



R.K.D.F. UNIVERSITY, BHOPAL

BACHELOR OF PHYSIOTHERAPY (BPT)

BACHELOR OF PHYSIOTHERAPY (BPT)



R.K.D.F. UNIVERSITY, BHOPAL

BACHELOR OF PHYSIOTHERAPY (BPT)

First Year

S.No	Subject Code	Subject	Sessional						
			Internal Assessment		Theory		Practical		Total
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks
1.	BPT101	Human Anatomy	50	20	100	40	50	20	200
2.	BPT102	Human Physiology	50	20	100	40	50	20	200
3.	BPT103	Fundamental of Physics,Biomechanics &Biomechanical Modalities	50	20	100	40	50	20	200
4.	BPT104	Fundamental of Medical Electronics and principles of Bioelectrical Modalities	50	20	100	40	50	20	200
5.	BPT105	Psychology & Sociology	50	20	100	40	--	--	150
Total			250	100	500	200	200	80	950



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BACHELOR OF PHYSIOTHERAPY (BPT)

Second Year

S.No	Subject Code	Subject	Sessional						
			Internal Assessment		Theory		Practical		Total
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks
1.	BPT201	Pathology & Microbiology	50	20	100	40	50	20	200
2.	BPT202	Biochemistry & Pharmacology	50	20	100	40	50	20	200
3.	BPT203	Medicine including Pediatrics & Geriatrics	50	20	100	40	50	20	200
4.	BPT204	General Surgery, Obstetrics & Gynecology	50	20	100	40	50	20	200
5.	BPT205	Exercise therapy including yoga	50	20	100	40	50	20	200
6.	BPT206	Electrotherapy	50	20	100	40	50	20	200
Total			300	120	600	240	300	120	1200



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Third Year

S.No	Subject Code	Subject	Sessional							
			Internal Assessment		Theory		Practical		Total	
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks	
1.	BPT301	Neurology including Psychiatry & Neurosurgery	50	20	100	40	50	20	200	
2.	BPT302	Orthopaedics	50	20	100	40	50	20	200	
3.	BPT303	Applied Biomechanics & Kinesiology	50	20	100	40	50	20	200	
4.	BPT304	Physiotherapeutic in Neurology & Neurosurgery	50	20	100	40	50	20	200	
5.	BPT305	Physiotherapeutic in Orthopaedic Conditions	50	20	100	40	50	20	200	
6.	BPT306	Physical Evaluation, Diagnosis & Prescription	50	20	100	40	50	20	200	
Total			300	120	600	240	300	120	1200	



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Fourth Year

S.No	Subject Code	Subject	Sessional						
			Internal Assessment		Theory		Practical		Total
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks
1.	BPT401	Community PT, Rehabilitation & Disability prevention	50	20	100	40	--	--	150
2.	BPT402	Research methodology & Biostatics	50	20	100	40	--	--	150
3.	BPT403	Cardiothoracic diseases and surgeries	50	20	100	40	--	--	150
4.	BPT404	Physiotherapeutic in General & Cardiothoracic Conditions	50	20	100	40	50	20	200
5.	BPT405	Sports Physiotherapy	50	20	100	40	50	20	200
6.	BPT406	PT Ethics, management & Administration ** NUES	50	20	100	40	--	--	150
7.	BPT407	Project Work**NUES	50	20	--	--	150	60	200
Total			350	140	600	240	250	100	1200



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BACHELOR OF PHYSIOTHERAPY (BPT) FIRST YEAR

Course	Subject	Subject Code
Bachelor of Physiotherapy	HUMAN ANATOMY	BPT-101

HUMAN ANATOMY

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 Outcome:

1. Once successfully completed the provide understanding of gross anatomy of various body parts, e
2. What will be their applications and how to utilize that knowledge of anatomy to learn evaluation and application of physical therapy,
3. Major importance is given towards understanding Musculo-skeletal, cardio-respiratory and nervous system.

Course Contents:

General Anatomy:

Introduction to Anatomy, terms and terminology, Regions of Body, cavities and Systems outline, Surface anatomy – musculo-skeletal and cardiopulmonary, Cell Structure and function of cell organelles (Brief outline only), Connective tissue & its modification, tendons, membranes, Special connective tissue, Bone structure, blood supply, growth, ossification, and classification

Upper extremity:

Bony architecture, Joints – structure, range of movement, Muscles – origin, insertion, actions, nerve supply, Major nerves – course, branches and implications of nerve injuries, Development of limb bones, muscles and anomalies, Radiographic identification of bone and joints

Lower Extremity:

Bony architecture, Joints – structure, range of movement, Muscles – origin, insertion, actions, nerve supply, Major nerves – course, branches and implications of nerve injuries, Development of limb bones, muscles and anomalies, Radiographic identification of bone and joints

Spine:



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

Thorax:

Thoracic cage, Pleural cavities & pleura, Lungs and respiratory tree, Heart and great vessels, Diaphragm, Head and neck:, Cranium, Facial Muscles, Structure of eyeball in brief and extra ocular muscles, visual pathway, Ear and auditory pathway, Triangles of Neck, boundaries and contents, Tongue – parts ,extrinsic and intrinsic muscles, motor and sensory nerves, gustatory pathway, Pharynx, Larynx

CNS:

Central nervous system – disposition, parts and functions, Cerebrum, Cerebellum, Midbrain & brain stem, Blood supply of brain & its applied anatomy, Spinal cord- anatomy, blood supply, nerve pathways, Pyramidal, extra pyramidal system, Thalamus, hypothalamus, Ventricles of brain, CSF circulation.

Kinesiology

Basic Concepts, Muscular system, Joints, MachineryMusculoskeletal system, Principles of Motion, Principles of force and work, Basics of the development of motor skill, Principles of stability, Postural principles

PRACTICAL

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.

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 Histology Jaypee, New Delhi Latest



BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	HUMAN PHYSIOLOGY	BPT-102

HUMAN PHYSIOLOGY

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.

Course Outcome:

1. The students understand the details of Physiological functions of human body.
2. To Students gain knowledge and the application of physiological functions & uses of exercise in relation to physical therapy
3. The Major area of learning in detail about the functions of heart, cardio-respiratory system , Musculo-skeletal and nervous system.

Coursr Conent:

GENERAL PHYSIOLOGY

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

CARDIOVASCULAR SYSTEM

General introduction of cardiovascular systems, Structure and properties of Cardiac muscle, Dynamics of blood & lymph flow, Anatomical, biophysical consideration of arterial, arteriolar & capillary venous level, Lymphatic circulation, Cardiac cycle and Heart sounds, Mechanical events of Cardiac cycle, Cardiac output, its regulation, Origin and spread of cardiac excitation, Basic idea of Electrocardiogram and Interpretation of normal Electrocardiogram., Cardiac output and cardiac failure, Venous return, Heart rate and its regulation.

RESPIRATORY SYSTEM

Functional anatomy of Respiratory System , Physiological anatomy of lungs, mechanics of respiration, Mechanics of breathing: Mechanism of inspiration and Expiration, intra-pleural and intra-alveolar pressures, Compliance, Surfactant, Air-way resistance and work of breathing, Pulmonary circulation, Respiratory membrane and Gas exchange in



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Lungs, Composition of gases and Partial pressures, Oxygen and Carbon-dioxide transport, Other function of respiratory system

CARDIO RESPIRATORY ADJUSTMENTS IN HEALTH & DISEASE

Exercise, high altitude, deep sea diving, Hypoxia, hypercapnia, hypocapnia, oxygen treatment, Asthma, emphysema, artificial respiration

BLOOD

W.B.C., R.B.C., Platelets formation & functions, Plasma, Blood Groups, Haemostasis, Immunity

RENAL SYSTEM

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

DIGESTIVE SYSTEM

Digestion & absorption of nutrients, Gastrointestinal secretions & their regulation, Movements of G.I.T, Functions of Liver & Exocrine Pancreas

NERVE - MUSCLE AND SYNAPTIC & JUNCTION TRANSMISSION

Nerve – General Concept, Nerve cell – structure, Genesis of resting membrane potential & Action potential, Their ionic basis, All or None phenomenon, Ionic basis of nerve conduction, Classification & types of nerve fiber, Mixed nerves & compound action potential, Concept of nerve injury & Wallerian degeneration, Muscle properties and functions, Electric & Mechanical responses & their basis, Concept of isometric & isotonic muscle contraction, Electrical events in postsynaptic neurons

NERVOUS SYSTEM (descriptive)

Organization of Nervous system., Neuron and Neuralgia, Synapse: Properties and Synaptic transmission, Reflex arc, its components, properties, type and neurological impairments, General sensations and their properties, Ascending tracts of the Spinal cord and effects of their lesions, Pain and physiological Analgesia, Motor neurons, Descending tracts and their applied aspects, Regulation of Muscle Tone by Spinal and Supra-spinal mechanism, Function of Brain -stem, Cerebellum, Basal Ganglia and Motor cortex, Control of Voluntary movement

HIGHER FUNCTIONS OF NERVOUS SYSTEM

Learning & memory, neocortex: Limbic functions, sexual behaviour, fear & range, motivation



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SPECIAL SENSES

Functional anatomy of the Eye, Optics of Vision, Retinal Function, Visual Pathways, Mechanism of Hearing, Sensation of Taste and Smell.

ENDOCRINE

Role of Hypothalamus as an endocrine gland, Functions and hypo & hyper secretion of hormones of Pituitary, Thyroid, Parathyroid, Adrenal, Endocrine part of pancreas.

REPRODUCTIVE SYSTEM

Male & female reproductive system, Spermatogenesis, Functions of Testosterone., Ovarian and Menstrual Cycle and their hormonal control, Hormones of Ovary and their functions, Physiological basis of Fertilization, Implantation, Pregnancy, Parturition and Lactation, Contraception.

EXERCISE PHYSIOLOGY

Effects of acute & chronic exercises, Oxygen/CO₂ transport – O₂ debt, Effects of Exercises on muscle strength, power, endurance, B.M.R., R.Q.- hormonal & metabolic effects respiratory & cardiac conditioning, Aging, training, fatigue & recovery, Fitness- related to age, gender, & body type.

SKIN AND BODY TEMPERATURE REGULATION

Functional anatomy of the Skin and its function, Different mechanisms involved in body temperature regulation, Physiological basis of Pyrexia and Hypothermia

PRACTICAL

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

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 Respiratory system, Cardiovascular system, Central Nervous system., Special senses, Estimate of Haemoglobin, T.R.B.C., T.W.B.C. count (demonstration only), Study of Graphs, Blood indices, Blood grouping, Bleeding & Clotting time (demonstration only]



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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



BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	FUNDAMENTALS OF PHYSICS, BIOMECHANICS & EXERCISE THERAPY	BPT-103

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 Outcome:

After completing this course the ability of the student to understand the basic principles of Physics, how physics is applied in human body, Biomechanics, exercise therapy, basic principles and application of soft tissue manipulation and their uses & functions.

Course Content:

Mechanics - Definition of mechanics and Biomechanics

Force - Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle, Momentum - principles, and practical application, Friction, Gravity - Definition, line of gravity, Centre of gravity, Equilibrium - Supporting base, types, and equilibrium in static and dynamic state, Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body. Pulleys - system of pulleys, types and application, Elasticity - Definition, stress, strain, HOOKE'S Law, Springs - properties of springs, springs in series and parallel, elastic materials in use, 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

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

PRACTICAL

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 Normal gait and posture



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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



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BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	FUNDAMENTALS OF MEDICAL ELECTRONICS & PRINCIPLES OF BIOELECTRICAL MODALITIES	BPT-104

Course Objective:

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

Course Outcome:

After completing this course the student will be understand and use the basic electricity, electronics, equipments and their potential in the field of biological applications which are used in Electrotherapy.

Course Contents:

Section – A: FUNDAMENTALS OF MEDICAL ELECTRONICS & MAGNETISM

DC Currents -Modern concept of electricity: fundamental electric charges (proton and electron), bound and free electrons, free electrons and current, static electric charge, charging of an object, potential and capacitance, potential difference and EMF, A. C. currents: Sinusoidal wave from, frequency, wavelength, Amplitude and phase of a sine wave, Average & RMS value of a sine wave, Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm's law, resistances in series and parallel, Capacitors: Electric field around a capacitor, charging and discharging of capacitor, types of capacitor with application of each in Physiotherapy department, Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department, Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention, 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, Construction and application of Cathode Ray Oscilloscope, Semiconductor Devices: Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices, Basing of Diode and their characteristics, Light Emitting Diodes, integrated circuits, Advantage of semiconductor devices over thermionic valve, Electronic Circuits: Rectifiers, Wheat stone bridge & smoothing circuits, Oscillators and its types, A.C. AND D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters, Introduction to Therapeutic Energies – Thermal, Mechanical, Electrical, Electromagnetic and magnetic Definition, description, Electromagnetic spectrum, physiological effects, pathological effects and dangers



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Section – C: Bioelectrical Modalities

Medical Instrumentation For Physical Therapy: Brief description of generation, circuit diagrams and testing, Low frequency currents, Direct currents, Medium frequency currents, Short wave Diathermy-continuous and pulsed, Microwave Diathermy, Ultrasound, Actino-therapy – Infrared- Types of generators , UVR-generators , types, dosimetry and LASER- Productions & instrumentation, classification and physiological effects.

PRACTICAL

Demonstration of Bioelectrical principles

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

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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
5. Michlovitz, S L; Thermal Agents in Rehabilitation, F A Davis, Philadelphia



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Course	Subject	Subject Code
Bachelor of Physiotherapy	PSYCHOLOGY & SOCIOLOGY	BPT-105

Course objectives:

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

Course objectives:

Once completed this course will enable the student to understand specific psychological factors about the patients and their uses in physical illness and allow them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge from the hospitals and get job in different clinics & hospitals.

PSYCHOLOGY (PART – A)

Course Contents:-

What is psychology? Fields of application of psychology, influence of heredity and environment on the individual, Learning – theories & principles learning, Memory, Forgetting, theories of memory and forgetting, thinking & methods to improve memory, Thinking – process, problem solving, decision making and creative thinking, Motivation - theories and types of Motivation, Emotions - theories of Emotions and stress, Attitudes – theories, attitudes and behaviour, factors in attitude change, Intelligence - theories of intelligence, Personality, theories of personality, factors influencing personality, Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age, Behavior - normal and abnormal, Counseling - Definition, Aims and principles, Psychotherapy – brief introduction to paradigms in psychopathology and therapy, Disorders of under and over controlled behavior, Eating disorders

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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SOCIOLOGY (PART – B)

Course Contents:-

A-Introduction

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

The meaning of Social Factors. The role of Social factors and illness., Socialization, Meaning and nature of Socialization., Primary, Secondary, and Anticipatory Socialization., Agencies of Socialization.

Social Groups: Concepts of social groups, Influence of formal and informal groups on health and sickness, The roll of primary groups and secondary groups in the hospital and rehabilitation settings, The family - Meaning and definition, Functions, Changing family Patterns, Influence of family on the individual health, family, and nutrition, The effects of sickness on family and psychosomatic disease and their importance to Physiotherapy, Rural community – Meaning and features – Health hazards of rural population, Urban community – Meaning and features – Health hazards of urban population G-Culture and Health:Concept of culture, Cultures and Behaviour, Cultural meaning of sickness

Culture and health disorders H-Social,

Social problems of disabled: Consequences of the following social problems in relation to sickness and Disability, remedies to prevent these problems, Population explosion., Poverty and unemployment, Beggary, Juvenile delinquency, Prostitution, Alcoholism, Problems of women in employment, Social security: Social security and social legislation in relation to the Disabled, Social worker: Meaning of social work; the role of a medical social worker.

Suggested Readings:

- 1.Bhusan, Vidya and Sachdeva, D.R.; Introduction to Sociology Kitab Mahal, New Delhi
- 2.Turner, J. H.; Structure of Sociological Theory, Jaipur Publication
3. Anand Kumar Indian Society and Culture Vivek, New Delhi



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BACHELOR OF PHYSIOTHERAPY (BPT)

BPT SECOND YEAR

S.No	Subject Code	Subject	Sessional						
			Internal Assessment		Theory		Practical		Total
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks
1.	BPT201	Pathology & Microbiology	50	20	100	40	50	20	200
2.	BPT202	Biochemistry & Pharmacology	50	20	100	40	50	20	200
3.	BPT203	Medicine including Pediatrics & Geriatrics	50	20	100	40	50	20	200
4.	BPT204	General Surgery, Obstetrics & Gynecology	50	20	100	40	50	20	200
5.	BPT205	Exercise therapy including Yoga	50	20	100	40	50	20	200
6.	BPT206	Electrotherapy	50	20	100	40	50	20	200
Total			300	120	600	240	300	120	1200



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BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	Pathology & Microbiology	BPT-201

Course objectives:

Rationale for understanding of the subject for Physiotherapy students

Brief concept of pathological basis of disease and infectious disease prevention

Course Outcome:

After understanding of the subject for Physiotherapy students can apply for Physiotherapy clinics or can start there own clinic and use the concept of physiotherapy disease cure & prevention .

Brief concept of pathological basis of disease and infectious disease prevention

Course Contents:-

Aims and objectives of study of pathology, Concept of Diseases, Classification of Lesions, Brief outline of cell injury, degeneration, necrosis and gangrene, Brief concepts of inflammation and Repair, Degeneration, Necrosis and Gangrenes. Inflammation, Definition, vascular and cellular phenomenon, differences between transudate and exudates , granuloma, Deficiency Diseases vitamin A, vitamin B, vitamin C, vitamin D, Vascular disturbances: Oedema, Thrombosis, Embolism, Hemorrhage and Shock, Blood Disorder: Anemia, Leukemia, Hemorrhagic disorders, Neoplasia: Brief overview of Tumors, Definition, Classification, Etiology and spread of tumors, Benign versus Malignant tumors

In brief about:

Respiratory system diseases- Etio-pathogenesis, gross pathology of conditions - aging , Pneumonia, Bronchitis, Bronchiectasis, COPD, Asthma, Emphysema, Pulmonary Tuberculosis, Lung cancers, Restrictive Lung disease and Occupational Lung diseases, Cardiovascular system: – Etio-pathogenesis, gross pathology of conditions- aging, IHD, myocardial infarction, CCF, HT, Rheumatic heart disease, Congenital heart disease, Arteriosclerosis, Thrombo-angitis, Vasomotor-Raynaud's, venous thrombosis, Gangrene, Lymph edema.

Alimentary system – Peptic ulcer, Carcinoma of stomach, Ulcerative lesions of Intestine, Liver – Hepatitis, Cirrhosis and Hepatoma, Pancreas – Pancreatitis, Carcinoma of Pancreas, Diabetes.



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Details about:

CNS and PNS: Etio-pathogenesis, gross pathology of conditions - Aging, Meningitis, Encephalitis, Parkinson's, Amyotrophic lateral sclerosis, Ataxias, Multiple Sclerosis, stroke, Neuropathies (Carotid Marie Tooth's disease, Compression and entrapments, diabetic, G.B syndrome), Poliomyelitis and post-polio syndrome, Myasthenia Gravis, brief outline of C.N.S. Tumours and peripheral nerve lesions.

Musculoskeletal system (Bones and Joints): Etio-pathogenesis, gross pathology of conditions - osteomalacia, Osteoporosis, Osteomyelitis, Osteoarthritis, rheumatoid arthritis, Gout, spondyloarthropathy, Osteonecrosis, bone tumors, Myofascial pain syndrome. Biological responses to trauma, bone and soft tissue immobilization, Muscle – Poliomyelitis, Myopathies, Volkman's ischemic contracture, Skin – Scleroderma, Psoriasis, Autoimmune disorders.

In brief about

Urinary system – Nephrotic syndrome, Nephritis, Glomerulonephritis, Prostate –Prostatitis, BPH, Carcinoma of Prostate, Endocrine – Thyroid, Thyroiditis, Thyroid Tumours, Salivary gland – Salivary gland tumours.

SECTION B: MICROBIOLOGY

Course Contents

General Microbiology; Introduction and historical background, Classification of Microorganisms, Morphology of bacteria, Sterilization and disinfection, Immunity – Antigens and Antibodies, General overview of antigen antibody reaction and practical applications.

Systemic Microbiology; Gram Positive cocci – Staph, Strepto, Pneumococci, Gram-negative cocci – Gonococci and Meningococci, Gram positive bacilli – Tubercle bacilli, Lepa bacilli, Clostridium tetani, Clostridium perfringens, Gram negative bacilli – Salmonella, Coliforms, pseudomonas, proteus etc, Anaerobic non – sporing cocci and bacilli, Virology – General introduction, brief description of polio virus, Rubella Hepatitis-B and AIDS (diagnosis, prevention and treatment), Spirochetes- Syphilis (congenital and acquired), Malaria, Mycology – Actinomycosis, Maduramycosis, Mucosal Candidiasis, Applied microbiology as relevant to diseases of bones, joints, Muscles, Skin, Infection and Bums.

Demonstratio; .Demonstration of collection of clinical specimen., Demonstration of morphology and culture of organisms, Demonstration of simple Gram's and Ziehl- Neelsen staining, Sterilization and Disinfection techniques, Demonstration of serological tests for syphilis, Hepatitis.

PRACTICAL

Gross pathology of Pneumonia, COPD, Pulmonary Tuberculosis , osteoarthritis
Demonstration of collection of clinical specimen, Sterilization and Disinfection techniques

Suggested Readings:

- 1 Chakraborty, P. Textbook of Microbiology NCB, Calcutta 1999
- 2 Ananth Narayan, R. Text Book of Microbiology Orient Longman, Madras 1986



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- 3 Chatterjee, K. D. Parasitology: Protozoology and helminthology Chatterjee, Calcutta 1965
- 4 Cotran, Ramzi S Pathologic Basis of Disease W. B. Saunders, Singapore 1999
- 5 Vinay Kumar Basic Pathology Harcourt 1997
- 6 Nagalotimath, S.J. Textbook of Pathology CBS, New Delhi 1998
- 7 Talib, V. H. Essential Parasitology Mehta, New Delhi 2001



BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	BIOCHEMISRTY & PHARMACOLOGY	BPT-202

Course Objective:

To understand biochemical basis of life sciences

Course Outcome:

After finishing the course the student with basic Biochemistry knowledge with special emphasis on clinical understanding of biochemistry processes. Students shall be able to relate these processes with underlying mechanism of physiotherapeutics.

Course Contents:-

Basic Biophysics: Concept of Acid base, buffer, Henderson- Hasselbach equation, brief knowledge of biophysical process such as Osmosis. Viscosity, Surface tension, Dialysis with special emphasis on their biomedical implication. A brief study of Radio-isotopes and their clinical applications.

General Biochemistry with Biomedical functions

Nutrition: Basic principles of nutrition; Carbohydrates, Proteins and Lipid caloric requirement and balance diet, Carbohydrates: Definition, classification with examples and general functions, Metabolism - Glycolysis, T.C.A Glycogen metabolism, Blood Sugar regulation, Diabetes and diabetic keto-acidosis, Lipids: Definition, classifications and general functions. Essential fatty acids, cholesterol, Blood lipids. Brief review of lipoproteins. Metabolism-Oxidation of fatty acids, cholesterol synthesis, and fatty liver, Proteins: Definition, classification, and Bio-medical Importance, Study of hemoglobin and immunoglobulins with functions, Plasma Proteins and functions. Metabolism: General reactions of amino acids. Formation and fate of ammonia - Urea cycle, Nucleic Acids: Brief overview of the structure of RNA and DNA including Nucleosides and Nucleotides. Study of few biologically important nucleotides, Tissue chemistry: Chemistry of connective tissue, bone and teeth. Composition function and chemical mediators of nerve structure of muscle tissue. General Biochemistry of muscle contraction and relaxation.

Bioenergetics

Study of Plasma Membrane, Review of laws of thermodynamics as applicable to biological systems. Concept of free energy charge. High-energy compounds and Respiratory chain.

General Metabolism

Carbohydrate metabolism: Glycolysis, TCA, Glycogen metabolism, blood sugar regulation, Diabetes and Diabetic Ketoacidosis, Lipids Metabolism: Beta-oxidation of Fatty acids, Fatty acid synthesis, cholesterol synthesis, Ketosis and Fatty liver, Protein Metabolism: General reaction of Amino acids, Formation and fate of Ammonia, Urea cycle, Purine and Pyrimidine: Only catabolism of Purine to be Stressed in detail with special emphasis on Gout. General breakdown of Pyrimidine and associated disorders.



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General outline of fluid compartments of the body with their water and electrolyte content and balance, Dehydration.

Book References

1. Textbook of Biochemistry by West and Todd.
2. Textbook of Medical Biochemistry by Chatterjee and Shinde
3. Principles of Biochemistry by A. Lehninger.
4. Textbook of Biochemistry by A.C. Deb
5. Ahuja, Lakshmi CBS Quick Review in Biochemistry CBS, New Delhi
6. Chatterji, M N Text Book of Medical Biochemistry Jaypee, Bangalore
7. Deb, A.C. Fundamentals of Biochemistry CBA, Calcutta
8. Lehninger, A.L. Principles of Biochemistry CBS, Delhi



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SECTION : B – PHARMACOLOGY

Course Objective

The objective of the course in Pharmacology is that after 40 hours of lectures and demonstration, the students shall be able to understand and correlate the biochemical process involved with drugs in human body and their clinical importance especially in physiotherapeutic, in addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral, practical and internal evaluation) the following objectives of the courses.

To understand pharmaco-kinetics, pharmaco-dynamics, Usage of common drugs with (indications, contraindications, side effects), To understand the drug actions that may affect the physical therapy treatment, Course is not prescription oriented.

Course Contents:-

General Pharmacology (Brief description only)

Definition of drug, Pharmacokinetics and Pharmacodynamics, Broad categories of adverse drug reactions, Alcohols, Analgesics and Antipyretics, anti-inflammatory drugs, Sedatives, Stimulants, Drugs acting on muscles- Muscle relaxants, Muscle stimulants, Anti-parkinsonism agents, Anti-cancer drugs, Drugs acting on respiratory systems: Respiratory stimulants and respiratorydepressants, Bronchodilators, Expectorants. Anti-Asthmatics, Anti-tussive, Vitamins, Ovarian hormones, Anabolic steroids, Estrogen, Progesterone, Androgen, Locally acting drugs: Anodies ,Local anesthetic drugs, Counter-irritants Rubefacient, Soothing agent, Anti-microbial.

PRACTICAL

General outline, values of fluid compartments of the body with their water and electrolyte content and balance, Dehydration.

Routes of drug administration.

Books Suggested :-

1. Pharmacology by Satoskar
2. Clinical Pharmacology by Lawrence.
3. Textbook of Pharmacology by B.N. Ghose.
4. Tripathi, K.D.Essential of Medical Pharmacology New Delhi



BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	MEDICINE INCLUDING PAEDIATRICS & GERIATRICS	BPT-203

Course Objective:

The objective of this course is that students at the end of course shall have a broad understanding about common medical diseases, which they would be handling as a physiotherapist. They should have a brief idea about Etiology, pathology, Type and Degree of Disability the patient will have as a result of the disease, so that he/she as a physiotherapist with physician should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

Course Outcome:

Once completed the course in Paediatrics the students understand patients physiocology and its special needs in relation to physical therapy.

\This course is that students at the end of course shall have a broad understanding about common medical diseases, which they would be handling as a physiotherapist. They should have a brief idea about Etiology, pathology, Type and Degree of Disability the patient will have as a result of the disease, so that he/she as a physiotherapist with physician should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

Course Contents:-

Infections

Outline briefly the Etiology, symptoms and brief management of the following disease, Bacterial – Tetanus, Typhoid, Viral – Herpes simplex, Herpes Zoster, Measles, Hepatitis –B. and HIV, Protozal – Filariasis, Malaria, Amoebiasis.

Diseases of blood.

Define and describe clinical aspects of Nutritional Anaemias, Brief description of Bleeding Disorder with emphasis to Haemophilia, Lymphadenopathy and splenomegaly, Leukaemia – acute and chronic, **Diseases of Liver**; Jaundice, Viral Hepatitis, Cirrhosis of Liver, **GIT Diseases (Brief description)**; Peptic Ulcer, Diarrhea and Dysentery, **Renal Diseases**; Brief description of acute and Chronic renal Failure, Urinary Tract Infection, Acute Nephritis, Nephrotic Syndrome.

Nutritional and Metabolic Disease; Balanced normal diet, Protein Calorie Malnutrition, Avitaminosis of both water and fat-soluble vitamins, Diabetes mellitus – Definition, Classification and complications, brief description of management of diabetes mellitus, Obesity – Etiology and management., Hyper and Hypo-thyroidism, Calcium Homeostasis, Gigantism and Acromegaly.

Diseases of Bones, Joints and Connective tissue; Brief introduction to understanding of Auto immune diseases, Rheumatic fever and Rheumatoid arthritis – Aetio pathogenesis, Clinical features, complications, diagnosis and briefly outline the management, Brief description of Systemic Lupus Erythematosus, Polyarteritis Nodosa, Dermatomyositis, Scleroderma, Osteoarthritis – Aetiopathogenesis, clinical feature, diagnosis, complication and management.

Genetics and Diseases: Common inherited disorders, Prevention of genetic disorders.



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PAEDIATRICS

Normal Growth and development of child – motor, mental, language and social from birth including physical, social, adaptive development, Pathological presentations of growth and development disorders, Common infectious diseases in children: Brief description of following infectious diseases along with outline of management: Tetanus, diphtheria, Mycobacterial, measles, chicken pox, gastroenteritis, HIV, and Malaria

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

Child and nutrition - Nutritional requirements, malnutrition syndrome, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies in children and management in brief, Clinical presentation, management & prevention of the following: - Cerebral palsy, Poliomyelitis, Muscular dystrophy, Childhood rheumatism-types, clinical presentation, & management in brief, Acute CNS infections: clinical presentation, complications and management of bacterial and tubercular infections in brief, Clinical presentation, management & prevention of the following respiratory conditions: URI, LRI, bronchiolitis, asthma, TB. Clinical presentation, management & prevention of the following cardiac conditions: Rheumatic heart disease, SAE, Congenital heart disease - ASD, VSD, PDA (in brief)

Practical:-

Students shall be posted for one month in general Medicine ward. They shall do clinical checking and ward work to acquaint themselves to General Medicine and pediatrics.

Book References:-

1. Davidson Principles and Practice of Medicine (Churchill Livingstone)
2. Chamberlin, E.N. and Ogilvie, C. Symptoms and signs in Clinical Medicine Jhon Wright
3. Swash, Michael Hutchison's Clinical Methods W B Saunders, London
4. Ghai, O. P. Essential Pediatrics Interprint, New Delhi
5. Haslett, C. Davidson's Principles and Practice of Medicine Churchill Livingstone, London
6. Golwalla, Aspi F. Medicine For Student NBD, Mumbai
7. Behrman, R. Nelson's Text Book of Pediatrics W B Saunders, London



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BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	GENERAL SURGERY, OBSTETRICS & GYNECOLOGY	BPT-204

Course Outcome;

This course follows the basic course on Anatomy, Physiology, Psychology, Sociology, Pathology and Microbiology and provides knowledge about relevant aspects of general surgery, Plastic surgery, Pediatrics, E.N.T. Ophthalmology, Obstetrics and Gynecology and Radiology with emphasis on physiotherapeutic.

Course Objectives

The objective of this course is that students at the end of course shall have a broad understanding about common surgical diseases, which they would be handling as a physiotherapist. They should have a brief idea about etiology, pathology and type and degree of disability the patient will have as a result of the disease, so that he/she as a Physiotherapist with surgeon should help the patient to achieve cure and/or ameliorate his/her illness and sufferings

SECTION:A- GENERAL SURGERY

Course Contents:-

Introduction: Description of events frequently accompanying general Anesthesia, Blood transfusion and physiological response of the body, Wounds, scars, ulcers, boils, carbuncles etc, Principles of pre- and post –operative physical examination, investigations, postoperative complications and their management, **Abdominal surgery:** Incisions, complications and management of following:Nephrectomy, Appendicectomy, Herniorrhaphy, Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy, Ileostomy, Incisional hernia and its prevention, **Burns:** Causes, Classification, Medical management and precautions in the acute stage, complications of burns and their management, **Plastic Surgery:**Principles of plastic surgery, post – operative management and complications, Cineplasty, Principles of cosmetic surgerySkin grafting, Surgery of Hand with emphasis on management of traumatic & leprosy hand, Burns and plastic surgery management.



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Practical

Clinical assessment of neurological function to be taught through bedside or demonstration in clinics, of the following: Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved, Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language.

~~Assessment of Cranial nerves, Assessment of Motor system, Assessment of Sensory function, Touch, Pain and Position, Assessment of Tone-Spasticity, Rigidity and Hypotonia, Assessment of Cerebral function, Assessment of Higher cortical function – Apraxia, Assessment of Gait Abnormalities.~~

Students shall be posted for 10 hrs. in Neurosurgery units. They shall do clinical checking and ward work to acquaint themselves to neurological and surgical conditions.

Ophthalmology: Etiology, symptomatology and treatment of visual defects emphasis on Errors of Refraction, Squint, Conjunctivitis, Trachoma, Corneal ulcers, Iritis, Cataract, Retinitis, Detachment of retina and Glaucoma (lecture demonstration only-10 Hrs.) **E.N.T.:-** Etiology, symptomatology and treatment of sinusitis, Rhinitis, Acute and Chronic Otitis, Otosclerosis, Mastoidectomy and loss of hearing. (lecture demonstration only-10 Hrs.)

Book References

1. Surgery by Nan.
2. Surgery by Baily & Love –
3. Short Practice of Surgery by Rain & Ritelife.
4. Russell, R.C.G. Short practice In Surgery Arnold, London
5. Gupta, R. L. Text Book of Surgery Jaypee, New Delhi



BACHELOR OF PHYSIOTHERAPY (BPT)

SECTION: B OBSTETRICS AND GYNECOLOGY

Course objectives:

To understand common gynaecological conditions and procedures (in brief)

To understand implications of gynaecological conditions and procedures on physical therapy

Course Contents:

Brief Anatomy and physiology of female reproductive system, Basic principles of clinical examination, investigation, diagnosis, prognosis of female reproductive system disorders, Menstruation and its disorders, Physiological changes during pregnancy, Antenatal care and diagnosis of pregnancy including high-risk pregnancy, Labour, stage of labour, normal and abnormal labour, Delivery and management of neonate, Puerperium & postnatal care, social obstetrics- maternal & perinatal mortality, Pelvic pain and its management : Musculo-skeletal problems in an obstetric patient, management, Importance Gynecological condition, a short review of PID, Tumors, malignancies, infertility, Endometriosis, Ectopic pregnancy, Vesicular mole; Prenatal and post-natal care, Prolapse Uterus, causes of incontinence of urine, type and management, Pelvic inflammatory diseases, Abortion and birth control, Surgical consideration in obstetrics and gynecology.

Practical

Students shall be posted for one month in General Surgery, plastic and burns, obstetrics and Gynecology & Radiology units. They will do clinical checking and ward work to acquaint themselves to General Surgical and Obs. & Gyn. conditions.

Suggested Readings:-

1. Gynaecology and Obstetrics in the Health care of a Woman by Seymoul L. Romney, Mary Jane Gray, J. A. Merrill.
 2. Shaw's Textbook of Gynecology.
 3. Jeffcoat's Principles of Gynecology.
 4. General Surgical Operations by R.M. Kirk and R.C.N. Williamson.
 5. Howkins, John Shaw's Textbook of Gynecology Orient-Longman, Bangalore
 6. Datta, D.C. Textbook of Obstetrics NCBA, Calcutta
 7. Mudaliar, A.L. Clinical Obstetrics Orient-Long main, Bangalore
 8. Percival, Robert Manual of Obstetrics ELBS, London
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BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	EXERCISE THERAPY INCLUDING YOGA	BPT-205

Course Outcome;

In these courses, the student shall learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

Courses Objective

To understand the principles of exercise therapy and its application as a treatment modality. The objectives of this course is that after 200 hours of lectures, demonstrations, practical and clinical, the students shall be able to list the indications and contraindications of various types of exercise and demonstrate the different techniques and describe their effects. In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective of the course.

Course Contents:-

Introduction to Exercise Therapy, Exercise and physiology of body, Psychogenic and Pharmacological aspects of exercise, Classification of movements in details :- **Active voluntary movements** : Free, assisted and resisted; Indication, contraindications, advantages and techniques of various types of active exercises, Clinical methods of strengthening of various muscle groups. - **Involuntary movements, Passive movements**: Definition, types- Relaxed, forced and stretching type, Indications, contraindications, advantages and Techniques of various passive movements. Voluntary Movements :- Free exercises, assisted exercises, Resisted exercise ; Free exercises – Classification technique effects of free exercise on various systems, Resisted exercises – technique and types of resistance, SET system (heavy resisted exercise, Oxford method, Delorme method, McQueen’s method), Relaxed passive movement- Definition, Classification of relaxed passive movements, Technique, effects and uses of relaxed passive movements.

Muscle strength – Anatomy and Physiology of muscle tissue, Causes of muscle weakness/paralysis, Prevention of muscle weakness/paralysis. Type of muscle work and contractions, Torque of muscle work, Muscle assessment M.R.C. grading, Principles of muscle strengthening/re-education, early re-education of a paralyzed muscle etc. , Strengthening technique, Endurance training, Therapeutic Gymnasium., Manual Muscle Testing: Concept, introduction, significance and limitations. Grade systems, Techniques of Muscle testing. Emphasis on skills to grade upper, lower limb, neck and trunk muscles including trick movements, Joint movement-Classification of joint movements, Causes for restrictions of joint movement, prevention of restriction of joint range of motion. principles of mobilization of joint, increasing its range of motion, technique of mobilization of stiff joint. Accessory movements- glides, traction and approximation, Mobilization of peripheral, spinal joints, techniques and grading in detail, Manipulation therapy: Introduction, Principles of therapy, Indications and Contraindication (no clinical application of these techniques), Co-ordination: Balance – Static and Dynamic, Hydrostatics and Hydrodynamics



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:
Hydrotherapy : Indication, contraindication, benefits, dangers and precautions, Hydrotherapy regimes of exercises, Hydrotherapy exercise for all age groups, Types of pools and baths, Soft tissue manipulations Techniques of application, Kneading and picking up, rolling (back) Clapping, Tapping, Friction, Isometric exercise and Isotonic exercise, Exercises of the shoulder and hip and evaluation, Exercise of hand, foot and evaluation, Exercise of the knee and elbow and evaluation, Spinal exercises including neck exercises, Starting position

Yogasanas and Pranayama: Physiology and therapeutic principles of yoga, Yogasanas and their scientific studies, Concept of total yoga discipline , Yogasana for physical culture, relaxation and medication., Psycho-physiological aspects yoga procedures , Psychological aspects of yoga, Psycho-social aspects of yoga , Yogasanas for physical fitness, relaxation, flexibility and meditation .
Therapeutic application of yoga- Application of Yogasana in flexibility, cardio-respiratory rehabilitation, Neuro motor learning , Yoga a holistic approach

EXERCISE THERAPY INCLUDING YOGA; PRACTICAL

Demonstration and learning of active & passive movements of Limbs and spine, Demonstration and practice of Manual Muscle testing, Goniometry Demonstration and practice of muscle stretching techniques Demonstration and practice of muscle strengthening techniques, Demonstration and practice of muscle reeducation techniques, Demonstration and practice of coordination exercises (Frankel's), Demonstration and practice of relaxation techniques, Demonstration and practice of all types of soft tissue manipulation, mobilization of peripheral joints, various types of manipulations demonstrated and practiced to Upper limbs, Lower Limbs, Neck and Face appropriately, Demonstration of normal and pathological gaits and crutch walking. Demonstration and practice of suspension techniques

Demonstration and Practice of Functional Re-education Technique. Demonstration and Practice of various Yogasana & Pranayama .



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Suggested Books for Readings:

- 1 Hollis, M. and Cook, P.F. Practical Exercise Therapy Blackwell, Oxford
- 2 Gardiner, Dena M. Principles of Exercise Therapy CBS, New Delhi
- 3 Lippert, Lynn Clinical Kinesiology for Physical Therapy Jaypee, New Delhi
- 4 Paliarulo, M. A. Introduction to Physical Therapy Mosby, London
- 5 Jones and Barker, Human Movement Explained Butter worth- Heine
- 6 Thomson, Ann Tidy's Physiotherapy Varghese, Mumbai
- 7 Hislop, H.J. and Montgomery, J.Daniels and Worthingham's uscle
Testing: Techniques of Manual Examination W.B.Saunders, Philadelphia
- 8 Norkin Measurement of Joint Motion
- 9 Kisner, C. and Kolby, L.A. Therapeutic Exercise Foundation and Technique Jaypee, New Delhi
- 10 Holey, E. and Cook, E.Therapeutic Massage Harcourt, Singapore
- 11 Bates, Andrea and Hanson, Norm Aquatic Exercise Therapy W.B.Saunders, Philedelphia
- 12 Kendal, F.P. Muscles Testing and Function Lippincott, New York
- 13 Campion, M. R. Hydrotherapy: principles and Practice Butterworth, Oxford
- 14 Perry, Jan F Kinesiology Workbook F A Davis, Philadelphia
- 15 Adler, S.S. PNF in Practice Springer, New York
16. Aids to P.T. by J.M. Lee.
- 17.Therapeutic Exercise by Basmajian.
- 18.Aliimco all Volumes.



BACHELOR OF PHYSIOTHERAPY (BPT)

Course	Subject	Subject Code
Bachelor of Physiotherapy	ELECTROTHERAPY	BPT-206

Course Objective -

The objective of this course is that after 200 hours of lectures, demonstration, practical and clinics, the students shall be able to list the indications and contraindications of various types of electrotherapy, modalities and demonstrate the different techniques and describe their effect. In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective of the course-

To list indications and contraindications of various Modalities.

To understand different techniques of applications, their justification and effects.

Demonstration of individual techniques of applications of various modalities.

Course Outcome:

In this course the student shall learn the principles, techniques and effects of electrotherapy as a therapeutic modality in the restoration of physical function.

Course Contents:-

LOW FREQUENCY CURRENTS:

Nerve Muscle Physiology - Resting potential, Action potential, propagation of action potential, in myelinated and un myelinated nerve fiber, Motor unit, and Synapse and Synaptic transmission of Impulse. Effect of negative and positive electrodes on nerve and accommodation of the nerve.

Faradic Current - Definition, Characteristic of original Faradic current, modified faradic plane faradic current interrupted faradic current and surged faradic current, parameters, indication, effect on denervated muscles, innervated muscles, technique of application, group muscles stimulation, individual muscle stimulation, faradic bath, faradic under pressure, pelvic floor muscle reeducation, therapeutic effect of faradic current, contraindication and dangers.

Galvanic Current – Classification of Galvanic current: Plain galvanic current, Interrupted galvanic current

Electro-Diagnosis -S.D. Curve, Chronaxae and Rheobase, Nerve Conduction, EMG, Nerve Conduction Velocity Measurement (outline only).

TENS:- Definition, parameters and wave form, pain gate theory of pain modulation, techniques of application, therapeutic effect and contraindication.



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MEDIUM FREQUENCY CURRENTS: Definitions, effects, indications, techniques of application, contraindications, Interferential therapy: Physiological, therapeutic effects & dangers, Indications & contra indications, Technique and method of applications, Dosimetry.

HIGH FREQUENCY CURRENT

Short Wave Diathermy:- Introduction, Principle of application (Capacitor field methods and conductive field methods) preparation of patient, Therapeutic effects, contraindication and dangers of SWD.

Pulsed S.W.D.:- Definition, Characteristic, Principles of Treatment, Therapeutic effects, Indications, Technique of application, Contraindications and dangers.

Microwave Diathermy:- Definition, characteristic of wave, properties of microwave, technique of application, Therapeutic effects, contraindication, and dangers, , precautions and potential harmful effects, Dosimetry

ACTINOTHERAPY:

Infra-Red:- Introduction, Classification, penetration depth, Techniques of application, Dangers and Contraindications .

Ultraviolet Radiation :- Introduction, classification of ultraviolet rays, penetration depth, effect of ultraviolet, Physiological and therapeutic effects- photosensitization, test dose calculation, technique of application, (contact methods non contact methods) Physiological and Therapeutic effect, Indications and contraindications , Potential harmful effects and dangers, Methods of application, Sensitizes, Filters, Dosage, wavelength, penetration, tolerance, Treatment / Application condition wise.

LASER:- (Infrared and red light laser, helium/neon laser and semi conductor laser) Definition, principle of application, (contact methods non contact methods) technique of application, Therapeutic effect and potential harmful effects , dose calculation, indications, contraindications and dangers.

ULTRASONIC THERAPY:- Introduction and Characteristics of the wave parameters, coupling media, Therapeutic effects, Indications, Contraindication and Dangers, Testing of Apparatus, and Techniques of application and dose.

THERMAL THERAPY MODALITIES: Therapeutic effects and uses, Techniques and applications, Indications, contraindications, precautions and Potential harmful effects of various heat modalities:

Paraffin wax bath therapy - Introduction, Preparation of wax, preparation of patient, Method of application, Therapeutic Effects, Indications and Contraindications.

Hydro collator packs (Heating pad, and Moist heat): - Introduction, methods of application, indication, contra indication., Whirlpool and moist heat Heating pads IV. Hot air chambers, fluidotherapy , V. Cryotherapy :- Introduction, Physical Principles, Physiological and Therapeutic effects, Techniques of Application, Indications, precautions and Potential harmful effects of treatment, Contraindications and dangers, Dosimetry.



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ULTRASONIC THERAPY:Physiological and therapeutic effects & potential harmful effects., Indications, contraindications, methods of application and precautions, Dosimetry

Bio Feedback :Introduction, principles of Bio feedback, therapeutic effects of Bio Feedback, Indication and Contraindications, Techniques of Treatment.

Advanced electrotherapy:Computerization of electrotherapy modalities, Programming of parameter of treatment , Appropriate Selection and combination of parameters in therapy . Combined therapy-Microwave with traction, Ultrasonic therapy with stimulation,IFT or TENS-Principles, uses, indications etc.

ELECTROTHERAPY PRACTICAL

Testing of above apparatus, Techniques of application of above treatment modalities(Demonstration & Practice), Demonstration of Electrical Modalities functioning & Usage, Demonstration and practice of various motor point stimulations, Demonstration and practice of therapeutic application of different low frequency currents, Demonstration and practice of Electro diagnosis (demonstration and Practice of following electro diagnostic Measures) F.G. Test, SD curves plotting , Chronaxae and Rheobase, Reaction of degeneration., Demonstration and practice of therapeutic application of the following modalities: Short-wave diathermy, Ultrasound, Infra red, Wax bath, Hydro collator, Electric muscle stimulator, Interferential currents, TENS, Ultraviolet, Microwave, Lasers, and Electrical Traction

Suggested Readings Books:

- 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
- 5 Michlovitz, S L Thermal Agents in Rehabilitation F A Davis, Philadelphia
- 6.B.K.Nanda, Electrotherapy , Jaypee Publication, New Delhi
7. Jagmohan Singh- Electrotherapy , Jaypee Publication, New Delhi.



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Third Year

S.No	Subject Code	Subject	Sessional						
			Internal Assessment		Theory		Practical		Total
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks
1.	BPT301	Neurology including Psychiatry & Neurosurgery	50	20	100	40	50	20	200
2.	BPT302	Orthopaedics	50	20	100	40	50	20	200
3.	BPT303	Applied Biomechanics & Kinesiology	50	20	100	40	50	20	200
4.	BPT304	Physiotherapeutic in Neurology & Neurosurgery	50	20	100	40	50	20	200
5.	BPT305	Physiotherapeutic in Orthopaedic Conditions	50	20	100	40	50	20	200
6.	BPT306	Physical Evaluation, Diagnosis & Prescription	50	20	100	40	50	20	200
Total			300	120	600	240	300	120	1200



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Course	Subject	Subject Code
Bachelor of Physiotherapy	NEUROLOGY INCLUDING PSYCHIATRY & NEUROSURGERY	BPT-301

Course Objectives:

1. To understand clinical condition of Neurological and Neurosurgical disorders
 2. The rationale and implications of psychological disorders on disability
 3. To understand the management of neurological & psychological disorders
- In addition, the student shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objectives of the course.

Course Outcome:

Following the Neurology including Psychiatry and Section-B: Neurosurgery of 100 Max. :- basic science and clinical science courses, this course introduces the student to the neurological and psychological conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any details pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by neurological pathology on the individual.

Course Contents: Section: A NEUROLOGY

Nervous system: Disorders of Neurological functions in the light of Anatomy and Physiology (Brief description only) – Basic Neurophysiology, functional anatomy, tracts, pyramidal and extrapyramidal/cerebellar systems of brain and spinal cord/nerves, Major Nerve Tracts, Motor System, Sensory System, Autonomic System, Communication & CSF, Reflexes:- Physiology of reflexes, genesis of spasticity, rigidity, postural reflex, Bladder and Bowel Control:- Innervations, anatomy, physiology, pathology, clinical & management, Clinical assessment of a neurological patient: Principles of clinical examination and diagnosis, higher mental function, assessment of brain and spinal cord function, Differential diagnosis and Prognosis of Neurological disorders, history taking/overview from perspective of clinical examination.

Brief Description of Headache, migraine, raised intra-cranial pressure, Cranial Nerves and special senses with major emphasis on V, VII, X, XI, & XII, Inflammatory conditions (brief description) – meningitis (bacterial, tubercular), Poliomyelitis, syphilis, rabies, viral encephalitis, Disorders of cerebral circulation –

Stroke:- Etiopathology, clinical features pertaining to artery involved, types, management, Hypertensive encephalopathy



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Demyelinating diseases (brief description) - acute disseminated encephalomyelitis, multiplesclerosis
Movement disorders/ Extra pyramidal syndromes - Parkinson's disease, Chorea, Athetosis, Dystonia, Hemiballismus, Spasmodic Torticollis, Tremors and Writer's Cramps, Cerebellar Ataxia, Friedreich's Ataxia, Convulsive disorders (brief description) - epilepsy (GM, PM, Psychomotor), tetany
Developmental and degenerative syndromes – cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy
Disorders of Spinal cord and Cauda Equina- spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, Non-compressive myelopathies , Neurogenic bladder and bowel.
Peripheral nerve disorders – traumatic/ compression or entrapment neuropathy, polyneuritis, AIDP, CIDP, GB syndrome, diabetic polyneuropathy and spinal radiculopathies. Special emphasis on brachial and lumbo-sacral plexuses and major nerves – radial, ulnar, median, femoral, and sciatic nerve.
Autonomic nervous system (brief description)– clinical features of autonomic disorders, autonomic dysreflexia, autonomic nervous system and pain.
Muscle disorders – Dystrophies (classification clinical features. Beckers muscular dystrophy, Duchennes muscular dystrophy), Progressive muscular dystrophy, polymyositis, myasthenia

Practical

Students shall be posted for 12 hrs. in Neurology units. They shall do clinical checking and ward work to acquaint themselves to neurological and medical conditions

PSYCHIATRY

Brief outline only:- Principles of psychiatric examination, Modalities of psychiatric treatment, Psychiatric illness and physical therapy link. Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses - Anxiety neurosis, Depression, Obsessive compulsive neurosis, Child psychiatry: Brief descriptions of manifestations, and management of childhood disorders - attention deficit syndrome, and behavioral disorders, Geriatric Psychiatry, Mental deficiency- (descriptive) : Mental retardation, Learning disabilities, Autistic behavior



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BACHELOR OF PHYSIOTHERAPY (BPT.)

SECTION: B-NEUROSURGERY

Neurophysiology: Reviews in brief the neurophysiologic basis of tone and Disorders of tone and Posture, Bladder control, Muscle conduction, Movement and Pain. Clinical Features and Management: Briefly outline the clinical features and management of the following neurological disorders. Congenital and Childhood disorders; Hydrocephalus, Spina Bifida. Trauma - Broad localization, first aid and management. Head Injury: : Etiology, pathophysiology, classification, clinical sign and symptoms, investigations, medical management, Surgical management and complications. Pre - operative assessment, Contraindications for Neurosurgery, . Introduction and brief description of indication and complications of following neurosurgeries: Craniotomies, cranioplasty, stereotactic surgery, deep brain stimulation, burr hole, shunting, laminectomy, hemilaminectomy, rhizotomy, microvascular decompression surgery, Endarterectomy, embolization, pituitary surgery, ablative surgery- Thalamotomy and pallidotomy, Neuroimplantation. 10. Infections of brain and Spinal Cord: pathophysiology, classification, clinical sign and symptoms, investigations, differential diagnosis, medical management, surgical management and complications. Management of Pain, Electrical Stimulation of Brain and Spinal cord.

Practical

Clinical assessment of neurological function to be taught through bedside or demonstration in clinics, of the following: Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved. Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language. Assessment of Cranial nerves, Assessment of Motor system, Assessment of Sensory function, Touch, Pain and Position, Assessment of Tone-Spasticity, Rigidity and Hypotonia, Assessment of Cerebral function, Assessment of Higher cortical function – Apraxia, Assessment of Gait Abnormalities.

Students shall be posted for 10 hrs. in Neurosurgery units. They shall do clinical checking and ward work to acquaint themselves to neurological and surgical conditions.

Suggested Reading Books:

- 1 Bannister, R. Brain and Bannister Clinical Neurology Oxford university press, oxford 2002
 - 2 Chamberlain, E.N. Symptoms and Signs in Clinical Medicine John Wright, Bristol 1974
 - 3 Friedman, H.H. Problem-Oriented Medical Diagnosis Little Browne, Boston 1979 3V
 - 4 Swash, Michael Hutchison's Clinical Method W B Saunders, London 2000
 - 5 Rees, Lingford New Short Text Book Of psychiatry Arnold, New Delhi 1988
- Walton, John Brain's Disease of the Nervous System Oxford Univ. 1998 7 Haerer, A.F. Neurological Examination Lippincott, Philadelphia



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	ORTHOPAEDICS	BPT-302

Objective of Course

To understand an orthopaedic patient, common orthopaedic conditions and procedures, To understand applications of physical therapy in various orthopaedic conditions, To understand the implications of various orthopaedic conditions, and procedures on physical therapy, At the end of syllabus and instructional course and demonstrations, the student shall be able to understand orthopedic conditions causing disability and manage them by physiotherapy point of view, In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective of the course

Course Outcome:

This specially marks the students to understand the common traumatic and orthopedic conditions, which commonly cause disability. The syllabus is made keeping in mind to avoid details of diagnosis and pathology.

Course Contents:

Introduction to Orthopedics: Terminology, types of common etiology, clinical examination, Common investigation, Outline of management – Operative & Non-Operative, Fractures and Dislocations: Briefly mention Types of fracture and dislocations, symptoms and signs of above injuries and their Principles of management and Complications, Fracture healing (Normal & pathological) Calcium-phosphorus metabolism - normal and pathological states, Prevention and treatment of common complications: Fracture disease, Volkman's ischaemic contracture, Sudeck's osteodystrophy, Myositis ossificans, Ligament injuries, Shoulder- hand syndrome etc, Spinal column: fractures, management and complications of Spinal injuries spinal deformities like Scoliosis, Kyphosis, and Lordosis etc. Injuries of upper limb and lower limb, enumerate major fracture and joint injuries, brief description of principle of management and complications, Congenital anomalies and other deformities: Brief descriptions of following congenital conditions along with the outline

PRACTICAL

Students do clinical checking, ward work, hospital posting for a period of one month to acquaint themselves with traumatology and orthopedic conditions.

Suggested Readings:

1. Outline of fracture by Adams.
2. Outline of Orthopedics by Adams.
3. Orthopedics and Traumatology by Natarajan.
4. Apley's Orthopedics.
5. Joshi, J. and Kotwal, P. Essential Of Orthopedics and Applied Physiotherapy Elsevier, New Delhi
6. Terke, Samuel L. Orthopedics: principles and their application Lippincott, New York
7. Magee, David J. Orthopedic and Physical Assessment Saunders, Philadelphia
8. Maheshwari, J Essential Orthopedics
9. Solomon, Louis Apley's Systems of Orthopedics and Fracture Arnold, London



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	APPLIED BIO-MECHANICS & KINESIOLOGY	BPT-303

COURSE OBJECTIVE:

1. To understand the Musculoskeletal surgical anatomy normal and pathological deviations
2. After 90 hours of lectures, demonstrations, and practicals, the student shall be able to demonstrate an understanding of the principles of biomechanics, kinesiology and their applications in health, disease and bioengineering.
3. In addition the student shall be able to fulfill with 75% accuracy (as measured in written and oral evaluation) the following objectives of the course

COURSE OUTCOME:

The course supplements the knowledge of anatomy and enable the student to have a better understanding of the principles of biomechanics and their application in musculoskeletal rehabilitation and dysfunction, kinesiological analysis and bioengineering appliances, manufacture and uses.

COURSE CONTENTS:

Introduction: Definition and Aim of Biomechanics, Scope and Importance of Biomechanics in Physiotherapy and Bioengineering, Kinematics and Kinetics: Definition, Descriptors of motion, Types of motion, and Axes and planes. Definition of force, Statics and Dynamics, Inertia, Classification of forces, Composition and Resolution of forces: Linear, Concurrent and Parallel force system, Muscle force, Friction force, Torque, Anatomic Pulley and its role in movement, Gravity: Definition, Center of Gravity and Center of Mass, Location of Center of Mass, Line of Gravity, Stability and Equilibrium, Linear and Angular Equilibrium, Biomechanics of Bone, collagenous tissue and muscle: Structure, function and Mechanics in health and in disease, injury, immobilization, exercise and overuse, Biomechanics of Spine: Structure, Function and Mechanics in health and in disease, Biomechanics of Upper Extremity: Structure, Function and Mechanics in health and in disease, Biomechanics of Lower Extremity: Structure, Function and Mechanics in health and in disease, Biomechanics of Locomotion and Gait Deviations, Origin of human movements and significance, Forms of human movements, their characteristics and factors affecting them, Biomechanics of Activities of Daily Living, Work Analysis, Posture: Definition, Biomechanics of Good Posture, Biomechanics of postural deviations, effect of age, disease, occupation and pregnancy on good posture



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KINESIOLOGY:

Joint structure and function; Types of joints, Joint functions, Kinesiology: Origin of human movement and its significances, Analysis of movement – kinetics and kinematics, Body links and motion parts.

General effects of injury and disease on joint functioning, Brief surgical anatomy (structural components, and alignment), Joint range of motion, axis and plane of motion, Joint movements, mobility and stability, restrictions and limitations, end feels, Abnormal deviations in joints in disease and injury of the following joint complexes: Shoulder joint complex, Elbow joint complex, Wrist and hand complex Hip joint complex, Knee joint complex Ankle-foot complex Vertebral column, Weight distribution (lower limb joints), Abnormal Posture: Definition and description, Analysis of postures (anterior, lateral and posterior), alignment of joints in different postural deviations, Abnormal postures – biomechanical analysis and effects, Principles of Postural correction, Pathological Gait:

PRACTICAL

Demonstration of bones, joints structures, analysis of posture and gait, mechanics of throwing, running and ADLs.

Suggested Readings:

1. Norkin, C.C. and Levangie P.K. Joint Structure and Function: Comprehensive Ara Jaypee, New Delhi 1998
- 2 Magee, David J. Orthopedic and Physical Assessment Saunders, Philadelphia 2002
- 3 Donatelli, R.A. Biomechanics of the Foot and Ankle Davis, Philadelphia 1996
- 4 Mow, Van C. and Hayes, W.C. Basic Orthopedic Biomechanics Lippincott, New York 1997
- 5 Norkin, C.C. and White, J. Measurement of Joint Motion Jaypee, New Delhi 1995
- 6 Kapandgi, I.A. Physiology of Joints Churchill- Livingstone 1998
- 3V
- 7 Tritschler, Katbleen Practical Measurement and Assessment Lippincott, New York 2000
- 8 Leveau, Biomechanics of Human Motion



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	PHYSIOTHERAPEUTIC IN NEUROLOGY & NEUROSURGERY	BPT-304

Course objective

To identify various neurological dysfunction, Disability due to neurological dysfunction clinically, To set treatment goals and apply therapeutic skills in different neurological conditions to restore neurological function, In addition, the student shall be able to fulfill with 75% accuracy (as assured by written oral and practical internal evaluation) the following objectives of the course.

Course Outcome:

This course serves to integrate the knowledge gained by the student in normal neurology with the skills gained in exercise therapy and Electrotherapy enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

Course Contents:

Review of Neuroanatomy and Physiology. Symptomatology of Neurological disorders, Role of investigations in differential diagnosis, diagnosis and clinical examination of C.N.S. functions including cranial nuclei, Principles of examination of higher function and applicability in training, Physiotherapy evaluation of a neurological patient, electro diagnostic procedures, interpretations and prognosis in different neurological conditions, Developmental disorders of C NS, Early detection of brain damaged child, Risk babies, Neuropediatric examination., Developmental programmes and Delayed milestones, Neuro-developmental screening test, Minimum Brain Damage, Sensory, Motor, Functional Psycho-social behaviours of a child, Developmental physiotherapy programs (Neurodevelopmental approaches) , reeducation and retraining techniques in neurological conditions, approaches like: Bobath's, Rood's, PNF, Vojta techniques, biofeedback, Brunnstorm, Motor Relearning programming, Primitive patterns and abnormal motor behaviour due to brain damage, its control and training with reference to gait and hand function, Assessment and principles of therapeutic management of following neurological conditions: Stroke, meningitis, encephalitis, basal ganglion diseases , Parkinson's disease, Cerebral palsy, Ataxia, Cerebellar Ataxia, Friedreich's Ataxia , Brain tumors

PRACTICAL

Students do clinical checking, ward work, hospital posting in rehabilitation unit for a period of one month to acquaint themselves with traumatology and neurology & neurosurgery conditions



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Suggested Readings:

1. Cash's Textbook of Neurology for Physiotherapist by JohnCash.
2. Key issue in Neurological Physiotherapy byAda/Canning.
3. Elements of Paediatric Physiotherapy byEckersy.
4. Tidy'sPhysiotherapy.
5. Hislop, H.J. and Montgomery, J. Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination W.B.Saunders, Philadelphia2002
6. Bobath, Berta Adult Hemiplegia: Evaluation and treatment Butterworth, Oxford1990
7. Shepherd, R.B. Physiotherapy in Paediatrics Butterworth- Heinemann, Oxford1995
8. Downie, P.A. Cash's Textbook of Neurology for Physiotherapy Jaypee, New Deli1993
9. Swaner, K.A. and LaVigne, J.M. Brunnstom's Movement Therapy in Hemi Lippincott, New York1992
10. Burns, Y.R. and Macdonald J. Physiotherapy and the Growing Child Harcourt, Singapore1998
11. Bromley, Ida Tetraplegia and Paraplegia Churchill-Livingston, London1998
12. Voss, Dorothy Proprioceptive Neuromuscular Facilitation Lippincott, New York1989



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	PHYSIOTHERAPEUTIC IN ORTHOPAEDIC CONDITIONS	BPT-305

Course objective

1. To identify various Musculo skeletal dysfunction clinically
2. To set goals and apply therapeutic skills in different orthopaedic conditions to restore musculoskeletal function.
3. In addition, the student shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation), the following objectives of the course.

Course Outcome:

This course serves to integrate the knowledge gained by the students in clinical Orthopedics with the skills gained in Exercise therapy, Electrotherapy and Physical evaluation, thus enabling them to apply these in clinical situations of dysfunction due to musculoskeletal pathology.

Course Contents:

Traumatology and Orthopedics: - Classification of fractures, causes and types, Signs and symptoms, Complications, Healing and factors affecting , Principles of fracture management. Principles of Physiotherapy management, management of complication. Dislocation - Common sites, signs and symptoms, Principles of Physiotherapy evaluation and Management of an orthopaedic patient.

General principles of physiotherapy in fracture management including complications at different stages, Post fracture - assessment and PT management, Specific fractures and their complete physiotherapy assessment and management, Upper Limb: Scapula, Clavicle, Humerus, Ulna and Radius, Colle's fracture and Crush injuries of Hand, Lower Limb: Fracture of Pelvis, Neck of Femur, Shaft of Femur, Patella, Tibia and Fibula, Pott's Fracture, Fractures of Tarsal and Metatarsal bones, Management of Fracture of Spine with or without neurological deficit, **Soft Tissue injuries:** Assessment and therapeutic management of Sprains, strains, ligament and cartilage tear (Tear of semilunar cartilage and cruciate ligament of knee)/rupture, Synovitis, Capsulitis, Volkman's ischamic contracture. Rotator cuff tendinitis, Ankle sprains, Tennis elbow, Golfer's Elbow, Retrocalcaneal bursitis.

Orthopedics Surgery: General principles of assessment, physiotherapy management in surgical conditions like – Osteotomy, Joint Replacements, ORIF, Arthroplasty, Arthrodesis, Illizarov's technique , Tendon transfers, soft tissue releases & soft tissue repair , Tendon transplant, Grafting, Arthroscopy, spinal Stabilization, reattachment of limbs, operation in C.P. and Polio.



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Practical

Various physiotherapy modalities and assessment & treatment techniques for the above-mentioned conditions to be demonstrated and practiced by the students. (70 hrs.)

Suggested Readings:

1. Cash's textbook of Orthopedics and Rheumatology.
2. Physiotherapy in Rheumatology.
3. Physiotherapy in disorders of brain.
4. Clinical Orthopedics for Physical Therapy - by Campbell
5. Tidy's Physiotherapy.
6. Clinical Orthopedics for Physical Therapy - by Richardson's & Sadowsky.
7. Smith, Laura K Brunnstrom's Clinical Kinesiology Jaypee, New Delhi
8. Buckley, John Exercise on Prescription Butterworth-Heinemann, Boston
9. Downie, Patricia A. Cash's Textbook of Orthopedics and Rheumatology Jaypee, New Delhi
10. Donatelli, R. A. and Wooden, M.J. Orthopedic Physical Therapy Churchill- Livingstone, New York
11. Tidswell, Marian Orthopedic Physiotherapy Mosby, London
12. Jones and Barker, Human Movement Explained Butterworth-Heine
13. Jacobs, Karen Ergonomics For Therapist Butterworth-Heine, Boston
14. Maitland, G.D. Maitland's Vertebral Manipulation Butterworth-Heine, Oxford
15. Nachemson, A.L. and Jonsson, E. Neck and Back pain: Scientific Evidence Lippincott, New York
16. Donatelli, R.A. Physical Therapy of Shoulder Churchill, New York
17. Walker, J.M. and Helewa, A. Physical Therapy in Arthritis W B Saunders, London
18. Engstrom, B. and Van de Ven C. Therapy for Amputees Churchill, London
19. Calliet, Rene Knee Pain and Disability Jaypee, New Delhi
20. Calliet, Rene Shoulder Pain Jaypee, New Delhi
21. Calliet, Rene Low Back pain syndrome Jaypee, New Delhi
22. Calliet, Rene Neck and arm pain Jaypee, New Delhi.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	PHYSICAL EVALUATION, DIAGNOSIS & PRESCRIPTION	BPT-306

Courses Objective

Student shall be able to acquire the concept of evaluation of functions and measurements in general and in disorders of different systems. Able to diagnose and measure the physical problems presented by the patients. In addition, the student shall be able to fulfill with 75% accuracy (as Measured by written, oral, Practical and Internal Evaluation)

Course Outcome:

This course serves to integrate the knowledge gained by the students in both basic and Clinical Medical science subjects and physiotherapy subjects, thus enabling them to apply these in evaluation of functions and measurements in general and in clinical situations of dysfunctions of systems in order to reach a state of diagnosing the physical problems presented by the patients.

The student shall also learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

Course Contents:-

General principles of Human development & maturation, Aspects: physical, motor, sensory, cognitive, emotional, cultural, social

Factors influencing human development & growth: Biological, environmental, inherited, Principles of maturation - in general and anatomical directional pattern cephalo – caudal, proximo – distal, centro – lateral, mass to specific pattern, gross to fine motor development, Reflex maturation tests, Development in specific fields: Oromotor development, sensory development, neurodevelopment of hand function, Electrodiagnosis, Investigation : Principles, methods, views, type of following investigative procedure- Skull XRay, CT, MRI, Evoked potential, lumbar puncture, CSF examination, EMG, NCV, Bioelectricity-Physiology of generation & propagation of action potential, volume conduction, therapeutic current-as a tool for electrodiagnosis

Higher functions, cranial nerves, sensations & sensory organization, body image, Muscle tone, Voluntary movement and voluntary control tests (isolated and skilled), Abnormal movements -Clonus, Tremor, Chorea, Athetosis, Reflexes: superficial & deep, Primitive Reflexes, muscle strength, Myotomes and Dermatomes, Upper motor and lower motor neuron lesions, Nerve entrapments, Test for disorder of programme (i.e. cerebellum basal ganglia lesions) and co-ordination tests, balance, posture, gait, Neural control of bladder, Perceptual motor dysfunction, Investigative Methods in Modern Medicine like EEG, MRI, CT Scan



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Assessment of Musculoskeletal Dysfunction

Postures and postural disorder, Tightness, deformity, ROM joint mobility, muscle strength and endurance, muscle girth, pelvic inclination, limb length, segmental Measurement of body part (femur, tibia etc.), trick movement, special tests, Angle of scoliotic curve, Gait analysis in pathological conditions and measurement of gait parameters. Functional diagnosis using ICF, Interpretation of X-ray of extremities & spine, routine biochemical investigations, CT scan, MRI

Assessment of cardiopulmonary dysfunction

Posture (recumbent, erectorthopnoeic), Vital parameters, Breathing pattern and breath hold (rate, rhythm, use of accessory muscle) Chest deformity, Cough, Sputum, Tactile and vocal fremitus, Mobility of thoracic spine and rib cage, Percussion, chest expansion measurement, breath holding test, breath sounds, rate of perceived exertion (RPE), peak flow rate, Measurement of

PRACTICALS

Skills to be practiced in following condition; Pediatric conditions, Neurology condition, Cardio respiratory conditions, Orthopedics conditions, Sports conditions, Electro diagnosis and biophysical diagnosis
Case presentation with Physical & Functional diagnosis in medical – surgical conditions

RECOMMENDED TEXT BOOKS:-

1. Pediatric developmental therapy - Sophie Levitt
2. Orthopedics physical examination by Magee
3. Physical Rehabilitation Assessment and Treatment - O'Sullivan Schmitz
4. Electrotherapy explained - Low & Reed
5. Clayton's electrotherapy (6th and 9th Ed.)
6. Clinical Electro Therapy - Nelson-Currier
7. Clinical Electromyography - Mishra
8. Cash's textbook of chest, heart, vascular disorder for physiotherapist
9. Physiotherapy for respiratory and cardiac problems - Webber and Pryor
10. Cash's textbook of General Medicine and surgical conditions for physiotherapists
11. Clinical Electromyography - Kimura
12. Orthopaedic Physical therapy - Donnatelli
13. Exercise & Heart - Wenger
14. Exercise Physiology - Mc'Ardle
15. Orthopedic examination - Hoppenfield
16. Cardiorespiratory physiotherapy - Elizabeth Dean
17. Text Book of Physical Diagnosis — by Mark M. Swartz.
18. Rehabilitation medicine — by Joel A. Delisa.
19. Differential Diagnosis in Physical Therapy — Goodman and Snyder.
20. Manual of Exercise Testing



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Fourth Year

S.No	Subject Code	Subject	Sessional						
			Internal Assessment		Theory		Practical		Total
			Max marks	Min marks	Max marks	Min marks	Max marks	Min marks	Max marks
1.	BPT401	Community PT, Rehabilitation & Disability prevention	50	20	100	40	--	--	150
2.	BPT402	Research methodology & Biostatics	50	20	100	40	--	--	150
3.	BPT403	Cardiothoracic diseases and surgeries	50	20	100	40	--	--	150
4.	BPT404	Physiotherapeutic in General & Cardiothoracic Conditions	50	20	100	40	50	20	200
5.	BPT405	Sports Physiotherapy	50	20	100	40	50	20	200
6.	BPT406	PT Ethics, management & Administration ** NUES	50	20	100	40	--	--	150
7.	BPT407	Project Work**NUES	50	20	--	--	150	60	200
Total			350	140	600	240	250	100	1200



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	COMMUNITY PT, REHABILITATION & DISABILITY PREVENTION	BPT-401

Course Objective

The objective of this course is that after 60 hours of lectures, demonstrations, practical, clinics and field visits, the student will be able to understand the various community awareness programmes and health disorders causing disability and the role of physiotherapy in community awareness and prevention of health disorders causing disability. In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical evaluation), the following objectives of the course.

Course Outcome:

This course provides knowledge about health care delivery programmes in Rural and urban areas and role of Physiotherapy in both Rural & Urban set ups with special emphasis to various community awareness programmes and preventive aspects of health disorders causing disability. Enables the student to understand the effects of the environment and the community dynamics on the health of the individual with special emphasis on disability limitation specific protection and rehabilitation.

Course Contents:-

Community PT & Community Medicine; General Concepts of health and diseases with reference to natural history of disease with pre-pathogenic and pathogenic phase. The role of socio-economic and cultural environment in health and disease. Epidemiology and scope. Role of Epidemiological investigation in public health, Public Health Administration — Overall view of the health administration setup at Central State and Local self-government levels. Role of Non-Government Organisations in public health care delivery system. The National Health Programmes — Highlighting the role of social, economic and cultural factors in the implementation of the National Programmes, Primary Health Care, objectives and implementation. Health Problems of vulnerable groups — Pregnant and Lactating women Infants and Pre-school children, Occupational groups (see below) and Geriatrics.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Occupational Health: Definition, scope, occupational diseases, prevention of occupational diseases and hazards. Role of ES, In occupational health of industrial workers, Social security and other measures for the protection of occupational hazards, accidents and diseases. Details of Factory Act, Environmental safety and Compensation acts, ES. .5.Acts.Family Welfare Programme — Objectives of National Family Welfare Programme and Family Planning Methods. A general idea of advantages and disadvantages of methods Reproductive Child Health Services, Concept, of plan d pregnancies, population dynamics, Mental Health — Community aspects of Mental Health: Role of Physiotherapists. Therapist in Mental Health Problems such as Cerebral Palsy, Mental retardationetc, Communicable diseases — Diseases transmission concepts, an overall view of communicable diseases (Malaria, Filariasis, Tuberculosis, Leprosy, Poliomyelitis, and Viral Encephalitis etc.) classified according to principal mode of transmission, Role of Insects and other Vectors in disease transmission. Control and prevention of communicable diseases, universal immunization programme,

Programmes such as ARI, Diarrhoea and Polio Control Programmes. International Health Agencies and National NGOs, Non-communicable diseases, Blindness, Accidents, Cancer, IHD, Hypertension, Stroke(CVA), Vital and health statistics — Basic concepts, Morbidity and Mortality rates, Period, Age and Cause of specific death rates and role of these rates as indicators of health and diseases.

Community PT:-COMMUNITY PT ,REHABILITATION & DISABILITY PREVENTION THEORY Introduction of Rehabilitation & History, Epidemiology of disability (Impairment, disability, phases of disability process, etc.), Principles of Rehabilitation & concept of team approach with roles of each individual participant. Organization of Rehabilitation unit.Disability prevention evaluation & principles of Rehabilitation Management, Role of Physiotherapy in Rehabilitation (Preventive, treatment & restoration)Brief outline of Communication disorder & its implications on Rehabilitation process, Brief outline of psychosocial & vocational aspects of Rehabilitation, Introduction to Occupational therapy, Activities of daily living, functional assessment & training for functional independence, Brief outline of basic community medicine with special reference to community based Rehabilitation, infrastructure and role of CBR, Assessment of disability in rural & urban setups. Health care delivery system & preventive measures with specific reference to disabling conditions. Community education program., Application of Physiotherapy skills at community level with special reference to the need at rural level.

Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, REDCROSS. National District Level Rehabilitation Program: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker.

Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise program, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation program for various neuro-musculoskeletal and cardiothoracic disabilities.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

ORTHOTICS AND PROSTHOTICS; Introduction to surgical anatomy and various pathological deviations with respect to bracefitting, Rationale of prescribing Prosthetic and Orthotic devices, Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb. 4. Checkout, usage advice, precautions, and follow-up, Walking aids and wheel chairs: prescription, usage advice, and follow-up.

PRACTICAL –

Orthosis and prosthesis devices in detail, Role of Physiotherapy in CBR, Principles of Rehabilitation.

Students do clinical checking, ward work, urban & rural health care survey camp posting for a period of one month to acquaint themselves with communicable , geriatric , degenerative conditions

Book Reference

1. Textbook of Preventive and Social Medicine by Dr J E Park.
2. Rehabilitation medicine -- by Joel A. Delisa.
3. Text book of physical diagnosis --- by Mark .MS wartz
4. Physical Rehabilitation -----by Susan B O'Sullivan , Thomas J Schmitz , George Fluke
5. Essentials of Physical Medicine and Rehabilitation: Musculoskeletal Disorders, Pain, and Rehabilitation –by Walter R. Frontera MD PhD(Author), Julie K. Silver MD(Author), Thomas D. Rizzo Jr. MD(Author)
6. Delisa's Physical Medicine and Rehabilitation: Principles and Practice – by Walter R. Frontera
7. Parks Text Book Of Preventive & Social Medicine -by K. Park
8. Textbook of Community Medicine –by Bhalwar(Author)

FIELD VISITS

1. Demonstration of methods of using orthotics & prosthetics devices.
2. Methods of organization of community based rehabilitation centers.
3. Visit of different rehabilitation centers and preparing a report of the visit & viva-voce of the aforesaid report
4. Visit to different physiotherapy colleges.
5. Visit to different National and Regional Rehabilitation Centre,
6. Visit to different Health Institutions.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	RESEARCH METHODOLOGY & BIostatISTICS	BPT-402

Course Objective

The objective of this course is that after 60 hours of lectures, demonstrations, practical, clinics and field visits, the student will be able to understand the various community awareness programmes and health disorders causing disability and the role of physiotherapy in community awareness and prevention of health disorders causing disability. In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical evaluation), the following objectives of the course.

Course Outcome:

This course provides knowledge about health care delivery programmes in Rural and urban areas and role of Physiotherapy in both Rural & Urban set ups with special emphasis to various community awareness programmes and preventive aspects of health disorders causing disability. Enables the student to understand the effects of the environment and the community dynamics on the health of the individual with special emphasis on disability limitation specific protection and rehabilitation.

Course Contents :-

RESEARCH METHODOLOGY AND BIostatISTICS

RESEARCH METHODOLOGY: Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs. methodology, Criteria for good research, Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem, Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design, Measurement & scaling techniques: Measurement in research Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, important scaling techniques, Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules. Computer technology: Introduction to Computers, computer application in research computers & researcher.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

BIOSTATISTICS; Introduction: Meaning, definition, characteristics of statistics. Importance of the study of statistics, Branches of statistics, Statistics and health science, Parameters and Estimates, Variables and their types, Measurement scales. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve. Measures of Central Tendency: Need for measures of central Tendency, Definition and calculation of Mean – ungrouped and grouped, interpretation and calculation of Median-ungrouped and grouped, Meaning and calculation of Mode, Geometric mean & Harmonic mean, Guidelines for the use of various measures of central tendency, Measures of Dispersion : Range, mean deviation, standard deviation & variance. 5. Probability and Standard Distributions:

Meaning of probability of standard distribution, the binomial distribution, the normal distribution, Divergence from normality-skewness, kurtosis. Correlation & regression : Significance, correlation coefficient, linear regression & regression equation. Testing of Hypotheses, Level of significance, Degrees of freedom. Chi-square test, test of Goodness of fit & student t-test., Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA), Sampling: Definition, Types- simple, random, stratified, cluster and double sampling. Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling design errors.

PRACTICAL

Students do clinical checking, ward work, in urban & rural area for a period of one month for all conditions related to fields

Book References

(SUBJECTS - RESEARCH METHODOLOGY AND BIostatISTICS)

1. Bailey, N.T.J. -Statistical methods in Biology. The English universities press, London
2. Bajpai, S.R.- Methods of Social Survey and Research, Kitab Ghar, Kanpur.
3. Colton - Statistics in medicine, Little Brown Company, Boston
4. Gupta, S.P -Statistical methods. Sultan Chand and Sons Publishers, New Delhi.
5. Goulden C.H.- Methods of Statistical Analysis. Asia Publishing House, New Delhi.
6. Mohsin S.M.- Research Methods in Behavioral Sciences: Orient Publications. New Delhi.
7. Mahajan - Methods in Biostatistics, Jay Pee Brothers. Medical Publishers (P) Ltd. N. Delhi.
8. Hicks- Research for Physiotherapists, Churchill Livingstone, London. 9. Meenakshi. - First Course in Methodology of Research. Kalia Prakashan, Patiala.
10. Kumar, R.- Research Methodology. Pearson Education, Australia.
11. Snedecor, G.W -Statistical Methods, Allied Pacific Pvt. Ltd., London



R.K.D.F. UNIVERSITY, BHOPAL

BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	CARDIOTHORACIC DISEASES AND SURGERIES	BPT-403

Course objective

To identify various Cardiac dysfunction clinically. To set goals and apply therapeutic skills in different Cardiac conditions to restore musculoskeletal function. In addition, the student shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation), the following objectives of the course.

Course Outcome:

This course serves to integrate the knowledge gained by the students in clinical Cardiac with the skills gained in Exercise therapy, Electrotherapy and Physical evaluation, thus enabling them to apply these in clinical situations of dysfunction due to Cardiac pathology.

Course Contents:

Respiratory System; Respiratory diseases including diseases of chest wall, Chronic Bronchitis and Emphysema, Definition, Clinical features, and investigation, complication and treatment., Bronchial asthma - Definition, Aetiopathogenesis, clinical features, Diagnosis and Treatment. 3) Pneumonia - Definition, Classification, clinical features, Complications and Treatment. Tuberculosis - Aetiopathogenesis, clinical test of pulmonary tuberculosis, Diagnosis Complication & Treatment. Lung abscess and Bronchiectasis - Definition, clinical features, Diagnosis and Treatment. Chest wall deformities- Describe various deformities of chest wall, its effect and Pulmonary diseases associated with it. Occupational Lung Diseases - Clinical features, Diagnosis and Treatment., Respiratory failure - Classification, Causes and Treatment. Cardiothoracic surgery Theory; Introduction-types of incision, pre and post operative assessment, management and complication of cardio thoracic surgery and their management. Cardiac Surgery-Outline indication, contra indication, site of incision, pre and post Operative management and complications of the following: Valvotomy and Valve Replacement. Open heart surgery/ cardiac by pass surgery, Surgery of pericardium, Heart transplantation, Pacemaker, Coronary angioplasty, Balloon angioplasty and vascular surgery (Outline surgery and artery and veins)



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Thoracic Surgery; Outline clinical features and management of the following; fracture of ribs, Flail chest, stove in chest, Pneumothorax, Haemothorax, Lung contusion and Lacerration and injury to vessels and brounchus. Outline indications, contradiction, site of incision, pre and post operative management and complication of following- Lobectomy, Pneumonectomy, segentectomy, pleuro-pneumonectomy, Thoracoplasty, decortion, Tracheostomy. Outline clinical features and management of carcinoma of lung. Describe in detail the following procedure: management of endotracheal tubes, tracheal Suction, Weaning the patient from ventilator, Extubation and Post-extubation care. Describe the principles of cardio-pulmonary Resusciation, cardiac Massage, Artificial respiration, defibrillators and their use.

PRACTICAL

Students do clinical checking, ward work, hospital posting in ICU , CTVS unit for a period of one month to acquaint themselves with Cardiothoracic & cardiothoracic surgery conditions.

Book References

(SUBJECTS - CARDIO - THORACIC DISEASES AND SURGERY)

1. Cardiothoracic Surgery: Recent Advances and Techniques- by Daniel Willson
- 2 .Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine .
3. Textbook of Interventional Cardiology Hardcover .
4. Textbook of Pulmonary and Critical Care Medicine .
5. Principles of Respiratory Medicine .
6. Davidson's Principles and Practice of Medicine, International Edition
7. Murray & Nadel's Textbook of Respiratory Medicine
- 8 Oxford Textbook of Fundamentals of Surgery- by William E. G. Thomas, Malcolm W. R. Reed, Michael G. Wya
9. Surgery by Nan.
10. Short Practice of Surgery by Rain & Ritelife.
11. Russell, R.C.G. Short practice In Surgery Arnold, London
12. Gupta, R. L. Text Book of Surgery Jaypee, New Delhi



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	PHYSIOTHERAPEUTIC IN GENERAL & CARDIOTHORACIC CONDITIONS	BPT-404

Course objective:

To identify various Cardiac dysfunction clinically. To set goals and apply therapeutic skills in different Cardiac conditions to restore musculoskeletal function. In addition, the student shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation), the following objectives of the course.

Course Outcome:

This course serves to integrate the knowledge gained by the students in clinical Cardiac with the skills gained in Exercise therapy, Electrotherapy and Physical evaluation, thus enabling them to apply these in clinical situations of dysfunction due to Cardiac pathology.

Course Contents:

Anatomical and Physiological differences between the Adult and Pediatric lung, Bedside assessment of the patient-Adult & Pediatric. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiography, PFT, ABG, ECG, Hematological and Biochemical Tests, Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB, Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP, Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilization and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning

Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhaled Nebulizers. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper granulated Scars Keoloids, Electrotherapeutics measures for relief of pain during mobilization of scar tissues, Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Care of anesthetic hand and foot; Evaluation, planning and management of leprosy- prescription, fitting and training with prosthetic and orthotic devices.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

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

Burns management - Role of physiotherapy in the management of burns, post grafted cases- Mobilization and Musculo- skeletal restorative exercises following burns .Physiotherapy management following cardiac surgeries, Cardiac Rehabilitation, Physiotherapy management following Peripheral Vascular Disease(PVD).Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax, Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes, Physiotherapy intervention in the management of Medical, Surgical and Radiation OncologyCases, Home program and education of family members in patientcare. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincter, Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure andObesity, Geriatrics: Problems in old age, role of physiotherapy in elderly

PRACTICAL

Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in cardio – respiratory, and other medical conditions. 2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

Book References

(subject : Physiotherapeutic in General& Cardiothoracic Conditions)

1. Cash's text book of general medicine and surgical conditions forphysiotherapist
2. Cash's text book of chest ,heart and vascular disorder forphysiotherapist.
3. The brompton guide to chest physiotherapist – D.U GASKED(completed)
4. Physiotherapy of paediatrics – shepherd.
5. Elements of paediatric physiotherapy by pamel .M.eckersly
6. Essential of cardiac – pulmonary physical therapy byHillegas
7. Cardiac pulmonary symptoms in physical therapy practice Cohens' andMichael
8. Chest physiotherapy in Intensive care Unit byMackenzie.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	SPORTS PHYSIOTHERAPY	BPT-405

Courses Objective:

Student shall be able to acquire the concept of evaluation of functions and measurements in general and in disorders of different systems. Able to diagnose and measure the physical problems presented by the patients. In addition, the student shall be able to fulfill with 75% accuracy (as Measured by written, oral, Practical and Internal Evaluation)

Course Outcome:

This course serves to integrate the knowledge gained by the students in both basic and Clinical Medical science subjects and physiotherapy subjects, thus enabling them to apply these in evaluation of functions and measurements in general and in clinical situations of dysfunctions of systems in order to reach a state of diagnosing the physical problems presented by the patients.

The student shall also learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

Course Contents:-

Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system, Nervous system, Sports injuries - Spine – PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction, Hip – muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis, Knee – menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome, Leg & ankle – shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, plantar fascitis, turf toe syndrome, Head & face – maxillofacial injuries, helmet compressionsyndrome.

Sports injuries Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer's elbow, Wrist and hand – carpal tunnel syndrome, gamekeeper's thumb., Principles of injury prevention, Principles of training & Rehabilitation in sports injuries, Sports in Special age groups: Female athletic triad, Younger athlete- Musculoskeletal problems, management, children with chronic illness and nutrition. Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines forelderly.



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PRACTICAL:

Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy 2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

Book References

(SUBJECTS - PHYSIOTHERAPY IN SPORTS)

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
2. Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
3. Torg, Welsh & Shephard: Current Therapy in Sports Medicine III - Mosby.
4. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
5. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
6. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
7. Gould: Orthopaedic Sports Physical Therapy, Mosby.
8. C. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists, Heinemann.
9. D. Kulund: The Injured Athlete, Lippincott.
10. Nicholas Hershman: Vol. I The Upper Extremity in Sports Medicine. Vol. II The Lower Extremity and Spine in Sports Medicine. Vol. III The Lower Extremity and Spine in Sports Medicine. Mosby.
11. Lee & Dress: Orthopaedic Sports Medicine - W.B. Saunders.
12. K. Park: Preventive and Social Medicine - Banarsi Dass Bhanot - Jabalpur.
13. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
14. Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby.
15. Lars Peterson and Per Renström: Sports Injuries – Their prevention and treatment, Dunitz.
16. clinical sports medicine 3rd edition (english, paperback, Peter Brukner, Karim Khan)
17. text book of orthopedic physical assessment by Magee, David
18. Modern principles of athletic training by Corliss Klafs and physiotherapist
19. sports injuries : diagnosis and management for physiotherapist
20. The children's sports injuries by David Kennedy.
21. Dynamics of clinical rehabilitative exercise by Order
22. Basic athletic training by Cramer



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	PT Ethics, management & Administration	BPT-406

Courses Objective:

This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practice, its moral and legal aspects, rules of IAP, WHO, & WCPT.

Course Outcome:

This course serves to integrate the knowledge gained by the students in both basic and Clinical Medical science subjects and physiotherapy subjects, thus enabling them to apply these in evaluation of functions and measurements in general and in clinical situations of dysfunctions of systems in order to reach a state of diagnosing the physical problems presented by the patients.

The student shall also learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

Course Contents:-

PT Ethics, History of physiotherapy, Ethical principles in healthcare, Ethical principles related to physiotherapy, scope of practice, enforcing standards in health profession-promoting quality care,

Professional ethics in research, education and patient care delivery, Informed consent issues, Medical ethics and economics in clinical decision-making. Rules of professional conduct: physiotherapy as a profession relationship with patients relationship with health care institutions relationship with colleagues and peers relationship with medical and other professional Concepts of morally ethics, and legally rules of professional conduct and their medico legal and moral implication. the need of council act for physiotherapy constitution and functions of the Indian association of physiotherapist Functioning of the world federations of physical therapy (wcpt) & its various branches. Rule of WHO & WCPT Confidentiality and responsibility, malpractice and negligence, provision of services and, advertising, legal aspects: consumer protection act, legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action, Major ethical principles applied to clinical practice in healthcare, Rules of professional conduct and scope of practice, Personal & professional standards & accreditation, Laws and legal concepts – protection from malpractice claims, consumer protection act, Liability & document.



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Management & Administration; Planning health care services, Promoting & building a new hospital, Technology advances and high quality patient care, Hospital facilities, staff & services, Equipment planning and financial planning, Hospital organization, operational plan and functional plan, Design development, planning and purchase, Organization and management of hospital, Planning and administrative services, Hospital information system, Human resources management, Financial management, Nursing service administration, Public relations & marketing, Medical & ancillary services, Planning & designing supportive services and hospital service, Safety & security of the institution, Disaster management & preparedness plan

Book References

(Subject : PT Ethics, Management & Administration)

1. Managerial and supervisory principles for physical therapists by-hardcover, nosse larryj.
2. hospital administration and management: a comprehensive guide by gupta joydeepdas
3. Textbook of medical administration and leadership by: loh, erwin, long, paul w., spurgeon, peter.
4. Essentials of community physiotherapy & ethics.
5. Physical therapy ethics book by donald l. Gabard and mikemartin
6. ethical decision-making in therapy practice book by juliussim



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BACHELOR OF PHYSIOTHERAPY (BPT.)

Course	Subject	Subject Code
Bachelor of Physiotherapy	Project Work	BPT-407

Courses Objective:

The student will be doing specific case studies allotted by their teacher/guide. Subject is for Case Presentations and evaluations. Minimum 5- 10 cases are to be documented for discussion.

Course Outcome:

This course serves to integrate the knowledge gained by the students in both basic and Clinical Medical science subjects and physiotherapy subjects, thus enabling them to write projects related to their research.

The student shall also learn principles, techniques of writing projects for different funding agencies.

PROJECT WORK*

*There will be no university examination. Students will be assessed on the basis of Viva on his/her project work and the awards so secured by them will be sent to University



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BPT INTERNSHIP GUIDELINES

- Candidates seeking entry to the internship period must have passed all examinations in all subjects (i.e. He/She must have secured total credits of the Programme).
- Duration: 6 months inclusive of posting in rural setup/CBR/similar setup.
- During the internship candidate shall have to work full time average 7 hours per day (each working day) for 6 Calendar months (total Credit hours –1260).
- Each candidate is allowed maximum of 6 holidays during entire Internship Programme and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.
- Assessment: The interns/candidate shall maintain the record of work, which will be verified and certified by the Head of the Department under whom he/she works. Apart from scrutiny of the record of work, the Head of the Department shall undertake assessment and evaluation of training in attendance, discipline, knowledge, skills and attitude for the duration of training. The assessment report of the candidate shall be sent to the Parent institution.
- Based on the record of work and date of evaluation the Director/Principal shall issue ‘Certificate of Satisfactory Completion’ of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same.
- In the event of unsatisfactory report, the said intern shall have to repeat the internship for the period to be decided by the Head of the Institution concerned.
- Intern will abide by all the rules & regulations of Institution/Hospital where they are posted.
- Intern shall be responsible for proper use of equipments of the Institute/Hospital where they are posted. He/She shall be liable to pay for damages caused to the equipments resulting from improper use by him/her.
- Internship duration can be extended by the Principal / Director on the grounds: subjected to disciplinary proceedings by the Disciplinary Action Committee., Punishments: Suspension of Internship for a period of 3-4 weeks for the reasons to be recorded. Following this disciplinary suspension, internship can be resumed only after submission of an appropriate undertaking/guarantee/surety. Period of suspension shall be considered as Break in Internship. Disciplinary Action Committee shall decide the period of suspension and resumption of Internship for a specified period., Rustication & Termination: In case of a serious complaint of indiscipline or breach of trust against intern or any criminal activity done by intern according to the law of the country, he/she may be rusticated along with termination of Internship. Hon’ble Court of Law can resume the Internship in this case only on the abrogation of criminal charges against him.



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- Institution shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken. Following parameters / guidelines have been suggested: It is mandatory for the Institution conducting BPT Programme to have its own Physiotherapy clinic fully furnished with all the necessary equipments as per the curriculum of the Programme., The Institutes & the Hospitals should have the Physiotherapy section with all the necessary infrastructure facilities., Senior Physiotherapist with sufficient clinical experience should manage the physiotherapy departments in the Institutes/Hospitals., Institute Director / principal can at his discretion grant NOC to the students to do the Internship at the place of his choice provided, the concerned Hospital fully satisfies the above criteria. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy Services available at the place where he intend to do his Internship.

EVALUATION OF STUDENTS UNDER PRACTICAL/INTERNSHIP

S. No.	Description	Satisfactory/ Unsatisfactory
1	Attendance	
2	Discipline and general behavior in the Department	
3	Approach to patients	
4	Inquisitiveness regarding the subject	
5	Knowledge about evaluation of conditions	
6	Knowledge about various therapeutic modalities	
7	Knowledge about actual application of therapeutic skills	

