

STUDY & EVALUATION SCHEME
OF
BACHELOR OF PHYSIOTHERAPY
(BPT-II YEAR/ IV SEMESTER)

[Applicable w.e.f. Academic Session 2015-16 till revised]



INTEGRAL UNIVERSITY, LUCKNOW
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Syllabus approved by Board of Study, Faculty Board, Academic Council, Executive Council of the Integral University, Lucknow

**STUDY & EVALUATION SCHEME
BACHELOR OF PHYSIOTHERAPY (BPT)
(w.e.f. July 2015)**

II - Year

IV - Semester

S. No.	Subject Code	Subject Title	Periods per week			Credits	Evaluation Scheme				Subject Total
			L	T	P		Sessional		Exam		
							CT	TA	Total	ESE	
1.	PT 210	General Medicine	2	1	0	3	25	15	40	60	100
2.	PT 211	Pharmacology	2	1	0	3	25	15	40	60	100
3.	PT 212	Therapeutic Techniques	3	1	0	4	25	15	40	60	100
4.	PT 213	Electrotherapy & Electrodiagnosis	3	1	0	4	25	15	40	60	100
5.	PT 214	Basic of Biomechanics_	3	1	0	4	25	15	40	60	100
6.	PT 215	Ethics in Physiotherapy	2	0	0	2	25	15	40	60	100
7.	PT 216	Therapeutic Techniques-Lab	0	0	4	2	30	30	60	40	100
8.	PT 217	Electrotherapy & Electrodiagnosis-Lab	0	0	4	2	30	30	60	40	100
9.	PT 218	Basic of Biomechanics-Lab_	0	0	2	1	50	50	100	--	100
Total			15	05	10	25	260	200	460	440	900

L: Lecture

T: Tutorials

P: Practical

CT: Class Test

TA: Teacher Assessment

ESE: End Semester Examination

Sessional Total: Class Test + Teacher Assessment

Subject Total: Sessional Total + End Semester Examination (ESE)

SUBJECT NAME: GENERAL MEDICINE

SUBJECT CODE: PT 210

(w.e.f. July 2015)

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UNIT-I: Cardio-Vascular and Haematology

(8 Hours)

Cardio-Vascular

Hypertension – systemic, I.H.D.-Myocardial infarction Arrhythmia-classification, Valvular Heart Disease a) Congenital b) Acquired, Rheumatic Fever, Congenital Heart Disease, Infective Endocarditis, Geriatric Cardio Vascular Problems & management, ECG – Normal & Variations due to ischemia & infarction.

Haematology

Anaemia, Leucopenia, Leucocytosis, Thrombocytopenia, DVT, Thrombotic disorders, Jaundice (Hemolytic).

UNIT-II: Respiratory System

(8 Hours)

Common Infectious diseases like Tuberculosis Pneumonia, Lung Abscess, Bronchiectasis Tumors of the lung and bronchus, Diseases of the nasopharynx, larynx, trachea, Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, Empyema, Occupational lung diseases (like Silicosis Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung) Obstructive Lung Diseases(like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis), Interstitial Lung Diseases, Geriatric respiratory problems & management, Intensive Medical Unit-Infrastructure & Treatment (2hrs), Introduction of clinical examination, Breath sounds / X ray chest /Blood gas analysis / P.F.T.

UNIT-III: Disturbances in Water, Electrolyte and Acid-Base Balance

(8 Hours)

Physiology of water and electrolytes, Renal failure (Acute and Chronic), Electrolyte imbalance: hypernatremia , hyponatremia , hyperkalaemia , hypokalaemia , sodium and water excess , calcium , phosphate and magnesium disorders, Acid-Base balance-metabolic acidosis and alkalosis , respiratory acidosis and alkalosis mixed acid – base disorders.

UNIT-IV: Endocrine and Rheumatological Conditions

(8 Hours)

Endocrine System

Thyroid, Parathyroid, Pituitary and Adrenal conditions, Diabetes, Calcium metabolism.

Rheumatological Conditions

Osteoarthritis, Rheumatoid arthritis, Infectious arthritis, SLE, Gout, Polymyositis, Osteoporosis, Osteopenia.

UNIT-V: SKIN AND PSYCHIATRY

(8 Hours)

SKIN

Anatomy of skin, Immunologically mediated skin disorders, Skin disorders in AIDS, immunodeficiency & venereal disease, Brief description of eczematous dermatoses, psoriasis, lichen planus, acne, rosacea, and similar disease, systemic disease, disorders of pigmentation, principles of management of skin diseases.

PSYCHIATRY

Brief description of epidemiology and etiological factors, Classification of psychiatric disorders, Brief description of psychological and physical treatments used, Brief description of clinical syndromes (organic psychiatric disorders, substance abuse, schizophrenia, affective disorders, neurotic, stress related and somatoform disorders mental disorders and personality disorders).

BOOKS RECOMMENDED:

1. Principles & Practical Medicine – Davidson
2. Medicine for students – Golwalla
3. Principle of Internal Medicine – Harrison
4. Principles & Practical Medicine – Kumar & Clarke

SUBJECT NAME: PHARMACOLOGY
SUBJECT CODE: PT 211
(w.e.f. July 2015)

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UNIT-I GENERAL PHARMACOLOGY & ANS:	(8 Hours)		
Routes of Drug Administration			1
Pharmacokinetics			2
Pharmacodynamics			2
Adverse Drug Reactions			1
Cholinergics & Anti-cholinergics			1
Adrenergics & Anti-adrenergics			1
UNIT-II AUTACOIDS, PNS & RESP. SYSTEM:	(8 Hours)		
Autacoids & Antihistaminics			1
Drug Therapy of Migraine			1
NSAIDs			2
Anti-Gout & Anti-Rheumatoid			1
Skeletal Muscle Relaxants			1
Local Anaesthetics			1
Drug acting on Respiratory System			1
UNIT-III CVS, GIT & MISCELLANEOUS:	(8 Hours)		
Anti-anginal Drugs			1
Anti-hypertensive Drugs			1
Drugs for Peptic Ulcer			1
Anti-emetic Drugs			1
Drugs acting on Kidney			1
Drugs affecting bleeding & coagulants			1
Chelating Agents			1
Anti septics & Disinfectants			1
UNIT-IV CNS & HORMONES:	(8 Hours)		
General Anaesthesia			1
Sedatives & Hypnotics			1
Alcohols			1
Opioid Analgesics			1
Insulin & Oral Hypoglycemic Drugs			1
Corticosteroids			1
Estrogen, Progestins & OCPs			1
Calcium Balance			1

UNIT-V ANTI - MICROBIAL AGENTS:**(8 Hours)**

Sulphonamides	1
Quinolones	1
Beta-lactams	1
Aminoglycosides	1
Anti-tubercular Drugs	1
Anti-leprotic & Anti-fungal Drugs	1
Anti-malarial Drugs	1
Anti-amoebic & Anti-helminthic Drugs	1

RECOMMENDED BOOKS:

1. Dr. K.D. Tripathi, Jaypee, Essential of Medical Pharmacology, Brothers Medical Publishers.
2. Gaddum, Pharmacology, Gaddum's Pharmacology.
3. Dr. R.S. Satoskar & Dr. S.D. Bhandarkar, Pharmacology & Pharmacotherapeutics Revised 19th Edition 2005 by Popular Prakashan.
4. Krantx, & Carr, Pharmacology principle of Medical practice, Williams & Wilkins.
5. Goodman Pharmacological basis of Therapeutics, L. S. Gilman A.

SUBJECT NAME: THERAPEUTIC TECHNIQUES

SUBJECT CODE: PT 212

(w.e.f. July 2015)

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UNIT-I SOFT TISSUE MOBILIZATION:

(8 Hours)

Therapeutic Massage:

History & importance of various types of soft tissue manipulation technique (Massage). Define massage, Classify and describe the techniques of stroking, effleurage, petrissage & tapotment. Physiological effects of soft tissue manipulation on the following system of the body- circulatory, nervous. Musculoskeletal, excretory, respiratory, integumentary system and metabolism. Preparation of the patient, Preparation of the therapist, effect uses, indication and contraindication of the above manipulation techniques.

Stretching:

Definition of stretching; classification of stretching, Determinants of stretching exercise, Effects of stretching, Precautions, indications and contraindications of stretching.

Techniques of stretching for group & individual muscles, Dosimetry of stretching.

UNIT-II MOBILIZATION TECHNIQUE:

(8 Hours)

Joint Mobilization:

Joint mobility: aetiology of joint stiffness, general technique of mobilization, effects, indication, contraindications & precautions.

Principle, classification of Basic concept of Joint mobilization techniques, physiological and therapeutic effects, indication and contraindication of therapeutic exercises.

Introduction to special mobilization & manipulation techniques, effects indications, effects, indications & contraindications.

Traction:

Definition of traction, Principles of traction, classification, physiological & therapeutic effects, indications contraindications technique of application operational skills & precautions.

Application of Traction in human body with manual traction & importance.

UNIT-III NEUROMUSCULAR FACILITATION TECHNIQUE:

(8 Hours)

Neuromuscular Incoordination:

Neuromuscular incoordination: review normal neuromuscular coordination, aetiology of neuromuscular incoordination & general therapeutic techniques to improve coordination—Frenkel exercise, effects, indication contraindication & precautions,

Functional Re-Education:

Functional re- education general therapeutic techniques to re- educate ADL functions.

Balance:

Static & dynamic balance: assessment & management including therapeutic exercises

UNIT-IV AQUATIC THERAPY & HYDROTHERAPY:

(8 Hours)

Aquatic Therapy:

Basic principles of fluid mechanics as they relate to Aquatic Therapy. Description of the Physiological, therapeutic effects, indication contraindication of Aquatic Therapy.

Hydrotherapy:

Basic principles of hydrotherapy, Physiological & therapeutic effects of hydrotherapy, including joint mobility, muscle strengthening & wound care etc. Various types of hydrotherapy equipments (Description of the Various Tank), indications, and contraindications operational skills & patients preparations.

UNIT-V SPECIAL TECHNIQUES:

(8 Hours)

Relaxation:

Describe Relaxation, Muscle fatigue, Muscle spasm, General causes, and signs, symptoms of tension (mental and physical). Factors contributing to fatigue and tension. Techniques of relaxation (local and general). Effect, uses and clinical application

Group Therapy:

Definition of Group therapy, basic principles, types advantages & disadvantages of Group therapy.

Yoga:

Introduction to yoga: conceptual frame work various asana the body mind relationship, effects & precautions.

RECOMMENDED BOOKS:

1. Kisner and Colby. F.A. Davis, Therapeutic Exercises Foundations and Techniques
2. Gardiner, Principle of Exercise Therapy, C.B.S. Delhi.
3. Norkins & White F.A. Davis, Measurement of Joint Motion: A Guide to Goniometry.
4. Wood - W.B. Saunders, Beard's Massage.
5. Kendal, Muscle testing and functions, Williams & Wilkins.
6. Bates and Hanson , Aquatic Exercise Therapy
7. Margaret Hollis, Massage for therapist: Margaret Hollis
8. Hollis, Lab Exercise Therapy, Blackwell Scientific Publications.

SUBJECT NAME: ELECTROTHERAPY & ELECTRODIAGNOSIS

SUBJECT CODE: PT 213

(w.e.f. July 2015)

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Production, physiological effects, application techniques, effects, indications, contra-
indications, precautions, operational skills of equipment, patient preparation of the following:

UNIT-I: THERMAL AGENTS-II:

(8 Hours)

Contrast Bath Therapy

Contrast Bath Therapy (CBT), Principle of CBT, Physiological effects, Methods of Application of CBT. Principle of clinical application effects, uses, indications, contraindications, precautions, and patient preparation.

Whirlpool Bath Therapy

Whirlpool bath Therapy (WBT), Principle of application of WBT, Physiological effects, Methods of Application of WBT, effects, uses, indications, contraindications, precautions, and patient preparation.

Fluidotherapy

Fluidotherapy (FDT), Principle of application of FDT, Physiological effects, Methods of Application of FDT, effects, uses, indications, contraindications, precautions, and patient preparation.

UNIT-II: ACTINOTHERAPY:

(8 Hours)

Ultra-violet rays (UVR):

Ultra-violet rays (UVR), Wave Length, frequency, types & sources of UVR generation, technique of irradiation, physiological & therapeutic effects. Dosimetry of UVR.

Infra red rays (IRR):

Infra red rays-Wavelength, frequency, types & sources of IRR generation, technique of irradiation, physiological and therapeutic effects.

UNIT-III: THERAPEUTIC LIGHT IN PHYSIOTHERAPY:

(8 Hours)

LASER:

History & Principle of Light Amplification of Stimulation Emission and Radiation (LASER), types of LASER, pulse widths, frequencies & intensities used as LASER applications. Principle of clinical application effects & uses, indications, contraindications, precautions, and operational skills of equipment & patient preparation. Theories of pain relief by LASER.

Extracorporeal Shock Wave Therapy:

History & Principle of Shock Wave Therapy, types of Shock Wave Therapy, Principle of clinical application effects & uses, indications, contraindications, precautions, and operational skills of equipment & patient preparation.

UNIT-IV: INTERMITTENT COMPRESSION DEVICES (ICD): (8 Hours)

Definition, & Principle of application of ICD, Physiological effects, Methods of Application of ICD, effects, uses, indications, contraindications, precautions, and patient preparation. Different kind of others ICD, used in Physiotherapy, Their Principal of application, Physiological effects, Indication, contraindication, Precaution.

UNIT-V: ELECTRICAL REACTIONS ELECTRO-DIAGNOSTIC TESTS: (8 Hours)

Electrical Stimuli and Electrical Properties of Nerve and muscle tissue. Types of lesion and development of reaction of degeneration.

Basics of S.D. Curve and its interpretation, Chronaxie, Rheobase & pulse ratio.

Basic of NCV tests

Basic of EMG,

Basic of Biofeedback

RECOMMENDED BOOKS:

1. Clayton's Electrotherapy
2. Clinical Electrotherapy- Nelson and Currier
3. Electrotherapy Explained- Low and Reed
4. Electrotherapy in Rehabilitation-Meryl Roth Gerth
5. Electrotherapy Explained-Sheela Kitchen
6. Basic of Electrotherapy by Basant Kumar Nanda

SUBJECT: BASIC BIOMECHANICS

SUBJECT CODE: PT 214

(w.e.f. July 2015)

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COURSE DESCRIPTION & COURSE OBJECTIVES:

The course involves a description of principles of biomechanics and their application in musculoskeletal function and dysfunction. At the end of the course, the candidate will be able to–

1. Understand the principles of Biomechanics.
2. Acquire the knowledge of kinetics and kinematics of human body.
3. Acquire the knowledge of Musculoskeletal movements during normal Gait and Activities of Daily Living
4. Describe the properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular & periarticular soft tissues.

UNIT I: BASIC CONCEPTS IN BIOMECHANICS:

(8 Hours)

1. Introduction to Biomechanics and kinesiology and related terminology.
2. Kinematics and Kinetics & their biomechanical importance in Physiotherapy.
3. Application of different Forces & Torque in human body.
4. Application of Lever & Pulley in human body.
5. Clinical & biomechanical importance of COG, LOG, BOS, Equilibrium.

UNIT II: MUSCLE STRUCTURE AND FUNCTION

(8hours)

1. Muscle Attachments, Muscle Names, Muscle Fiber Arrangement, Functional Characteristics of Muscle Tissue.
2. Length-Tension Relationship in Muscle Tissue: *Active and Passive Insufficiency*
3. Types of Muscle Contraction & Roles of Muscles.
4. Angle of Pull & Kinetic Chains.
5. Biomechanical of factors Affecting Muscle Function, Effects of Immobilization, Injury, and Aging.

UNIT III: JOINT STRUCTURE, FUNCTION, AND THEIR BIOMECHANICS (8 Hours)

1. Introduction: Basic Principle of Human Joint design & Joint Function.
2. Materials Found in Human Joints: Structure of Connective Tissue.
3. Brief about Specific Connective Tissue Structures.
4. General Properties of Connective Tissue: Mechanical Behavior, Viscoelasticity, Time-Dependent and Rate-Dependent Properties, Properties of Specific Tissues.
5. General Changes with Disease, Injury, Immobilization, Exercise, and Overuse

UNIT IV: BIOMECHANICS OF SPECIFIC CONNECTIVE TISSUE STRUCTURES:

Structure, Function & their biomechanical importance of-

1. Ligaments
2. Tendons
3. Bursae
4. Cartilage
5. Bone

UNIT V: Abnormal Posture & Gait:

(8 Hours)

1. Static and Dynamic Postures, Kinetics and Kinematics of Posture.
2. Analysis of normal and abnormal Standing Posture, Sitting Postures and Lying Postures.
3. Effects of Age, Pregnancy, Occupation, and Recreation on Posture.
4. Kinetics Analysis of Gait: Ground Reaction Force, Centre of Pressure, Internal and External Forces, Moments, and Conventions, Mechanical Power and Work, Muscle Activity.
5. Biomechanical Importance of Abnormal Gait & their Analysis.

RECOMMENDED BOOKS:

1. Measurement of Joint Motion – A Guide to Goniometry - Norkins & White - F.A. Davis.
2. Therapeutic Exercise by Carolyn Kisner, F. A. Davis.
3. Clinical Kinesiology and Anatomy: Fifth Edition Lynn S. Lippert, MS, PT
4. Basic Biomechanics. Nordin.
5. Basic Biomechanics & clinical Kinesiology. Otis
6. Biomechanics of Human Movement. D Winter

SUBJECT NAME: ETHICS IN PHYSIOTHERAPY

SUBJECT CODE: PT 215

(w.e.f. July 2015)

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Course Objectives:

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice. Physiotherapy and ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. Few of the important and relevant topics that need to focus on are as follows:

UNIT I: INTRODUCTION

4 Hours

1. History of Physiotherapy, Philosophy & philosophical statements
2. Medical Ethics and code of conduct.

UNIT II: ETHICS OF TRUST VS ETHICS OF RIGHTS

4 Hours

1. Basic principles of physiotherapy ethics – Confidentiality
2. Autonomy and informed consent
3. Rights of Patient

UNIT III: PROFESSIONAL AND PERSONAL

4 Hours

1. Malpractice , Negligence and Confidentiality
2. Duties of Medical Practioner

UNIT IV: LEGAL PROFESSIONAL ETHICAL ISSUES

4 Hours

1. Legal issues
2. Consumer protection act

UNIT V: PHYSIOTHERAPY PRACTICE

4 Hours

1. Clinical and Private Practice
2. Administration and Management

RECOMMENDED BOOKS:

1. Medical Ethics by C.M. Francis
2. Ethical Issues by K.Raja, F. Davis Shivkumar T
3. Consumer Protection Act & The Medical Profession by R.K.Chaube

SUBJECT NAME: THERAPEUTIC TECHNIQUES-LAB

SUBJECT CODE: PT 216

(w.e.f. July 2015)

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Course description: This course involves a detailed study of physiological effects, application techniques, effects, indications, and contra-indications, precautions for exercises used in Physiotherapy.

Course Objectives: Student should be able to explain the rationale for the prescription of safe and effective exercises.

1. **Therapeutic Soft Tissue Manipulation Technique:** Preparation of the patient, Preparation of the therapist, effect uses, indication and contraindication of the above manipulation techniques.
2. **Stretching:** Application of techniques of stretching for group & individual muscles, Dosimetry of stretching.
3. **Joint Mobilization:** Application of joint mobilization technique on patients on different joints. Introduction to special mobilization & manipulation techniques.
4. **Traction:** Application of traction technique on patients on different joints.
5. **Aquatic Therapy:** Types of hydrotherapy equipments, indications, and contraindications operational skills & patients preparations.
6. **Motor Learning & Motor control:**
7. **Practical Aspects on Neuromuscular incoordination, Functional re-education, Balance.**
8. **Relaxation:**
9. **Demonstration on different types of Breathing Exercise:**
10. **Benefit and demonstration on different types of Group therapy & Yoga**

RECOMMENDED BOOKS:

1. Kisner and Colby. F.A. Davis, Therapeutic Exercises Foundations and Techniques
2. Gardiner, Principle of Exercise Therapy, C.B.S. Delhi.
3. Norkins & White F.A. Davis, Measurement of Joint Motion: A Guide to Goniometry.
4. Wood - W.B. Saunders, Beard's Massage.
5. Kendal, Muscle testing and functions, Williams & Wilkins.
6. Bates and Hanson , Aquatic Exercise Therapy
7. Margaret Hollis, Massage for therapist: Margaret Hollis
8. Hollis, Lab Exercise Therapy, Blackwell Scientific Publications.

SUBJECT NAME: ELECTROTHERAPY & ELECTRODIAGNOSIS LAB
SUBJECT CODE: PT 217
(w.e.f. July 2015)

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Course description: This course involves a detailed study of application techniques, effects, indications, contra-indications, precautions, operational skills of equipment, patient preparation of physical agent modalities used in Physiotherapy.

Course Objectives: Student should be able to operate all physical agent modalities safely and effectively.

1. Contrast bath therapy, its operation and methods of application - region wise.
2. Paraffin bath therapy, its operation and methods of application - region wise.
3. Fluidotherapy therapy, its operation and methods of application - region wise.
4. Various types of infrared lamps and their application to body region wise.
5. Different types of Ultra violet units, their operation, and assessment of test dose and application of UVR - region wise.
6. LASER unit, its operation and methods of application - region wise.
7. Reaction of degeneration of nerves.
8. Plot strength duration curves. Chronaxie and Rheobase.
9. Application of EMG biofeedback in different cases.

RECOMMENDED BOOKS:

1. Clayton's Electrotherapy
2. Clinical Electrotherapy- Nelson and Currier
3. Electrotherapy Explained- Low and Reed
4. Electrotherapy in Rehabilitation-Meryl Roth Gerth
5. Electrotherapy Explained-Sheela Kitchen
6. Basic of Electrotherapy by Basant Kumar Nanda

SUBJECT: BASIC BIOMECHANICS LAB

SUBJECT CODE: PT 218

(w.e.f. July 2015)

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COURSE DESCRIPTION & COURSE OBJECTIVES:

The course involves a description of principles of biomechanics and their application in musculoskeletal function and dysfunction. At the end of the course, the candidate will be able to—

1. Understand the principles of Biomechanics.
2. Acquire the knowledge of kinetics and kinematics of human body.
3. Acquire the knowledge of musculoskeletal movements during normal Gait and Activities of Daily Living.
4. Describe the properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular & periarticular soft tissues.
5. Practical Aspects of muscle, joint ligaments, Tendon, disc, Bursa etc.
6. Practical analysis of Posture & Gait analysis.
7. Practical aspect to demonstrate different types of joints.

RECOMMENDED BOOKS:

1. Measurement of Joint Motion – A Guide to Goniometry - Norkins & White - F.A. Davis.
2. Therapeutic Exercise by Carolyn Kisner, F. A. Davis.
3. Clinical Kinesiology and Anatomy: Fifth Edition Lynn S. Lippert, MS, PT
4. Basic Biomechanics. Nordins.
5. Basic Biomechanics & clinical Kinesiology. Otis
6. Biomechanics of Human Movement. D Winter