

NIMS UNIVERSITY, JAIPUR



SYLLABUS

BACHELOR OF PHYSIOTHERAPY (B.P.T.)

Scheme of Examination
Ist Year Examination (Marks Distribution)

S.N.	Subject	Theory	Practical and Oral	Total Practical	Subject Total
1.	Human Anatomy	100	100	100	200
2.	Human Physiology	100	100	100	200
3.	Biochemistry	100	-	-	100
4.	Fundamentals of Exercise Therapy- I	100	50	150	150
5.	Fundamentals of Electro Therapy-I	100	50	150	150

HUMAN ANATOMY

Goal: To provide the student with the necessary Anatomical knowledge & skills to practice as a qualified Physiotherapist

Objectives:

1) MUSCULO – SKELETAL:

- i) The student should be able to identify & describe Anatomical aspects of muscle bones & joints, & to understand and analyze movements.
- ii) To understand the Anatomical basis of various clinical conditions e.g. trauma, deformities, pertaining to limbs & spine.
- iii) To be able to localize various surface land-marks;
- iv) To understand & describe the mechanism of posture & gait the Anatomical basis of abnormal gait.

2) IN NEURO – ANATOMY:

- i) to identify & describe various parts of C.N.S. – for – brain, Midbrain, Hind-brain Brain stem, courses of cranial nerves; functional components, course distribution. Anatomical bases of clinical lesions:
- ii) to describe the source & course of spinal tracts;
- iii) to describe blood circulation of C.N.S. & spine;
- iv) be able to identify the components of various Trans –sections.

3) THORAX: to identify & describe various components of the contents of the Thorax – with special emphasis to trachea-bronchial tree, & cardio – pulmonary system.

4) CIRCULATORY – I: be able to identify & describe the source & course of major arterial venous & lymphatic system, with special emphasis to extremities, Spine & Thora.

5) PSYCHO-MOTOR:

- i) To be able to demonstrate the movements of various joints –
- ii) Distinguish cranial & peripheral nerves
- iii) Distinguish major arteries, veins & Lymphatic's with special emphases to extremities, & spine.

SYLLABUS

UNIT I: GENERAL ANATOMY

Including Histology – Basic tissues like epithelial, Connective, muscular, nervous, system.

UNIT II: MUSCULO SKELETAL Anatomy (dissection / prosection mandatory)

- i) Superior extremity
- ii) Inferior extremity
- iii) Spine, head & neck
- iv) Facial muscle & T.M. joint
- v) Surface Anatomy

UNIT III: NEURO –ANATOMY

- i) General organization of C.N.S.
- ii) Cranial nerves
- iii) peripheral nervous system
- iv) C.N.S.

UNIT IV: SYSTEMIC ANATOMY

- i) Elementary system
- ii) Uro –genital system (special emphasis to Female organs)
- iii) Micro – Anatomy (cartilage, bone, nerve, muscle)

- iv) Cardio – vascular (including Lymphatic)
- v) Respiratory system
- vi) Integrated neuro – muscular
- vii) Axial skeletal
- viii) Appendicular system
- ix) Sensory organs
- x) Endocrine
- xi) Radiological

TEXT BOOKS

1. Human Anatomy – by Snell
2. Anatomy & Physiology by Smout and McDowell
3. Anatomy by Chaurasia all 3 volumes
4. Kinesiology by Katherine Wells (Soundersco)
5. Neuro anatomy by Inderbir Singh
6. Human Anatomy by Kadasne (All t hree volumes)
7. Neuroanatomy by Snell
8. Neuroanatomy by Vis hram Singh

REFERENCE BOOKS

1. Gray's Anatomy
2. Extremities by Quining Wasb
3. Atlas of Histology by Mariano De Fiore

HUMAN PHYSIOLOGY

Objectives: At the end of the course, the candidate will –

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior (Homeostasis)
2. Be able to describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Female urogenital function, & alterations in function with aging
3. Analyse physiological response & adaptation to environmental stresses-with special emphasis on physical activity, temperature
4. Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, Cardiovascular & Respiratory system, & Exercise tolerance / Ergography.

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UNIT I

1. General Physiology Structure of cell membrane. Transport across cell membrane and Homeostasis (only short notes)
2. **Blood:** Rh- A B O system & mismatch-transfusion WBC plasma protein Eryt hrocytes. Haemoglobin. Normal values of Blood (composition & function)

UNIT II

3. **Nerve Neuron AHC**
 - i) Structure, classification & Properties;
 - ii) R.M.P.
 - iii) action potential;
 - iv) Propagation of nerve impulse;
 - v) degeneration & regeneration
 - vi) Reaction of degeneration (retrograde)
4. **Muscle**
 - i) Structure- properties-classification-excitation/contraction coupling
 - ii) Motor unit- E.M.G.- factors affecting muscle transmission
 - iii) Neuro-muscular transmission

UNIT III

5. **C.N.S. & P.N.S.**
 - i) Receptor physiology-classification & properties-;
 - ii) Synapse-structure, properties, & transmission;
 - iii) Reflexes-classification & properties;
 - iv) Sensory & Motor Tracts-effect of transaction (complete & incomplete) at various levels
 - v) Physiology of Touch, Pain, Temperature & Proprioception;
 - vi) Physiology of Muscle Tone (muscle spindle); Stretch
 - vii) Vestibular Appralus mainly ottolyth organ Anatomy
 - viii)Function of Basal Ganglia, Thalamus, Hypo-Thalamus, Pre- frontal lobe, P.A.S.,
 - ix) Sensory / motor cortex;
 - x) Limbic system;
 - xi) Learning, memory & condition reflex,
 - xii) Physiology of Voluntary movement

UNIT IV

6. **Excretory system**
 - i) Kidneys- (short note)- structure & function;
 - ii) urine formation;
 - iii) Micturition- neural control – neuroqenic bladder

7. Temperature Regulation

- i) circulation of the skin- body fluid- electrolyte balance

8. Endocrine

- i) secretion- regulation & function of Pituitary-thyroid-adrenal-parathyroidpancreas

9. Reproductive system

- i) Functions of Estrogen, Progesterone & Testosterone
- ii) Puberty & Menopause

10. Special senses

- i) Eye-Errors of refraction-accommodation-reflexes-dark & light adaptation photosensitivity
Ear, Skin

11. Gastrointestinal system**UNIT V****12. Respiratory system**

- i) Introduction, general organization;
- ii) Mechanics of respiration;
- iii) Pulmonary Volumes & capacities;
- iv) Anatomical & Physiological Dead space-ventilation/perfusion ratio, alveolar ventilation
- v) Transport of respiratory gases
- vi) Nervous & Chemical control of respiration
- vii) Pulmonary function tests-Direct & indirect method of measurement;
- viii)Physiological changes with altitude & acclimatization

13. Cardio-Vascular

- i) structure & properties of cardiac muscle;
- ii) Cardiac cycle;
- iii) Heart rate regulation-factors affecting;
- iv) Blood pressure- definition-regulation-factors affecting;
- v) cardiac output-regulation & function affecting;
- vi) Peripheral resistance, venous return
- vii) Regional circulation-coronary-muscular, cerebral
- viii)Normal ECG.

UNIT VI**14. Exercise physiology**

- i) Effects of acute & chronic exercises;
- ii) oxygen / CO₂ transport-O₂ debt
- iii) effects of exercise on muscle strength, power, endurance, B.M.R., R.Q.-hormonal & metabolic effects-respiratory & cardiac conditioning
- iv) AGING
- v) Training-fatigue- & recovery;
- vi) Fitness-related to age, gender, & body type

15. A.N.S.

Sympathetic / parasympathetic system-adrenal medulla-functions-Neuro Transmitters-role in the function of pelvic floor-(micturation, defecation labour)

TEXT BOOKS

1. Course in Medical Physiology – Vol- I & II- by Dr. Chaudhary
2. Medical Physiology - by Dr. Bijlani
3. Text book on Medical Physiology – by Guyton

REFERENCE BOOKS

1. Review of medical physiology – Ganong
2. Samson & wright's applied physiology
3. Human Physiology – Chaudhary & Bijlani
4. Semiclingum – Essentials of Medical physiology – K. Semubulingam

PRACTICAL

1. Haematology – (demonstration only)
 2. GRAPHS
 - i) skeletal muscle-properties-pre / after load-fatigue-Starling's law
 - ii) Cardiac muscle-properties-effect of Ach & Adrenaline.
 3. Physical fitness
 - i) breath holding
 - ii) mercury column test;
 - iii) cardiac efficiency test- Harvad step test- Master step test
 4. Blood pressure- effects of change in posture & exercise
 5. Stethography
 - i) effect of deglutination;
 - ii) voluntary hyperventilation
 6. Spirometry
 - i) Lung volumes
 - ii) timed vital capacity
 7. Bicycle ergography
 8. Perimetry
 9. Clinical examination
- respi / cvs / higher functions / memory / time / orientation / reflexes / motor & sensory system

BIOCHEMISTRY

UNIT I

1. CARBOHYDRATES:
(1) Chemistry, Definition, classification with examples, functions.
2. Digestion and Absorption, glycogenesis, glycolysis, TCA cycle. Hormonal regulation of blood glucose, diabetes mellitus, glycosuria, changes in Carbohydrate, protein & lipid metabolism.
3. PROTEINS: Definition, Importance, Functional, Classification Digestion & Absorption, decarboxylation, deamination, transamination, transmethylation, Urea cycle, clinical significance of serum urea, function of glycine, Phenylalanine, tryptophan, methionine tyrosine.
4. ENZYMES: Definition, Modern Classification, Factors affecting enzymes Action, diagnostic & therapeutics uses & enzymes, iso-Enzymes, competitive & Non competitive inhibition.

UNIT II

5. VITAMINS: Definition, Classification, Fat & water soluble vitamins, functions, Deficiency manifestations sources & RDA
6. MINERALS: Ca, P, Fe, I, Zinc, Selenium, Fluorine, Magnesium, Function sources, Deficiency manifestations
7. HORMONES: Definition with mechanism of action, classification
8. NUTRITION: Composition of food, balanced diet, kwashiorkor, marasmus, nitrogen balance, major dietary constituent & they importance

UNIT III

9. Clinical Biochemistry: Liver function test, Renal function test, Lipid profile in serum
10. LIPID: Definition, classification with examples, biomedical importance, Phospholipid & lipoproteins functions. Digestion & absorption of lipid B – oxidation of fatty acid with energetic, Ketone bodies and their & metaboism, cholesterol, importance of cholesterol, obesity.

UNIT IV

11. Muscle Contraction: Mechanism & Biochemical, events
Connective Tissue- Biochemistry of connective tissue-collagen-Glyco-protein-proteoglycans
12. NUCLEIC ACID: Function of DNA, RNA, genetic code specialized products of amino acids phenylalminetryosine trptophan, glycine, methionine. Transmionation, deamination and urea cycle (protein)
13. **Clinical Significance of some importance biochemical constituents in serum in various diseases.**

TEXT BOOKS

1. Biochemistry – by Dr. Deb Jyoti Das
2. Biochemistry – by Dr. Satyanarayan
3. Text book of Biochemistry for Medical students by – Dr. Vasudevan / S hri Kumar

REFERENCE BOOKS

1. Review of Biochemistry (24th edition) by Harpar

FUNDAMENTALS OF EXERCISE THERAPY- I

Objective: At the end of the course, the candidate will be able –

1. To define the various terms used in mechanics, Biomechanics & Kinesiology
2. Recall the basic principles of Physics related to mechanics of movement / motion & will be able to understand the application of such principles to the simple equipment designs, & their efficacy in therapeutic gymnasium, & various starting position used in therapeutics.
3. to describe & also acquire the skill of use of various tools of the Therapeutic gymnasium
4. to demonstrate passive movements in terms of various Anatomical planes
5. to demonstrate various starting & derived positions
6. Acquire the skill of application of various massage manipulations & describe the Physiological effects, therapeutic use, merits / demerits of the same.
7. acquire a skill of assessment of sensations, superficial & deep reflexes, pulse rate/ Blood pressure, Chest expansion / respiratory rate, & limb length / girth measurement on Models
8. To demonstrate & also acquire the skill of relaxation.
9. To describe the skill & usefulness of group & recreational activities & will be able to demonstrate general fitness exercises used in Physical Training.
10. Be able to define Yoga & its types, its physiological & Psycho-somatic effects & will be able to demonstrate standard yoga postures used by the beginners.
11. Be able to demonstrate, General Fitness exercises & shall gain fitness for self.

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UNIT I

1. Bio-mechanics
 - i) Axes / planes, laws of inertia & motion, mechanics of Forces, levers, pendulum, equilibrium, Torque
 - ii) Types of muscle work angle of pull – Mechanical advantage – applied mechanics in the Therapeutic Gymnasium.
2. Starting & derived positions, stability, base of support
3. Classification of movements, (active, passive, assisted, resisted) / Goniometry – techniques, uses, types.

UNIT II

4. Limb length (only lower limb – apparent, true, Supratrochantric) & girth measurements
5. Assessment of Sensations / Reflex testing
6. Assessment of Blood pressure / pulse rate / chest expansion & Respiratory rate
7. Relaxation – all methods

UNIT III

8. Massage manipulations – principles effects / merits / demerits – skills on extremities / scalp/ spine / abdomen / face.
9. Therapeutic Gymnasium suspension therapy, use of accessories such as pulleys springs, shoulder wheel, axillary crutches, finger ladder, therapeutic balls parallel bars etc applied Biomechanical principles.
10. Group & recreational activities – General fitness exercises – Warm up – stretching mobility strengthening – cool down.

UNIT IV

11. Principles of Yoga & basic ten Yogic postures & their physiological effects Yogic postures.
 - A. 1) a) Padahasthasana Padangusthasana b) Trikonasana, c) utkatasana
 - 2) Padmasana / Siddhasana, /Sukhasana
 - 3) Bhujangasana
 - 4) Ardha – Salabhasana

- 5) Paschimottanasana
 - B. Savasana
 - C. 1) Dhanurasana
 - 2) Ardha Halasana
 - 3) Yogamudrasana
 - 4) Uttanasana
 - 5) Virasana
 - 6) Vajrasana
 - 7) setu bandhasana
 - 8) gomukhasana
 - 9) Pavan muktasana
 - 10) Halasana
 - 11) Sarvangasana
 - 12) Naukasana
12. Basic principles of General fitness – warming up exercises, aerobics – cooling down exercises.
13. Hydrotherapy – physics – application – effects – merits / demerits.

PRACTICAL

Skills included in sr. no. 2 to 13 above to be practiced on self & models.

TEXT BOOKS

1. Principles of Exercise Therapy – Dena Gardiner
2. Massage, manipulation & traction – Sydney Litch
3. Therapeutic Exercise – Sydney Litch
4. Massage – Holly
5. Suspension Therapy in Rehabilitation – Margaret Hollis
6. Bio mechanics – Cynthia Norkin
7. Hydrotherapy – Duffield
8. Measurement of physical function – Cynthia Norkins.

REFERENCE BOOKS

1. Therapeutic Exercise – Carolyn Kisner
2. Physiotherapy in Orthopedic conditions – by Jayant Joshi (for the study of Basic Yogic postures)

FUNDAMENTALS OF ELECTRO THERAPY- I

Objectives: At the end of the course the candidate will be able to –

1. Recall the physics principles & Laws of Electricity, Electro – magnetic spectrum, & ultra sound
2. Describe effects of environmental & man made electromagnetic field at the cellular level & risk factors on prolonged exposure.
3. Describe the main electrical supply, Electric shock –precautions:
4. Enumerate types & production of various Therapeutic electrical currents describe the panel diagrams of the machines.
5. Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test / calibrate these components (such as potentiometer, oscilloscope etc) of the circuitry, & will be able to identify such components.
6. Describe & identify various types of electrodes used in therapeutics, describe electrical skin resistance & significance of various media used to reduce skin resistance.
7. Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, homemade remedies, etc; their physiological & therapeutic effects, Merits / demerits; & also acquire the skill of application.

SYLLABUS

UNIT I

1. Fundamentals of Low frequency currents:
 - i. production of electricity, mains supply,
 - ii. A.C. currents & Faradic type current
 - iii. D.C. currents – Types – fundamentals of electrical charges, static electricity- physic of direct currents Ohm's law Conductors-Capacitors-Rheostats-Potentiometers-ammeters-oscilloscopes,
 - iv. types of electrodes galvanic skin resistance – electrode –gels- types significance
2. Fundamentals of High frequency currents:
 - i. Magnetism, E.M.F. Conduction – Lenz's Law- transformers -types,
 - ii. Thermonic valves,
 - iii. Semi – conductors – types -Transistors
 - iv. Electronic circuits –oscillators,, - pulse generators

UNIT II

3. E.M. spectrum – Laws of transmission reflection – refraction – absorption – attenuation.
4. Cellular Bio-physics – reception & emission of E.M.F. signals
5. Environmental currents & fields risk factors on prolonged exposure to E.M. field.

UNIT III

6. Production, Physical principles, Panel diagram, Testing of apparatus – S.W.D. Ultra sound, U.V.R., I.F.T. / Beat frequency currents, I.R. LASER (no panel diagram)

UNIT IV

7. Therapeutic continuous / interrupted Direct currents & their various wave forms, A.C. current

UNIT V

8. Bio-physics of Superficial heat & cold – Physiological effects –Therapeutic effects/ uses – Merits / demerits, Indications / contra-indications-skills of application
 - i. Home remedies,
 - ii. Paraffin wax bath
 - iii. whirl pool,
 - iv. contrast bath

- v. Hydro-collator hot packs / cold packs,
- vi. Cry therapy

PRACTICALS

1. Panel diagrams – Identification of components – Testing the mains supply & Machines
2. Skills of application of thermal agents

TEXT BOOKS

1. Clayton 1s Electro therapy – 3rd & 10th ed,
2. Electro therapy explained – by Low & Read
3. Electro Therapy – by Kahn
4. Basics of Electrotherapy – Dr. Subhash Khatri

REFERENCE BOOK

1. Clinical Electro Therapy – by Nelson & Currier.

Scheme of Examination

IIInd Year Examination (Marks Distribution)

S. N.	Subject	Theory	I.A (Theory)	Total Theory	Practical and Oral	I.A Practical	Total Practical	Subject Total
1.	Pathology & Microbiology	80	20	100	-	-	-	100
2.	Pharmacology	80	20	100	-	-	-	100
3.	Fundamental of Exercise Therapy-II	80	20	100	80	20	100	200
4.	Fundamental of Electro Therapy-II	80	20	100	80	20	100	200
5.	Psychology	80	20	100	-	-	-	100
6.	Biomechanics & Kinesiology	80	20	100	80	20	100	200

BACHELOR OF PHYSIOTHERAPY (B.P.T.) – 2ND YEAR**Subjects:-**

1. Pathology (Section A) & Microbiology (Section B)
2. Pharmacology
3. Exercise Therapy
4. Electrotherapy
5. Psychology
6. Seminars
7. Supervised Clinical practice

(To practice clinical skills under the supervision of Senior clinical staff at the O.P.D. set up & to maintain a Register / Log book-in which the prescribed Case Histories, & written assignments are to be documented & to obtain the signature from the respective section In-charge at the end of the assignment.)

PATHOLOGY & MICROBIOLOGY

PATHOLOGY (Section I)

Objectives: At the end of the course, the student will be able to-

1. Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs- capacity of the body in healing process
2. Recall the Etio – pathogenesis, the pathological effects & the clinico – pathological correlation of common infections & non-infectious diseases.
3. Acquire the knowledge of concepts of neoplasia with reference to the Etiology, gross & microscopic features, diagnosis, & prognosis in different tissues, & organs of the body.
4. Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance (with special emphasis to neuro-musculo-skeletal & cardio-respiratory systems)
5. Acquire knowledge of common immunological disorders & their resultant effects on the human body.
6. Understand in brief, about the Hematological diseases & investigations necessary to diagnose them & determine their prognosis.

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UNIT I

1. a) General Pathology- Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation
 - b) Reversible injury (degeneration)- types-morphology,- swelling, hyaline, fatty changes,
 - c) Intra-cellular accumulation-hyaline mucin,
 - d) Irreversible cell injury-types of necrosis- apoptosis – calcification- dystrophic & metastasis,
 - e) Extra-cellular accumulation-amyloidosis, calcification-Pathogenesis- morphology
2. Inflammation & Repair:
 - i) Acute inflammation – features, causes, vascular & cellular events,
 - ii) Morphologic variations,
 - iii) Inflammatory cells & mediators,
 - iv) Chronic inflammation: causes, types, non-specific & granulomatous – with examples
 - v) Wound healing by primary & secondary union factors promoting & delaying healing process.
 - vi) Healing at various sites- including-bones, nerve & muscle
 - vii) Regeneration & repair

UNIT II

3. Immuno – pathology – (basic concepts):
 - a) Immune system: organization-cells- antibodies- regulation of immune responses,
 - b) Hyper-sensitivity,
 - c) Secondary immuno-deficiency including HIV,
 - d) Organ transplantation
4. Circulatory disturbances
 - i) Edema - pathogenesis - types - transudates / exudates,
 - ii) Chronic venous congestion- lung, liver, spleen,
 - iii) Thrombosis – formation – fate – effects,
 - iv) Embolism – types- clinical effects,
 - v) Infarction – types – common sites
 - vi) Gangrenes – types – aetiopathogenesis
 - vii) Shock – Pathogenesis, types, morphologic changes

UNIT III

5. Deficiency disorders – Vitamins A,B,C,D

6. Growth Disturbance
 - a) Atrophy-malformation, agenesis, dysplasia,
 - b) Neoplasia classification, histogenesis, biologic behaviour, difference between benign & malignant tumour
 - c) Malignant neoplasms- grades-stages-local & distal spread,
 - d) Carcinogenesis – environmental carcinogens
 - e) Chemical, Occupational, heredity, vira,
 - f) Precancerous lesions & ca in situ
 - g) Tumor & host interactions – systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc.
7. Medical Genetics – (In Brief)

UNIT IV

8. Specific Pathology:
 - A. CVS
 - a) Atherosclerosis - Ischemic heart diseases – myocardial infarction – Pathogenesis / Pathology
 - b) Hypertension
 - c) C.C.F.
 - d) Rh H.D.
 - e) Peripheral vascular diseases
 - B. Respiratory:
 - a) COPD
 - b) Pneumonia (lobar, broncho, viral)
 - c) T.B. Primary, secondary – morphologic types,
 - d) pleuritis, complications
 - e) Lung collapse – atelectasis

UNIT V

- C. Neuro Pathology
 - a) Reaction of nervous tissue to injury – infection & ischaemia
 - b) Pyogenic meningitis, TBM, Viral
 - c) Cerebro – vascular diseases – atherosclerosis – Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage.
 - d) Effects of Hypotension on CNS
 - e) Coma
 - f) Polio myelitis- Leprosy- Demyelinating diseases – Parkinsonism – Cerebral palsy- metabolic leucodystrophy – Dementia – Hemiplegia / paraplegia – Pathogenesis & pathology of Wilson's disease
 - g) SOL- (in brief)
 - h) Peripheral nerve injury
9. Muscle diseases – Muscular dystrophy-hypertrophy-Pseudo-hypertrophy-altrophy-Polio-myelitis Myositis ossificans, neorosis, regeneration-Myotonia
10. Neuro – muscular junction – Myasthenia gravis – Myasthenic syndrome.
11. Bone & Joints - a)fracture healing – Osteomyelitis – rickets – Osteomalacia – Bone tumors

UNIT VI

Osteoporosis

- a) Spondylosis, P.I.D.- Scoliosis – Haemarthrosis – Gout – T.B.
- b) Arthritis – degenerative – inflammatory – RA-Ankylosing spondylitis – Tenosynovitis
12. Urinary – commonly encountered in paralytic bladder, common urinary tract infections (brief)- urinary calculi-
13. G.I. system- (1 hr)- Gastric/ duodenal ulcer, enteric fever, TB, enteritis, Gastritis (related to consumption of NSAID)
14. Endocrine – Hyperthyroidism – Diabetes

15. Hepatic diseases (1 hr)- Cirrhosis – emphasis to systemic effects of portal hypertension
16. Skin-Melanin pigment disorders – Vitiligo – Tinea versicolor-Psoriasis- Bacterial/fungal infections – cutaneous TB, Scleroderma, SLE, Leprosy Alopecia
17. Clinical pathology – (including Demonstrations)
 - a) Anemia – (deficiency) – T.C./D.C./ Eosinophilia, E.S.R., C.P.K.
 - b) Muscle / skin / nerve biopsy
 - c) Microscopic appearance of muscle necrosis – fatty infiltration
 - d) Lab investigation in liver & renal failure

TEXT BOOKS

1. Text book of Pathology - by Harsh Mohan
2. Pathologic basis of disease by Cotran, Kumar, Robbins
3. General Pathology – by Bhende

Scheme of Examination: Duration-3 Hrs.

Theory – Total 100 marks.

University Examination – Pathology- 50 marks and Microbiology- 30 marks = 80 marks, Internal Assessment – 20 marks

*No Practical Examination.

MICROBIOLOGY (Section B)

Objectives: At the end of the course, the candidate will have sound knowledge of the agent responsible for causing human infections, pertaining to C.N.S., C.V.S. musculoskeletal, & Respiratory system.

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UNIT I

1. General Microbiology
 - i) Introduction & scope
2. Classification of Micro-organisms & morphology of Bacteria
3. Sterilization & disinfection (basic concepts)
Hospital acquired infection, universal safety precautions, and waste disposal

UNIT II

4. Immunology
 - i) Antigen antibody – reaction & application for diagnosis;
 - ii) Immune response – normal / abnormal
 - iii) Innate immunity & acquired immunity (vaccination)
 - iv) Hyper – sensitivity & auto-immunity
5. Laboratory Diagnosis of Infection

UNIT III

6. Bacteriology
 - i) Infection caused by gram +ve cocci; Gas gangrene – clostridium – Diphtheria
 - ii) Infection caused by gram –ve cocci, Septicemia-cholera – Shock –Typhoiddiarrhoea
 - iii) Mycobacterial infection tuberculosis-Leprosy-Atypical Mycobacterium
 - iv) Syphilis – morphology & pathogenesis (VDRL)
7. Viruses
 - i) Introduction & general properties,
 - ii) HIV
 - iii) Hepatitis
 - iv) Polio, measles, congenital viral infections, Rubella, CMV Herpes
8. Mycology
Mycetoma – Aspergilosis – candidiasis

UNIT IV

9. Parasites affecting C.N.S.
Malaria – Filaria – Toxoplasma – Cystisarcosis & echinococcus
10. Applied Microbiology as relevant to diseases involving Bones, Joints – Nerves – Muscles-
Skinbrain-cardiopulmonary system, & burns.

TEXT BOOKS

1. Text books of Microbiology – by R. Ananthnarayan & C.K. Jayram Panikar

Scheme of Examination, Duration-3 Hrs.

Theory – Total 100 marks.

University Examination – Pathology- 50 marks and Microbiology- 30 marks = 80 marks, Internal Assessment – 20 marks

*No Practical Examination.

PHARMACOLOGY

Objectives: At the end of the course the candidate will be able to –

1. Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy, list their adverse reactions, precautions to be taken & contraindications, formulation & route of administration.
2. Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vise-versa
3. Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.
4. get the awareness of other essential & commonly used drugs by patients- The bases for their use & common as well as serious adverse reactions.

SYLLABUS

A. MUST KNOW:

- a. Drugs described in topics 2 to 9;
- b. Pharmacological effects & mechanism, Formulation, Route of administration, salient Pharmacokinetic feature,
- c. adverse Reactions;
- d. Precautions & contra-indications.

B. DESIRABLE

- a. Major group of drugs described in topics 10, 11 & 12
- b. Bases of use in indicated conditions;
- c. Common & serious Adverse Reactions

UNIT I

1. General Pharmacology - Drug Pharmco-kinetics – Pharmacology – adverse reaction – factors modifying drug effect
2. Drug activity of CNS – Introduction, alcohols + Sedatives & hyphotics, Anti-convulsions, Analgesics & antipyretics – specially Gout & R.A., Psycho Therapeutics, General anaesthetic + local anaesthetic

UNIT II

3. Drugs acting on peripheral nervous system: i) Adrenergic, ii) Cholinergic
4. Drug therapy in Parkinsonism
5. Skeletal muscle relaxants

UNIT III

6. Drugs acting on CVS: i) Hyper tension, ii) B-blockers, iii) Ca channel ACEI, iv) blockers (prazosin), Diuretics, CCF, Angina, Antiarrhythmia + Shock, Drug satisfying Homeostasis
7. Drugs acting on Respiratory system for upper respiratory tract infections – sinusitis- cough, laryngitis, pharyngitis, For Bronchial asthma, for COPD – effects of prolonged drug administration

UNIT IV

8. Insulin & oral anti-diabetic drugs
9. Chemo–therapy: i) general principles, ii) anti-Tuberculosis, & iii) anti-leprosy
10. Other Chemo Therapeutic drugs: i) Sulfa drugs in urinary tract infection, ii) tetra / chlora, iii) penicillin, iv) cephalosporin, v) aminoglycides, vi) Microlytic

UNIT V

11. Endocrine: i) introduction, Thyroid & Antithyroid, ii) Estrogen + Progesterone, iii) steroidsanabolic steroids
12. Drugs in G.I. tract: i) Peptic ulcer + antiemetic, ii) Diarrhoea & constipation

UNIT VI

13. Hematinics, Vitamin B; Iron
14. Dermatological --- Scabies – Psoriasis – Local antifungal
15. Vaccines & Sera
16. Vitamin – D, Calcium, Phosphorus, Magnesium

TEXT BOOKS

1. Pharmacology by Gaddum
2. Medical Pharmacology by Drill
3. Pharmacology principle of Medical practice – by Krantz, & Carr
4. Pharmacological basis of Therapeutics – by Goodman, L.S. Gilman A

Scheme of Examination: Duration- 3 Hrs.

Theory Examination- Total marks – 100

University Exam. - 80 marks.

Internal Assessment – 20 marks

*No Practical Examination.

FUNDAMENTAL OF EXERCISE THERAPY- II

Objective: – At the end of the course, the candidate will be able to –

1. Analyze Normal human posture (static & dynamic) & various Normal musculo skeletal movements during Gait, activities of daily living, & also the normal describe the movements of the Thorax during breathing; in terms of Biomechanical & Physiological Principles.
2. Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength.
3. Describe the Biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the Muscle strength, & mobility of articular & periarticular soft tissues
4. Describe the physiological effects, - Therapeutic uses, merits / demerits of various exercise modes.
5. Demonstrate various therapeutic exercises on self; also acquire the skill of application on Models.
6. Acquire the skill of assessment of isolated & group muscle strength, & Range of motion of the joints subjectively & objectively.

SYLLABUS

UNIT I

1. Biomechanics of joints of the skeletal system (spine, extremities, T.M. joint & Thoracic cage)
2. Kinetics & Kinematics of various activities of daily living e.g. supine to sitting, sitting to standing, squatting, climbing up & down, lifting, pulling, pushing, overhead activities, walking running, jogging.

UNIT II

3. a) Assessment of muscle strength, (group/individual) subjective & objective methods 1/10 RM dynamometry
- b) Factors that influence the strength of the normal muscle/hypertrophy, recruitment of motor units, change after training / type of contraction Isometric / Isotonic / Isokinetic Eccentric.
- c) General principles of strength training: overload / intensity/ Motivation/ learning/ duration/ frequency/ reversibility/ specificity

UNIT III

4. a) Bio-physical properties of connective tissue, (contractile & non-contractile) elasticity / Plasticity – response to sudden/ slow/ sustained loading –strain curve-Creep – Hysteresis
- b) Mobilisation – Methods - stretching / traction (cervical & lumbar) / Hold – Relax method-rhythmic movements/oscillations.
- c) Mobilization of muscles & Fasciae-around the shoulder / elbow/wrist/Hip/knee/ankle / Spine (dorso-lumbar fascia)

UNIT IV

5. Methods of Assessment of the Posture – Sitting / standing/Lying/Physiological deviations of the posture
6. Methods of assessment of Gait-measurements for walking aids – asillary / elbow crutches, walking sticks – Pre-crutch training, crutch gaits.
7. Co-ordination & Balance – neural control – Methods of co-ordination exercises – Frankel's exercises.
8. Principle of P.N.F. (no practical)
9. Breathing exercises – Goals – Inspiratory – Expiratory / Segmental – Forced expiratory – coughing – huffing / Modified Inspiratory / Active cycle of breathing.
10. Bronchial Hygiene – postural drainage position/ humidification

UNIT V

11. Principles of Home programme & Ergonomic advise
12. Functional Re-education

- a) Functional motor skills, e-Motor skills to function independently in ADL
 - b) Mobility, Bed / Wheel chair mobility, ambulation
13. Application of mat exercises (to practice on self & on models)
 14. 6 Minute walk test – on models (only technique)

PRACTICAL No. 3a, 4b, 5, 6,7,9,10,12 a & 13, 14

TEXT BOOKS

1. Progressive resisted exercises – by Margaret Hollis
2. Therapeutic Exercise by Carolyn Kisner
3. Kinesiology by Cynthia Norkins
4. PNF – Knott and Voss

REFERENCE BOOKS

1. Therapeutic exercise by Basmijjan & Wolf.
2. Muscle testing by Daniel Kendall
3. Clinical evaluation – Lacote (for Isolated assessment of abdominal muscles)
4. Muscle stretching & Auto stretching – Olaf Evjenth
5. Orthopaedic Evaluation – Magee (only for assessment of posture)

Scheme of Examination, Duration- 3 Hrs.

Theory- Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks.

Practical Examination – Total marks – 100

University Examination- 80 marks.

Internal Assessment- 20 marks

FUNDAMENTAL OF ELECTROTHERAPY-II

Objective: At the end of the course, the candidate will be able to –

1. Describe the Production & Physiological effects, Therapeutic uses, merits, demerits indication & contraindications of various low/medium & high frequency modes
2. Describe the Physiological effects & therapeutic uses of various therapeutic ions & topical pharmaco -therapeutic agents to be used for the application of iontophoresis & sono/ phono phoresis
3. Acquire the skill of Application of the Electro therapy modes on models, for the purpose of Assessment & Treatment.
4. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

SYLLABUS

UNIT I

1. Low frequency currents –
 - a) Cathodal / Anodal Galvanism, Ionotophoresis – with various ions & pharmacotherapeutic drugs
 - b) Electrical stimulation for re-education – short / long pulse motor points.
 - c) Strong surged faradic current under pressure / elevation
 - d) T.N.S. types
 - e) High voltage currents
 - f) Micro –current
 - g) Didynamic currents

UNIT II

2. Medium frequency currents – Beat frequency – types Endovac attachment advantage of I.F.T. over low frequency currents.
3. Bio-Feedback methods

UNIT III

4. High frequency thermal agents – S.W.D. types continuous / Pulsed – types of electrodes
5. Therapeutic Ultra sound pulsed / continuous –

UNIT IV

6. Actino Therapy: a) Radiant heat (I.R.), b) U.V.R. a/b/c types – Test dose, local & general application, c) Laser – He/Ne, & I.R. combination.

UNIT V

7. Care of wound – application of Therapeutic currents, Ultrasound, U.V.R. & LASER

PRACTICAL

Skills of application to be practiced on models –in No-1 to 7 above

TEXT BOOKS

1. Clayton's Electro Therapy
2. Electro therapy Explained – by Low & Read
3. Electro Therapy – by Kahn,
4. Therapeutic Electricity – by Sydeny Litch

REFERENCE BOOKS

1. Clinical Electro Therapy – by Nelson & Currier

Scheme of Examination: Duration – 3 Hrs.

Theory- 80 marks, Internal Assessment- 20 marks, Total- 100 marks

Practical- 80 marks, Internal Assessment-20 marks, Total- 100 marks

PSYCHOLOGY

Objective: At the end of the course, the candidate will-

1. Be able to define the term Psychology, & its importance in the Health delivery system, & will gain knowledge of Psychological maturation during human development & growth; & alterations during aging process.
2. Be able to understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.

SYLLABUS

1. Schools of thought – Psycho-analytical theory, Behaviourism, gestalt, Structuralism, Functionalism (In Brief)
2. Learning – Role of learning in human life – Conditioning
3. Emotions- nature & relationship with autonomic nervous system- Theories of emotions: a) James Lange theory, b) Schachter Singer theory, c) Cannon Bard theory
4. Memory – types – Forgetting causes
5. Attention & perception Nature of attention (in brief) Nature of perception Principles of grouping
6. Conflict & Frustration – Types –Common Defense mechanism stress-common reactions to frustrations.
7. Abnormal Psychology (in brief): a) Introduction, b) difference between normal & abnormal psychology, c) Causes, d) Anxiety disorders – Phobias, Obsessive – compulsive, Hysterical convulsion disorder, e) Affective disorders – Depression, mania, Bipolar disorders, f) Psychotic disorders – Types of Schizophrenia

TEXT BOOKS

1. Morgan C.T. & King R.A. Introduction to Psychology – 7th edn (Tata McGraw-Hill publication)
2. Munn N.L. Introduction to Psychology (Premium Oxford, I.B.P. publishing co.)
3. Clinical Psychology – By Akolkar.

Scheme of Examination: Duration- 3 Hrs.

Theory- 80 marks, Internal Assessment- 20 marks, Total- 100 marks.

*No Practical Examination.

Scheme of Examination

IIIrd Year Examination (Marks Distribution)

S. N.	Subject	Theory	I.A (Theory)	Total Theory	Practical and Oral	I.A Practical	Total Practical	Subject Total
1.	Surgery & Orthopedics	80	20	100	-	-	-	100
2.	Medicine & Pediatrics	80	20	100	-	-	-	100
3.	Community Health & Biostatistics	80	20	100	-	-	-	100
4.	Physical Diagnosis & Manipulative Skills	80	20	100	80	20	100	200

BACHELOR OF PHYSIOTHERAPY (B.P.T.) – 3RD YEAR**Subjects****1. Surgery & Orthopedics**

Section-I: General Surgery

Section-II: Traumatology & Orthopedics

2. Medicine & Pediatrics

Section – I: Medicine

Section-II: Pediatrics

3. Community Health & Biostatistics

Section-I: Community health

Section-II: Biostatics

4. Physical Diagnosis & manipulative skills**5. *Obstetrics and Gynecology****6. *Psychiatry subject should be adding Third year college exam theory only**

Supervised Physiotherapy Practice

Seminar (including: 1) Case presentation, 2) Literature review)

***Note:** - No University Examination for Psychiatry and Obstetrical Gynecology.

SURGERY & ORTHOPEDICS

SURGERY (Section-I)

GENERAL SURGERY

SYLLABUS

UNIT I

General

1. Effect of Anesthesia & surgical trauma, Hemorrhage, Shock, Water & Electrolyte imbalance
2. Inflammation – acute & chronic-signs, symptoms, complications & management
3. Wounds / ulcers – classification, healing process, management
4. Common abdominal surgeries for G.I. tract, Genito-urinary system Scar during surgical approach through abdominal wall. Scar management in brief

UNIT II

5. Radical mastectomy – complications & management
6. Amputation – types, sites, complications & management
7. Burns – causes, complications, classification & management

UNIT III

Neuro Surgery

1. Head Injury – management
2. Intra cranial & Spinal tumors
3. Surgeries of Head & neck in neurosurgical conditions & post operative care

UNIT IV

Cardio vascular – thoracic surgery

1. Surgical approach
2. Post operative complications & management in Thoractomy, Thoracoplasty, Lobectomy, pneumonectomy, Decortication, CABG, Valvular Surgery, Congenital Heart Disease Surgeries, and Surgery for Peripheral Vascular Disease.

UNIT V

E.N.T. Surgery

1. Upper respiratory track surgery & post operative care
2. Tracheostomy – indications, surgical approach & management
3. Surgery for cancer – indications & post operative care
4. Surgical procedures in VIIth nerve palsy
5. Vertigo

Ophthalmic Surgery

Surgeries for III, IV & VI cranial nerve palsy

UNIT VI

Plastic Surgery

1. Skin grafts & flaps – Types, indications with special emphasis to burns, wounds, ulcers
2. Tendon transfers, with special emphasis to hand, foot & facial paralysis,
3. Keloid & Hypertrophied scar management
4. Reconstructive surgery of peripheral nerves
5. Micro vascular surgery

CLINICAL

- A. Evaluation / presentation and recording of one case each in burns, wound & ulcer, Head Injury case, peripheral vascular condition, post Radical mastectomy, post thoracic surgery, post abdominal surgery.
- B. Auscultation & its interpretation with special emphasis to Reading & interpretation of the X-ray chest.

Observation: one abdominal & one thoracic surgery & one surgery of skin graft / flap.

TEXT BOOKS

1. Under graduate Surgery by Nan
2. Bailey & Love's short practice of Surgery – 21 st edn

ORTHOPAEDICS (Section-II)

SYLLABUS

UNIT I

1. Post trauma Pathology, clinical manifestations, healing process in bone & intra articular & extra articular soft tissues.
2. Fractures & dislocations of upper extremity & lower extremity
 - i) Classification
 - ii) Conservative treatment

UNIT II

- iii) Surgical intervention – a) Surgical approach, b) soft tissue section / repair, c) internal / external fixation / art hroplasty, d) post operative complications, e) post operative management & management of complications.

UNIT III

3. Fractures & dislocations of spine, thoracic cage, shoulder girdle & pelvis
 - i) Conservative treatment
 - ii) Surgical intervention: a) Surgical approach, b) soft tissue section / repair, c) internal / external fixation / art hro plasty, d) post operative complications, e) post operative management & management of complications.

UNIT IV

4. Management of Metabolic disorders: a) Osteoporosis, b) Osteomalacia
5. Brachial Plexus / Lumbo Sacral Plexus & Peripheral nerve injuries – sites, management
6. Deformities of the spine – scoliosis / kyphosis
7. Deformities of extremities like Varus / Valgus, Torsion, Deformities of hands & feet
8. Congenital Malformation Spina Bifida, Meningocele meningocele
9. Vascular Disorders like Avascular Necrosis, Necrosis, Perthe's Disease, Compartmental Syndrome

UNIT V

10. Reconstructive surgery for bone lengthening
11. Reconstructive surgery in Polio & Cerebral Palsy
12. Inflammatory / Infectious diseases of the bone & joints e.g. T.B, Osteomyelitis
13. Tumors of bone & management
14. Surgical intervention for Arthritis like O.A., RA, Ankylosing Spondylitis
15. Reconstructive surgery in soft tissue lesions of Shoulder, Knee & Ankle

UNIT VI

16. A etiology of Back Pain & surgical management
17. Common Sports injuries / overuse injuries & management
18. Traumatic Amputation & management

19. Hand injury & management
20. X-rays of extremities & spine

CLINICAL:

1. Independent clinical orthopedic evaluation presentation & recording of-
 - a. One acute soft tissue lesion (including nerve injury)
 - b. 2 cases of degenerative art hritis of extremity joint
 - c. 2 degenerative art hritis of spine
 - d. One case of acute P.I.D.
 - e. 2 chronic backaches
 - f. 1 post operative case of fractures of extremities
 - g. One traumatic paraplegia / quadriplegia

OBSERVATION

At least 2 surgeries of # internal fixation, one knee/hip replacement & Reconstructive surgery of the tendons.

TEXT BOOKS

1. Adam's outline of fractures – 8th edn
2. Adams outline of Orthopaedics – 8th edn
3. Apley's text book of Orthopedics

Scheme of Examination, Duration- 3 Hrs,

Theory Examination- Total marks – 100

Section-I: Surgery- 50 marks

Section –II: - Orthopedics- 50 marks

University Examination- 80 marks (40 each)

Internal Assessment- 20 marks (20 each)

*No Practical Examination.

MEDICINE & PAEDIATRICS

SECTION –I MEDICINE SYLLABUS

UNIT 1

A. CARDIO-VASULAR & RESPIRATORY MEDICINE

1. Cardio-vascular diseases

- i) Hypertension – systemic
- ii) I.H.D. –Myocardial infarction
- iii) Arrhythmia – classification
- iv) Valvular Heart Disease: i) Congenital, ii) Acquired
- v) Rheumatic Fever
- vi) Congenital Heart Disease
- vii) Infective Endo Carditis
- viii) Geriatric Cardio Vascular Problems & management
- ix) ECG – Normal & Variations due to ischemia & infarction

UNIT 2

2. Diseases of the respiratory system

- i) Common Infectious diseases like Tuberculosis Pneumonia, Lung Abscess, Bronchiectasis
- ii) Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, Empyema
- iii) Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung

UNIT 3

- iv) Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis
- v) Interstitial Lung Diseases
- vi) Geriatric respiratory problems & management
- vii) Intensive Medical Unit – Infrastructure & Treatment
- viii) Introduction of clinical examination – Breath sounds / X ray chest / Blood gas analysis / P.F.T.

UNIT 4

B. NEUROLOGY

1. Circulation of the brain & spinal cord
2. Cerebro – vascular accidents – Thrombosis, Embolism, Haemorrhage
3. Stroke – Level of Lesion & Management
4. Extra Pyramidal lesions – Basal Ganglia
 - i) Parkinsonism
 - ii) Athetosis, Chorea, Dystonia & Spasmodic Torticollis

UNIT 5

5. Polyneuropathy
 - i) G B Syndrome
 - iii) Diabetic, Alcoholic & SADC
6. Disorders & Diseases of muscle
 - i) Myopathy – Types
 - ii) Muscular Dystrophy – Types
 - iii) Inflammatory Disorders – Polymyositis & Dermatomyositis
 - iv) Myotonia
7. Disorders of Anterior Horn Cell
 - i) Motor Neurone Disease
 - ii) SMA, Syringomyelia, Peroneal Muscular Atrophy, Polio
8. Multiple Sclerosis

9. Infections of the nervous system like Encephalitis, Neurosyphilis, H I V infection, Herpes, Meningitis, Transverse Myelitis, Tabes Dorsalis & T.B. Spine

UNIT 6

10. Epilepsy
11. Tetanus
12. Alzheimer's Disease
13. Disorders of cerebellar function
14. Disorders of cranial nerves & Special Senses
15. Disorders of Myoneural Junction – Myasthenia Gravis & Myasthenic Syndrome
16. Dysfunction of Autonomouns Nervous System is Spinal Cord Lesions
17. Neurogenic Bladder
18. Cerebro Spinal Fluid
 - i) Formation & Absorption
 - ii) Status in Various Disorders
19. Sexually transmitted diseases

UNIT 7

C. GENERAL MEDICINE

1. **Disorders of Endocrine system**
 - i) Diabetes
 - ii) Thyroid, Pituitary & Adrenal conditions
 - iii) Calcium Metabolism
2. **Rhumatological Conditions**
 - i) Rheumatoid Art hritis
 - ii) S L E
 - iii) S S A
 - iv) Gout
 - v) Polymyositis

UNIT 8

3. **Geriatric Conditions**
 - i) Aging Process
 - ii) Osteoporosis
 - iii) General Health Care, Wellness Clinic
 - iv) Hypertension
4. **Nutrition Deficiency Disease**
5. **Drug Abuse / Intoxication**

D. DERMATOLOGY

UNIT 9

1. Introduction to Dermatology, basic skin lesions & History taking
2. Skin infections (Part I) – Scabies / Pediculosis / Bacterial infections
3. Skin infection (Part II) viral / Fungal / Cutaneous T.B.
4. Psoriasis / Sebaceous Dermatitis / Atopic Dermatitis / Hand eczemas (Psoriasis & Eczema)
5. Pigmentary Disorders (Vitiligo, Melasma) & Drug Reactions (Urticaria, Fixed Drug Eruption, Maculo Papular Drug Rash, Erythema Multiform minor, Steven Johnson Syndrome, Toxic Epidermal Necrolysis)

UNIT 10

6. Leprosy & Deformity
7. Autoimmune Disorders (Scleroderma, Systemic Lupus Erythematosus, Dermatomyositis)
8. Acne & treatment of Acne (Including cosmetic & Dermatological procedures) (Chemical peels, MDA etc.)
9. Disorders of Scalp (Dandruff, Chronic Hair loss, Alopecia)
10. Sexually Transmitted skin lesions
11. HIV & Cutaneous manifestations
12. Topical therapy in Dermatology

TEXT BOOK

1. API- Text book of Medicine – 5th edn
2. Golwalla – Medicine for students
3. Principles & practice of Medicine – 16th edn-by Davidson

CLINICAL

Evaluation, presentation and recording of two cases each in

- i) U.M.N. lesion
- ii) L.M.N. lesion
- iii) Respiratory Condition
- iv) Cardio Vascular Conditions
- v) Degenerative / Rheumatological Condition
- vi) General Medicine Conditions like Obesity, Nutritional disorders, Diabetes Mellitus & Metabolic bone disorders.

SECTION-II PAEDIATRICS**SYLLABUS****UNIT 1**

1. Normal intra-uterine development of foetus
2. Normal development & growth
3. Immunization, Handling of the child, Significance of breast-feeding
4. Common causes for Developmental disorders like Sepsis, Prematurity, Asphyxia & Hyperbilirubinemia
5. Brain damage-Cerebral Palsy-types & Medical Management
6. Spinal Cord Disorders like Poliomyelitis, Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele

UNIT 2

7. Common infections
 - a) C.N.S. & peripheral nervous system
 - b) Typhoid, rubella, mumps, measles, tetanus, diphtheria, chicken pox, hepatitis
8. Epilepsy
9. Mental Retardation
10. Genetically transmitted neuro-muscular conditions

UNIT 3

11. Malnutrition related condition
12. Juvenile R A & other immunological conditions of Musculoskeletal system
13. Common diseases of the respiratory system like Asthma, Bronchitis, T.B. & Pneumonia & bronchiectasis
14. Rheumatic & Congenital heart disease

CLINICAL

1. Normal & abnormal reflexes in neonate & child
2. Examination of the nervous system
3. Examination of respiratory system
4. Examination of cardiovascular system

* Internal assessment to be conducted at the end of the completion of the term – passing in this IA is mandatory to pass in the I.A. of the subject Medicine.

TEXT BOOK

1. Essentials of Pediatrics – by O.P. Ghai-Inter Print publications
2. D.K. series in Pediatrics

Scheme of Examination, Duration 3 Hrs.

Theory Examination- Total marks- 100

Section-I: (Medicine) – 60 marks

Section-II: (Pediatrics) – 40 marks

University Examination – 80 marks (50+30)

Internal Assessment – 20 marks (10+10)

*No Practical Examination.

COMMUNITY HEALTH & BIO-STATISTICS

COMMUNITY HEALTH (SECTION-I)

SYLLABUS

UNIT 1

1. General concepts & Determinants of Health & Diseases – National & International Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease
 - a) Epidemiology – Definition & Scope
 - b) Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk, & Food Hygiene (Overview)
2. Overview of Public Health Administration at Central & State levels – Strategies of Health Delivery System for “The Health for All” National health programme (brief Role of WHO)

UNIT 2

3. Socio-Economical & Cultural Issues related to Morbidity owing to the Physical Disability & Handicaps of Structural / Neuro-motor & Psycho-somatic origin-
 - a) Health problem vulnerable groups
 - i. Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence,
 - ii. Pre-term babies with high risk, Infants & Pre-School Children-Brain Damage, during birth injury, Congenital & Acquired structural Deformities, Spinal Dysraphism, T.B. Meningitis, Polio, Cerebral palsy, Other Hereditary neuro-motor Conditions, such as Myopathies & Muscular Dystrophies, Malnutrition – Rickets,
 - iii. Occupational Diseases & Hazards – Definition, Scope, Accident prevention, Hand Injuries, Amputations, Disc Lesions Head Injuries, Backaches, Respiratory Illnesses due to exposure to asbestoses, tobacco, fumes, COPD, Asthma, Sarcoidosis ; Stress.
 - b) Traumatic / Paralytic morbidity, Head Injury, Quadri /paraplegia, Urinary/Bowel Incontinence, Amputation, Skeletal Deformities due to multiple Fractures & Prolonged Bed Rest & Mental Retardation.
 - c) Nutritional – Osteomalacia, Rickets, Neuropathies due to Vitamin- deficiency, Skeletal Deformities.

UNIT 3

- d) Auto-immune & Hereditary diseases- Rheumatoid art hritis, S.L.E. Sero-ve arthritis, Ankylosing Spondylitis, Multiple Sclerosis, Spinal Muscular Atrophies & Myopathies, Dystrophies in adults,
- e) Geriatric-Osteoporosis, Malnutrition, Alzheimer’s disease, Parkinsons, Ataxia, CHD, Hypertension.
- f) Addiction – Alcoholic – Neromotor & Psychosomatic disorders, Smoking – asthma, COPD,
4. Family planning – objectives of National Family Planning Programmes & Family Methods General Idea of Advantage & Disadvantage of the Methods.
5. Mental health –socio-economical & cultural aspect,
6. Communicable diseases-an over-view (including prevention & control) TB, HIV Leprosy, Brucillosis, & Other conditions leading to Paralysis & Art hritis, Respiratory diseases causing Bronchiactesis COPD.
7. Immunization programmes – children & hospital staff

Text Book

1. K. Park – Park’s Textbook of Preventive & Social Medicine
2. P.K. Mahajan & M.C. Gupta – Textbook of Preventive & Social Medicine

BIostatISTICS (SECTION-II)

Objective: At the end of the course, the candidate shall-

1. gain knowledge of the basic concepts of Biostatistics & its need for professional practice & Research
2. Be able to describe an Over-view-a a) Ethnography & Anthropology b) Design & Methodology of an Experiment or Survey c) Demography & vital statistics d) Sampling & interpretation of Data

SYLLABUS**UNIT 4**

1. Introduction – Uses of statistical methods in Physiotherapy – Measurement Scales, variables, & their Measurements, Symbolic Data, Operations
2. Statistical data – Tabulation, Calculation of Central Tendency, & Dispersion, Linear Regression & Correlation – Presentation of Data in Diagrammatic & Graphic Form,
3. Probability & Sampling as a Mathematical System, Population & Samples, Sampling Distribution, Sampling Methods

TEXT BOOK

1. B.K. Mahajan – Methods in Biostatistics

Scheme of Examination, Duration 3 Hrs.

Theory Examination- Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

*No Practical Examination

PHYSICAL DIAGNOSIS & MANIPULATIVE SKILLS

Objectives: At the end of the course, the candidate will-

1. Be able to describe the human development & maturation; with special emphasis to sensory, motor, psychological & social aspects and alteration during aging process.
2. acquire the skill of detection & objective documentation of the Neurological, Musculoskeletal, cardiovascular & pulmonary dysfunctions such as Pain, altered muscle power, mobility, endurance, limb length, posture, gait, hand function & A.D.L. in adult & pediatric conditions & acquire skill & interpretation of Exercise tolerance test to arrive at the Functional diagnosis as per International Classification of Functioning.
3. Acquire the skills to use on patients, the therapeutic currents, for Electro-diagnosis of sensory & motor dysfunction & pain.
4. Be able to describe the physiology of nerve conduction & motor units, interpretation of Normal & Abnormal EMG, Nerve Conduction studies & late responses.
5. acquire the simple skills of mobilization of the extremities on models
6. acquire the neurotherapeutics skills on models
7. Be able to do Interpretation of common investigations used for functional diagnosis.

SYLLABUS

UNIT 1

1. General principles of Human development & maturation

- a. Aspects: i) physical, ii) motor, iii) sensory, iv) cognitive, v) emotional, vi) cultural, vii) social
- b. Factors influencing human development & growth: i) Biological, ii) environmental, iii) inherited.
- c. Principles of maturation: i) in general, ii) in anatomical directional pattern –
 - Cephalo – caudal
 - Proximo – distal
 - Centro – lateral
 - Mass to specific pattern
 - Gross to fine motor development
 - Reflex maturation tests
 - iii) Development in specific fields
 - oromotor development
 - Sensory development
 - Neurodevelopment of hand function

UNIT 2

2. Electro diagnosis

- a. Physiology of resting membrane potential & action potential, Propagation of Action Potential, Volume conduction.
- b. Physiology of muscle contraction
- c. Motor unit & Recruitment pattern of motor unit – Size principle
- d. Therapeutic current – as a tool for electro diagnosis.
 - i) Physiological principles
 - ii) Faradic Galvanic Test, Strength Duration Curve, Test for Sensory & Pain Threshold, Test for Pain Tolerance – tests should be carried out on relevant patients.
- e. Electro-myography
 - i) Principles
 - ii) Instrumentation – Basic components like CRO, Filter, Amplifier & Pre-amplifier, Types of Electrodes, Panel diagram.
 - iii) Normal & Abnormal EMG pattern
 - 1) At rest

- 2) On minimal contraction
- 3) On maximal contraction
- f. Nerve Conduction Studies
 - i) Principles & Technique
 - ii) F wave
 - iii) H reflex

UNIT 3**3. Basics in Manual Therapy & Applications with Clinical reasoning**

- a. Examination of joint integrity
 - i) Contractile tissues
 - ii) Non contractile tissues
- b. Mobility – assessment of accessory movement & End feel
- c. Assessment of articular & extra-articular soft tissue status
 - i) Myofascial assessment
 - ii) Acute & Chronic muscle hold
 - iii) Tightness
 - iv) Pain-original & referred
- d. Basic principles, Indications & Contra-Indications of mobilization skills for joints & soft tissues.
 - i) Maitland
 - ii) Kaltenborn
 - iii) Mulligan
 - iv) McKenzie
 - v) Muscle Energy Technique
 - vi) Myofascial stretching
 - vii) Cyriax
 - viii) Neuro Dynamic Testing

UNIT 4**4. Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning.**

- a. Principles of Neuro Developmental Technique, Rood's Technique, PNF, Brunnstrom
- b. Technique
- c. Indications for Application

UNIT 5**5. Assessment of Movement Dysfunction**

- a. Higher functions
- b. Cranial nerves
- c. Sensations & sensory organisation
- d. Joint mobility
- e. Body image
- f. Tone
- g. Reflexes-Superficial & Deep
- h. Voluntary control
- i. Muscle Strength
- j. Co-ordination
- k. Balance
- l. Endurance
- m. Trick movements
- n. Limb Length
- o. Posture
- p. Gait
- q. Scales-Berg's Balance, Ashworth, Glasgow Coma, DGI
- r. Functional Diagnosis using ICF

- s. Interpretation of Electro diagnostic findings, routine Biochemical investigations.

UNIT 6

6. Assessment of Cardio Vascular & Pulmonary Dysfunction

- a. Vital parameters
- b. Chest expansion
- c. Symmetry of chest movement
- d. Breath Holding Test
- e. Breath Sounds
- f. Rate of Perceived Exertion (RPE)
- g. Quality of life questionnaire
- h. Exercise Tolerance – six minutes walk test, Theoretical bases of Bruce's protocol
- i. Peak Flow Meter
- j. Interpretation of reports – ABG, PFT, ECG- (Normal & Variations due to Ischaemia & Infarction)
- k. X-ray Chest
- l. Ankle Brachial Index
- m. Tests for Peripheral Arterial & Venous circulation

UNIT 7

7. Assessment of Musculoskeletal Dysfunction

- a. Tightness
- b. Joint Mobility
- c. Muscle strength
- d. Limb Length
- e. Trick Movement
- f. Posture
- g. Gait
- h. Special Test
- i. Functional Diagnosis using ICF
- j. Interpretation of X-ray of extremities & spine, routine, bio-chemical investigations

UNIT 8

8. Assessment of Hand

- a. Sensations
- b. Mobility of joints
- c. Strength
- d. Special Tests like Froment's Sign, Bunnel – Litter's Test, Phalen's Test, Tinel's Sign, Wartenberg's Sign.
- e. Hand Function – Precision & Power Grips

9. Assessment of pain

- a. Intensity & quality
- b. Objective assessment & documentation – VAS, Mc Gill's modified questionnaire, Numerical Rating Scale.

10. Assessment of Obesity

- a. Pathophysiology
- b. Assessment – BMI, Waist – Hip Ratio

11. Introduction to Quality of Life Questionnaire

CLINICALS

1. Practice of Manual Therapy in Kaltenborn, Maitland, Mulligan & Cyriax on extremities only & only on models
2. Electro-diagnostic assessment – S D Curve, Faradic Galvanic Test, Test for Sensory & Pain T hreshold, Test for Pain Tolerance.

3. Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, vital parameters, Grades of Dyspnoea, Rate of Perceived exertion, Ankle Brachial Index.
4. Exercise tolerance testing – 6 minutes' walk test & Bruce's protocol on models only
5. Practice to Neuro Therapeutic Skills of NDT, PNF, Rood's Technique & Brunnstrom on models only.
6. Interpretation of reports – EMG, NC Studies, ABG, PFT, X-ray of Chest, Extremities & Spine & ECG.

Term work in Clinical

- A. Documentation & Interpretation of following investigations
 - i) Electro diagnosis –
 - a) SDC
 - b) Faradic Galvanic Test
 - c) Test for Sensory / pain T hreshold
 - d) Test for Pain tolerance – Any 3
 - ii) Cardio Vascular & Pulmonary – ABG, PFT, ECG, X-ray Chest, Exercise Tolerance Test-1 each.
 - iii) Neurological – Scales like Modified Ashworth, Berg's Balance, DGI, Glasgow Coma, Barthel Index, STREAM Format – Any 3 & EMG & NC Studies – 2 each.
- B. Case presentation with Functional diagnosis – T hree cases Each in –
 - i) Musculoskeletal
 - ii) Neurological
 - iii) Cardiovascular & Pulmonary

To maintain the Record/Journal of the term work & to get each assignment duly signed by Head.

TEXT BOOK

1. Maitlands book on Manual therapy,
2. Clinical Electro Therapy – Nelson – Currir --- Appleton & Lange publication
3. Clinical Electromyography – by Mis hra
4. Mobilisation – Kaltenborn
5. Physical Rehabilitation, Assessment and treatment by Susan B O's Sullivan

REFERENCE BOOK

1. Orthopedic Physical examination – by Magee
2. Mobilization methods – Kaltonborn
3. Clinical Electromyography – Kimura
4. Orthopedic Physical therapy – Donnatelli
5. Exercise & Heart – Wenger
6. Exercise Physiology – William D Mc' Ardle
7. Facilitation techniques based on NDT principles by Lois Bly Allison Whiteside
8. Neurological Examination by John Patten
9. Movement therapy in Hemiplegia by Brunnstrom
10. Cash textbook of Physiotherapy in neurological conditions by Patricia Downie
11. Physical Dysfunction by Tromble Scoot

Scheme of Examination, Duration 3 Hrs.

Theory Examination –Total marks – 100

University Examination – 80 marks

Internal Assessment- 20 marks

Practical Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

OBSTETRICS & GYNAECOLOGY

(Non-University Paper)

Objective: at the end of the course, the candidate will-

1. Be able to describe the normal & abnormal physiological events during the Puberty, Pregnancy, Labour, Puerperium, & Pre, Peri & Post Menopause.
2. Be able to discuss common complications during Pregnancy, Labour, Puerperium & Pre Peri & Post Menopausal stage & various aspects of Urogenital Dysfunction & the management in brief.
3. Acquire the cognitive skill of the clinical examination of Pelvic Floor.

SYLLABUS

UNIT 1

1. Physiology of Puberty & Menstruation , Abnormalities & common problems of Menstruation
2. Pregnancy – Fertilization, Development of the foetus, Normal gestations, Abnormal / Multiple gestations, Common Complications during pregnancy like P I H, Eclampsia Diabetes, Hepatitis, German Measels, TORCH infection.
3. Labour
 - i) Normal – Events of Ist IInd & III rd Stages of labour
 - ii) Complications during labour & management
 - iii) Caesarian section
4. Post Natal – Puerperium, lactation, Methods of Contraception complications of repeated child bearing with small gaps

UNIT 2

5. Sterility – management
6. Methods of family planning
7. Uro-genital dysfunction
 - i) Uterine prolapse – classification & management (Conservative / Surgical)
 - ii) Cystocoele, Rectocoele, Enterocoele
8. Neoplasm of Female reproductive organs – surgical management
9. Pre, Peri & Post Menopause – Physiology, Complications & management
10. Pelvic Inflammatory Diseases with special emphasis to backache due to Gynaec / Obsconditions

CLINICAL

Evaluation & presentation of two cases each in

- a) Uro-genital dysfunction
- b) Antenatal care
- c) Postnatal care
 - i) Following normal labour
 - ii) Following Caeserean section
- d) Pelvic Inflammatory Diseases

OBSERVATION: One Normal & One Caesarian delivery, One case of Tubectomy & One Hysterectomy / Repair of the Uro-genital Prolapse.

TEXT BOOK

1. Text book of Gynecology – by Dutta – New Central Book Agency
2. Text book of Obstetrics by Dutta – New Central Book Agency

PSYCHIATRY

(Non-University Paper)

Objective: At the end of the course, the candidate will be able to –

1. Enumerate various Psychiatric disorders with special emphasis to movement / Pain & ADL – describe the various causative factors & methods of assessment & management.
2. Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of various Psychiatric conditions.
3. Describe in brief the various treatment modalities commonly used.

SYLLABUS

UNIT 1

1. Psychiatric History, & examination of mental status
2. Classification of Mental status

UNIT 2

3. Schizophrenia & its types-brief Psychotic disorder, delusional disorder, schizoaffective disorders, post-partum psychosis, mood disorders, organic mental disorders, Anxiety disorder, phobia, obsessive compulsive dissociative conversion disorder, hypochondriasis, post-traumatic disorder, personality disorder, substance related disorders-adjustment & impulse control, disorder, psycho-sexual disorders, psycho-somatic disorder, psychiatric emergencies suicide stress management disorders of infancy – childhood & adolescence disruptive behavior, conduct disorder, attention deficit, & hyper-reactivity-eating disorder, tic, disorder, elimination disorder – child abuse, enuresis.

UNIT 3

4. Management –ECT, Chemotherapy, group therapy, psycho therapy, cognitive behavioral therapy.

TEXT BOOK

1. A short book of Psychiatry – 3rd edn-by Ahuja – Jaypee bros – medical publishers
2. Shah L.P. Handbook of Psychiatry

Scheme of Examination

IVth Year Examination (Marks Distribution)

S. N.	Subject	Theory	I.A (Theory)	Total Theory	Practical and Oral	I.A Practical	Total Practical	Subject Total
1.	PT in Musculoskeletal	80	20	100	80	20	100	200
2.	PT in Neurosciences	80	20	100	80	20	100	200
3.	PT in General Medical & Surgical Conditions	80	20	100	80	20	100	200
4.	Community Physiotherapy & Rehabilitation	80	20	100	-	-	-	100
5.	Principles of Bioengineering	80	20	100	-	-	-	100
6.	Professional Issues & Administration	80	20	100	-	-	-	100

BACHELOR OF PHYSIOTHERAPY (B.P.T.) – 4TH YEAR**Subjects**

1. PT in Musculoskeletal
2. PT in Neuro-Sciences (including Adult/Pediatric/ Psycho-somatic & Psychiatric/Mental health
3. PT in General Medical & Surgical physiotherapy (including Cardio-vascular & Respiratory conditions)
4. Community Physiotherapy & Rehabilitation (including Women's Health/Geriatrics/Industrial Health (Ergonomics) & Health Promotion
5. Principles of Bio-engineering
6. Professional issues/Administration
7. Seminar (Including case presentation)
8. Supervised clinical practice + Project

Each Clinical assignment shall be of 74 hours at Indoor & 74 hours at the Outdoor section (including 20 hours of Project) respectively in each of the subjects mentioned at 1, 2 & 3 above. Clinical assignments, Clinical assignment in Community P.T. shall be of 150 hours (Total 7 assignments)

- A) During each clinical assignment, the student shall functionally diagnose plan & practice Clinical skills on patients in consultation with the experienced senior staff.
- B) Project During each of the 7 assignments, the candidate, shall conduct retrospective case studies on Minimum 5 samples. He/she shall maintain a separate File/journal for each subject & keep all the records of the clinical assignment & ward exam/Seminar etc. in the respective file. However the records of the Project work carried out during the 7 assignments shall be maintained in the file titled as "PROJECT FILE" The candidate shall get the clinical & project work duly verified with the signature from the section In charge at the end each respective assignment.

PT IN MUSCULOSKELETAL

Objectives: This course is formulated on the “Problem based” method. At the end of the course, the candidate will –

1. Be able to identify, discuss & analyze, the Musculo Skeletal Dysfunction in terms of Biomechanical, Kinesiology & Biophysical bases & correlate the same with the provisional diagnosis, routine radiological & Electrophysiological investigations & arrive at appropriate Functional diagnosis with clinical reasoning.
2. Be able to plan & Prescribe as well as acquire the skill of executing short & long term Physiotherapy treatment by selecting appropriate modes of Mobilisation/manipulations, Electro Therapy, Therapeutic exercise & appropriate ergonomic advise for the relief of pain, restoration/Maintenance of function, &/or rehabilitation for maximum functional independence in A.D.L. at home & work place:

SYLLABUS

Following topics are applicable to all the Musculo – skeletal conditions included in the various clinical subjects of Medical Sciences taught in IIIrd B.P.Th.

UNIT 1

1. Evaluation, interpretation of investigations & functional diagnosis (ICF) with appropriate clinical reasoning for planning & implementation of management techniques.
2. Planning, Prescription & Implementation of short term & long term goals with clinical reasoning.
3. Documentation.

UNIT 2

4. Application of appropriate electro therapeutic modes for relief of acute & chronic pain & swelling; wound healing, re-education etc with clinical reasoning.
5. Application of simple therapeutic modes for muscle strength / joint mobility.
6. Application of Advanced therapeutic modes of mobility like Mobilisation Techniques (Techniques covered in IIIrd B.P.Th.) (to be applied only on extremities), Friction Massage, Myofascial Release, Muscle Energy Techniques & Neuro Dynamic Techniques on patients. (Non-thrust mobilization methods only).
7. Application of various taping methods for support & relief of pain.

UNIT 3

8. Posture Correction & Gait Training.
9. Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints.
10. Application of appropriate Therapeutic exercise using therapeutic gymnastic tool as and when necessary, for the relief of pain, structural stability, strength/endurance: & Functional restoration including gait training/ maintenance of functions & / or for the preventive measures.
11. Appropriate Home Program & Ergonomic advise for preventive measures & Functional efficiency at home & work place, Advice to Parents & Care Givers.

UNIT 4

Physiotherapy management for the following conditions:

1. Manifestations of trauma & diseases of the bones & soft tissues of the musculo skeletal tissue.
2. Fractures of the spine, extremities – classification/ management & complications.
3. Metabolic & hormonal disorders of the bone tissue – Osteoporosis.
4. Peripheral nerve injuries, management/ complications – V.I.C.

UNIT 5

5. Deformities of the spine, extremities – congenital malformation – Spina Bifida, meningocele / meningomyelocele, CTEV (Foot Deformities) CDH
6. Re-constructive surgeries in Polio & cerebral palsy.
7. Inflammatory/ Infectious disease of the bone & joints T.B. / Osteomyelitis.
8. Tumours of the bone.
9. Degenerative / Rheumatoid arthritis.

UNIT 6

10. Soft tissue injuries/common soft tissue injuries encountered during sports/ Over-use.
11. Amputation – classification – prosthetic management.
12. Hand injury – management.

CLINICAL

Evaluation & treatment planning: its presentation & documentation of Minimum two cases each in –
1) # upper Limb (Including hand injury), 2) # lower limb, 3) Soft tissue lesion (any), 4) # spine with/without Neurological condition 5) degenerative arthritis of skeletal joint 6) musculo – skeletal condition of Hand & foot.

TEXT BOOKS

1. Cash's Textbook of Orthopedics & Rheumatology for Physio Therapists- Jaypee
2. Manual mobilization of extremity joints – by Freddy Kaltenborn, Maitland
3. Therapeutic exercise – by Colby & Kisner
4. Therapeutic exercise – by O' Sullivan
5. Taping Techniques – by Rose Mac Donald

REFERENCE BOOK

1. Orthopedic Physical therapy – by Donatelli
2. Manual Therapy – by Maitland
3. Neural tissue mobilization – Butler.

Scheme of Examination, Duration 3 Hrs.

Theory Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

Practical Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks.

PT IN NEUROSCIENCES

Objectives: At the end of the course, the candidate will –

1. Acquire the knowledge of normal neurodevelopment, with specific reference to locomotion
2. Be able to assess, identify & analyze neuro-motor & psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements sensations/perception etc, E.M.G. / N.C. Studies & arrive at functional diagnosis with clinical reasoning.
3. Acquire the skill of application of P.N.F. technique on patients.
4. Be able to plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic advise, & parents education in neuro-pediatric care.
5. Be able to prescribe appropriate Orthosis / splints & will be able to fabricate temporary protective & functional splints.

SYLLABUS

Following topics are applicable to all the Neurological conditions (Adult & Pediatric) included in the various clinical subjects of Medical Sciences taught in IIIrd B.P.Th course.

UNIT 1

1. Understanding principles of theories of motor control & motor learning.
2. Assessment of development, Tone, Co-ordination, Psycho-somatic & Locomotor function.
3. Functional Diagnosis of neuromuscular dysfunction & assessment of Neuropathic pain.

UNIT 2

4. Understanding sensory system & organization of sensory strategies for efficient motor output.
5. Skill of sensory-motor learning & neuro-mumcular skeletal training.
6. Understanding principles of Application of neuro therapeutic skills like PNF, NDT, Carr & Shepherd. Brunnstorm & Rood's

UNIT 3

7. Planning short term & Long term goals for all the topics
8. Treatment Programme includes
 - a) Application of appropriate Electro-therapeutic modes for relief of pain & functional re-education with clinical reasoning.
 - b) Application of skills as P.N.F., Co-ordination & balancing exercise by using techniques based on neuro physiological principles.
 - c) Tools used for neuro rehabilitation like vestibular balls, tilt board etc.
 - d) Application of transfer & functional re-education exercise, postural exercise & gait training.
 - e) Bladder training.
 - f) Developing a philosophy for caring.
 - g) Prescription for appropriate orthotic devices & fabrication of temporary splints.
 - h) lifting techniques, wheel chair modifications, adaptive devices
 - i) Ergonomic advice for prevention / rehabilitation & parents / care givers education about handling of a patient.

UNIT 4

Physiotherapy management for the following conditions:

1. Hemiplegia, disorders of cerebral circulation & space occupying lesions such as cortical, thalamic & Brain-stem lesions
2. Cranial nerves-emphasis on & 7th & 8th nerves.
3. C.P.

UNIT 5

4. Subdural haematoma & birth injuries, hydrocephalus
5. Disease of meninges,
6. Neuro-syphilis, Tabes dorsalis, H.I.V. infection
7. Viral infection of nervous system-encephalitis Herpes, poliomyelitis, viral meningitis.
8. Demyelinating diseases of the nervous System-Multiple sclerosis

UNIT 6

9. Lesions of Extra-pyramidal system & Basal ganglia, Parkinsonism, spasmodic torticollis, Athetosis, Chorea, Dystonia.
10. Congenital & Degenerative disorders, M.N.D. Hereditary Ataxia, Peroneal muscle atrophy S.M.A.
11. Disorders of spinal cord-paraplegia, syringomyelia, Transverse myelitis spinal Dysraphism.

UNIT 7

12. Deficiency disorders-Sub-acute combined degeneration of spinal cord.
13. Disorders of peripheral nerves, tumors traumatic, infective & metabolic lesions of nerves.
14. Disorders of voluntary muscles-Dystrophies & Neuro—muscular junction disorders.
15. Disorders of Autonomic nervous system
16. Psycho-somatic Pain & Paralysis.

CLINICAL

Evaluation & Treatment planning, its presentation & documentation of minimum two case each in 1) U.M.N. lesion, 2) L.M.N. lesion, 3) Pediatric neuro case

TEXT BOOKS

1. Cash's Text book for physio Therapist in Neurological disorders-Jaypee bros.
2. Proprioceptive Neuro muscular Facilitation – by Herman Kabat
3. Practical Physical Therapy – Margaret Hollis
4. Therapeutic exercise – by O'Sullivan
5. "Right in the middle" – by Patricia Davis
6. Stroke rehabilitation – by Margaret Johnson

REFERENCE BOOK

1. Therapeutic exercise – by Basmajian – 5th edn.
2. Physical Rehabilitation – by Krusen
3. Brain's disorders of Nervous system

Scheme of Examination, Duration 3 Hrs.

Theory Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

Practical Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks.

PT IN GENERAL MEDICAL & SURGICAL CONDITIONS

Objectives: At the end of the course, the candidate will:

1. Identify, discuss & analyze cardio-vascular & pulmonary dysfunction, based on pathophysiological principles, & arrive at the appropriate functional diagnosis.
2. Acquire knowledge of rationale of basic investigative approaches in the medical system & surgical intervention regimes related to cardio-vascular & pulmonary impairment.
3. Acquire the skill of evaluation & interpretation of functional capacity, using simple exercise tolerance tests, such as 6 minutes walk test, symptom limited test.
4. Be able to select strategies for cure care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.
5. Be able to execute the effective Physio Therapeutic measures (with appropriate clinical reasoning) with special emphases to Breathing retraining, nebulization humidification, bronchial hygiene, General Mobilisation & Exercise conditioning.
6. Acquire Knowledge of the overview of patients care at the Intensive care area, artificial ventilation suctioning, positioning for bronchial hygiene & continuous monitoring of the patient at the Intensive care area.
7. Acquire the skill of basic Cardio-pulmonary resuscitation.
8. Be able to execute the effective physiotherapeutic measures with appropriate clinical reasoning to improve general surgical and medical condition.

SYLLABUS

The following topics are applicable to all the adult & pediatric conditions related to Cardio-respiratory conditions & Peripheral vascular diseases included in the Clinical subjects of IIIrd B.P.Th. program.

UNIT 1

1. Assessment of Respiratory & haemo-dynamics, by means of assessment of breath sounds, interpretation of dysfunction by, spirometry / Exercise tolerance test / assessment of thoracic mobility & breathing pattern.
2. Interpretation of radiological & Biochemical investigations & co-relate the same with clinical findings.
3. Functional diagnosis of cardio-respiratory dysfunction & associated Movement dysfunction.

UNIT 2

4. Planning short / long terms goals with clinical reasoning – documentation of the conditions given.
5. Application of appropriate skills for breathing re-training & bronchial Hygiene, as preventive (used specifically in preoperative care), restorative & rehabilitative measures.
6. Prescription of appropriate therapeutic exercise program for conditioning.
7. Prescription of home program & ergonomic advice/parents education in case of Pediatric cases with reference to energy cost.

UNIT 3

8. Importance of life style modification in prevention of IHD.
9. Use, application of electro therapeutic modalities for relief of pain, swelling and wound healing.
10. Cardio respiratory changes associated with ageing and fitness Programme.
11. Familiarization with concept of quality of life.

UNIT 4

Physiotherapy management for the following conditions:

1. Cardiac disorders (Congenital, Acquired, Rheumatic, Rhythm Disturbances IHD, Post Cardio-thoracic surgeries)

2. Pulmonary disorders (Obstructive, Restrictive, Occupational & Pediatric, pulmonary infective.)
Precautions with HIV.
3. Peripheral Vascular Diseases.
4. Diabetes (Wound, Ulcer, Glycemic control with exercise)
5. Obesity

UNIT 5

6. Amputation
7. Burns
8. General Surgery (Mastectomy & Abdominal surgery)
9. Intensive care unit-suctioning, measures to improve Bronchial Hygiene, Positioning for Bronchial Hygiene, Continuous monitoring of the patient, General mobilization.

CLINICAL

1. Skill to palpate all pulses, rhythm, rate, volume & Heart rate / pulse rate discrepancy.
2. Skill to assess B.P. at various sites, & its Physiological variation, & to assess Ankle Brachial Index.
3. Skill of exercise testing a) 6/12 min walk, b) symptom limited.
4. Interpretation of
 - a) Treadmill & Ergo-cycle test findings.
 - b) ECG, I.H.D. & Blocks,
 - c) Biochemical analysis-serum enzymes, C.P.K. Levels, L.D.H., S.G.O.T., S.G.P.T., TropominT, Lipid profile, electrolyte balance.
 - d) Chest x-ray
 - e) P.F.T. obstructive/restrictive/reversibility
 - f) A.B.G.
 - g) R.P.E. Borge's scale
 - h) Quality of life questionnaires
5. Evaluation & treatment planning, presentation & documentation of ONE Case Each in:
 - a) Medical Respiratory condition
 - b) Pediatric respiratory condition
 - c) Thoracic Surgical condition
 - d) Cardiac Medical condition
 - e) Cardiac Surgical condition
 - f) Peripheral vascular disorders
 - g) Abdominal surgical condition
 - h) Mastectomy / Amputation

TEXT BOOKS

1. Cash's Text book for Physiotherapists in Chest, Heart & Vascular diseases
2. Cash's text book in General Medicine & Surgical conditions for Physiotherapists
3. Chest Physical therapy & pulmonary rehabilitation by Donna Frownfilter
4. Brompton's hospital guide

REFERENCE BOOK

1. Physiotherapy in Cardio – Vascular rehabilitation – Webber
2. Exercise & the Heart – Wenger
3. ECG – by P.J. Mehta
4. Cardiopulmonary Physical Therapy by Irwin Scott

Scheme of Examination, Duration 3 Hrs.

Theory Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

Practical Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks.

COMMUNITY PHYSIOTHERAPY & REHABILITATION

Objectives: At the end of the course the candidate will:

- A. Be able to describe:
 - i. The general concepts about health, disease and physical fitness.
 - ii. Physiology of aging process and its influence on physical fitness.
 - iii. National policies for the rehabilitation of disabled – role of PT.
 - iv. The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in improving morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment solution for the same.
 - v. The evaluation of disability and planning for prevention and rehabilitation.
 - vi. CBR in urban and rural set up.
- B. Be able to identify with clinical reasoning the prevailing contextual { e.g. environmental and psycho-social cultural} factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems.
- C. Be able to conduct as small project {cross sectional study / survey} to access to the prevalence of specific physical health problem and / or morbidity in specific community – which may be based at the institutional level or in field.

SYLLABUS

UNIT 1

1. W.H.O definition of health and disease.
2. Health delivery system – 3 tier.
3. Physical fitness definition and evaluation.
 - i. Effect of growth.
 - ii. Physical fitness in women-pregnancy, menopause.
 - iii. Physiology of aging – neuromuskuloskeletal, CVS, metabolic and degenerative.
 - iv. Physiological effects of aerobic exercise – clinical reasoning for advocating aerobic exercise as preventive measure in obesity & its related conditions / in cardio-respiratory conditions / Aging/deconditioning effect after prolonged bed rest / Diabetes.

UNIT 2

4. Women's Health – Women in India, Social issue having impact on physical Function, Legal rights and benefits. Anatomical & Physiological variations associated with pregnancy & menopause. Antenatal, post natal care, advice on labor positions, pain relief, - Urogenital dysfunction, prolapse, incontinence and therapeutic interventions.

UNIT 3

5. Geriatrics – Senior citizens in India, NGOs, Legal rights, benefits. Institutionalized & Community dwelling elders. Physiology of ageing. Ms & neuro / Cardio respiratory, metabolic, scheme of evaluation & role of PT in Geriatrics.
 - i) Definition of International classification of functioning.
 - ii) Disability- evaluation, types, prevention.
 - iii) Rehabilitation- definition, types {institutional, reach out and CBR}
 - iv) Team work of medical practitioner, PT/OT, AST, P&O, Clinical psychologist, and vocational counselors and social workers. CBR – Role of PT. National policies for rehabilitation of disabled – Role of PT.
 - v) CBR strategies in
 - A. Urban are e.g. i. UHC, community centre, clubs, mahila mandals, and Social centers. Ii. Schools, industries, sports centers.

B. Rural area- by using PHC / rural hospital, district hospital / in infrastructure.

UNIT 4

6. Industrial health:

- I. Ability Management – Job analysis: Job description, Job demand Analysis, Task Analysis, Ergonomics Evaluation, Injury Prevention, and Employee Fitness Programme. Disability Management: Acute care, Concept of Functional Capacity Assessment, Work Conditioning, Work Hardening.
- II. Environmental stress in the industrial area – accidents due to
 - A. Physical agents e.g. heat/cold, light, noise, vibration, UV radiation, ionizing radiation.
 - B. Chemical agents- inhalation, local action and ingestion.
 - C. Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and ergonomic evaluation of work place.
Mechanical stresses per hierarchy
 - i. Sedentary table work-executive’s clerk.
 - ii. Inappropriate seating arrangement-vehicle drivers.
 - iii. Constant standing- watchman, defense forces, surgeons.
 - iv. Over execution in laborers-stress management.

UNIT 5

- D. Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Role of PT. in industrial set up and stress management relaxation modes.
Clinical posting / Visits to UHC, PHC.
Project- Survey in any one community in one of the above posting.

TEXT BOOKS

1. Physiotherapy in Gynaecological & Obstetrical conditions – by Poldon – Jaypee
2. Astrand P A Rodahe K-Text book of Work Physiology
3. Therapeutic Exercise – By Kisner
4. Text book of Community Medicine & Community Health – by Bhaskar Rao
5. Geriatrics Physiotherapy – By Andrew Guccione
6. Industrial Therapy – by Glenda Key

REFERENCE BOOKS

1. Mural K F –Ergonomics: Man in his working environment
2. Exercise Physiology-by Mc’Ardle
3. Musculoskeletal Disorders in work place: Principle & Practice-by Nordin Andersons Pope
4. Indian Social Problem Vol 2 –by G R Madan
5. Disability 2000-RCI
6. Legal Rights of disabled in India-by Gautam Bannerjee
7. ICF –WHO Health Organisation 2001 publication
8. Preventive & Social Medicine –by Park
9. Training in the Community for the people with disability –by Hallender Padmini Mendes
10. Disabled Village Children-by David Werner
11. Chorin C& M Desai, C Gonsalves, 1999, Women & the Law, Vol. I & II Socio - legal Information Centre Mumbai

Scheme of Examination, Duration 3 Hrs.

Theory Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

*No Practical Examination.

PRINCIPLES OF BIOENGINEERING

Objectives: At the end of the course, the candidate shall-

1. Acquire knowledge about biomechanical principles, of application of variety of aids & appliances used for ambulation, protection & prevention.
2. Acquire in brief knowledge about various material used for splints/Orthosis & prostheses-- selection criteria.
3. Acquire the skill of fabrication of simple splints made out of low cost material.

SYLLABUS

UNIT 1

1. Classification of Aids & appliances
2. Biomechanical principles in designing of appliances & assessment Procedures for static & dynamic alignment of the following—Aids & appliances /Splints /Orthosis -for spine-upper & lower limb Prosthesis- for Lower limbs , Upper limbs,

UNIT 2

3. Project-Temporary splints –to fabricate ONE splint each - (to use P.O.P, aluminum strips/sheets/ wires rubber bands, rexin, Orfit etc) –
 - i) cock up (dorsal/volar,
 - ii) Outrigger,
 - iii) Opponence splint
 - iv) Anterior and posterior guard splints for gait training,
 - v) Foot drop splint
 - vi) Facial splint
 - vii) Mallet Finger Splint,
 - viii) C bar for 1st web space of hand

Scheme of Examination, Duration 3 Hrs.

Theory Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

*No Practical Examination.

PROFESSIONAL ISSUES (INCLUDING ETHICS)

(SECTION-I)

Objectives: This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practice ,as well as its moral & legal aspects; & role of W.H.O. & W.C.P.T.

UNIT 1

1. Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico- legal & moral implications-The need of Council Act for Physiotherapy
2. Constitution & Functions of the Indian association of Physical therapy-
3. Functioning of the World Confederation of Physical therapy (W.C.P.T.) & its various branches- Special Interest groups (brief)
4. Role of W.H.O. & WCPT

ADMINISTRATION/MANAGEMENT & MARKETING

(SECTION-II)

Objectives: At the end of the course the student will acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice.

UNIT 2

1. Management studies related to –local health care organization management & structure,-planning delivery with quality assurance & funding of service delivery -information technology -Time management -career development in Physiotherapy
2. Administration-principles-based on the Goal & functions -at large hospital set up / domiciliary services/ private clinic /academic
3. Methods of maintaining records
4. Budget-planning
5. Performance analysis--physical structure / reporting system (man power / status /functions / quantity & quality of services/turn over-cost benefit revenue contribution

Scheme of Examination, Duration 3 Hrs.

Theory Examination – Total marks – 100

University Examination – 80 marks

Internal Assessment – 20 marks

*No Practical Examination.

INTERNSHIP

1. Musculo-Skeletal (Surgical/Medical)
Traumatology / Rheumatology & cold cases
Burns & Plastic Surgery
2. Neuro-Sciences-(Surgical/Medical/Psycho-somatic)
 - a) Adult
 - b) Paediatric
 - c) Psychiatry/psycho-somatic
3. Cardio-Respiratory-(Surgical/Medical)
 - a) Surgical/Medical
 - b) Intensive Care (Surgical/Medical/Trauma)
 - c) Obstetrics & Gynaecology# Residency- recommended
4. Community/physiotherapy & Rehab
5. Project (20 Cases)
(Includes Project on evidence based investigation measures or Clinical trials/ Prospective case studies having sample size of minimum 20 Subjects.)

EVALUATION OF THE INTERNSHIP

1. **ATTITUDE:** The student shall put up not less than 90% attendance during EACH assignment. Student's performance shall be graded by the respective clinic section In-charge at the end of each assignment. The candidates shall Repeat the particular assignment if the performance is found unsatisfactory (Grade-C or D).
2. **PROJECT:** submitted by the candidate will be dully verified & a viva shall be conducted on the same at the end of the Internship& a grade shall be granted. Internship Completion certificate shall be issued to the candidate ONLY after the satisfactory performance in project Viva as well as in the "Attitude" during EACH clinical assignment.