

SCHEME OF EXAMINATION
(REVISED)
&
SYLLABI
OF
BACHELOR OF PHYSIOTHERAPY
(FIRST THROUGH FOURTH YEAR)
+
(INTERNSHIP OF SIX MONTHS)

Guru Gobind Singh Indraprastha University
Kashmere Gate, Delhi

Guru Gobind Singh Indraprastha University, Delhi

BACHELOR OF PHYSIOTHERAPY (BPT) FIRST YEAR

Course Code	Course Name	L	T/P	Yearly Credits*
BPT -101	Anatomy	4	-	8
BPT -102	Physiology	4	-	8
BPT-103	Psychology & Sociology	4	-	8
BPT-104	Fundamentals of Biomechanics & Exercise Therapy	3	-	6
BPT-105	Principles of Bioelectrical Modalities	3	-	6
BPT-106	Biochemistry	1	-	2
	<u>Practicals</u>			
BPT-151	Anatomy	-	4	4
BPT-152	Physiology	-	4	4
BPT-153	Fundamentals of Biomechanics & Exercise Therapy	-	2	2
BPT-154	Principles of Bioelectrical Modalities	-	2	2
Total		19	12	50

**Yearly Credits have been calculated by multiplying the semester-wise credits by two.*

SECOND YEAR

Course Code	Course Name	L	T/P	Yearly Credits*
BPT -201	Pathology & Microbiology	2	-	4
BPT -202	Pharmacology	2	-	4
BPT-203	Medicine & Paediatrics	2	-	4
BPT-204	General Surgery	2	-	4
BPT-205	Exercise Therapy	4	-	8
BPT-206	Electrotherapy	4	-	8
	<u>Practicals</u>			
BPT-251	PT-Clinicals**	-	4	4
BPT-252	Exercise Therapy	-	7	7
BPT-253	Electrotherapy	-	7	7
Total		16	18	50

**Yearly Credits have been calculated by multiplying the semester-wise credits by two.*

***NUES stands for Non University Examination Subject.*

THIRD YEAR

Course Code	Course Name	L	T/P	Yearly Credits*
BPT -301	Neurology including Psychiatry	2	-	4
BPT -302	Orthopaedics	2	-	4
BPT-303	Obstetrics & Gynaecology	1	-	2
BPT-304	Applied Biomechanics & Kinaesiology	3	-	6
BPT-305	Physiotherapeutic in Neurology	4	-	8
BPT-306	Physiotherapeutic in Orthopaedic <u>Practicals</u>	4	-	8
BPT-351	PT-Clinicals**	-	4	4
BPT-352	Physiotherapeutic in Neurology	-	7	7
BPT-353	Physiotherapeutic in Orthopaedic	-	7	7
Total		16	18	50

**Yearly Credits have been calculated by multiplying the semester-wise credits by two.*

***NUES stands for Non University Examination Subject.*

FOURTH YEAR

Course Code	Course Name	L	T/P	Yearly Credits*
BPT -401	Community Rehabilitation & Disability Prevention	2	-	4
BPT -402	Research Methodology & Biostatistics	2	-	4
BPT-403	Physiotherapeutic in General & Cardio thoracic	4	-	8
BPT-404	Physiotherapeutic in Sports <u>Practicals</u>	4	-	8
BPT-451	PT-Clinicals**	-	8	8
BPT-452	Physiotherapeutic in General & Cardio thoracic	-	6	6
BPT-453	Physiotherapeutic in Sports	-	6	6
BPT-454	Project Work	-	6	6
Total		12	26	50

**Yearly Credits have been calculated by multiplying the semester-wise credits by two.*

***NUES stands for Non University Examination Subject.*

NAME OF THE INSTITUTE/COLLEGE

Ref. No.:

Enrolment No: _____

Name: _____ S/D of: _____

Bachelor of Physiotherapy (4½ years programme including 6 months of internship)

Medium of Instruction: English

Date of Admission: _____ Date of Completion: _____

Curriculum Hours

First Year			
Theory Courses		Practical Courses	
Subject	Hours	Subject	Hours
Anatomy	160	Anatomy	160
Physiology	160	Physiology	160
Psychology & Sociology	160	Fundamentals of Biomechanics & Exercise Therapy	80
Fundamentals of Biomechanics & Exercise Therapy	120	Principles of Bioelectrical Modalities	80
Principles of Bioelectrical Modalities	120		
Biochemistry	40		
Second Year			
Theory Courses		Practical Courses	
Subject	Hours	Subject	Hours
Pathology & Microbiology	80	PT-Clinicals	160
Pharmacology	80	Exercise Therapy	280
Medicine & Paediatrics	80	Electrotherapy	280
General Surgery	80		
Exercise Therapy	160		
Electrotherapy	160		
Third Year			
Theory Courses		Practical Courses	
Subject	Hours	Subject	Hours
Neurology including Psychiatry	80	PT-Clinicals	160
Orthopaedics	80	Physiotherapeutic in Neurology	280
Obstetrics & Gynaecology	40	Physiotherapeutic in Orthopaedics	280
Applied Biomechanics & Kinaesiology	120		
Physiotherapeutic in Neurology	160		
Physiotherapeutic in Orthopaedics	160		
Fourth Year			
Theory Courses		Practical Courses	
Subject	Hours	Subject	Hours
Community Rehabilitation & Disability Prevention	80	PT-Clinicals	320
Research Methodology & Biostatistics	80	Physiotherapeutic in General & Cardio thoracic	240
Physiotherapeutic in General & Cardio thoracic	160	Physiotherapeutic in Sports	240
Physiotherapeutic in Sports	160	Project Work	240
	Theory Hours	Practical Hours	Internship
Total	2520	2960	1260
Total Curricular Hours			6740

Date: _____

Head – department of Physiotherapy

Head of the Institution
& Seal

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

ANATOMY

Course Code: BPT – 101

L – 4

T/P – 0

CREDITS – 8

Course objectives:

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

Course Contents: All sections carry equal weightage

Section – A

1. 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.
- Muscle classification, structure and functional aspect.
- Nerve – structure, classification, microscopy with examples.
- Neurons, classification with examples. Simple reflex arc.
- Parts of a typical spinal curve/Dermatome
- Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.
- Circulatory system – major arteries and veins of the body, structure of blood vessels
- Lymphoid system – circulation + function, lymphoid organs- and their structure & functions.

2. 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

Section – B

3. 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

4. Spine:
- 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

Section – C

5. Thorax:
- Thoracic cage
 - Pleural cavities & pleura
 - Lungs and respiratory tree
 - Heart and great vessels
 - Diaphragm
6. Head and neck:
- Cranium
 - Facial Muscles
 - Central nervous system – disposition, parts and functions
 - Cerebrum
 - Cerebellum
 - Midbrain & brain stem
 - Blood supply & anatomy of strokes
 - Spinal cord- anatomy, blood supply, nerve pathways
 - Pyramidal, extra pyramidal system
 - Thalamus, hypothalamus
 - Ventricles of brain, CSF circulation
 - Development of nervous system & defects (Brief Description)
 - Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution and palsies)
 - Sympathetic nervous system, its parts and components (Brief Description)
 - Parasympathetic nervous system (Brief Description).
7. Miscellaneous:
- a. Embryology in brief covering neuromuscular developmental aspects
 - b. Endocrine - system – Pituitary, Thyroid, parathyroid (Brief Description)
 - c. Special senses (Brief Description): Nerve receptors, Eye, Ear, Labyrinth
 - d. Abdomen and pelvis (Brief descriptions only):
 - Abdominal cavity – divisions
 - Muscles of abdominal wall, pelvic floor, innervations
 - Bony Pelvis
 - Digestive system (Liver & pancreas, Alimentary canal)
 - Urinary system – Kidney, Ureter, bladder, urethra
 - Genital system – male and female

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Chaurasia, B D	Human Anatomy: Regional and Applied	CBS, New Delhi	2004	3V
2	Chaurasia, B D	Human Osteology	CBS, New Delhi	1991	
3	Singh, Inderbir	Text Book of Anatomy: With Color Atlas	Jaypee, New Delhi	1999	3V
4	Singh, Inderbir	Text Book of Neuroanatomy	Jaypee, New Delhi	1999	
5	Singh, Inderbir	Text Book of Human Histology	Jaypee, New Delhi	1997	
6	Singh, Inderbir	Text Book of Human Osteology	Jaypee, New Delhi	1997	
7	Garg, Krishna	Text Book Histology	CBS, New Delhi	1997	
8	Singh, Inderbir	Multiple Choice Questions in Anatomy	Jaypee, New Delhi	1989	
9	Datta, A.K.	Essentials of Human Anatomy: Neuroanatomy	Current Book, Calcutta	1997	
10	Datta, A.K.	Essentials of Human Anatomy: Thorax and Abdomen	Current Book, Calcutta	1997	
11	Williams, Peter L	Gray's Anatomy: Anatomical Basis of	Churchill Livingstone, New York	1995	
12	McMinn, M. H.	Colour Atlas of Human Anatomy	Mosby-Wolfe, London	1995	
13	Snell, Richard S	Clinical Anatomy for Medical Students	Little- Brown, Boston	1995	
14	Field, Derek	Anatomy: Palpation and Surface Markings	Butterworth, London	1997	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

PHYSIOLOGY

Course Code: BPT – 102

L – 4

T/P – 0

CREDITS – 8

Course objectives:

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

Course Contents: All sections carry equal weightage

Section – A

1. General Physiology
 - Structure of cell membrane
 - Transport across cell membrane
 - Functional morphology of the cell
 - Intercellular communication
 - Homeostasis
2. Cardiovascular System
 - Dynamics of blood & lymph flow
 - Anatomical, biophysical consideration of arterial, arteriolar & capillary venous level, Lymphatic circulation
 - Origin and spread of cardiac excitation
 - Basic idea of Electrocardiogram
 - Mechanical events of Cardiac cycle, Cardiac output, its regulation
 - Local & systemic regulatory mechanisms of CVS, humeral & neural
 - Cerebral, coronary, splanchnic, skin, Placental & Fetal circulation
3. Respiratory System
 - Physiological anatomy of lungs, mechanics of respiration
 - Pulmonary circulation, Gas exchange in lungs
 - Oxygen & Carbon dioxide transport
 - Other function of respiratory system
 - Neural & chemical control of breathing
 - Regulation of respiratory activity, non-chemical influences on respiratory activity
4. Cardio respiratory adjustments in health & disease
 - Exercise, high altitude, deep sea diving
 - Hypoxia, hypercapnia, hypocapnia, oxygen treatment
 - Asthma, emphysema, artificial respiration

Section – B

5. Blood
 - W.B.C., R.B.C., Platelets formation & functions
 - Plasma, Blood Groups
 - Haemostasis, Immunity
6. Renal System
 - Glomerular filtration rate, clearance, Tubular function
 - Water excretion, concentration of urine-regulation of Na, Cl, K excretion
 - Physiology of urinary bladder

7. 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 fibre
 - 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
 - Inhibition & facilitation at synapses
 - Chemical transmission of synaptic activity
 - Principal neurotransmitter system
 - Neuromuscular junction, structure & events occurring during excitation

Section – C

8. Digestive System
- Digestion & absorption of nutrients
 - Gastrointestinal secretions & their regulation
 - Liver & Exocrine Pancreas
9. Functions of Nervous system (descriptive)
- Reflexes, monosynaptic, polysynaptic, withdrawal reflex
 - Properties of reflexes
 - Sense organ, receptors, electrical & chemical events in receptors
 - Ionic basis of excitation
 - Sensory pathways for touch, temperature, pain, proprioception, others
 - Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions & clinical aspects
 - Autonomic nervous system & Hypothalamus
 - Higher functions of nervous system
 - i. Learning & memory, neocortex,
 - ii. Limbic functions, sexual behaviour, fear & range, motivation
10. Miscellaneous
- i. Special senses
 - ii. Endocrinology
 - iii. Male & female reproductive system

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Chatterji, C. C.	Human Physiology	Medical Allied	1997	2V
2	Keele, Cyril A	Samson Wright's Applied Physiology	Oxford University Press	1998	
3	Bijlani, R L	Understanding Medical Physiology	Oxford University Press	1998	
4	Guyton, A.C. and Hall, J. E.	Textbook of Medical Physiology	W.B.Saunders, Singapore	1998	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

PSYCHOLOGY & SOCIOLOGY

Course Code: BPT – 103

L – 4

T/P – 0

CREDITS – 8

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.

Note: This course is to be taught by two teachers (Psychologist & Sociologist / Medical Sociologist). Each part carries equal weightage. External Question Paper for each part shall be set by two relevant subject paper setters The examinees shall use different answer books for the two different parts. And, relevant subject teachers shall evaluate these.

Course Contents: All sections carry equal weightage

PSYCHOLOGY (PART – A)

Section – A

1. What is psychology? Fields of application of psychology, influence of heredity and environment on the individual
2. Learning – theories & principles learning
3. Memory, Forgetting, theories of memory and forgetting, thinking & methods to improve memory
4. Thinking – process, problem solving, decision making and creative thinking
5. Motivation - theories and types of Motivation
6. Emotions - theories of Emotions and stress
7. Attitudes – theories, attitudes and behaviour, factors in attitude change
8. Intelligence - theories of intelligence
9. Personality, theories of personality, factors influencing personality
10. Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age
11. Behavior - normal and abnormal
12. Counseling - Definition, Aims and principles
13. Psychotherapy – brief introduction to paradigms in psychopathology and therapy

Section – B

14. Psychological need of children and geriatric patients
15. Communication – effective and faulty
16. Emotional and behavioral disorders of childhood and adolescence- (in brief)
 - a) Disorders of under and over controlled behavior
 - b) Eating disorders
17. Mental deficiency -
 - a) Mental retardation,
 - b) Learning disabilities
 - c) Autistic behavior
18. Anxiety Disorders -
 - a) Phobias, panic disorder,

- b) Generalized Anxiety disorder,
- c) Obsessive Compulsive Disorder,
- d) Post –traumatic Stress Disorder
- 19. Somatoform and Dissociate Disorders -
 - a) Conversion Disorder,
 - b) Somatization Disorder,
 - c) Dissociate Amnesia & Dissociate Fugue
- 20. Personality Disorder
- 21. Patho-physiological Disorders – stress and health
- 22. Severe psychological disorders – Mood disorders, psychosis

SOCIOLOGY (PART – B)

Section – C

A-Introduction

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

B-Social Factors in Health and Disease:

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

C-Socialization:

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

D. Social Groups:

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

E- Family:

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

F-Community:

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

Section – D

G-Culture and Health:

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

H-Social change:

1. Meaning of social changes & Factors of social change.
2. Human adaptation and social change.
3. Social change and stress.
4. Social and deviance.
5. Social change and health Program.
6. The role of social planning in the improvement of health and in rehabilitation.

I-Social problems of disabled:

Consequences of the following social problems in relation to sickness and Disability, remedies to prevent these problems

1. Population explosion.
2. Poverty and unemployment.
3. Beggary.
4. Juvenile delinquency.
5. Prostitution.
6. Alcoholism.
7. Problems of women in employment.

J-Social security: Social security and social legislation in relation to the Disabled.

K-Social worker: Meaning of social work; the role of a medical social worker.

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Morgon, Clifford T	Introduction to Psychology	Tata Mcg. Hill, Delhi	1999	
2	Farnald, L.D.	Introduction to Psychology	AITBS, Delhi	1999	
3	Korchin, Sheldon J.	Modern Clinical Psychology: Principals	CBS, New Delhi	1999	
4	McDavid, J.W. and Harari, H.	Social psychology: Individuals, Groups, Societies	CBS, New Delhi	1999	
5	Davison, G.C. and Neale, J.M.	Abnormal Psychology	Jhon Wiley, New York	1997	
6	Mehta, Manju	Behavioral Sciences in Medical Practice	Jaypee, New Delhi	1998	
7	Bhusan, Vidya and Sachdeva, D.R.	Introduction to Sociology	Kitab Mahal, New Delhi	1999	
8	Turner, J. H.	Structure of Sociological Theory	Jaipur Publication	1995	
9	Anand Kumar	Indian Society and Culture	Vivek, New Delhi	2000	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

FUNDAMENTALS OF BIOMECHANICS & EXERCISE THERAPY

Course Code: BPT – 104

L – 3

T/P – 0

CREDITS – 6

Course Objectives:

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

Course Contents: All sections carry equal weightage

Section – A

All topics are for a brief description only

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

Section – B

11. Aims and scope of various biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights
12. Normal Posture - definition & description, static and dynamic, alignments of various joints, centre of gravity, planes & muscular moments, and Analysis of posture
13. Movements - Anatomical definition and description, Movements and exercise as therapeutic modality and their effects, Physiological reaction of exercise
14. Traction - Rationale, Technique, indications & contra-indications

Section – C

15. Normal Gait - definition & description, alignments, centre of gravity during gait cycle, planes & muscle acting mechanisms, pattern, characteristics Normal gait cycle, time & distance parameters, & determinants of Gait
16. Starting positions - Description and muscle work, Importance of fundamental and derived types, Effects and uses of individual positions
17. Soft tissue manipulation - History, definition, types and their rationale, general effects, local effects of individual manipulation (physiological effects) and uses, contra-indications and techniques of application

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Hollis, M. and Cook, P.F.	Practical Exercise Therapy	CBS, New Delhi	1999	
2	Gardiner, Dena	Principles of Exercise Therapy	CBS, New Delhi	1999	
3	Lippert, Lynn	Clinical Kinesiology for Physical Therapy	Jaypee New Delhi	1996	
4	Pagliarulo, M.A.	Introduction to Physical Therapy	Mosby, London	2001	
5	Jones,	Human Movement Explained	Butterworth Heine	2000	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

PRINCIPLES OF BIO-ELECTRICAL MODALITIES

Course Code: BPT – 105

L – 3

T/P – 0

CREDITS – 6

Course Objectives:

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

Course Contents: All sections carry equal weightage. All topics are for a brief description only.

Section – A

Fundamentals of Electricity & Magnetism

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

Section – B

1. Thermionic Valves: Thermionic emission, Diode and Triode valves and their characteristics, Construction and application of Cathode Ray Oscilloscope
2. Semiconductor Devices: Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices. Basing of Diode and their characteristics, Light Emitting Diodes, integrated circuits
3. Electronic Circuits: Rectifiers & smoothing circuits, Oscillators - Sinusoidal and non-sinusoidal types
4. A.C. AND D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters, Wheat stone bridge
5. Introduction to Therapeutic Energies – Thermal, Mechanical, Electrical, Electromagnetic and magnetic - Definition, description, physiological effects, pathological effects and dangers

Section – C

6. Medical Instrumentation For Physical Therapy: Brief description of generation, circuit diagrams and testing
7. Low frequency currents, Direct currents, Medium frequency currents
8. Short wave Diathermy-continuous and pulsed
9. Microwave Diathermy
10. Ultrasound
11. Actino-therapy - Infrared, UVR and Lasers

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

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Froster, A. and Palastanga, N.	Clayton's Electrotherapy: Theory and Practice	AITBS, Delhi	1999	
2	Jhon, Low and Ann, Reed	Electrotherapy Explained: Principles	Butterworth Heine, Oxford	2000	
3	Nelson, R.M. and Currier, D.P.	Clinical Electrotherapy	Appleton and Lange	1987	
4	Chemeron, M.H.	Physical Agents in Rehabilitation	W B Saunders, London	1999	
5	Michlovitz, S L	Thermal Agents in Rehabilitation	F A Davis, Philadelphia	1996	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

BIOCHEMISTRY

Course Code: BPT – 106 L – 1 T/P – 0 CREDITS – 2

Course Objectives:

To understand biochemical basis of life sciences

Note: A brief description of metabolic pathways mentioned herein is indicated. Details and structures are to be avoided.

Course Contents: All sections carry equal weightage.

Section – A

1. Nutrition: Basic principles of nutrition; Carbohydrates, Proteins and Lipid caloric requirement and balance diet.
2. Carbohydrates: Definition, classification with examples and general functions. Metabolism - Glycolysis, T.C.A Glycogen metabolism, Blood Sugar regulation, Diabetes and diabetic keto-acidosis
3. 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.
4. Proteins: Definition, classification, and Bio-medical Importance.

Section – B

5. Study of hemoglobin and immunoglobulins with functions.
6. Plasma Proteins and functions. Metabolism: General reactions of amino acids. Formation and fate of ammonia - Urea cycle.
7. 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.

Section – C

8. Enzymes: Definition, classification with examples. Factors affecting enzyme action. Brief study of enzyme inhibition. Clinical importance of enzymes.
9. Vitamins: Definition, classification and functions. Dietary source, Daily requirement and deficiency disorders.
10. Water and Electrolyte Balance: General outline of fluid compartments of the body with their water and electrolyte content and balance, Dehydration.

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Ahuja, Lakshmi	CBS Quick Review in Biochemistry	CBS, New Delhi	1999	
2	Chatterji, M N	Text Book of Medical Biochemistry	Jaypee, Bangalore	1999	
3	Deb, A.C.	Fundamentals of Biochemistry	CBA, Calcutta	1999	
4	Lehninger, A.L.	Principles of Biochemistry	CBS, Delhi	1984	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

ANATOMY

Course Code: BPT – 151

L – 0

T/P – 4

CREDITS – 4

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.

PRACTICAL EXAMINATION

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

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

PHYSIOLOGY

Course Code: BPT – 152

L – 0

T/P – 4

CREDITS – 4

PRACTICAL

1. Examination of pulse, B.P., respiratory rate, & measure study the effect of posture & exercise.
2. Spirometry to measure various lung capacities & volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometry (demonstration only)
3. Estimate of Haemoglobin, T.R.B.C., T.W.B.C. count (demonstration only)
4. Blood indices, Blood grouping, Bleeding & Clotting time (demonstration only)

PRACTICAL EXAMINATION

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

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

FUNDAMENTALS OF BIOMECHANICS & EXERCISE THERAPY

Course Code: BPT – 153

L – 0

T/P – 2

CREDITS – 2

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

- soft tissue manipulative techniques
- normal gait and posture
- starting and derived positions
- spinal mechanical traction

PRACTICAL EXAMINATION

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

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FIRST YEAR

PRINCIPLES OF BIOELECTRICAL MODALITIES PRACTICAL

Course Code: BPT – 154

L – 0

T/P – 2

CREDITS – 2

PRACTICAL

Demonstration of Bioelectrical principles

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

PRACTICAL EXAMINATION

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

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

PATHOLOGY & MICROBIOLOGY

Course Code: BPT – 201

L – 2

T/P – 0

CREDITS – 4

Course objectives:

Rationale for understanding of the subject for Physiotherapy students
Brief concept of pathological basis of disease and infectious disease prevention

Course Contents: All sections carry equal weightage

PATHOLOGY

Section – A

1. Inflammation, injury and repair
2. Oncology: Classification, gross pathological state, cancer pain syndrome (Brief description)
3. Skin: Etio-pathogenesis, gross pathology of commonly occurring skin Diseases, Burns, Pressure ulcers (Brief description)
4. Cardiovascular system: Etio-pathogenesis, gross pathology of conditions- aging, IHD, MI, CCF, HT, RHD, Congenital heart disease, Arteriosclerosis, Thrombo-angitis, Vasomotor-Raynaud's, venous thrombosis, Gangrene, Lymph edema
5. Haematology: (Brief description) – Etio-pathogenesis, gross pathology of conditions- anaemia, polycythaemia, leukaemia, haemolytic disease, and haemophilia
6. Respiratory system: Etio-pathogenesis, gross pathology of conditions - aging, Pneumonia, Pulmonary TB, Bronchiectasis, COPD, Bronchial Asthma, Restrictive Lung disease, Occupational lung disease

Section – B

7. Musculoskeletal system: Etio-pathogenesis, gross pathology of conditions - osteomalacia, Osteoporosis, Osteomyelitis, Osteoarthritis, rheumatoid arthritis, Gout, spondyloarthropathy, Osteonecrosis, Myofascial pain syndrome. Biological responses to trauma, bone and soft tissue immobilization
8. CNS AND PNS: Etio-pathogenesis, gross pathology of conditions - Aging, Meningitis, Encephalitis, Parkinson's, Amyotrophic lateral sclerosis, Ataxias, Multiple Sclerosis, stroke, Neuropathies (Carcoat Marie Tooth's disease, Compression and entrapments, diabetic, G.B syndrome), Poliomyelitis and post-polio syndrome, Myasthenia Gravis

MICROBIOLOGY

Section – C

9. Immunology: Brief description of immune system, immunity, immune responses & immune deficiency Immunology, Hypersensitivity disorders
10. Infectious diseases: Brief description of classification of microorganisms, identification, Sterilization and disinfections with special reference to principles of antisepsis and prevention of communicable diseases in clinical practice
11. Brief description of identification of infectious diseases; principles of prevention of infectious diseases caused by common pathogens - streptococci, staphylococci, gonococci, Meningococci, salmonella, V. cholerae, E. coli, shigella, tetanus, Diphtheria,

M. leprae, M. tuberculosis, Poliomyelitis, Rabies, Malaria, Amoebiasis, Helminthiasis, Scabies, ringworm, candidiasis

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Chakraborty, P.	Textbook of Microbiology	NCB, Calcutta	1999	
2	Ananth Narayan, R.	Text Book of Microbiology	Orient Longman, Madras	1986	
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	

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BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

PHARMACOLOGY

Course Code: BPT – 202 L – 2 T/P – 0 CREDITS – 4

Course Objectives:

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

Course Contents: All sections carry equal weightage

Section – A

1. General Pharmacology (brief description only):
 - a) Introduction & general concepts
 - b) Pharmaco-kinetics (routes of administration, metabolism & elimination)
 - c) Pharmaco-dynamics (mechanism of drug action, therapeutic & side effects, toxicity)
2. Autonomic Nervous System:
 - a) Brief outline of Sympathetic-parasympathetic nervous system
 - b) Therapeutic agents-uses, effects and interaction with physical therapy
3. Central Nervous System:
 - a) Anaesthetic agents- uses, side effects and interaction with physical therapy
 - b) Sedatives and hypnotics - uses, side effects and interaction with physical therapy
 - c) Anti epileptic drugs- uses, side effects and interaction with physical therapy
 - d) Analgesics - uses, side effects and interaction with physical therapy
 - e) Anti inflammatory drugs- uses, side effects and interaction with physical therapy
 - f) Psychotherapeutic agents- uses, side effects and interaction with physical therapy
 - g) Alcoholism and drug dependence and interaction with physical therapy
 - h) Therapeutic agents used for movement disorders- uses, side effects and interaction with physical therapy

Section – B

4. Cardio-vascular System:
 - a) Therapeutic agents (classification, effects on cardio-vascular system, uses & adverse reactions)
 - b) Drugs used in cardiac failure, hypertension & arrhythmias and interaction with physical therapy
 - c) Drug therapy in vascular disease & ischaemia and interaction with physical therapy
5. Respiratory system:

Therapeutic agents - uses, side effects and interaction with physical therapy

Section – C

6. Gastrointestinal system:

Therapeutic agents in Peptic ulcer, Diarrhoea- uses, side effects and interaction with physical therapy
7. Endocrinal hormones: Thyroid, adrenal, parathyroid hormones – uses, side effects and interaction with physical therapy
8. Diabetes mellitus:

Drug therapy and its interaction with physical therapy

9. Geriatrics:

Pharmacological challenges in geriatric age group and its effects on physical therapy

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Tripathi, K.D.	Essential of Medical Pharmacology	New Delhi,	1985	
2	Laurence, D.R.	Clinical Pharmacology	ELBS, London	1975	
3	Eddy, Lynne	Physical Therapy pharmacology	Mosby, London	1992	
4	Barbar, F.S.K.	Essential. Of Pharmacotherapeutics	S. Chand, New Delhi	2000	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

MEDICINE & PAEDIATRICS

Course Code: BPT – 203

L – 2

T/P – 0

CREDITS – 4

Course Objectives:

1. To understand the subject of medicine, the medical patient & implications of medical condition in physical therapy
2. To understand a Paediatrics patient and its special needs in relation to physical therapy

Course Contents: All sections carry equal weightage

MEDICINE

Section – A

1. Introduction: Brief outline of subject of medicine, a medical patient, common signs & symptoms of disease
2. Infectious Diseases: Brief description of concept of infection, types, classification & common clinical manifestation of infection and general principle of management (No specific infections)
3. Nutritional & Metabolic Diseases: Brief description of following diseases along with outline of management: Diabetes Mellitus, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies, and Obesity
4. Alimentary tract: Brief description of manifestations of alimentary tract disease & general principle of diagnosis & outline of management of following diseases: Peptic ulcer disease, common infections of small & large intestine
5. Brief description of liver diseases along with outline of management: Hepatitis, & Jaundice
6. Diseases of the blood: Brief description of manifestations along with outline of management of common blood diseases - Anaemia, Leukaemia, Coagulopathy
7. Diseases of connective tissues: Brief description of manifestations along with outline of management of - SLE, polymyositis
8. Diseases of skin: Brief description of manifestations along with outline of management of common skin diseases - scabies, pediculosis, taeniasis, impetigo & psoriasis
9. Geriatrics- physiology of ageing, manifestations of diseases in old people and general principles of management. Implications of aging in physical therapy. lung disease, Pleurisy & Pulmonary embolism
10. First Aid in common Medical Emergencies

Section – B

11. Cardio-vascular System: Manifestations of heart & vascular disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Cardiac failure, Ischaemic heart disease, hypertension, atherosclerosis, Deep vein thrombosis
12. Respiratory System: Manifestations of respiratory disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Obstructive Pulmonary diseases (Bronchial Asthma, COPD), pulmonary infections (Pneumonia, Bronchitis, Lung abscess, Tuberculosis), Respiratory failure, occupational

PAEDIATRICS

Section – C

1. Normal Growth and development of child – motor, mental, language and social
2. Pathological presentations of growth and development disorders
3. 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
4. Immunization programmes – WHO schedule, different vaccinations, rationale; special consideration to various disease eradication programmes like Pulse-Polio
5. 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
6. Clinical presentation, management & prevention of the following: - Cerebral palsy, Poliomyelitis, Muscular dystrophy
7. Childhood rheumatism-types, clinical presentation, & management in brief
8. Acute CNS infections: clinical presentation, complications and management of bacterial and tubercular infections in brief
9. Clinical presentation, management & prevention of the following respiratory conditions: URI, LRI, bronchiolitis, asthma, TB (in brief)
10. Clinical presentation, management & prevention of the following cardiac conditions: Rheumatic heart disease, SABE, Congenital heart disease - ASD, VSD, PDA (in brief)

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Chemberlin, E.N. and Ogilvie, C.	Symptoms and signs in Clinical Medicine	Jhon Wright	1974	
2	Swash, Michael	Hutchison's Clinical Methods	W B Saunders, London	2000	
3	Ghai, O. P.	Essential Pediatrics	Interprint, New Delhi	1987	
4	Haslett, C.	Davidson's Principal and Practice of Medicine	Churchill Livingstone, London	1999	
5	Golwalla, Aspi F.	Medicine For Student	NBD, Mumbai	2003	
6	Behrman, R.	Nelson's Text Book of Pediatrics	W B Saunders, London	2001	2V
7	Kasper, D.L.	Harrison 's Principles of Internal Medicine	Mc-Graw Hill, New York	2005	2V

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BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

GENERAL SURGERY

(INCLUDES CARDIO-THORACIC, VASCULAR & NEUROSURGERY)

Course Code: BPT – 204 L – 2 T/P – 0 CREDITS – 4

Course Objectives:

- a) To understand common surgical conditions & surgical procedures.
- b) To understand implication of surgical conditions, procedures on physical therapy.

Course Contents: All sections carry equal weightage

Section – A

- 1) Introduction to Surgery, surgical patient, principles of surgical examination (Brief description)
- 2) Anesthesia: Brief description of events of General Anesthesia, potential complications & outline of management
- 3) Common types of wounds, scars, ulcers, boils – clinical feature and out line of treatment
- 4) Burns: causes, classification, complications, conservative management of patients. Management of burns & wound scars
- 5) Brief outline of nutritional support, pain relief of a surgical patient
- 6) Abdominal wall: brief surgical anatomy
 - a. Brief description of various types of abdominal incisions, external opening of abdominal viscera (colostomy) resultant potential complications and management
 - b. Brief description of causes, clinical presentation and management of various types of hernias
- 7) General principles of plastic surgery and postoperative management

Section – B

- 8) Cranium:
 - a. Head injuries – classification, clinical features, complications & management
 - b. Intra-cranial disorders – clinical features, complications & management of brain abscess, space occupying lesion, hydrocephalus, vascular malformation (brief)
- 9) Nerve injuries – causes, clinical features of Cranial (V, VII) & peripheral nerve injuries (major nerves), complications & management
- 10) Vertebral column injuries – classification, clinical features, complications & management

Section – C

- 11) Vascular Disorders: clinical features, complication & management of Arterial occlusion, dilatations, arteritis, small vessel abnormalities
 - a. Gangrene – classification, brief clinical features & management
 - b. Amputations – causes & types
 - c. Superficial & deep vein thrombosis – pathogenesis, prevention & management. Lymph edema – brief outline of causes, clinical features & management
- 12) Thorax:

- a. Chest injuries - classification, causes, clinical features, complications & management Pulmonary resection - causes, outline of surgical management, pneumothorax, haemo - pneumothorax
- b. Heart: - brief description of various surgical heart diseases with respect to clinical presentation, complications and management - valvular heart disease, congenital heart disease -e.g., ASD, VSD, PDA, Ischaemic heart disease. Outline of postoperative complications in cardiac surgery and their management
- c. Brief description of first aid principles of cardio-pulmonary resuscitation and trauma

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Russell, R.C.G.	Short practice In Surgery	Arnold, London	2000	
2	Gupta, R. L.	Text Book of Surgery	Jaypee, New Delhi	1996	

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BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

EXERCISE THERAPY

Course Code: BPT – 205

L – 4

T/P – 0

CREDITS – 8

Course Objectives:

To understand the principles of exercise therapy and its application as a treatment modality

Course Contents: All sections carry equal weightage

Section – A

1. 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.
2. Goniometry
 - Measurement of various joints range in normal and disease condition.
 - Different techniques of goniometry.
 - Limb length measurements
3. Passive movements:
 - Definition
 - Relaxed, forced and stretching type.
 - Indications, contraindications, advantages and Techniques of various passive movements.
4. Active movements:
 - Free, assisted and resisted
 - Indication, contraindications, advantages and techniques of various types of active exercises.
 - Special emphasis on: Shoulder abductors & flexors, Triceps brachii, Hip abductors & flexors, quadriceps femoris, Abdominal and back extensors.
 - Clinical methods of strengthening of various muscle groups.

Section – B

5. Muscle Stretching:
 - Stretching – definition, effects and uses of stretching, indications, contra indications, general techniques & group stretching techniques
 - Special emphasis on stretching of: Pectoral major, biceps brachii, triceps brachii, and long flexors of fingers. Rectus femoris, Ilio-tibial band, gastrocnemius-soleus, hamstrings, hip abductors, ilio-psoas. Sternocleidomastoid
6. Relaxation:
 - Description of fatigue and spasm & factors.
 - General causes, signs and symptoms of fatigue
 - Techniques of Relaxation- local and General with indication
 - Rationale of relaxation Techniques.
7. Joint Mobility:
 - Joint range, stiffness, range and limitations
 - Accessory movements- glides, traction and approximation
 - Mobilization of peripheral, spinal joints, techniques and grading in detail.

8. Re-education of muscles:
 - Concept, technique, spatial and temporal summation.
 - Various reduction techniques and facilitating methods.
 - Progressive strengthening of various muscle groups in Grade-I-Grade IV.
 - Muscle strengthening technique – PNF - Principles of PNF, indications, contra indications, techniques, limb patterns
9. Co-ordination:
 - Balance – static and Dynamic
 - Discoordination: LMNL & UMNL, cerebellar lesion, loss of kinesthetic sense (Tabes-dorsalis, leprosy, syringomyelia)
 - Reeducation of balance and coordination: PNF and Frenkel's exercises.

Section – C

10. Crutch Walking:
 - Description of crutch - components, classification
 - Good crutch, measurements
 - Crutch use- Preparation, Training, counseling.
 - Crutch gaits- types, & significance.
 - Crutch complications- Palsy, dependency etc.
11. Hydrostatics and Hydrodynamics:
 - History
 - Properties of water, Specific gravity, Hydrostatic pressure
 - Archimedes principle, Buoyancy-law of floatation
 - Effect of buoyancy on movements performed in water
 - Equilibrium of a floating body, Bernoulli's theorem
 - Physiological effects of exercise in water
12. Hydrotherapy:
 - Indication, contraindication, benefits, dangers and precautions
 - Hydrotherapy regimes of exercises,
 - Hydrotherapy exercise for all age groups
 - Types of pools and baths
13. Suspension Therapy:
 - Principles of suspension & types
 - Components
 - Effects and uses & therapeutic application
14. Yogasanas and Pranayama:
 - Physiology and therapeutic principles of yoga,
 - Yogasana for physical culture, relaxation and medication.
 - Application of yogasana in physical fitness, flexibility.
 - Therapeutic application of yoga. Yoga a holistic approach

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Hollis, M. and Cook, P.F.	Practical Exercise Therapy	Blackwell, Oxford	1999	
2	Gardiner, Dena M.	Principles of Exercise Therapy	CBS, New Delhi	1999	
3	Lippert, Lynn	Clinical Kinesiology for Physical Therapy	Jaypee, New Delhi	1996	
4	Paliarulo, M. A.	Introduction to Physical Therapy	Mosby, London	2001	
5	Jones and Barker,	Human Movement Explained	Butter worth- Heine	2000	
6	Thomson, Ann	Tidy's Physiotherapy	Varghese, Mumbai	1991	
7	Hislop, H.J. and Montgomery, J.	Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination	W.B.Saunders, Philadelphia	2002	
8	Norkin	Measurement of Joint Motion			
9	Kisner, C. and Kolby, L.A.	Therapeutic Exercise Foundation and Technique	Jaypee, New Delhi	1996	
10	Holey, E. and Cook, E.	Therapeutic Massage	Harcourt, Singapore	1998	
11	Bates, Andrea and Hanson, Norm	Aquatic Exercise Therapy	W.B.Saunders, Philedelphia	1996	
12	Kendal, F.P.	Muscles Testing and Function	Lippincott, New York	1993	
13	Campion, M. R.	Hydrotherapy: principles and Practice	Butterworth, Oxford	2000	
14	Perry, Jan F	Kinesiology Workbook	F A Davis, Philadelphia	1996	
15	Adler, S.S.	PNF in Practice	Springer, New York	2003	

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BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

ELECTROTHERAPY

Course Code: BPT – 206

L – 4

T/P – 0

CREDITS – 8

Course Objectives:

- a) To list indications and contraindications of various Modalities.
- b) To understand different techniques of applications, their justification and effects.
- c) Demonstration of individual techniques of applications of various modalities.

Course Contents: All sections carry equal weightage

Section – A

A. LOW FREQUENCY CURRENTS:

Nerve Muscle Physiology: brief outline

Faradic current:

- Indications, contraindications, Techniques, parameters, Group muscle stimulation.
- Faradic footbath, Faradism under pressure and muscle re-education.
- Dosimetry

Galvanic current:

- Indications, contraindications, precautions and therapeutic effects of stimulation.
- Techniques, parameters, Dosimetry

Electro-Diagnosis:

- S. D. Curve, Reaction of degeneration, Chronaxie & Rheobase
- Outline of EMG & Nerve conduction velocity

Iontophoresis:

- Definition and principles & factors
- Indications, effects, techniques, contraindications, precautions and Potential harmful effects.

TENS therapy:

- Principle of therapy, Parameters and therapeutic uses.
- Theories of pain and pain control.
- Indications and contra-indications, Dosimetry

B. 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.

Section – B

C. THERMAL THERAPY MODALITIES:

1. Infrared Therapy:

- Therapeutic effects and uses, Techniques of application.
- Indications, contraindications precautions and Potential harmful effects.

2. Heating Modalities:

- Therapeutic effects and uses, Techniques and applications
- Indications, contraindications, precautions and Potential harmful effects of various heat modalities:
Paraffin wax bath therapy, Hydro collator packs, Whirlpool and moist heat Heating pads, Hot air chambers.

3. Cold-therapy:
 - Indications, contraindications and therapeutic effects.
 - Technique, precautions and Potential harmful effects of treatment, Dosimetry

D. HIGH FREQUENCY CURRENTS:

Short wave Diathermy: Continuous & Pulsed

- Indications, contraindications and therapeutic effects.
- Methods of application-capacitor and induction electrode, precautions and Potential harmful effects of treatment, Dosimetry.

Microwave Diathermy:

- Characteristics and therapeutic effects.
- Application techniques, indications, contraindications, precautions and potential harmful effects, Dosimetry.

Section – C

E. ULTRASONIC THERAPY:

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

F. ACTINOTHERAPY:

Laser:

- Introduction, effects and potential harmful effects.
- Indication, contraindications, precautions, method of application, dosimetry

Ultraviolet therapy:

- Physiological and therapeutic effects- photosensitization
- Indications and contraindications and Potential harmful effects.
- Methods of application, Sensitizes, Filters, Dosage, wavelength, penetration, tolerance, Treatment / Application condition wise
- Comparison between UVR & IR Therapy

G. Advanced electrotherapy:

- Computerization of modalities
- Programming of parameter.
- Selection and combination of parameters.
- Combined therapy-U.S.+TENS-Principles, uses, indications etc.
- Principles of Bio-feed back, indications & uses.

H. Traction instruments:

Rationale, technique, indications, contraindications, precautions of electric traction equipments

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Froster, A. and Palastanga, N.	Clayton's Electrotherapy: Theory and Practice	AITBS, Delhi	1999	
2	Jhon, Low and Ann, Reed	Electrotherapy Explained: Principles	Butterworth Heine, Oxford	2000	
3	Nelson, R.M. and Currier, D.P.	Clinical Electrotherapy	Appleton and Lange	1987	
4	Chemeron, M.H.	Physical Agents in Rehabilitation	W B Saunders, London	1999	
5	Michlovitz, S L	Thermal Agents in Rehabilitation	F A Davis, Philadelphia	1996	

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BACHELOR OF PHYSIOTHERAPY (BPT)

SECOND YEAR

ELECTROTHERAPY PRACTICAL

Course Code: BPT – 253

L – 0

T/P – 7

CREDITS – 7

PRACTICAL

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 Reaction of degeneration, SD curves plotting.

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.

Note: All the demonstrations are done on normal persons.

PRACTICAL EXAMINATION

Students will be assessed by viva & practical demonstrations based upon learning in Theory and Practical.

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BACHELOR OF PHYSIOTHERAPY (BPT)

THIRD YEAR

NEUROLOGY INCLUDING PSYCHIATRY

Course Code: BPT – 301

L – 2

T/P – 0

CREDITS – 4

Course Objectives:

- a) To understand clinical manifestations of Neurological and Psychological disorders
- b) The rationale and implications of psychological disorders on disability
- c) To understand the management of neural & psychological disorders

Course Contents: All sections carry equal weightage

Section – A (Neurology)

3. Nervous system: Disorders of Neurological functions in the light of Anatomy and Physiology (Brief description only) - Cerebrum, Cerebellum, Spinal Cord, Major Nerve Tracts, Motor System, Sensory System, Autonomic System, Reflexes, Communication & CSF
4. Clinical examination of a neurological patient
5. General manifestations of nervous system disease & principles of diagnosis & management
6. Brief Description of Headache, migraine, raised intra-cranial pressure
7. Cranial Nerves and special senses with major emphasis on V, VII, X, XI, & XII
8. Inflammatory conditions (brief description) – meningitis (bacterial, tubercular), viral encephalitis, syphilis, rabies
9. Disorders of cerebral circulation - ischaemia, haemorrhages (CVA), HT encephalopathy
10. Demyelinating diseases (brief description) - acute disseminated encephalomyelitis, multiple sclerosis
11. Extra pyramidal syndromes - Parkinson's disease, Chorea, Athetosis, Dystonia, Hemiballismus, Spasmodic Torticollis
12. Convulsive disorders (brief description) - epilepsy (GM, PM, Psychomotor), tetany
13. Developmental and degenerative syndromes – cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy

Section – B

14. Disorders of Spinal cord and Cauda Equina- spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, Neurogenic bladder and bowel
15. Metabolic and intoxication disorders (brief description) - Alcoholism, Drug addiction, heavy metals poisoning (lead, mercury, copper), Organo-phosphorous poisoning, electric shock, tetanus, botulism
16. Peripheral nerve disorders – traumatic/ compression or entrapment neuropathy, polyneuritis, 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
17. Muscle disorders – Progressive muscular dystrophy, polymyositis, myasthenia gravis, floppy infant syndrome
18. Autonomic nervous system (brief description)– clinical features of autonomic disorders, autonomic dysreflexia, autonomic nervous system and pain

Section – C (Psychiatry)
(Brief outline only)

- A) Principles of psychiatric examination
- B) Modalities of psychiatric treatment
- C) Psychiatric illness and physical therapy link
- D) Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -
 - i. Anxiety neurosis
 - ii. Depression
 - iii. Obsessive compulsive neurosis
 - iv. Psychosis
 - v. Maniac-depressive psychosis
 - vi. Drug induced psychosis
 - vii. Post-traumatic stress disorder
 - viii. Psychosomatic reactions: Stress and Health, theories of Stress – Illness Link
- E) Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses-
 - i. Organic brain syndrome
 - ii. Dementia
 - iii. Drug dependence and alcoholism
 - iv. Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue
 - v. Multiple Personality & Depersonalization disorder
- F) Child psychiatry: Brief descriptions of manifestations, and management of childhood disorders - attention deficit syndrome, and behavioral disorders
- G) Geriatric Psychiatry
- H) Mental deficiency- (descriptive)
 - a. Mental retardation,
 - b. Learning disabilities
 - c. Autistic behavior

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
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	
6	Walton, John	Brain's Disease of the Nervous System	Oxford university press, Delhi	1998	
7	Haerer, A.F.	Neurological Examination	Lippincott, Philedelphia	1999	
8	Ahuja, Neeraj	Short Text Book Of psychiatry	Jaypee, New Delhi	1999	
9	Haslett, C.	Davidson's Principal and Practice of Medicine	Churchill Living stone, London	1999	
10	Kasper, D.L	Harrison `s Principles of Internal Medicine	Mc-Graw Hill, New York	2005	2V

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

THIRD YEAR

ORTHOPAEDICS

Course Code: BPT – 302

L – 2

T/P – 0

CREDITS – 4

Course objectives:

1. To understand an orthopaedic patient, common orthopaedic conditions and procedures
2. To understand applications of physical therapy in various orthopaedic conditions
3. To understand the implications of various orthopaedic conditions, and procedures on physical therapy

Course Contents: All sections carry equal weightage

Section – A

1. Introduction to Orthopaedics: An Orthopaedic patient, history taking, clinical features, clinical examination, and investigation
2. Fracture healing (Normal & pathological)
Calcium-phosphorus metabolism - normal and pathological states
3. Congenital malformations:
Brief descriptions of following congenital conditions along with the outline of treatment:
Congenital Hip Displasia, Congenital Talipes Equinovarus / Calcaneovalgus, Arthrogryposis Multiplex Congenita, Congenital Torticollis, Acromelia, phocomelia, Amelia, Spina Bifida: all types, clinical presentation, sequel & management
4. Development diseases of skeleton: (Brief description only)
Osteogenesis imperfecta, heterotopic ossification, Osteochondritis, Perthes' disease
5. Neuromuscular diseases:
Volkman's Ischaemic contracture, obstetrical paralysis, and peroneal muscular atrophy
Poliomyelitis – orthopaedic aspects and treatment of deformities
6. Spinal deformities: clinical features, diagnosis & Conservative management of Scoliosis, Kyphosis, and traumatic deformities
7. Infections of Musculoskeletal system with conservative management (in brief):
 - a. Bacterial infections
 - b. Tubercular infections
 - c. Leprosy, Pott's paraplegia
8. Neuro-vascular Diseases (Brief Description): orthopaedic aspects and treatment of - Nerve injuries (major nerves), Plexus injuries

Section – B

9. Arthritis & Rheumatic Diseases: Clinical features, evaluation & conservative management of various categories of arthritis
 - i. Rheumatoid arthritis, Juvenile Ch. Arthritis, Reiter's disease
 - ii. Polymyalgia rheumatica,
 - iii. Gout,
 - iv. Osteoarthritis,
 - v. Ankylosing spondylitis,
 - vi. Neuropathic- joints, haemophilic arthropathy,
 - vii. Avascular necrosis.
10. Bony & Soft tissue injuries: Injury & repair, Clinical presentation, evaluation & general principles of rehabilitation management (Brief Description)

11. Upper Limbs: Clinical presentation, evaluation & conservative management of rotator cuff injuries, adhesive capsulitis, bursitis, biceps tendonitis, shoulder dislocation, snapping & winged scapula, tennis and golfer elbow, olecranon bursitis, soft tissue injuries, sprains and strains, Arthritic conditions, tenosynovitis, Carpal tunnel syndrome, deformities Dupuytren's contracture, VIC, reflex sympathetic dystrophy, common fractures and dislocations

Section – C

12. Lower Limb: Clinical presentation, evaluation and conservative management of Arthritic conditions, soft tissue injuries, sprains and strains, achillis tendonitis, bursitis, plantar fasciitis, deformities, reflex sympathetic dystrophy, neuropathic Joints, common fractures and dislocations
13. Spine: clinical presentation, evaluation and conservative management of – disc prolapse, cord compression, spondylosis, Ankylosing spondylosis, Spondylyolsthesis and Spinal Fractures
14. Amputations - Justification, outline of surgical approaches, incisions, procedures, indications, contraindications, complications & management.

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Joshi, J. and Kotwal, P.	Essential Of Orthopedics and Applied Physiotherapy	Elsevier, New Delhi	2004	
2	Terke, Samuel L.	Orthopedics: principles and their application	Lippencott, New York	2000	2V
3	Magee, David J.	Orthopedic and Physical Assessment	Saunders, Philadelphia	2002	
4	Maheshwari, J	Essential Orthopedics			
5	Solomon, Louis	Apley's Systems of Orthopedics and Fracture	Arnold, London	2001	
6	McRae, R. and Esser, Max	Practical Fracture Treatment	Churchill Living stone, London	2002	

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BACHELOR OF PHYSIOTHERAPY (BPT)

THIRD YEAR

OBSTETRICS AND GYNECOLOGY

Course Code: BPT – 303

L – 1

T/P – 0

CREDITS – 2

Course objectives:

- To understand common gynaecological conditions and procedures (in brief)
- To understand implications of gynaecological conditions and procedures on physical therapy

Course Contents:

1. Brief Anatomy and physiology of female reproductive system
2. Basic principles of clinical examination, investigation, diagnosis, prognosis of female reproductive system disorders Menstruation and its disorders
3. Physiological changes during pregnancy
4. Labour, stages of labour & delivery
5. Musculo-skeletal problems in an obstetric patient, management
6. Prenatal and post-natal care
7. Pelvic inflammatory diseases
8. Prolapse uterus, urinary incontinence, causes & management
9. Abortion and birth control
10. Tumor of the reproductive systems, management
11. Surgical consideration in obstetrics and gynecology

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Howkins, John	Shaw's Textbook of Gynecology	Orient-Longman, Bangalore	1971	
2	Datta, D.C.	Textbook of Obstetrics	NCBA, Calcutta	2000	
3	Mudaliar, A.L.	Clinical Obstetrics	Orient-Long main, Bangalore	1972	
4	Percival, Robert	Manual of Obstetrics	ELBS, London	1973	

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BACHELOR OF PHYSIOTHERAPY (BPT)

THIRD YEAR

APPLIED BIO-MECHANICS & KINESIOLOGY

Course Code: BPT – 304

L – 3

T/P – 0

CREDITS – 6

Course objectives:

To understand the Musculoskeletal surgical anatomy normal and pathological deviations

Course Contents: All sections carry equal weightage

Section – A

- A. Joint structure and function
1. Types of joints
 2. Joint functions
- B. Kinesiology:
1. Origin of human movement and its significances
 2. Analysis of movement – kinetics and kinematics
 3. Body links and motion parts
- C. 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

Section – B

- D. 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
 - Weight distribution (lower limb joints)
- Of the following joint complexes:
- Wrist and hand complex
 - Hip joint complex
 - Knee joint complex:
 - Ankle-foot complex:
 - Vertebral column

Section – C

- C. Abnormal Posture:
1. Definition and description.
 2. Analysis of postures (anterior, lateral and posterior), alignment of joints in different postural deviations.
 3. Abnormal postures – biomechanical analysis and effects.
 4. Principles of Postural correction
- D. Pathological Gait:
1. Phases of gait – biomechanical analysis.

2. Time and distance parameters – biomechanical significance.
3. Joint motion – chains of movement
4. Effects of pain, deformity, weakness in pathological gaits
5. Management of pathological gaits.

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
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)

THIRD YEAR

PHYSIOTHERAPEUTIC IN NEUROLOGY

Course Code: BPT – 305 L – 4 T/P – 0 CREDITS – 8

Course objectives:

- a) To identify various neurological dysfunction clinically
- b) To set goals and apply therapeutic skills in different neurological conditions.

Course Contents: All sections carry equal weightage

Section – A

- A) Review of basic Neuro-Anatomy and Physiology
- B) Physiotherapy evaluation of a neurological patient, electro diagnostic procedures, interpretations and prognosis in different neurological conditions
- C) Spinal cord injury: review of anatomy and physiology
 - Physiotherapy Assessment of Spinal cord injury
 - Principles of Physiotherapy at various stages of Spinal cord injury
 - Rehabilitation goals and ADL training

Section – B

- D) Assessment and principles of therapeutic management of following neurological conditions:
 - Stroke, meningitis, encephalitis, Parkinson's disease, Cerebral palsy, Ataxia, Brain tumors
 - Motor neuron disease, Disseminated sclerosis, transverse myelitis, tumors, polio, syringomyelia, spina bifida,
 - Neuropathies, neuromuscular junction disorders and myopathies
- E) Developmental physiotherapy programs, reeducation and retraining techniques in neurological conditions, approaches like: Bobath's, Rood's, PNF, Vojta techniques, biofeedback, Brunnstorm, Motor Relearning programming

Section – C

- F) Peripheral nerve injuries, surgical resection & repair:
 - Classification & types
 - Functional assessment, investigation, diagnosis & prognosis
 - Physiotherapeutic management
- G) Traumatic brain injury:
 - Types and Mechanisms of head injury
 - Clinical features, potential complications
 - Physiotherapy principles of immediate and postoperative therapeutic management
- H) Neurosurgery: Post surgical Physical therapy in neurosurgical procedures – craniotomy, shunts, SOL resection, surgical treatment of spasticity, cervical cord decompression

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Hislop, H.J. and Montgomery, J.	Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination	W.B.Saunders, Philadelphia	2002	
2	Bobath, Berta	Adult Hemiplegia: Evaluation and treatment	Butterworth, Oxford	1990	
3	Shepherd, R.B.	Physiotherapy in Paediatrics	Butterworth-Heinemann, Oxford	1995	
4	Downie, P.A.	Cash's Textbook of Neurology for Physiotherapy	Jaypee, New Deli	1993	
5	Swaner, K.A. and LaVigne, J.M.	Brunnstom's Movement Therapy in Hemi	Lippincott, New York	1992	
6	Burns, Y.R. and Macdonald J.	Physiotherapy and the Growing Child	Harcourt, Singapore	1998	
7	Bromley, Ida	Tetraplegia and Paraplegia	Churchill-Livingston, London	1998	
8	Voss, Dorothy	Proprioceptive Neuromuscular Facilitation	Lippincott, New York	1989	
9	Adler, S.S.	PNF in Practice	Springer, New York	2003	
10	Carr, J.H. and Shepherd, R.B.	Stroke Rehabilitation	Butterworth-Heinemann, Singapore	2003	
11	Carr, J.H. and Shepherd, R.B	Neurological Rehabilitation	Butterworth, Oxford	1998	
12	Kottke, F.J. and Lehman J.F.	Handbook of Physical, Medicine and Rehabilitation	W B Saunders, London	1990	
13	Umphred, Dracy A	Neurological Rehabilitation	Mosby, London	2001	

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BACHELOR OF PHYSIOTHERAPY (BPT)

THIRD YEAR

PHYSIOTHERAPEUTIC IN ORTHOPAEDIC

Course Code: BPT – 306

L – 4

T/P – 0

CREDITS – 8

Course Objectives:

- a) To identify various Musculo skeletal dysfunction clinically
- b) To set goals and apply therapeutic skills in different orthopaedic conditions.

Course Contents: All sections carry equal weightage

Section – A

1. Physiotherapy evaluation of an orthopaedic patient
2. Manipulation therapy - general assessment, indications, contra indications, brief introduction to schools of manual therapy (Maitland, Kaltenborne, Cyriax, Mulligan, Mackenzie)
3. Spinal stabilization, scoliosis correction
4. Assessment, management and treatment goals of:
 - a. Osteoarthritis,
 - b. Spondylosis, spondylolisthesis
 - c. Proplapse intervertebral disc, Lumbar cord decompression
 - d. Adhesive capsulitis, rotator cuff lesions of shoulder
 - e. Tuberculosis of the spine, bone and major joints
 - f. Avascular bony necrosis at hip joint

Section – B

5. Assessment, management and treatment goals of:
 - a. Rheumatoid arthritis
 - b. Ankylosing Spondylitis
 - c. Deformities: - Torticollis, thoracic outlet syndrome, CTEV, pes cavus, pes planus, Scoliosis, kyphosis, lordosis, coxa vara, genu valgum-varum-recurvatum
6. General principles of physiotherapy in fracture management including complications at different stages
7. General principles of physiotherapy in dislocations management including complications
8. Post fracture - assessment and PT management of: various fractures of upper limb, lower limb, vertebral column

Section – C

9. Assessment and therapeutic management of: Soft tissue injuries – Sprains, strains, ligament and cartilage tear/rupture
10. Orthopaedic surgery: General principles of assessment, physiotherapy management in surgical conditions like – osteotomy, joint replacements, ORIF, arthodesis, Illizarov's technique
11. Tendon transfers, soft tissue releases & soft tissue repair
12. Surgeries in C.P. & Polio
13. Amputation – pre & postoperative evaluation & principles of management
Pre & post prosthetic assessment & principles of management

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Smith, Laura K	Brunnstrom's Clinical Kinesiology	Jaypee, New Delhi	1996	
2	Buckley, John	Exercise on Prescription	Butterworth-Heinemann, Boston	1997	
3	Downie, Patricia A.	Cash's Textbook of Orthopedics and Rheumatology	Jaypee, New Delhi	1993	
4	Donatelli, R. A. and Wooden, M.J.	Orthopedic Physical Therapy	Churchill- Livingstone, New York	2001	
5	Tidswell, Marian	Orthopedic Physiotherapy	Mosby, London	2001	
6	Jones and Barker,	Human Movement Explained	Butter worth- Heine	2000	
7	Jacobs, Karen	Ergonomics For Therapist	Butter worth- Heine, Boston	1999	
8	Maitland, G.D.	Maitland's Vertebral Manipulation	Butter worth- Heine, Oxford	2001	
9	Nachemson, A.L. and Jonsson,, E.	Neck and Back pain: Scientific Evidence	Lippincott, New York	2000	
10	Donatelli, R.A.	Physical Therapy of Shoulder	Churchill, New York	1997	
11	Walker, J.M. and Helewa, A.	Physical Therapy in Arthritis	W B Saunders, London	1996	
12	Engstrom,B. and Van de Ven C.	Therapy for Amputees	Churchill, London	2001	
13	Calliet, Rene	Knee Pain and Disability	Jaypee, New Delhi	1992	
14	Calliet, Rene	Shoulder Pain	Jaypee, New Delhi	1992	
15	Calliet, Rene	Low Back pain syndrome	Jaypee, New Delhi	1992	
16	Calliet, Rene	Neck and arm pain	Jaypee, New Delhi	1991	
17	Calliet, Rene	Foot and Ankle Pain	Jaypee, New Delhi	1992	
18	Calliet, Rene	Soft tissue Pain and disability	Jaypee, New Delhi	1988	

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BACHELOR OF PHYSIOTHERAPY (BPT)

THIRD YEAR

PHYSIOTHERAPEUTIC IN NEUROLOGY

Course Code: BPT – 352 L – 0 T/P – 7 CREDITS – 7

PRACTICAL

Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physical therapy in treatment of neurological conditions

PRACTICAL EXAMINATION

Students will be assessed by viva & practical demonstration of application of Physical therapy based upon learning in theory.

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FOURTH YEAR

COMMUNITY REHABILITATION & DISABILITY PREVENTION

Course Code: BPT – 401 L – 2 T/P – 0 CREDITS – 4

Course objectives:

- a) To understand the concept of Rehabilitation and team approach.
- b) Principles of Physiotherapy in Rehabilitation.
- c) Disability evaluation & management.
- d) Application of Physiotherapy at community level.

Course Contents: All sections carry equal weightage

REHABILITATION

Section – A

1. Introduction of Rehabilitation & History
2. Epidemiology of disability (Impairment, disability, phases of disability process, etc.).
3. Principles of Rehabilitation & concept of team approach with rolls of each individual participant.
4. Organization of Rehabilitation unit.
5. Disability prevention evaluation & principles of Rehabilitation Management.
6. Role of Physiotherapy in Rehabilitation (Preventive, treatment & restoration)

Section – B

7. Brief outline of Communication disorder & its implications on Rehabilitation process.
8. Brief outline of psychosocial & vocational aspects of Rehabilitation.
9. Introduction to Occupational therapy.
10. Activities of daily living, functional assessment & training for functional independence.
11. Brief outline of basic community medicine with special reference to community based Rehabilitation, infrastructure and role of CBR
12. Assessment of disability in rural & urban setups. Health care delivery system & preventive measures with specific reference to disabling conditions. Community education programme.
13. Application of Physiotherapy skills at community level with special reference to the need at rural level.

BIO-MEDICAL ENGINEERING

Section – C

1. Introduction to surgical anatomy and various pathological deviations with respect to brace fitting (brief outline only).
2. Rationale of prescribing Prosthetic and Orthotic devices.
3. Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb.
4. Checkout, usage advice, precautions, and follow-up.
5. Walking aids and wheel chairs: prescription, usage advice, and follow-up.

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Park, J.E.	Text Book of Preventive and Social Medicine	Banarsidas, Jabalpur	1987	
2	Pedretti, L.W.	Occupational Therapy: Practice skill	Harcourt-Brace, New York	1990	
3	Sunder, S.	Rehabilitation Medicine	Jaypee, New Delhi	1999	
4	Bates, Barbara	Physical Examination and History Taking	J.B.Lippincott, Philedelphia	1995	
5	Mackee, Pat	Orthotics in Rehabilitation	Jaypee, New Delhi	1998	
6	W.H.O.	Disability Prevention and rehabilitation In primary Health Care: Guide for District Health and Rehabilitation Managers	W.H.O	1995	
7	Lusardi, M.M. and Nielsen, C.C.	Orthotics and Prosthetics In Rehabilitation	Butter worth- Heine, Woburn	2000	
8	Delisa, Joel A.	Rehabilitaion Medicine: Principal and Practice	J.B.Lippincott, New York	1998	
9	Braddom, Randall L.	Physical Medicine and Rehabilitation	W B Saunders, New York	2000	
10	Sharwan Kumar	Multidisciplinary Approach to Rehabilitation	Butter worth- Heine, New York	2000	
11	W.H.O.	Community- Based Rehabilitation and The Health Care Referral Services: Guide for Programme managers	W.H.O.	1994	
12	Kottke, and Lehmann	Handbook of Physical Medicine and Rehabilitation	W B Saunders, London	1990	

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BACHELOR OF PHYSIOTHERAPY (BPT)

FOURTH YEAR

RESEARCH METHODOLOGY & BIO-STATISTICS

Course Code: BPT – 402

L – 2

T/P – 0

CREDITS – 4

Course Contents: All sections carry equal weightage

SECTION-A (BIOSTATISTICS)

- 1) Definition – Statistics, Biostatistics
- 2) Applications of Biostatistics
- 3) Data collection from experiments & surveys.
- 4) Variable – Qualitative & Quantitative, Discrete and continuous.
- 5) Presentation of Data: -
 - a) Tabular Presentation of Data – Statistical Table, Format of a Table.
 - b) Frequency Distribution – construction of Frequency Distribution, cumulative and relative frequency distribution, Exclusive and inclusive method of classification of Data.
 - c) Diagrammatic Presentation of Data: -
Bar Diagrams, Pie Diagram, Line Diagram, Pictogram, Cartogram or Statistical map.
 - d) Graphical representation of a Frequency distribution – Histogram, Frequency Polygon, Frequency curve, ogives or cumulative frequency curves.
- 6) Measures of central tendency or measures of Location – Mean, Median Mode in ungrouped & grouped series. Partition Values – Quartiles, Deciles, Percentiles in ungrouped & grouped series. Graphical Determination of Median, Mode & partition values.
- 7) Measures of Dispersion or Variation – Range, Mean Deviation, Standard Deviation.
- 8) Measures of Skew ness – Pearson's and Bowley's coefficient of Skew ness.
- 9) Probability – Random experiment, sample space, events, probability of an event, addition & multiplication laws of probability, use of permutations & combinations in calculation of probabilities, random variable, probability distribution of a random variable, Binomial Distribution.
- 10) Normal Distribution & Characteristics of Normal curve.

SECTION-B (BIOSTATISTICS)

- 11) Correlation – Bivariate distribution, scatter diagram, coefficient of correlation, calculation & interpretation of correlation coefficient.
- 12) Regression – Lines of regression, calculation of Regression coefficient.
- 13) Sampling – Methods of Sampling.
- 14) Sampling Variability & significance – Sampling Distribution, Standard error, null hypothesis, alternative hypothesis, Type I & Type II errors, tests of significance, acceptance & rejection of null hypothesis, level of significance, Z test, t test (paired & unpaired), chi-square test.
- 15) Estimation of confidence limits & intervals.
- 16) Vital Statistics
 - 1) Rates & ratios of vital events.
 - 2) Measures of Mortality: - Crude Death Rate, Specific Death Rate, Age Specific Death Rate, Standardized Death Rates, Infant Mortality Rate.
 - 3) Measures of Fertility: - Crude Birth Rate, General Fertility Rate, Specific Fertility Rate, Age Specific Fertility Rate, And Total Fertility Rate.

- 4) Measurement of Population Growth: - Crude Rate of Natural Increase & Pearl's Vital Index, Gross Reproduction Rate, Net Reproduction Rate.
- 5) Measures of Morbidity: - Morbidity Incidence Rate, Morbidity Prevalence Rate.
- 6) Life Tables or Mortality Table.

SECTION-C (RESEARCH METHODOLOGY)

Objectives:

- a) To develop skills of critical thinking and selection of research strategy.
- b) To acquire skills to review literature, formulate problems, research writing and publishing.

Clinical Research for physiotherapist:

Why? How? And When?

A) Research in physiotherapy:

1. Introduction
2. Research – types, concept, definition.
3. Selection of aim and objectives.
4. Principles of methodology, analysis and report writing.

B) Concepts of Measurements:

1. Direct and indirect measurement variables.
2. Reliability and validity.
3. Application of physiotherapeutic tests and measurements.

C) Research Design:

1. Principles of designing.
2. Methods – Descriptive, Exploratory, single subject, others.
3. Design models utilized in physiotherapy.
4. Design of model for fundamental and clinical research.

D) Interpretation of experimental findings:

1. Collection and interpretation data theory.
2. Data review.
3. Interpretation of fundamental and clinical research.

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Armstrong, H.B.	Critical Moments in Quantitative Research	Butter worth- Heine. , Oxford	2001	
2	Hollis, M. and Cook, P.F.	Practical Exercise Therapy	CBS, New Delhi	1999	
3	Gardiner, Dena	Principles of Exercise Therapy	CBS, New Delhi	1999	
4	Lippert, Lynn	Clinical Kinesiology for Physical Therapy	Jaypee New Delhi	1996	
5	Pagliarulo, M.A.	Introduction to Physical Therapy	Mosby, London	2001	
6	Jones,	Human Movement Explained	Butterworth Heine	2000	

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BACHELOR OF PHYSIOTHERAPY (BPT)

FOURTH YEAR

PHYSIOTHERAPEUTIC IN GENERAL & CARDIOTHORACIC

Course Code: BPT – 403

L – 4

T/P – 0

CREDITS – 8

Course Contents: All sections carry equal weightage

SECTION-A (GENERAL)

- A) Principle of post surgical physical therapy management under following:
 - 1 Chest physiotherapy
 - 2 Abdominal wall care
 - 3 Scar management
 - 4 Pelvic Floor Care
- B) Dermatology: Physical therapy in:
 - Chronic Ulcers,
 - Leprosy (including Neuro-muscular complications)
 - Other dermatological conditions: Psoriasis, Vitiligo, acne, burns and skin grafting
- C) ENT: Physiotherapy management in- Maxillary Sinusitis, otitis media, rhinorrhoea
- D) Obs. & Gynaecology: Principles of physical therapy management in an Obs. Gynae patient: Incontinence, Prolapse Uterus, Pelvic Inflammatory disease, Muscular-skeletal and other problems associated with pregnancy & labour, caesarean section. Anti natal preparatory and post natal care

SECTION-B (CTVS)

- A) Review of basic cardio-thoracic anatomy and physiology
- B) Clinical examination including lung function tests in various pulmonary conditions
- C) Principles of physiotherapeutic treatment in following conditions:
 - 1. Bronchitis, asthma & bronchiectasis
 - 2. Pulmonary embolism, tuberculosis, emphysema, pleural effusion, atelectasis, pneumothorax, haemothorax, broncho-pulmonary fistula, empyema,
 - 3. Pulmonary rehabilitation – aims & objectives, principles, techniques including biofeedback.

SECTION-C (CTVS)

- D) Clinical examination in cardiovascular conditions
- E) Principles of physiotherapeutic treatment in following conditions:
 - 1. CHF, MI, PDA, HT
 - 2. Endocarditis, valve anomalies, congenital heart disorders, thrombosis, phlebitis, thrombosis, Thrombo angitis obliterans, varicose veins, ulcers
 - 3. Cardio-thoracic trauma/surgery:
 - a) Principles, techniques of physical therapy management in traumatic and other surgical conditions of chest, lung, pleura, heart and mediastinum
 - b) Principles of chest physiotherapy in ICU & ICCU.
- F) Physiotherapy care during bed-rest
- G) Physiotherapy in cancer and AIDS (General principles of management)

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Chemeron, M.H.	Physical Agents in Rehabilitation	W B Saunders, London	1999	
2	Polden, Margaret	Physiotherapy In Obstetrics and Gynecology	Jaypee, New Delhi	1990	
3	Downie, P.A.	Cash's Textbook Of Chest, Heart and Vascular Disorder's for Physiotherapists	Jaypee, New Delhi	1993	
4	Smith, H. and Ball, V.	Cardiovascular Respiratory Physiotherapy			
5	Frownfelter, D.	Principal and Practice of Cardiopulmonary Physiotherapy	Mosby, London	1996	
6	Irwin, S. and Tecklin, J.S.	Cardiopulmonary Physical Therapy	Mosby, Philedelphia	1995	
7	Froelicher, V.F. and Myers, J.N.	Exercise and the Heart	W.B.Saunders, London	2000	
8	Aua, Ruth S.	Women's Health: Text Book for Physiotherapy	Harcourt, Singapore	1998	
9	Michlovitz, S.L.	Thermal Agents in Rehabilitation	F A Davis, Philedelphia	1996	

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BACHELOR OF PHYSIOTHERAPY (BPT)

FOURTH YEAR

PHYSIOTHERAPEUTIC IN SPORTS

Course Code: BPT – 404

L – 4

T/P -0

CREDITS – 8

Course Objectives:

- To acquire concepts of evaluation of sports and sports injuries
- To learn concepts of sports training and physiotherapy for prevention and rehabilitation

Course Contents: All sections carry equal weightage

Section – A

- A) Pre-exercise evaluation
- B) Diet and nutrition
- C) Measurement of fitness components and sports skills
 - Measurement of muscular strength
 - Measurement of muscular endurance
 - Measurement of flexibility
 - Determination exercise endurance
- D) Physiological effects of exercise on body systems
 - Muscular system
 - Endocrine system
 - Cardio-respiratory system
 - Nervous system

Section – B

- E) 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 fasciitis, turf toe syndrome
 - Head & face – maxillo-facial injuries, helmet compression syndrome

Section – C

- F) 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
- G) Principles of injury prevention
- H) Principles of training & Rehabilitation in sports injuries
- I) Sports in Special age groups:
 - Female athletic triad
 - Younger athlete- Musculo-skeletal problems, management, children with chronic illness and nutrition
 - Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly

Suggested Readings:

S.No.	Author	Title	Publisher	Year	Vol.
1	Maheshwari, J	Essential Orthopedics			
2	Solomon, Louis	Apley's Systems of Orthopedics and Fracture	Arnold, London	2001	
3	Kolt, G.S and Mackler S.	Physical Therapies in Sports and Exercise	Livingston, London	2003	
4	Starkey, and Ryan,	Evaluation of Orthopedic and Athletic	F A Davis, Philedelphia	2002	
5	Mclatchie, and Lennox	Soft Tissues: Trauma and sports Injury	Butterworth Heine, Oxford	1993	
6	Norris, C.M.	Sports Injuries: Diagnosis and Management	Butterworth Heine, Oxford	2001	
7	Garrick, J.G.	Sports Injuries: Diagnosis and Management	W.B.Saunders, Philadelphia	1999	
8	Guten, Gray N.	Running Injuries	W.B.Saunders, London	1997	
9	James E.Z.	Athletic Injuries and Rehabilitation			
10	Fu, and Stone,	Sport Injuries	Lippincott, New York	2001	
11	Anderson, M.K.	Fundamentals of Sport Injuries and management	Lippincott, Philedelphia	2002	

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FOURTH YEAR

PT – CLINICALS*

Course Code: BPT – 451 L – 0 T/P – 8 CREDITS – 8

Course Objective: Assessment diagnosis, goal formulation, treatment plan formulation, and execution of therapeutic skills

The student will be posted in the department of Physiotherapy & he/she will learn the assessment, diagnosis, & physiotherapy treatment of patients visiting the department.

EXAMINATION

*There will be no university examination. The students will be awarded marks on the basis of his/her attendance & performance during clinical postings in the department of Physiotherapy, etc.

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

BACHELOR OF PHYSIOTHERAPY (BPT)

FOURTH YEAR

PHYSIOTHERAPEUTIC IN GENERAL & CARDIOTHORACIC

Course Code: BPT – 452

L – 0

T/P – 6

CREDITS – 6

PRACTICAL

Practical demonstration of basic principles of application of physiotherapy assessment, functional assessment and application of physical therapy of general & cardio thoracic conditions

PRACTICAL EXAMINATION

Students will be assessed by viva & practical demonstration of application of Physical therapy based upon learning in theory.

INTERNSHIP GUIDELINES (AMENDED)

- ❖ 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:
 - i. Remaining absent in excess of the permitted 6 days leave period, which is due: An intern will compensate by working extra for each day leave taken.
 - ii. Unsatisfactory performance during the period: If there are unsatisfactory reports in terms of performance of the intern, submitted by the Department In-charge, the said intern shall have to repeat the internship for a period at least two months further.
 - iii. Case of indiscipline at any level: A Discipline and Action Committee will be formed in the college / Institution convened by Internship coordinator/HOD PT & headed by Director/Principal. In case of any lack of discipline, breach of trust or indulgence in any criminal activity on the part of the interns when reported by the concerned departments of Hospitals/Institutions where the interns have been posted, the defaulting Intern shall be called back immediately and subjected to disciplinary proceedings by the Disciplinary Action Committee.
 - iv. Punishments:
 - a. 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.
 - b. 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.

- ❖ 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:
 - a. 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.
 - b. The Institutes & the Hospitals should have the Physiotherapy section with all the necessary infrastructure facilities.
 - c. Senior Physiotherapist with sufficient clinical experience should manage the physiotherapy departments in the Institutes/Hospitals.
 - d. 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 behaviour 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	