibility and Body composition **(10 Hrs)**
- ✓ Practical application of clinical examination of Blood Pressure measurement – Palpatory and auscultatory methods **(5 Hrs)**
- ✓ Practical application of clinical examination of Auscultation of Heart sounds and Breath sounds **(5 Hrs)**
- ✓ Demonstration of Spirometry – Recording of lung volumes and capacities **(2 Hrs)**
- ✓ Practical application of clinical examination of heart rate, respiratory rate, superficial, deep and cortical reflexes **(5 Hrs)**
- ✓ Practical application of clinical examination of cranial nerves **(8 Hrs)**

## **PRACTICAL EXAM FORMAT**

- 1. Spots (10 x 3 = 30 marks)**
  - a. 10 spots based on
    - i. Graphs – Muscle properties, ECG, Lung volumes and capacities
    - ii. Tools used for assessment of physical fitness
    - iii. Stethoscope and its parts
    - iv. Sphygmomanometer and its parts
    - v. Spirometer
- 2. Journal of Physiology (5 marks)**
- 3. Viva on structure and functions of various systems of the body covered in the syllabus (45 marks)**

### Paper III: EXERCISE THERAPY – I AND BASIC BIOMECHANICS

Subject Code: PT0103

Theory: 100 Hrs

Practical: 100 Hrs

Method of Assessment: Written, Practical and Oral

**Course Description:** In this course, the students will learn the basic principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions and basic biomechanics involves the study of basic concepts of human movements.

S. No	Description of topics	Hours
<b>1.</b>	<b>INTRODUCTION TO EXERCISE AND EXERCISE THERAPY</b>	<b>4</b>
1.1	Significance of assessment in prescribing exercise	
1.2	Physiological effects and uses of exercise	
1.3	Planning treatment through exercise	
<b>2.</b>	<b>BASIC BIOMECHANICS</b>	<b>5</b>
2.1	Terminologies related to movements – Axis, Planes, Kinetics, Kinematics, types of muscle contraction and work, Closed and Open chain activities, shunt and spurt muscles, Angle of pull	
<b>3.</b>	<b>SIMPLE MACHINES</b>	<b>4</b>
3.1	Definition, properties, types and uses of Levers, pulley and springs	
3.2	Mechanical Advantage	
<b>4.</b>	<b>THERAPEUTIC GYMNASIUM</b>	<b>6</b>
4.1	Tools and equipment used in exercise therapy-Uses and application	
<b>5.</b>	<b>STARTING POSITIONS</b>	<b>5</b>
5.1	Fundamental and derived starting positions	
5.2	Effects, uses and muscle work	
<b>6.</b>	<b>MOVEMENTS CLASSIFICATION</b>	<b>15</b>
6.1	Active movements	
6.1.1	Free exercises – Principles, techniques of application, indications, contraindications, effects and uses	
6.1.2	Active Assisted exercise - Principles, Classification, techniques of application, indications, contraindications, effects and uses	
6.1.3	Resisted exercise (in general and brief) - Principles, Classification, techniques of application, indications, contraindications, effects and uses	
6.2	Passive movements - Principles, Classification, techniques of application, indications, contraindications, effects and uses	
6.3	End feel – definition, types of normal and abnormal end feel	
<b>7.</b>	<b>GONIOMETRY</b>	<b>10</b>
7.1	Causes for restriction of range of motion	
7.2	Definition – goniometry, Active range of motion, passive range of	

	motion	
7.3	Types of goniometer, uses	
7.4	Principles, techniques of application, indications, contra indications, limitations of goniometry for joints of upper limb and lower limb	
7.5	Tools used to measure range of motion of spine, Principles, techniques of application, indications, contra indications, limitations of goniometry for spine	
7.6	Normal range of motion of upper limb, lower limb joints and spine	
7.7	Trick movements – Definition, types and its significance in exercise	
<b>8.</b>	<b>SUSPENSION THERAPY</b>	<b>6</b>
8.1	Definition, types, principles of application, therapeutic effects and uses, indications and contra indications	
<b>9.</b>	<b>BREATHING EXERCISES</b>	<b>6</b>
9.1	Patterns of breathing, types of breathing exercises - Techniques and principles of application, therapeutic effects and uses, indications and contra indications	
<b>10.</b>	<b>LIMB LENGTH MEASUREMENTS – TYPES, TECHNIQUES OF MEASURING</b>	<b>5</b>
<b>11.</b>	<b>GIRTH MEASUREMENTS</b>	<b>5</b>
<b>12.</b>	<b>AMBULATORY DEVICES AND WALKING AIDS</b>	<b>8</b>
12.1	Crutches – Types, measurement methods, uses	
12.2	Application of 2 point, 3 point and 4 point gait patterns	
<b>13.</b>	<b>SOFT TISSUE MOBILIZATION (MASSAGE)</b>	<b>15</b>
13.1	Definition, classification of massage	
13.2	Principles of application, Physiological effects and therapeutic uses, indications and contra indications of different types of massage techniques	
13.3	Massage for upper limb, neck, face, chest, back, and lower limb	
<b>14.</b>	<b>GROUP EXERCISE AND HOME EXERCISE</b>	<b>6</b>

### Recommended Books:

1. Principles of Exercise Therapy - Dena Gardiner.
2. Practical Exercise Therapy - Margaret Hollis.
3. Therapeutic Exercise - Kisner & Colby
4. Principles and Practices of Therapeutic Massage - Sinha A G
5. Measurement of Joint Motion – a guide to Goniometry - Cynthia Norkins
6. Therapeutic exercise - Hall & Brody

## QUESTION PAPER PATTERN FOR THEORY EXAMINATION

<b>Section – I: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
<b>Section – II: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

### **PRACTICAL (100 Hours)**

Practical skillful application of techniques of

- ✓ Observation of muscle work of various positions
- ✓ Active assisted movements, Passive movements, Resisted exercises
- ✓ Goniometry
- ✓ Suspension exercises
- ✓ Breathing exercises
- ✓ Limb length measurements
- ✓ Girth measurements
- ✓ Soft tissue mobilization

### **PRACTICAL EXAM FORMAT**

1. Spots (**10 x 3 = 30 marks**)
  - a. Based on therapeutic Gymnasium
2. Demonstration of techniques of application of any two of the following: (**30 marks**)
  - a. Free Exercise
  - b. Active/Active-Assisted/Resisted Exercise
  - c. Passive movements of limbs
  - d. Goniometry of joints of limbs
  - e. Suspension therapy
  - f. Breathing exercises
  - g. Limb length measurements
  - h. Girth measurements
  - i. Soft tissue mobilization
3. Viva on basic biomechanics, principles, indications and contra indications of various techniques covered in the syllabus (**15 marks**)
4. Journal of Exercise Therapy (**5 marks**)

## PAPER IV: SECTION – I PSYCHOLOGY

Subject Code: PT0104A

Theory: 40 Hours

Method of Assessment: Written

**Course description:** Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups. Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions (in relation to the individual, family and community) and the various social factors affecting the family in rural and urban communities in India will be studied. The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

S. No	Description of topics	Hours
<b>1.</b>	<b>INTRODUCTION TO PSYCHOLOGY</b>	<b>4</b>
1.1	Definition, Branches and methods	
1.2	Role of Psychology in Physiotherapy	
1.3	Influence of heredity and environment on individual – Nature Vs Nurture	
1.4	Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age, normal and abnormal	
<b>2.</b>	<b>MOTIVATION</b>	<b>3</b>
2.1	Definition and types	
2.2	Motivation cycle	
2.3	Theories of motivation	
<b>3.</b>	<b>ATTENTION AND PERCEPTION</b>	<b>3</b>
3.1	Types of attention, Factors determining attention	
3.2	Principles of perceptual grouping	
3.3	Errors or abnormalities in perception – Illusions and Hallucinations	
<b>4.</b>	<b>PERSONALITY</b>	<b>3</b>
4.1	Definition, types and theories of personality	
4.2	Factors influencing personality	
4.3	Assessment of Personality and personality disorders	
<b>5.</b>	<b>LEARNING</b>	<b>5</b>
5.1	Theories of learning – Trial and error, Classical and Operant conditioning	
5.2	Learning disabilities	
<b>6.</b>	<b>ATTITUDE AND BEHAVIOR MODIFICATION</b>	<b>3</b>
6.1	Definition and theories of attitude and behavior	

6.2	Methods and therapies for behavioral modification	
6.3	Factors affecting attitude and behavior	
<b>7.</b>	<b>MEMORY</b>	<b>3</b>
7.1	Types and Theories	
7.2	Methods to improve memory	
<b>8.</b>	<b>THINKING</b>	<b>3</b>
8.1	Types and Process of thinking	
8.2	Problem solving, decision making and creative thinking	
<b>9.</b>	<b>EMOTION</b>	<b>3</b>
9.1	Theories of emotion and stress	
9.2	Physiological and psychological changes to stress	
9.3	Stress management	
<b>10.</b>	<b>FRUSTRATION AND CONFLICT</b>	<b>2</b>
10.1	Types of frustration and conflict	
10.2	Defense mechanism – Denial, Identification, regression, repression, projection, sublimation and rationalization	
<b>11.</b>	<b>INTELLIGENCE</b>	<b>2</b>
11.1	Theories of intelligence	
11.2	Intelligence tests and their uses	
<b>12.</b>	<b>COMMUNICATION</b>	<b>4</b>
12.1	Different types	
12.2	Effective communication skills	
<b>13.</b>	<b>COUNSELING</b>	<b>2</b>
13.1	Principles of psychological counseling, its significance	

### **Recommended Books:**

1. Introduction to psychology - S.K.Mangal
2. Introduction to psychology - Morgan and King,
3. Psychology for Physiotherapists - Ramalingam

**PAPER IV: SECTION – II SOCIOLOGY**

**Subject Code: PT0104B**

**Theory: 40 Hours**

**Method of Assessment: Written**

S. No	Description of topics	Hours
<b>1.</b>	<b>INTRODUCTION TO SOCIOLOGY</b>	<b>3</b>
1.1	Definition and Branches	
1.2	Role of sociology in Physiotherapy	
<b>2.</b>	<b>SOCIAL FACTORS IN HEALTH AND DISEASE</b>	<b>3</b>
2.1	Definition and role of social factors in health and disease conditions	
<b>3.</b>	<b>SOCIALIZATION</b>	<b>4</b>
3.1	Meaning and nature	
3.2	Primary, secondary and anticipatory socialization	
3.3	Agencies of socialization	
<b>4.</b>	<b>FAMILY AND SOCIAL GROUPS</b>	<b>6</b>
4.1	Role of social groups in health and disease	
4.2	Types of social groups – Primary, secondary and Formal, informal	
4.3	Family as a social group	
4.4	Types of family and their functions; Advantages and disadvantages	
4.5	Role of family in health and disease	
<b>5.</b>	<b>COMMUNITY</b>	<b>4</b>
5.1	Advantages and disadvantages of Urban and Rural community	
5.2	Health Hazards in urban and rural communities	
<b>6.</b>	<b>CULTURE</b>	<b>4</b>
6.1	Definition and significance	
6.2	Role of culture in health and disease	
<b>7.</b>	<b>SOCIAL CHANGE</b>	<b>5</b>
7.1	Meaning and significance	
7.2	Factors affecting social change	
7.3	Stress related to social change	
7.4	Social change and its role in health and disease	
<b>8.</b>	<b>SOCIAL PROBLEMS</b>	<b>6</b>
8.1	Common Social problems encountered in the society	
8.2	Consequences of the following social problems and their remedies	
8.2.1	Population explosion	
8.2.2	Poverty and unemployment	
8.2.3	Beggary	
8.2.4	Alcoholism	
8.2.5	Juvenile delinquency	
8.2.6	Prostitution	

8.2.7	Geriatric issues	
<b>9.</b>	<b>SOCIETY AND THE DISABLED</b>	<b>4</b>
9.1	Meaning of disability	
9.2	Social security and legislation for the disabled	
<b>10.</b>	<b>SOCIAL WORKER</b>	<b>1</b>
10.1	Role of Medical Social Worker in rehabilitation	

### Recommended Books:

1. Introduction to the study of Sociology - Sachdeva and Vidyabushan
2. Textbook of Sociology for Physiotherapy Students - KP Neeraja
3. Text Books of Sociology for Graduates Nurses and Physiotherapy Students - Indrani T K
4. Sociology for Physiotherapists - Dibyendunarayana Bid

### QUESTION PAPER PATTERN FOR THEORY EXAMINATION

<b>Section – I (Psychology): 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
<b>Section – II (Sociology): 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

## PAPER V: BIOMEDICAL PHYSICS

Subject Code: PT0105

Theory: 80 Hours

Method of Assessment: Written

**Course Description:** At the end of the course the candidate will be able to Describe the fundamentals of general physics and able to relate its application in Physiotherapy, Understand basic physical principles of sound, light and heat and their application in Physiotherapy, Understand basic aspects of electricity and electronics as related to its application in electrotherapy instruments, Describe in brief certain common electrical components such as capacitors, transformers, valves and transistors; and will be able to identify such components.

S. No	Description of topics	Hours
<b>1.</b>	<b>GENERAL PHYSICS</b>	<b>15</b>
1.1	Force	
1.1.1	Definition, types, unit	
1.1.2	Motion and its types, Newton's Laws of motion	
1.2	Equilibrium	
1.2.1	Definition and types	
1.3	Work, power, energy and torque	
1.3.1	Definition, types and unit	
1.4	Friction	
1.4.1	Definition and types, Laws governing friction	
1.5	Fluid mechanics and Hydrodynamics	
1.5.1	Physical properties of water	
1.5.1.1.	Buoyancy, Specific Heat and Thermal Conductivity, Viscosity, Hydrostatic pressure	
1.5.1.2	Archimedes principles, Pascal's Law	
1.6	Elasticity	
1.6.1	Principles, Hook's Law	
<b>2.</b>	<b>HEAT</b>	<b>10</b>
2.1	Properties of heat and temperature	
2.2	Heat transfer and conducting properties	
2.3	Kirchoff's law, Joule's law of heat production, Grothus law and laws of thermodynamics, cosine law, inverse square law	
2.4	Biophysics of superficial heat and cold	<b>10</b>
<b>3.</b>	<b>SOUND</b>	
3.1	Frequency, Wavelength, Amplitude, vibration and phases of sound	

3.2	Newton's formula for velocity of sound	
3.3	Laplace's correction	
3.4	Interference and resonance of sound waves	
3.5	Doppler effect and Echo	
3.6	Ultrasonic sound waves – production and application	
<b>4.</b>	<b>LIGHT</b>	<b>10</b>
4.1	Electromagnetic spectrum	
4.2	Laws of emission, reflection, refraction, absorption and interference	
4.3	Fiber optics and LASER	
<b>5.</b>	<b>ELECTRICITY</b>	<b>15</b>
5.1	Definition, types and units	
5.2	Characteristics of charged body and lines of forces	
5.3	Electromagnetic induction, Potential difference and EMF	
5.4	Resistance in series and parallel	
5.5	Current	
5.5.1	Types – Direct current, alternate current and modified current; units of measurement of current	
5.5.2	Ohm's law, Faraday's law, Lenz's law, Fleming's right hand rule and Eddy currents	
5.6	Valves, Transformers	
5.6.1	Principles, types, construction and working	
5.7	Fuse	
5.7.1	Uses and practical implications	
5.8	Electric Shock	
5.8.1	Definition, types and safety precautions	
<b>6.</b>	<b>MODERN PHYSICS</b>	<b>10</b>
6.1	X-ray – Production, properties and application	
6.2	IR rays and UV rays – Short wave and microwave diathermy.	
	Therapeutic currents – impulses, definition and types, pulse duration and depletion times	
	Galvanic current, Faradic currents, Surging current, exponentially progressive current, biphasic current	
<b>7.</b>	<b>ELECTRONICS</b>	<b>10</b>
	Thermionic valves and their characteristics, semi-conductor devices: diode, its characteristics, types and uses	
	Rectifier, half wave, full wave, its characteristics, types and uses	
	Transistor: types, mode of connection, characteristics, use as an amplifier,	
	Oscillating circuit, production of shaped pulses	
	Triode valve as amplifier and oscillator	
	Cathode Ray Oscilloscope	

**Recommended Books:**

1. Biophysical Bases of Electrotherapy - Alex Ward, 1st Edition
2. Physical Principles Explained - Low & Reed
3. Biophysics: An Introduction - Roland Glaser
4. Principal of Electronics - V. K. Mehta
5. Fundamentals of Physics - Robert Resnik

**QUESTION PAPER PATTERN FOR THEORY EXAMINATION**

<b>Section – I: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
<b>Section – II: 40 Marks</b>		
<b>Type of question</b>	<b>Number of Questions</b>	<b>Marks for Each Question</b>
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

## PAPER VI: ENGLISH

Subject Code: PT0106

Theory: 40 Hours

Method of Assessment: Written

**Course Description:** This course is designed to help the student acquire a good command and comprehension of the English language through individual, papers and conferences. The student at the end of training is able to Read and comprehend English language, Speak and write grammatically correct English, Appreciates the value of English literature in personal and professional life.

S. No	Description of topics	Hours
<b>1.</b>	<b>GRAMMAR</b>	<b>10</b>
1.1	Vocabulary, framing sentences	
1.2	Phonetics	
<b>2.</b>	<b>COMPREHENSION</b>	<b>5</b>
2.1	Reading and comprehending	
<b>3.</b>	<b>COMPOSITION</b>	<b>15</b>
3.1	Various forms of composition	
3.1.1	Letter writing	
3.1.2	Notes taking	
3.1.3	Resume and curriculum vitae development	
<b>4.</b>	<b>SPOKEN ENGLISH</b>	<b>10</b>
4.1	Verbal communication	
4.2	Discussion, debate and Public speaking skills	

### Recommended Books:

1. English Grammar Collins, Birmingham University, International Language Data Base
2. Wren and Martin - Grammar and Composition
3. Spoken English - V Shasikumar and P V Dhanija

## NON-EXAM PAPERS

### A. ORIENTATION TO PHYSIOTHERAPY

**Course Description:** This course is designed to help the student acquire the geographical orientation of the various concerned sections of the education department and clinical training areas and to get an overall idea about the graduate programme and its scope in the professional practice.

S. No	Description of topics	Hours
1.	History of Physiotherapy	3
2.	Definition, Scope, branches, code of conduct, governing bodies – National and International	4
3.	Status of Physiotherapy profession in India and abroad	4
4.	Modes of management of disorders and diseases in Physiotherapy	4
5.	Role of Physiotherapists in the health care system	4
6.	Branches and fields in Physiotherapy	5
7.	Scope and areas of practice for Physiotherapy professionals	4
8.	Basic guidelines of Code of conduct in Physiotherapy	2

### B. FIRST AID

**Course Description:** At the completion of this course the student of First Aid and CPR must be able to identify and manage situation of common emergencies.

S. No	Description of topics	Hours
1.	Significance of First Aid	2
2.	Principles of emergency care and First Aid	2
3.	Basic instrumentations used in First Aid	3
4.	First Aid for accident victims	3
5.	First Aid during natural disaster and calamities	3
6.	First Aid in fractures and spinal cord injuries	3
7.	First Aid in cardiac arrest	3
8.	First Aid in respiratory distress and failure	3
9.	First Aid in Burns	3
10.	First Aid in poisoning	3
11.	First Aid in drowning	3
12.	First Aid in Shocks	3
13.	Concept of Cardiopulmonary resuscitation	6