

Syllabus

For

Bachelor of Physiotherapy (BPT)

Duration:

4 years & 6 months internship

Syllabus for BACHELOR OF PHYSIOTHERAPY
(Effective from academic session 2022-2023)
(FOUR YEARS AND SIX MONTHS DURATION)

There shall be Four Examinations for the course. The Examinations as follows:-

- I. The First Bachelor of Physiotherapy Examination
- II. The Second Bachelor of Physiotherapy Examination
- III. The Third Bachelor of Physiotherapy Examination
- IV. The Final Bachelor of Physiotherapy Examination

FIRST BACHELOR OF PHYSIOTHERAPY (Duration- One Year)

Sl. No.	Subject	Exam Method	Internal Marks	University Marks	Pass Marks (Int + Univ)	Aggregate Marks in Each Subject	Aggregate Pass Marks in Each Subject	Minimum Marks for Hons. In each subject (75% of Aggregate)	Hours of Study
1.	Anatomy	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	100 100	50 50	200	100	150	100 100
2.	Physiology	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	50 50	25 25	100	50	75	50 50
3.	Biochemistry	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	50 50	25 25	100	50	75	50 50

4.	Psychology & Sociology Section A: Psychology- 50 Marks Section B: Sociology-50 Marks	<ul style="list-style-type: none"> Theory 	Nil	100	50	100	50	75	150
5.	Exercise-therapy & Massage	<ul style="list-style-type: none"> Theory Oral & Practical 	25 Nil	75 100	50 50	200	100	150	120 330
6.	Electrotherapy & Actinotherapy	<ul style="list-style-type: none"> Theory Oral & Practical 	25 Nil	75 100	50 50	200	100	150	100 300

The course of the study shall include:

1. Anatomy
2. Physiology
3. Bio-chemistry
4. Psychology and Sociology
5. Exercise-therapy & Massage
6. Electrotherapy & Actinotherapy

Subjects of Examination:

Every candidate shall be examined in the following subjects:

1. Anatomy : a) Theory and b) Oral & Practical
2. Physiology : a) Theory and b) Oral & Practical
3. Bio-chemistry : a) Theory and b) Oral & Practical
4. Psychology and Sociology : a) Theory
5. Exercise-therapy & Massage: a) Theory and b) Oral & Practical
6. Electrotherapy & Actinotherapy: a) Theory and b) Oral & Practical

- The examination shall be conducted by means of written, printed or typed papers. Each theory paper of 100 marks and 75 marks shall be of three hours duration and oral & practical examination of 100 marks shall be of two hours duration. Each theory paper of 50 marks shall be of two hours duration and oral & practical examination of 50 marks shall be of one hour duration.
- The subjects of examination, pattern of examination and full marks shall be as follows :
Subject Written, Int. Assessment, Oral & Practical and Total

SECOND BACHELOR OF PHYSIOTHERAPY (Duration- One Year)

Sl. No.	Subject	Exam Method	Internal Marks	University Marks	Pass Marks (Int + Univ)	Aggregate Marks in Each Subject	Aggregate Pass Marks in Each Subject	Minimum Marks for Hons. In each subject (75% of Aggregate)	Hours of Study
1.	Pathology, Microbiology and Pharmacology Section A: Pathology & Microbiology- 50 Marks Section B: Pharmacology- 50 Marks	<ul style="list-style-type: none"> • Theory 	Nil	100	50	100	50	75	100
2.	Medicine – I (General)	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	100 100	50 50	200	100	150	100 70
3.	Medicine – II Section A: Cardiology- 50 Marks	<ul style="list-style-type: none"> • Theory 	Nil	100	50	100	50	75	100

	Section B: Pediatrics- 50 Marks								
4.	Surgery – I Section A: General Surgery, O & G- 50 Marks Section B: Plastic Surgery & Carddiothoracic Surgery- 50 Marks	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	100 100	50 50	200	100	150	150 100
5.	P.T. in Medical Conditions - I	<ul style="list-style-type: none"> • Theory • Oral & Practical 	25 Nil	75 100	50 50	200	100	150	150 150
6.	P.T. in Surgical Conditions - I	<ul style="list-style-type: none"> • Theory • Oral & Practical 	25 Nil	75 100	50 50	200	100	150	150 150

The course of the study shall include:

1. Pathology, Microbiology and Pharmacology
2. Medicine - I
3. Medicine - II
4. Surgery - I
5. P.T. in Medical Conditions - I
6. P.T. in Surgical Conditions - I

Subjects of Examination:

Every candidate shall be examined in the following subjects:

1. Pathology, Microbiology and Pharmacology: *a) Theory*
2. Medicine - I : *a) Theory and b) Oral & Practical*
3. Medicine – II: *a) Theory*

4. Surgery - I : a) *Theory and b) Oral & Practical*
5. P.T. in Medical Conditions - I : a) *Theory and b) Oral & Practical*
6. P.T. in Surgical Conditions - I : a) *Theory and b) Oral & Practical*

THIRD BACHELOR OF PHYSIOTHERAPY (Duration- One Year)

Sl. No.	Subject	Exam Method	Internal Marks	University Marks	Pass Marks (Int + Univ)	Aggregate Marks in Each Subject	Aggregate Pass Marks in Each Subject	Minimum Marks for Hons. In each subject (75% of Aggregate)	Hours of Study
1.	Biomechanics and Kinesiology	<ul style="list-style-type: none"> • Theory 	Nil	100	50	100	50	75	150
2.	Alternative Medicine	<ul style="list-style-type: none"> • Theory 	25	75	50	100	50	75	150
3.	Medicine – III (Neurology)	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	100 100	50 50	200	100	150	150 100
4.	Medicine – IV (Psychiatry)	<ul style="list-style-type: none"> • Theory 	Nil	50	25	50	25	38	100
5.	P.T. in Medical Conditions - II	<ul style="list-style-type: none"> • Theory • Oral & Practical 	25 Nil	75 100	50 50	200	100	150	150 150
6.	Rehabilitation Sciences	<ul style="list-style-type: none"> • Theory 	Nil	100	50	100	50	75	150
7.	Research methodology, Biostatistics & introduction to	(Non-University Examination)							50

	computers								
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The course of the study shall include:

1. Biomechanics and Kinesiology
2. Alternative Medicine
3. Medicine – III (Neurology)
4. Medicine – IV (Psychiatry)
5. P.T. in Medical Conditions – II
6. Rehabilitation Sciences
7. Research methodology, Biostatistics & introduction to computers

Subjects of Examination:

Every candidate shall be examined in the following subjects:

1. Biomechanics and Kinesiology: *Theory*
2. Alternative Medicine: *Theory*
3. Medicine – III (Neurology): *Theory and b) Oral & Practical*
4. Medicine – IV (Psychiatry): *Theory*
5. P.T. in Medical Conditions – II: *Theory and b) Oral & Practical*
6. Rehabilitation Sciences: *Theory*

FINAL BACHELOR OF PHYSIOTHERAPY (Duration- One Year)

Sl. No.	Subject	Exam Method	Internal Marks	University Marks	Pass Marks (Int + Univ)	Aggregate Marks in Each Subject	Aggregate Pass Marks in Each Subject	Minimum Marks for Hons. In each subject (75% of Aggregate)	Hours of Study
1.	Surgery – II (Orthopedics)	<ul style="list-style-type: none"> • Theory • Oral & Practical 	Nil	100 100	50 50	200	100	150	100 100
2.	Surgery – III (Neurosurgery)	<ul style="list-style-type: none"> • Theory 	Nil	50	25	50	25	38	50
3.	P.T. in Surgical Conditions - II	<ul style="list-style-type: none"> • Theory • Oral & Practical 	25 Nil	75 100	50 50	200	100	150	150 150
4.	P.T. in Sports Conditions	<ul style="list-style-type: none"> • Theory 	25	75	50	100	50	75	150
5.	Physical Diagnosis & Physical Fitness	<ul style="list-style-type: none"> • Theory • Oral & Practical 	25 Nil	75 100	50 50	200	100	150	100 100
6.	Professional Management and Ethics	<ul style="list-style-type: none"> • Theory 	25	75	50	100	50	75	100

Project Work- 50

The course of the study shall include:

1. Surgery – II (Orthopedics)

2. Surgery – III (Neurosurgery)
3. P.T. in Surgical Conditions – II
4. P.T. in Sports Conditions
5. Physical Diagnosis & Physical Fitness
6. Professional Management and Ethics

Subjects of Examination:

Every candidate shall be examined in the following subjects:

1. Surgery – II (Orthopedics): *Theory and b) Oral & Practical*
2. Surgery – III (Neurosurgery): *Theory*
3. P.T. in Surgical Conditions – II: *Theory and b) Oral & Practical*
4. P.T. in Sports Conditions: *Theory*
5. Physical Diagnosis & Physical Fitness: *Theory and b) Oral & Practical*
6. Professional Management and Ethics: *Theory*

- **In order to pass the Final Bachelor of Physiotherapy examination, a candidate must have to secure minimum of 50% marks in theory and oral & practical examinations separately.**
- **A candidate who passes in all the subjects in the first attempt and secures 75% or more of the maximum aggregate marks in any subject shall be declared to have passed with Honours in that subject.**

VIII. General guidelines for the conduct of first, second, third and final Bachelor of Physiotherapy Examination :

Note : Guidelines given below shall be considered in the context of the specific instruction elaborated for all the subjects of each year.

1. Theory Examination :

- a) For the theory papers that carry 25 internal assessment marks, the written University examination shall be for 75 marks.
- b) Evaluation and posting of theory and internal assessment marks shall be under a single head of passing.
- c) A question paper in two sections must be answered in two separate answer books.
- d) There shall be minimum TWO paper setters per paper / per section.
- e) The question paper shall cover the entire syllabus of the subject.
- f) Instructions on the question paper, if any, shall be stated in bold letters.

g) The paper setter shall provide a KEY for EACH question.

h) Pattern of question paper setting shall be as follows :

i) For the paper carrying 100 marks -

M.C.Q. (Twenty Multiple Choice Questions based on must know area) - 20 marks

S.A.Q. (Short Answer Questions) : Any four questions out of the six questions shall be answered, each question carrying 10 marks. - 40 marks

L.A.Q. (Long Answer Questions) : Any two questions out of the three questions shall be answered, each question carrying 20 marks. - 40 marks

ii) For the paper carrying 75 marks -

M.C.Q. (Fifteen Multiple Choice Questions based on must know area) - 15 marks

S.A.Q. (Short Answer Questions) : Any four questions out of the five questions shall be answered, each question carrying 10 marks. - 30 marks

L.A.Q. (Long Answer Questions) : Any two questions out of the three questions shall be answered, each question carrying 15 marks. - 30 marks

iii) For the paper carrying 50 marks -

M.C.Q. (Ten Multiple Choice Questions based on must know area) - 10 marks

S.A.Q. (Short Answer Questions) : Any four questions out of the six questions shall be answered, each question carrying 5 marks. - 20 marks

L.A.Q. (Long Answer Questions) : Any two questions out of the three questions shall be answered, each question carrying 10 marks. - 20 marks

2. Oral & Practical Examination :

a) There shall be TWO examiners per Oral & Practical examination having one internal and one external examiner.

b) Both the examiners shall jointly plan the overall conduct of the examination prior to its commencement and conduct the entire examination together.

3. Internal Assessment:

a) There shall be total three examinations, preferably, one mid-term, one terminal and one preliminary examination respectively for each paper where the internal assessment marks have been allotted. The pattern of examination shall be based on the pattern of University examination.

b) The average marks of three such assessments shall be considered for the internal assessment.

c) The internal assessment marks shall be sent to the University in sealed cover before the commencement of the theory examination.

d) The internal assessment marks once allotted shall not be changed even if a candidate fails to pass in the concerned subject. The same internal assessment marks shall be allotted for the concerned subject/subjects in the subsequent attempts.

4. COLLEGE EXAMINATIONS

a) College examination in Theory / Oral & Practical / Project etc. for any subject

Internship:

- There shall be six months of Internship after the final year examination for candidates declared to have passed the examination in all the subjects.
- During the internship candidate shall have to work full time average 7 hours per day (each working day) for 6 Calendar months.
- Each candidate is allowed maximum of 6 holidays during entire Internship Program and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.
- The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as Orthopaedics, Cardiothoracic including ICU, Neurology, Neurosurgery, Paediatrics, General Medicine, General Surgery, Obstetrics and Gynaecology both inpatient and outpatient services.
- Based on the attendance and work done during posting the Director/Principal/ head of institution/department shall issue 'Certificate of Satisfactory completion' of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same.

No candidate shall be awarded degree without successfully completing six months internship.

- Institution shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken.
- Institute Director / Principal can at his discretion grant NOC to the students to do the Internship at the place of his choice provided the concerned Hospital fully satisfies the above criteria. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy services available at the place where he intends to do his Internship.

FIRST BACHELOR OF PHYSIOTHERAPY (1 YEAR DURATION)

ANATOMY (PAPER - I)

Instruction Hrs. Theory - 100
Practical & Demonstration - 100

GENERAL ANATOMY

INTRODUCTION TO ANATOMY:

- Cell : (Parts, Name of Cytoplasmic organelles and inclusion with their functions)
- Epithelium - Types with examples and light microscopic structure.
- Connective Tissue - Classification with emphasis to tendon
- Cartilage - Types with example
- Bone - Types with examples, types of Ossification (Stages of Ossification not required) Blood supply, Fracture repair.
- Joints - Classification with example, emphasis to synovial joint.
- Muscles - Types (details of E.M. picture not required)
- Nervous tissue - Structure of a Neuron, Synapse Reflex arc, Degeneration and Regeneration of Nerve.

REGIONAL ANATOMY

Upper Extremity

THEORY

- Axilla, Brachial plexus, shoulder joint, sternoclavicular joint, Axillary lymph nodes, Elbow joint, Superior Radio-ulnar joint, Nerves of arm and fore arm, Synovial Bursa of hand and palmar space, ulnar Nerve in hand, Cutaneous distribution according to dermatome, Clinical anatomy, Surface Anatomy.

PRACTICAL / DEMONSTRATION

- Pectoral Region, Axilla, Scapula and Clavicle, Humerus, Muscles of arm (Front & Back), Radius, Front of forearm, Ulna, back of forearm, Muscles of Palm & arterial arches, Articulated hand (Carpals and Meta Carpals name and arrangements in order only).

Lower Extremity

THEORY

- Lumber plexus, Inguinal group of lymph Nodes, Hip joint, Femoral triangle and femoral sheath, knee joint, venous drainage of Inferiors Extremity, Sciatic Nerve and its distribution, obturator Nerve, Arches of foot, Mid tarsal and sub talar joint, cutaneous distribution according to myotome, Clinical anatomy, Surface Markings.

PRACTICAL / DEMONSTRATION

- Hip bone, Gluteal Muscles, Femur, front of thigh, Back of thigh, Medial side of thigh, Tibia, Anterior compartment of leg, Fibula, Lateral compartment of leg, Back of leg, Articulated foot (Identification of tarsal Meta tarsal only).

Abdomen and Pelvis

THEORY

- Abdominal wall, Inguinal canal, Stomach, Liver, Pancreas, Kidney with ureter and spleen, Small Intestine, Large Intestine, Abdominal Aorta, Portal vein, Diaphragm, Sacral Plexus, Sacro-Iliac joint, Intervertebral Disc.

PRACTICAL / DEMONSTRATION

- Abdominal viscera, Sacrum, Bony Pelvis, viscera of Pelvis and Blood vessels.

Thorax

THEORY

- Thoracic cage and Mediastinum, Heart with its internal and external features, Blood Vessels, typical Spinal Nerve, Typical Intercostal Space, Mechanism of Respiration, Surface Markings of Heart and Lungs.

PRACTICAL / DEMONSTRATION

- Superior Mediastinal structures, Sternum, Ribs (only general features), Vertebrae (Identification, general features, Functional Components, Development, Vertebral column with weight transmission), Heart, Pleura & Lungs.

Head & Neck

THEORY

- Tempero-Mandibular Joint, Atlanto-occipital and Atlanto-Axial Joint, Cutaneous distribution of trigeminal Nerve.

PRACTICAL / DEMONSTRATION

- Mouth cavity, Nasal cavity, Pharynx and Larynx (Parts, sensory distribution), Cranial bones (Identification of Individual bone general features, Different foramina in relation to cranial Nerve, Cranial fossae and their relations to brain and Hypophysis). Identifications of Anterior and Posterior triangles of Neck with their contents.

Nervous System

THEORY

- General Introduction and classification, Autonomic Nervous System (Idea about Sympathetic and Parasympathetic with their difference in distribution and function).
- Spinal cord with its Meninges, spinal Reflex, Pyramidal and Extrapyrmidal tracts (Detail Nucleus not required) Blood supply.
- Parts of brain, meninges, Gross discussion of Hind Brain, Mid Brain (cranial Nerve, Nucleus position should be mentioned) Fore brain - Cerebral hemisphere, functional areas and blood supply.

PRACTICAL / DEMONSTRATION

- Spinal cord and parts of brain.
- **CRANIAL NERVES**
- Names in order, Individual cranial Nerve distribution, Idea about upper Motor Neuron and Lower Motor Neuron, applied Anatomy.
- **HISTOLOGY PRACTICAL**
- Epithelium (Simple, Compound)
- Connective tissue (Cartilage & Bone)
- Muscle (smooth & skeletal)
- Nervous tissue (Neuron)
- Blood vessels (Large artery and vein)

Books Recommended:

- i. B.D. Chaurasia, Human Anatomy–Volume 1, 2, 3, 4 CBS Publishers & Distributors.
- ii. R. L. Drake, A. W. Vogl, Adam W.M. Mitchell, Gray’s Anatomy- Elsevier.
- iii. Inderbir Singh, Textbook of Anatomy with Colour Atlas–Vol. 1, 2, 3 Jaypee Brothers
- iv. Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.
- v. Inderbir Singh, A Textbook on Human Neuro Antomy, Jaypee Brothers.
- vi. Snell-Clinical Anatomy-Lippincott.
- vii. Ross & Wilson, Anatomy and Physiology-Elsevier.
- viii. Anne Waugh & Allison Grant, Anatomy and Physiology- Churchill Livingstone.

PHYSIOLOGY (Paper - II)

Instruction Hrs. Theory - 50
Practical & Demonstration - 50

GENERAL PHYSIOLOGY

1. Introduction and scope of Physiology
2. **Cell and tissue** - Its structure, principal constituents, Properties and functions including cell division.
3. **Body Fluid** - Blood : Composition and general function of Plasma. Blood cells - structure and function - Red Blood cells, white Blood Cells - including numbers and approximate length of life - position, structure and function of cells of Reticulo endothelial system. Blood clotting including bleeding time and clotting time, factors accelerating or slowing the process. Blood groups and their significance, Rh-factor, Haemoglobin and E.S.R., Formation of Blood, tissue fluid and lymph.
4. **Cardio-Vascular System** - Structure and properties of Heart Muscles and nerve supply of Heart. Structure and function of arteries, capillaries and veins. Cardiac cycle and Heart sound. Cardiac output measurements, factors affecting Heart Rate and its regulation, cardiovascular reflexes. Blood pressure, its regulation, physiological variation, peripheral resistance. Factors controlling Blood pressure. Hemorrhage.
5. **Respiratory System** - Mechanism of Respiration, changes in diameters of thorax, Intra-pleural and Intra-pulmonary pressure. Quantities of lung volume, tidal and residual volume, vital capacity. Gaseous interchanges in lung and tissues. Control of respiration - Nervous and chemical significance of changes in rate and depth, transportation of oxygen and carbon dioxide. Respiratory states - anoxia, asphyxia, Cyanosis Acclimatisation.
6. **Digestive System** - General arrangement of alimentary canal, liver, pancreas-position, structure and functions. Nutrition and Diet - Carbohydrates, Protein, fat, Salts, Water, Vitamins and Minerals digestion, absorption and Metabolism.
7. **Reproductive System** - Sex determination and development of puberty, male sex hormones, spermatogenesis, Female sex hormones, Menstrual cycle, Ovulation, Pregnancy, Function of Placenta, Lactation.
8. **Excretory System** - Gross and minute structures of kidney, Renal circulation, Mechanism of formation of urine, Glomerular filtration rate and tubular function, renal function and renal tests. Physiology of micturation.
9. **Endocrine System** - Structure and function of pituitary (anterior & posterior). Thyroid, Parathyroid, adrenal cortex, adrenal medulla, Thymus and pancreas. Blood sugar regulation.
10. **Skin** - Structure and functions.

NEUROMUSCULAR PHYSIOLOGY

1. Cell membrane - Ionic and Potential gradient and transport.

2. Muscle - Types of muscular tissue - Gross and Microscopic structure - function. Basis of muscle contraction - changes in muscle contraction, Electrical – Biphasic and mono-phasic action potentials, chemical, Thermal and physical changes, Isometric and Isotonic contraction.

- Motor units and its properties - clonus, tetanus, all or none law, fatigue.
- Nerve-Gross and microscopic structure of nervous tissue, one neuron – Generation of action potential - Nerve impulse – condition, Neuromuscular junction.
- Degeneration - Regeneration of peripheral nerves Wallerian degeneration, Electro tonus and Difiagus law.
- Types and properties of receptions, types of sensations, synapse, reflex arc, its properties, occlusion, summation, subminal fatigue etc.
- Tracts - Ascending and descending and extrapyramidal tracts.
- Functions of E.E.G.
- Functions of Cerebral cortex, cerebrum, cerebellum, Basal ganglia. Thalamus - connection and functions.
- Reticular formation - tone, posture & equilibrium, Autonomic nervous system.
- Special Senses Eye-Errors of refraction, lesions of visual path ways.
- Speech and its disorders.
- Ear and Vestibular apparatus, taste, olfaction, somatic sensations.

Work Physiology

1. Neuromuscular activity, human movement, physiological mechanism in movement behavior, skill, strength, endurance, analysis of movement.
2. Circulatory and respiratory response to exercises and work, the heart, blood Circulation, body fluid changes, pulmonary ventilation, gas exchange and transport.
3. Effects of exercise and work on other body functions.

PRACTICAL

- W.B.C. Count.
- R.B.C. Count.
- Haemoglobin percentage.
- E.S.R. and Blood groups.
- Bleeding time and clotting time.
- Pulse rate, Heart rate and measurement of Blood Pressure.
- Respiratory rate and Auscultation.
- Reflexes – Superficial Deep.

- Sensations.
- Tests for functions of Cerebrum.
- Tests for functions of Cerebellum.

Books Recommended:

- i. Text book of Medical Physiology–Arthur Guyton (Mosby.)
- ii. Essential of Medical Physiology-K Sembulingam, Jaypee
- iii. Ross & Wilson, Anatomy and Physiology-Elsevier.
- iv. Anne Waugh & Allison Grant, Anatomy and Physiology- Churchill Livingstone
- v. Text book of Physiology–Anand & Manchanda, Tata McGraw Hill.
- vi. Human Physiology – Vol. 1 & 2, Chatterjee. CC, Calcutta. Medical Allied.
- vii. Concise Medical Physiology. Chaudhari, S.K, New Central Agency, Calcutta.
- viii. Principles of Anatomy and Physiology. Tortora & Grabowski–Harper Collins.
- ix. Text book of Practical Physiology – Ghai – Jaypee.
- x. Human Physiology and Biochemistry- A K Jain, Arya Publication

BIO-CHEMISTRY (Paper - III)

**Instruction Hrs. Theory - 50
Practical & Demonstration - 50**

1. **BIOPHYSICS:** Concepts of pH and buffers, Acid-base equilibrium, osmotic pressure and its physiological applications.
2. **CELL:** Morphology, Structure and functions of cell, Cell membrane, Nucleus, Chromatin, Mitochondria Endoplasmic reticulum, Ribosome's.
3. **CARBOHYDRATES:** Definition, functions, sources, classification, Monosaccharide's, Disaccharides, Polysaccharides, Mucopolysaccharides and its importance.
4. **LIPIDS :** Definition, functions, sources, classification, simple lipids, compound lipids, derived lipids, Saturated and unsaturated fatty acids, Essential fatty acids and their importance, Blood Lipids and their implications, cholesterol and its importance.
5. **PROTEINS:** Definition, Sources, Functions, Classification, simple protein, congrugated proteins and derived proteins. Properties and reactions of proteins.
6. **NUCLEIC ACIDS:** Structure and functions of DNA, RNA, Nucleotides, Genetic code, Biologically important Nucleotides.
7. **ENZYMES:** Definition, Classification, Mode of action, factors affecting enzyme action, Clinical Importance of enzymes.
8. **VITAMINS:** Classification, Fat soluble vitamins A, D, E, K, water soluble vitamin - B Complex and Vitamin 'C', Daily requirement physiological functions and disease of vitamin deficiency.

9. **BIO-ENERGETICS:** Concept of free energy change, Exogenic reaction and endogenic reactions, concepts regarding energy rich compounds. Respiratory chain and Biological oxidation.
10. **CARBOHYDRATE METABOLISM:** Glycolysis, HMP Shunt Pathway, TCA cycle, Glycogenesis, Glycogenolysis, Gluconeogenesis, Maintenance of blood glucose, Interconversion of different sugars.
11. **LIPID METABOLISM:** Fatty acid oxidation, fatty acid synthesis, Metabolism of cholesterol, ketone bodies, Atherosclerosis and obesity.
12. **PROTEIN METABOLISM:** Transamination Transmethylation, Deamination, Fate of Ammonia Urea synthesis and synthesis of creatinine, inborn errors of metabolism.
13. **WATER AND ELECTROLYTES:** Fluid compartments, Daily intake and output, Dehydration, Sodium and potassium Metabolism.
14. **MINERAL METABOLISM:** Iron, Calcium, Phosphorous, Trace elements.
15. **NUTRITION:** Nutritional aspects of carbohydrate, fat and proteins. Balanced diet, Metabolism in exercise and injury, Diet for chronically ill and terminally ill patients.
16. **CONNECTIVE TISSUE:** Muco-polysaccharides, Connective tissue proteins, Glyco proteins, Chemistry and Metabolism of bone and teeth. Metabolism of skin.
17. **NERVE TISSUE:** Composition, Metabolism, Chemical mediators of nerve activities.
18. **MUSCLE TISSUE:** Structure, Metabolism of muscles, Muscle contraction.
19. **HORMONES:** General Characteristic and Mechanism of Hormone actions. insulin, Glucogen, Thyroid and Parathyroid hormones, Cortical sex hormones.
20. **ISOTOPES:** Isotopes and their role in diagnosis and treatment of diseases.

PRACTICAL / DEMONSTRATION

1. Preparation of solution of different strengths (Normal and molar)
2. Identification of carbohydrate, lipids and proteins and Biological fluids.
3. Preparation of protein free filtrates.
4. Test for constituents of normal urine.
5. Test for detection of Pathological constituents in urine.
6. Test for detection of Pathological constituents in urine.
7. Demonstration of the estimations of blood, sugar, serum, urea, creatinine, cholesterol and calcium.
8. Demonstration of the functioning of Photo electric calorimeter, Spectrophotometer, flame photometer. Electrophoresis and Chromatography equipments and spectroscopy.

Books Recommended:

- i. Biochemistry – U Satyanarayan & U. Chakrapani- Elsevier
- ii. Biochemistry – Pankaja Naik- Jaypee
- iii. Text book of Biochemistry - Chatterjee M.N.– Jaypee Brothers.

- iv. Text book of Biochemistry for Medical Students - Vasudevan D.M. - Jaypee Brothers.
- v. Clinical Biochemistry – Metabolic & Clinical aspects - Marshall & Bangert – Churchill Livingstone.
- vi. Biochemistry Southerland – Churchill Livingstone.

PSYCHOLOGY AND SOCIOLOGY (Paper - IV)

Instruction Hrs. Theory - 150

Section A - Psychology

I. General Psychology

- 1. Definition of Psychology
 - i. Science of mind, consciousness and behaviour
 - ii. Scope and branches of Psychology
- 2. Methods of Introspection, observation and experimentation.
- 3. hereditary and Environment
 - i. Relative importance of heredity and environment
 - ii. Physical characteristics intelligence and personality.
 - iii. Nature vs. nurture controversy
- 4. Learning, Types of Learning
 - i. Trial and error
 - ii. Classical Learning
 - iii. Instrumental Learning
 - iv. Insight for Learning
- 5. Memory
 - i. Steps of memory
 - ii. Measurement of memory
 - iii. Causes of forgetting
 - iv. Concept of STM and LTM
- 6. Perceptual Process
 - i. Nature of perceptual process
 - ii. Structural and functional factors in perception
 - iii. Illusion and Hallucination
- 7. Emotion
 - i. Emotion and feeling
 - ii. Physiological changes

iii. Theories of emotion (James - Lange and Cannon-Bird)

8. Motivation

i. Motive, need and Drive

ii. Types of motive: Physiological, Psychological and Social

9. Intelligence, Definitions: theory and assessment

10. Personality: Definition: Types and measurements

II. Child Psychology

1. Concept of child Psychology

a) Meaning : nature and subject matter of child Psychology

b) Practical importance of studying child Psychology for rehabilitation professionals.

2. Methods of studying child development

a) Baby Biography

b) Case History

c) Behaviour rating

III. Industrial Psychology

1. Human Engineering, Importance of human engineering, Development of human engineering, Problems in human engineering

2. Decision Making, Process and steps in decision making Individual decision making Decision making in organization

3. Stress and mental health, Causes and reaction to stress, Stress management

4. Work Culture, morale and rewards of work discipline

5. Guidance and Counseling, Meaning, types and objectives of counselor

Section B – Sociology

A. Introduction, Definition of Sociology, Sociology as a science, uses of the study of Sociology, application of knowledge of sociology in Physiotherapy and Occupational Therapy.

B. **Sociology and health** - Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment, Institutions of health, their role in the improvement of health and the people.

C. **Socialization** - Meaning of socialization, influence of social factors on personality, socialization in hospital and socialization in rehabilitation of patients.

D. **Social groups** - Concepts of social groups, influence of formal and informal groups on health and Sickness, the role of primary groups and secondary groups in the hospital and rehabilitation setting.

E. **Family** - Influence of family on human personality, discussion of changes in the functions of a family, influence of family on the individual's family and psychosomatic disease.

F. **Culture** - Components of culture, impact of culture of human behaviours, cultural meaning of sickness, response to sickness and choice of treatment (role of culture as social consciousness in moulding the perception of reality). Culture induced symptoms and diseases, sub-culture of medical workers.

G. **Caste System** - Features of the modern caste system and its trends.

H. **Social** - Meaning of social control, role of norms, folk ways, customs morals religion, law and other means of social control in the regulation of human behavior, social deviance and disease.

I. **Social problems of the disabled** - Consequences of the following social problems in relation to sickness and disability.

J. **Remedies to prevent these problems:** Population explosion, Poverty and unemployment, Beggary
Juvenile delinquency, Prostitution, Alcoholism, Problems of women in employment

K. **Social security** - Social Security and Social Legislation in relation to the disabled.

L. **Social worker** - The role of a medical social worker.

Books Recommended:

- i. Psychology for Physiotherapist – Thangamani R. A., Dibyendunarayan Bid - Jaypee
- ii. Introduction to Psychology - Mums - I.D.P. Co.
- iii. Foundation of Psychology - Weld - Publishing House, Bombay.
- iv. Introduction to Social Psychology – Akolkar – Oxford Publishing House.
- v. Psychology and Sociology – Applied to Medicine – Porter & Alder - W.B. Saunders.
- vi. Behavioural Sciences for Medical Undergraduates – Manju Mehta - Jaypee.
- vii. Elementary Psychology - Mohsin - Moti Lal Banarsi Dass, Delhi.
- viii. Textbook of Sociology For Physiotherapy Students – KP Neeraja- Jaypee.
- ix. Mcgee - Sociology - Drydon Press Illinois.
- x. Kupuswamy - Social Changes in India - Vikas, Delhi.
- xi. Ahuja - Social Problems - Bookhive, Delhi.
- xii. Ginnsberg - Principles of Sociology - Sterling Publications.
- xiii. Parter & Alder - Psychology & Sociology Applied to Medicine - W.B. Saunders.
- xiv. Julian - Social Problems - Prentice Hall.

EXERCISE THERAPY AND MASSAGE (Paper - V)

Instruction Hrs. Theory - 120
Practical & Demonstration - 330

1. Basic physics in exercise therapy. Mechanics: Force, Gravity, line of gravity, center of gravity in human body, Base, Equilibrium, Axes and Planes. Mechanical Principles of lever, order of lever, examples in human body, pendulum spring.

2. **Massage:** Definition of massage, types of massage, general effects and uses of massage local effects of individual manipulation (Physiological effects), contra-indications, techniques of application of all manipulations-stroking, Effleurage, kneading and picking up, skin rolling (back), clapping, tapping, friction etc.

Practicals:

Demonstration and practice of all types of massage manipulation: Stroking, Effleurage, Kneading-circular kneading, Thumb kneading, finger kneading (to joints) etc., picking up, skin rolling (back) clapping, etc.

The above various types of manipulation should be demonstrated and practiced to upper limbs, lower limbs, back and face appropriately.

3. **Suspension Therapy:** Principles of suspension, types of suspension therapy, effects and uses of suspension therapy, their application either to mobilize a joint to increase joint range of motion or to increase muscle power explaining the full details of components uses for suspension therapy.

Practicals:

Demonstration and practice of putting suspension to shoulder joint, elbow joint in upper limb, hip joint and knee joint in lower limb for all movements (except circumduction at shoulder and Hip joints. Demonstration of total suspension.

4. **Introduction to exercise therapy.**

5. **Starting positions** - Fundamental starting positions-standing, sitting, kneeling, lying and hanging. All the derived positions of the above five fundamental starting positions.

6. **Classification of movements** in details: Active - Voluntary in details, Involuntary movements, Passive Movements

7. **Voluntary movements:** Free exercise, assisted exercises, resisted exercises, Assisted and Resisted exercise.

8. **Assisted Exercise:** Technique and uses.

9. **Free exercises**-classification, technique, effects of exercise on various system etc.

10. **Resisted exercises** - Technique and types of resistance, SET system (Heavy resisted exercise, oxford method, Delorme method, Mc Queen's method).

11. Relaxed passive movements, basic knowledge of classification of relaxed passive movements, definition, technique, effects and uses of relaxed passive movements.

12. **Practicals** Demonstration and practice of relaxed passive movements to upper limb, lower limb and spine.

13. **Muscle strength:** Anatomy and physiology of muscle tissue, causes of muscle weakness / paralysis, prevention of muscle weakness / paralysis. Types of muscle work and contractions, ranges of muscle work. Muscle assessment M.R.C. grading. Principles of muscle strengthening / re-education, early re-education of a paralyzed muscle etc.

14. **Joint movement:** Classification of joint movements, causes of restriction of joint movement, prevention of restriction of joint range of motion, etc. Principles of mobilization of a joint in increasing its range of motion. Technique of mobilization of a stiff joint, Goniometry.

15. **Relaxation:** Technique of relaxation, principles obtaining relaxation in various positions, effects & uses.

16. **P.N.F.:** Basic theory of proprioceptive-neuro muscular facilitation techniques, Functional re-education.

17. **Bed Rest** - Complications

18. **Posture:** Types, factors responsible for good posture, factors for poor posture, principles of development of good posture.

19. **Co-ordination exercises:** Definition of co-ordinated movements, in coordinated movements. Factors for coordinated movements, causes of inco-ordination, principles of re-education of coordinated movements, technique of coordination exercise.

20. **Gait:** Analysis of normal gait with muscle work, various pathological gaits.

21. **Crutch gait:** Introduction, crutch measurement, crutch balance, various types of crutch gait in details.

22. **Breathing exercises:** Physiology of respiration, types of exercises, techniques of various types of breathing exercise, its effects and uses.

23. **Hydrotherapy:** Introduction, various types of hydrotherapy units, construction and equipments used in hydrotherapy. Principles, indications, contraindication, effects and uses of hydrotherapy. Precautions towards patient, towards therapist, equipment unit etc.

24. Individual, group and mass exercise, Maintenance exercise, plan of treatment, tables and schemes.

Practicals

Muscle Strength: Demonstration and practice of strengthening / re-educating weak / paralyzed muscles of both upper and lower extremity muscles, (individual / group muscles). Abdominal muscle exercises, **spinal extension exercise:** only free exercises.

Joint Movement: Demonstration and practice of techniques to improve joint range of motion of hip joint, knee joint, ankle and foot in lower limb, shoulder joint, elbow joint, radio-ulnar-joint, wrist and hand in upper limb. Demonstration and practice of free exercises to improve joint range of motion (small joints, e.g. hand, finger, toes, etc.). Demonstration and practice of all crawling exercises, faulty posture correcting technique. Demonstration and practice of technique of Dr. Frenkel's exercise to improve coordination.

Passive stretching: Technique of passive stretching to sternomastoid muscle, should adductors, flexors, elbow flexors, supinator, wrist and finger flexors in upper limbs. Passive stretching to hip flexors, adductors, Ilio-tibial band, tensor-fascialate, quadriceps, knee flexors, tendoachillis, etc. in lower limb.

Demonstration of various pathological gait : Measurement of crutches, walking aids, strengthening of crutch muscles, crutch balance, demonstration and practice of all crutch gaits.

Breathing exercises: Demonstration and practice of diaphragmatic breathing, localized expansion exercise.

Books Recommended:

- i. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications.
- ii. Therapeutic Exercises Foundations and Techniques - Kisner and Colby -F.A. Davis.
- iii. Proprioceptive Neuromuscular Facilitation - Voss et al - Williams and Wilkins.
- iv. Principle of Exercise Therapy -Gardiner - C.B.S. Delhi.
- v. Hydrotherapy, Principles and Practices - Campion - Butterworth Heinmann.
- vi. Muscle testing and functions - Kendall - Williams & Wilkins.
- vii. Daniels and Worthingham's - Muscle Testing - Hislop & Montgomery - W.B. Saunders.
- viii. Measurement of Joint Motion: A Guide to Goniometry - Norkins & White - Jaypee.
- ix. Principles and Practice of Therapeutic Massage- A.G.K. Sinha- Jaypee

ELECTROTHERAPY AND ACTINOTHERAPY (Paper - VI)

Instruction Hrs. Theory - 100
Practical & Demonstration - 300

Electrical fundamentals - Physical Principles, Structure and properties of matter, molecular atom, proton, neutron, electron, ion, etc.

Electrical Energy: Nature of electricity, Current Static electricity Current-Electric potentials generated by cell-Ohm's law, Joule's law.

Magnetic Energy: Nature and property of a magnet, magnetic induction and Maxwell's cork & screw rule. Electromagnetic induction - Principle and working of choke coil, transformer, rectification of A.C. to D.C. Metal Oxide Rectifier, Semi-conductor- Diode and Triode. Valves-Principle of working - condenser - principle - Details of charging and discharging, etc. Transistors, measurement of current intensity, EMS and power-moving coil milli ammeter and voltmeter.

Wiring of components in series and parallel Distribution of electrical energy – Earth Shock and electrical work. Safety Devices.

Low frequency currents: Nature and principles of production of muscle stimulating currents - Types of Low frequency currents used for treatment. Therapeutic electric stimulation - iontophoresis. High Voltage Galvanic current, Rectifying currents. Electrogenic membranes response - chemoresponsive electrogenic systems. Neuromuscular junction - synapse electrogenic - electro physiology of C.N.S. Constant direct and interrupted direct currents - Modified currents. Physiological and therapeutic effects and uses. Technique and method of application - precautions against dangers. Accident and treatment of them, if they occur.

Muscle stimulating current-to innervated and denervated muscles-long and short duration-various pulses-Accommodation. Principles of electro diagnosis-strength duration curve-Chronaxie and Rheobase and their relationship etc.

Practicals-

Low frequency current treatment: Preparation of electrotherapy, preparation of apparatus, patient treatment techniques. Following treatment techniques should be demonstrated and practiced by students.

- a) Stimulating the muscles of extremities, back and face through the motor points.
- b) Quadriceps inhibition
- c) Deltoid inhibition
- d) Faradism under pressure
- e) Faradism under Tension
- f) Nerve conduction method
- g) Re-education of a transferred muscle. Various techniques in L.F. current treatment using interrupted / modified D.C.
 - 1) Stimulation of motor points
 - 2) Stimulation of muscles directly
 - 3) Diagnostic tests
 - a) F. G. Test
 - b) S. D. Curve
 - c) Fatigue Test

Uses of surged faradism and interrupted Galvanism in various peripheral nerve lesions.

- a) Neuropraxia
- b) Axonotemesis
- c) Neurotomesis
- d) Pain-Physiology, Pain modulation & Tens

High frequency current treatments:

Physics of high frequency currents - production of high frequency currents - principles
Bio Physics of heat, physiology of heat and cold. production, physiological and therapeutic effects and uses, technique of treatment. Dangers and precaution-contraindication of the following:

- 1) Short wave diathermy
- 2) Ultrasound
- 3) Micro wave diathermy

Medium Frequency Current

Definition, Production (Brief), Physiological and therapeutic effect, uses, contraindication, technique of application of followings :

- 1. Interferential Current
- 2. Russian Current

Actino Therapy :

Definition, Production (Brief), Physiological & Therapeutic effect uses, contraindication, technique of application of followings.

- 1) Infrared radiation
- 2) Laser
- 3) Ultraviolet Radiation
- 4) Helio Therapy

Therapeutic Heat

Definition, Principles, Physiological and therapeutic effect, uses, contraindication, technique of application of followings.

(a) Moist heat (b) Paraffin wax bath (c) Contrast bath (d) Whirlpool bath (e) Fluidotherapy (f) Electric heating pads.

Cryotherapy

Principles, Physiological effects, Uses, techniques of application and contraindication of followings.

- a) Cold packs
- b) Ice massage
- c) Commercial Cold Packs
- d) Ice towels
- e) Cold Compression Units
- f) Evaporating Sprays

Electromyography & Biofeed back

Basic principles of amplifiers, Oscillators, Cathode ray tube, verords, Sigma Processing, display devices, and their indications principles & uses in electromyography. Principle and application of Biofeedback & functional electrical stimulation.

PRACTICAL

High Frequency Current Treatment

- a) Shortwave diathermy-setting up of apparatus including selection of method and electrodes. Technique-preparation of patient-checking contraindication-Application of SWD for various conditions and various parts of the body. These must be practiced by the students.
- b) Microwave - Same as above.
- c) Ultrasonics: Setting up of apparatus-selection of dose. Technique of application for various conditions and to various parts of the body.

Books Recommended:

- i. Electrotherapy Explained: Principles & Practice – Low & Reed – Elsevier.
- ii. Clayton's Electrotherapy- Forster & Palastanga - CBS.
- iii. Electrotherapy Simplified- Basanta Kumar Nanda – Jaypee
- iv. Textbook of Electrotherapy – Jagmohan Singh- Jaypee
- v. Therapeutic Heat and Cold – Lehmann – Williams & Wilkins.
- vi. Principles and Practice of Electrotherapy – Kahn – Churchill Livingstone.

SECOND BACHELOR OF PHYSIOTHERAPY (1 YEAR DURATION)

PATHOLOGY, MICROBIOLOGY AND PHARMACOLOGY (Paper - I)

Instruction Hrs. Theory - 100

Section - A - Pathology & Microbiology

1. Aims and objectives of study of pathology.
2. Brief outline of cell injury, degeneration, necrosis and gangrene.
3. **Inflammation:** Definition, vascular and cellular phenomenon difference between Transudate and exudate. Granuloma.
4. **Circulatory disturbances:** Hemorrhage, Embolism Thrombosis, Infarction, Shock, Volkmann's ischemic contracture.
5. **Neoplasia:** Definition, characteristic features Benign and malignant Tumour Spread of tumour.
6. General approach to immunity and Hypersensitivity Reaction SLE.
7. General approach to Bacterial, Viral, mycotic and parasitic infection with special importance to Tuberculosis, Syphilis and leprosy.
8. **Diabetes Mellitus.**
9. **Blood disorder:** Anaemia, Leukaemia, Bleeding disorder.
10. **VCS:** Heart and Blood vessels, Rheumatic heart disease, coronary heart disease, Aneurysm, Atherosclerosis.
11. **Respiratory System:** Ch. Bronchitis, Asthma Bronchiectasis, Emphysema, COPD
12. **Bones and joint:** Rheumatoid arthritis, Septic arthritis Osteoarthritis, Spondyloarthropathy including ankylosing spondylitis. Bone Tumour.
13. **Skin:** Scleroderma, psoriasis.
14. PNS and Muscles: Neuropathies, Poliomyelitis, Myopathies
15. CNS: Infection, Malformation, CVA, Demyelinating disease, Degenerative disease, CNS tumours

Section B - Pharmacology

1. General Pharmacology
2. Autonomic Pharmacology
3. Drugs acting on CNS
4. Drugs acting on CVS
5. Drugs acting on respiratory system
6. Antibiotics & Chemotherapeutic agents
7. Hormones and drugs affecting endocrine functions
8. Drugs acting on G.I. system
9. Immunomodulators
10. Vitamins
11. Heavy metals & antagonists
12. Diagnostic agents

Books Recommended:

- i. Robbins Pathological Basis of Disease - Cotran, Kumar & Robbins - W.B. Saunders.
- ii. General Pathology - Walter & Israel - Churchill Livingstone.
- iii. Muirs Textbook of Pathology - Anderson - Edward Arnold Ltd.
- iv. Text book of Pathology - Harsh Mohan - Jaypee Brothers.
- v. Pathology: Implications for Physical Therapists - Goodmann and Boissonnault - W.B. Saunders.
- vi. Essential of Medical Microbiology - Bhatia & Lal - Jaypee Brothers.
- vii. Medical Microbiology - Mims - Jaypee Brothers.
- viii. Microbiology: An Introduction for the Health Sciences – Ackerman and Richards - W.B. Saunders Co.
- ix. The Pharmacologic Principles of Medical Practice - Krantg & Jelleff - Calcutta Scientific Book Agency.
- x. Pharmacology - Praseem K. Das. – Churchill Livingstone
- xi. Essential of Medical Pharmacology - K.D. Tripathi - Jaypee Brothers.

MEDICINE - I (Paper - II) (General)

Instruction Hrs. Theory - 100
Practical & Demonstration - 70

1. General Medicine

Definition

- * Etiopathogenesis
- * Pathology
- * Clinical Features
- * Diagnosis
- * Differential Diagnosis
- * Principles of Management

1. Introduction to Medicine

2. General Principles of patient evaluation and management including over all idea about use of laboratory and imaging techniques.

3. **Diseases of Respiratory** System Approach to a patient with Respiratory disease, Chronic obstructive Pulmonary Disease, Bronchial Asthma, Pneumonia, Lung abscess, Bronchiectasis, Pleural effusion & Empyema thoracis, pneumothorax, Pulmonary tuberculosis

4. **Diseases of GIS** Hepatobiliary Disorders, Approach to a patient of GIS disease U.G.I.T. bleed
Jaundice, Viral Hepatitis, Cirrhosis of liver,

5. **Diseases of Kidney**, Approach to a patient of Renal disease, Acute glomerulonephritis, ARF, CRF Nephrotic Syndrome
6. **Hematologic Diseases**, Approach to a patient of hematologic disease, Anaemia, Iron deficiency Anaemia, Haemolytic Anaemia, Megaloblastic Anemia, Leukemias Hemophilia
7. Oncology Lymphomas
8. **Endocrine & Metabolic Diseases**. Acromegaly & Gigantism Dwarfism, Hypothyroidism, Hyperthyroidism, Adrenal hyper function & Hypofunction, Diabetes Mellitus, Hypoglycaemia, Vit D & Calcium metabolism & parathyroid gland disorders
9. **Nutritional Diseases**, Obesity, Protein Energy Malnutrition
10. **Connective Tissue Diseases**, Approach to a patient of connective Tissue diseases, Rheumatoid arthritis, Gout
11. **Infectious Diseases**, malaria, Filariasis, Tetanus, Leprosy,
12. **HIV & AIDS**
13. **Diseases of Skin**, Scabies, Fungal infections
14. Diseases due to Environmental factors & poisons. Heat stroke, Radiation injury, Snake bite, Organophosphorus Poisoning, Oleander poisoning.

Books Recommended:

- i. Symptoms and signs in Clinical Medicine- Chamberlin, E.N. and Ogilvie, C.-Jhon Wright
- ii. Hutchison's Clinical Methods, Swash, Michael - W B Saunders
- iii. Davidson's Principles and Practice of Medicine, Haslett, C. - Elsevier
- iv. Harrison's Principles of Internal Medicine Volume 1& 2, Kasper, D.L - Mc-Graw Hill, New York
- v. Text book of Medicine, Das & Das – Current Books International

MEDICINE - II (Paper - III) (Cardiology & Paediatrics)

Instruction Hrs. Theory - 100

Section – A: CARDIOLOGY

1. Basic anatomy of heart, Coronary circulation and development of heart.
2. **Normal Cardiac contraction and relaxation**: mechanism and diagnosis.
3. **Acute Rheumatic fever**: Aetiology, Diagnosis and management
4. **Valvular heart diseases**: Mitral stenosis, Mitral regurgitation, Aortic regurgitation and Aortic Stenosis: Diagnosis and Management.
5. **Ischaemic heart disease**: Clinical features, diagnosis and management.
6. **Hypertension**: Classification and treatment
7. **Congestive heart failure**: Aetiology Diagnosis and Management

8. **peripheral Vascular disease, Deep vein thrombosis:** Aetiology and management

Section – B: PAEDIATRICS

1. Describe growth and development of a child from birth to 12 year including physical, social, adaptive development.
2. List the maternal and neonatal factors contributing to high risk pregnancy. The neonate: inherited diseases, maternal infections viral and bacterial, maternal diseases incidental to pregnancy, such as gestational diabetes, pregnancy induced hypertension, chronic maternal diseases such as heart diseases, renal failure, tuberculosis, diabetes, epilepsy, bleeding to mother at any trimester.
3. Briefly **describe community programmes:** International (WHO), National and local for prevention of poliomyelitis, blindness, deafness, mental retardation and hypothyroidism. Outline the immunisation schedule for children.
4. **Cerebral palsy:** Define and briefly outline etiology of prenatal, perinatal and postnatal causes, briefly mention pathogenesis, types of cerebral palsy (Classification), findings on examination, general examination of C.N.S., Musculoskeletal and respiratory system. Briefly outline associated defects: Mental retardation, macrocephaly, blindness, hearing and speech impairment, squint and convulsions. Prevention: Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems.
5. **Muscular Dystrophy:** Outline various forms, modes of inheritance and clinical manifestation physical finding in relation to disabilities progression of various forms and prognosis. Describe treatment goals in forms which are and are not fatal.
6. **Spina bifida, meningomyelcele:** Outline development, clinical features-lower limbs, bladder and bowel control, Complications UTI & hydrocephalus, medical treatment and surgical treatment.
7. **Still's disease:** Classification, pathology in brief, physical findings, course & prognosis. Outline treatment, prevention and correction of deformity.
8. **Acute C.N.S. infections:** Classify (Bacterial and viral) and outline the acute illness, CNS sequelae leading to mental retardation, blindness, deafness, speech defect, motor paralysis, bladder and bowel problems, seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.
9. Normal diet of new born and child: List dietary calorie, fat, protein, mineral and vitamin requirement in a normal child and in a child with malnutrition. Classify and outline etiology, findings and treatment of Rickets; Vitamin D deficiency and resistant rickets.
10. **Lung infections:** Outline the clinical findings, complications and medical treatment of bronchieactasis, lung abscess and bronchial asthma, cystic fibrosis, primary complex in infant and children.
11. Acute pediatric respiratory distress syndrome, intensive pediatric care.
12. Intensive neonatological and pediatric surgical care.
13. Congenital cardiovascular problems-management.
14. Cardio respiratory rehabilitation in children.

Books Recommended:

- i. Symptoms and signs in Clinical Medicine- Chamberlin, E.N. and Ogilvie, C.-Jhon Wright
- ii. Hutchison's Clinical Methods, Swash, Michael - W B Saunders
- iii. Essential Pediatrics, Ghai, O. P. – CBS.

- iv. Davidson's Principal and Practice of Medicine, Haslett, C. - Elsevier
- v. Nelson's Text Book of Pediatrics, Behrman, R. - W B Saunders.
- vi. Cash's Text books of chest heart and vascular Disorders for physiotherapist, Downie PA. - Japee Brother.

SURGERY - I (Paper - IV)

(Including General Surgery, Obstetrics and Gynecology, Cardio thoracic Surgery and Plastic Surgery)

**Instruction Hrs. Theory - 150
Practical & Demonstration - 100**

Section – A: General Surgery, Obstetrics & Gynecology

(I) General Surgery

1. Principles of General Surgery and Anesthesia including blood transfusion and physiological response of the body to surgery.
2. Principles of Pre and postoperative management of surgical patients.
3. Role of Physiotherapy in General Surgery
4. Describe abdominal surgical incisions.
5. Outline the **post operative complications and management** in Nephrectomy, Appendicectomy, Herniorrhaphy, Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, prostatectomy, Cholecystectomy, Ileostomy

(II) Obstetrics and Gynecology

Pregnancy, stages of pregnancy, Labour, stages of labour, delivery, common gynecological problems.

Section - B - Cardiothoracic Surgery and Plastic Surgery

(I) Cardiothoracic Surgery

Incisions for cardiothoracic surgery - General pre- and post-operative management of cardio-thoracic surgery - Various surgical procedures for various chest and cardiac conditions / diseases.

(II) - Plastic Surgery

1. **BURN**: Degrees of Burns, Managements and Reconstructive Surgery following burns and complication of burns.
2. Types of Skin Graft and flaps
3. Principles of Tendon Transfers / Transplant.
4. Cosmetic Surgery
5. Surgery of the hand with emphasis on reconstructive surgery and replantation surgery in trauma and leprosy.

Books Recommended:

- i. Baily and Love - Short Practice of Surgery Volume 1 & 2 – Williams, Connell and Mccaskie – CRC Press
- ii. SRB's Manual of Surgery, Sriram Bhat M- Jaypee
- iii. A Manual on Clinical Surgery, Das-

- iv. Undergraduate Surgery - Nan - Academic Publishers, Calcutta.
- v. Textbook of Surgery - Gupta R.L. - Jaypee.
- vi. Principles and Practices of Trauma Care - Kocher - Jaypee.
- vii. Clinical Methods - S. Das - Calcutta.

PHYSIOTHERAPY IN MEDICAL CONDITIONS – I (Paper - V)

Instruction Hrs. Theory - 150
Practical & Demonstration - 150

INTRODUCTION:

1. Brief review of the following Medical conditions and various Physiotherapy modalities, Aims, Means and technique of Physiotherapy should be taught.

I. DISEASES OF RESPIRATORY SYSTEM: (Chest Diseases) Bronchitis, Asthma, Bronchiectasis, Pulmonary embolism, Pulmonary tuberculosis, Emphysema, Pleurisy and emphysema, Other Miscellaneous Chest conditions which are commonly treated by Physiotherapist, Prior to beginning with various conditions brief introduction of breathing exercises and postural drainage in detail should be taken.

II. CARDIOVASCULAR SYSTEM: Congestive heart failure, myocardial infarction, congenital Heart Diseases, Valvular Diseases, P.D.A., Thrombosis, Phlebitis and Phelbothrombosis, Atherosclerosis, Burger's Disease, Varicose veins and Ulcer, Raynaud's diseases.

III. DERMATOLOGY: Psoriatic arthritis, Syphilitic arthritis, scleroderma, Leprosy.

IV. PAEDIATRICS: Growth and development, maternal and neonatal factors contributing to high risk baby, CP, Myopathy, spina bifida, still's disease. Acute CNS infection, lung infection. CTEV, CDH, Erb's Palsy, Arthrogryposis multiplex congenita.

Books Recommended:

- i. Symptoms and signs in Clinical Medicine- Chamberlin, E.N. and Ogilvie, C.-Jhon Wright
- ii. Hutchison's Clinical Methods, Swash, Michael - W B Saunders
- iii. Essential Pediatrics, Ghai, O. P. – CBS.
- iv. Davidson's Principal and Practice of Medicine, Haslett, C. – Elsevier
- v. Cash's Text books of chest heart and vascular Disorders for physiotherapist, Downie PA. - Japee Brother.

PHYSIOTHERAPY IN SURGICAL CONDITIONS – I (Paper - VI)

Instruction Hrs. Theory - 150
Practical & Demonstration - 150

1. **ABDOMINAL SURGERY:** Pre and post operative physiotherapy management of following abdominal surgical conditions (Incisions pre and post operative complications must be explained) Total Gastrectomy, Partial gastrectomy, appendectomy, herniorrhaphy cholecystectomy Hysterectomy Radical mastectomy, colostomy, Nephrectomy etc.

2. **CARDIOTHORACIC SURGERY:** Introduction, Incisions for cardiothoracic surgery, Drainage tube - bottles, ventilators - uses and functions of ventilators, Pre and post operative Managements of the following conditions.

- a. Thoracotomy
- b. Lobectomy
- c. Thoracoplasty
- d. Pneumonectomy

Management of atelectasis, Pneumothorax, fistula, Pre and post operative Management of cardiac surgery - open heart surgery, mitral valvotomy, surgery on pericardium, Tetralogy of fallot etc.

3. **OBS AND GYN:** Antenatal and Post-natal training, prolapsed Uterus, Urogenital dysfunction, pre and post operative Management of pelvic floor surgery, common Gynecological conditions.

4. **PLASTIC SURGERY AND BURNS:** Physiotherapy Management of burns degrees of burns Physiotherapy approach, Pre and Post operative physiotherapy of skin grafting, Reconstructive surgery of hand, Tendon transfer etc.

Books Recommended:

- i. Baily and Love - Short Practice of Surgery Volume 1 & 2 – Williams, Connell and Mccaskie – CRC Press
- ii. SRB's Manual of Surgery, Sriram Bhat M- Jaypee
- iii. A Manual on Clinical Surgery, Das-
- iv. Undergraduate Surgery - Nan - Academic Publishers, Calcutta.
- v. Textbook of Surgery - Gupta R.L. - Jaypee.
- vi. Principles and Practices of Trauma Care - Kocher - Jaypee.
- vii. Clinical Methods - S. Das - Calcutta.
- viii. Cash's Text books surgery, Downie PA. - Jaypee Brother.

THIRD BACHELOR OF PHYSIOTHERAPY (1 YEAR DURATION)

BIOMECHANICS & KINESIOLOGY (Paper - I)

Instruction Hrs. Theory – 150

I. Essential concepts:

- a) Motion and forces
- b) Force distribution-linear force, resultant force & equilibrium, parallel forces in one plans.
- c) Newton's laws-Gravity and its effects on human body
- d) Moments
- f) Forces and moments in action
- g) Composition and resolution of forces
- h) Friction

II) Kinematic concepts

III) Kinetic aspects of limb movement

Classification of levers, Physiological significance of negative mechanical advantage Muscle function and performance

IV) Lower Extremity Kinematics

Hip and thigh, Hip joint motion and forces of hip joint, Two leg stances and one leg stances, Varus and valgus of femoral neck, Other factors affecting hip joint forces, Effect of cane by lever approach

V) Knee and leg kinematics, Motion of Knee joint, Forces of knee joint, Patellofemoral joint, Ankle and foot kinematics, Motion of ankle, Forces of ankle joint, Stability of ankle joint, Weight bearing on foot, Arches of foot

VII) Biomechanics of gait, Gait cycle, Parameters of gait, Myokinetics of human gait, Gait deviations
Crutch and cane exercises

VIII) Posture, Anatomical aspects of posture, Factors affecting posture, Biomechanics of Upper Extremity, Shoulder joint, Elbow Joint, Wrist Joint & Hand, Vicarious movement.

Books Recommended:

- i. Joint Structure and Function – A Comprehensive Analysis - Norkins & Levangie - F.A. Davis.
- ii. Measurement of Joint Motion – A Guide to Goniometry - Norkins & White - F.A. Davis.
- iii. Brunnstrom's Clinical Kinesiology - Smith et al - F.A. Davis.
- iv. Basic Biomechanics Explained - Low & Reed - Butterworth Heinmann.
- v. Kinesiology: Applied to Pathological Motion - Soderberg Lippincott

ALTERNATIVE MEDICINE (Paper - II)

Instruction Hrs. Theory – 150

A. **Yoga:** Definition-History-Principles-Concepts, General effects of yoga posture on musculo skeletal system. Specific effects of individual yogic posture on musculo skeletal system. Yoga and Therapy Rationale

B. **Naturopathy:** Definition-History-Principles-Concepts, Effect of Naturopathy.

C. **Holistic Approaches:**

i) Pranic Healing - Definition - Concepts - Principles, Effects and uses, Therapeutic effects

ii) Rhexi therapy - Definition - Concepts - Principles, Effects and uses, Therapeutic Effects

D. **Acupuncture & Acupressure**

1. Acupuncture points and meridians - their function extra meridians.

2. Forbidden points

3. Complications - contraindications

4. Specific important points (Luo and source points, horary points)

5. Mechanism of acupuncture - physiology

6. Techniques - equipment - methods for asepsis, sterilization.

7. Relevance of acupuncture to physical therapeutics Trigger points – electro - acupuncture.

Books Recommended:

- i. Alternative Therapies by Swati Bhagat- Jaypee

MEDICINE - III (Paper - III)

Instruction Hrs. Theory - 150
Practical & Demonstration - 100

NEUROLOGY

1) General principles of neurological diagnosis

2) Cerebro vascular diseases, Cerebro vascular accident, Cerebral thrombosis, embolism & haemorrhage

3) Intra Cranial tumours

4) Acute infections of CNS Encephalitis, Meningitis, Poliomyelitis

5) Traumatic injury of the Head & spine

6) Parkinsonism and other extrapyramidal disorders

7) MS & other demyelinating diseases

8) ALS (Amyotrophic Lateral Sclerosis) and other Motor neurone diseases

9) Diseases of Peripheral Nerves, cranial nerves, G.B.S. including peripheral nerve injury.

10) Myasthenia Gravis

- 11) Diseases of muscles (polymyositis, muscular dystrophy)
- 12) Seizure and epilepsy
- 13) Headache and Migraine
- 14) Dementia
- 15) Cerebral Palsy
- 16) Cervical and lumbar spondylosis and disc prolapse

Books Recommended:

1. Brain's Diseases of the Nervous System - Nalton – ELBS.
2. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone.
3. Principles of Neurology - Victor – McGraw Hill International edition.
4. Davidson's Principles and Practices of Medicine - Edward - Churchill Livingstone

MEDICINE IV (Paper - IV)

Instruction Hrs. Theory - 100

PSYCHIATRY

1. Neurosciences, Neuroanatomy, Neurotransmitter study etc.
2. Examination and diagnosis of psychiatric cases
3. Clinical manifestations of psychiatric disorders
4. Classification of mental disorders
5. Theories of personality and psychoanalysis
6. Neuropsychiatric aspects of
 - * Cerebrovascular disorders
 - * Brain tumours
 - * Epilepsy
 - * Traumatic brain injury
 - * Movement disorders
 - * Multiple Sclerosis
 - * HIV infection and AIDS
 - * Headache
 - * Neuromuscular disorders
7. Delirium, dementia, amnesic and other cognitive disorders
8. Substance related disorders-alcohol, amphetamine, cannabis, opioid, caffeine, nicotine, hallucinogens etc.
9. Schizophrenia
10. Other psychotic disorders, Schizo-affective disorders, Schizophreniform and brief psychotic disorders

Delusional disorders, shared psychotic disorder, Acute and chronic psychotic disorder, Postpartum psychotic syndromes

11. Mood disorders

12. Anxiety disorders - GAD, Phobias, Panic disorder, ASD, PTSD, OCP

13. Somatoform disorders

* Conversion disorder

* Somatization disorder

* Hypochondriasis

* Pain disorder

* Body dysmorphic disorder

* Chronic fatigue syndrome

14. Factitious disorder

15. Dissociative disorders

16. Normal human sexuality and sexual and gender identity disorders

17. Eating disorders

18. Sleep disorders

19. Impulse control disorders not classified elsewhere

20. Adjustment disorders

21. Personality disorders

22. Psychological factors affecting medical conditions

23. Disaster-types, psychiatric co-morbidities and management

24. Biological therapies

* Dopamine receptor antagonists

* Serotonin - dopamine antagonist

* Benzodiazepine receptor agonists and antagonists

* Mood stabilizers-Lithium, Valproate, Carbamazepine, etc.

* Tricyclics and tetracyclics

* Selective serotonin reuptake inhibitors

* SNRI

* Antihistaminics

* Electro convulsive therapy

25. Mental retardation

26. Suicide

27. Early onset schizophrenia

28. Attention deficit disorder

29. Conduct disorders

30. Tic disorders

31. Feeding and eating disorders of infancy and early childhood
32. Psychotherapies
33. Medical ethics

Books Recommended:

- i. A short textbook of psychiatry by Niraj Ahuja- Jaypee

P.T. IN MEDICAL CONDITIONS - II (Paper - V)

**Instruction Hrs. Theory - 150
Practice & Demonstration - 150**

INTRODUCTION

Brief review of the following medical conditions and various modalities of physiotherapy, aims, means and techniques of physiotherapy should be taught.

I. Neurology

- 1) Hemiplegia
- 2) Cerebral Palsy
- 3) Tetra Plegic Syndrome
- 4) Multiple sclerosis
- 5) Tabes dorsalis
- 6) Transverse myelitis
- 7) Poliomyelitis
- 8) Parkinson's disease
- 9) Motor neuron disease
- 10) Polyneuritis
- 11) Ataxia
- 12) Extra Pyramidal Lesions
- 13) Peripheral neuropathy
- 14) Peripheral nerve injuries
- 15) Sciatica
- 16) Brachial neuritis and neuralgia
- 17) Facial palsy and Bell's palsy
- 18) Syringomyelia
- 19) Monoplegia

20) Myopathy and muscular dystrophies

21) Sub-acute combined degeneration of spinal cord

II. General and physiotherapeutic management of psychiatric patients.

III. E.N.T. Sinusitis - Mastoidectomy - complications - Facial nerve Palsy Management

Books Recommended:

- i. Cash's Textbook of Neurology for Physiotherapists - Downi - J.P. Brothers.
- ii. Adult Hemiplegia – Evaluation & Treatment - Bobath - Oxford Butterworth Heinmann.
- iii. Neurological Rehabilitation – Carr & Shepherd -Butterworth Heinmann.
- iv. Tetraplegia & Paraplegia – A Guide for Physiotherapist - Bromley - Churchill Livingstone.
- v. Neurological Physiotherapy – A Problem Solving Approach - Susan Edwards - Churchill Livingstone.
- vi. Neurological Rehabilitation - Umpherd - Mosby.
- viii. Physical Rehabilitation, O'Sullivan- F.A. Davis

REHABILITATION SCIENCE (Paper - VI)

Instruction Hrs. Theory - 150

A. Introduction, Define the term rehabilitation. Explain its aims and principles. Scope of rehabilitation.

Discuss team work involved in rehabilitation, explaining briefly the role of each team member.

B. Therapeutic Techniques

1. Agencies involved in rehabilitation of a physically handicapped.

2. Legislations for physically handicapped (in brief)

3. Limitations of each team member in rehabilitation of a physically disabled individual.

C. **Communication Problems:** Identify communication problems, classify these and outline principles of treatment, outline of speech Therapy & hearing aids.

D. **Behavioral Problems:** Identify behavioral problems in the disabled and outline the principles of management.

E. **Mobility Aids:** Demonstrate knowledge of the indications for different types of mobility aids and their functions, e.g. wheelchairs, walkers, crutches.

F. **Pre-vocational Evaluation:** Discuss methods and team involvement in pre-vocational evaluation and training.

G. **Architectural barriers:** Describe architectural barriers and possible modifications with reference to Rheumatoid arthritis, cerebrovascular accident, spinal cord injury and other disabling conditions.

H. **Disability Evaluation:** Outline the principles of disability evaluation and discuss its use.

I. **Legal Aspects:** Outline legal aspects of disability in terms of compensation for disability and benefits available to the disabled.

- J. **Social Implications:** Outline the social implications of disability for the individual and for the community.
- K. **Community Based Rehabilitation Module:** Describe a CBR MODULE and compare this with an institutional based rehabilitation system.
- L. **Visual disability-**Definition and classification, mobility technique, communication skills, sensory re-education, emotional and psychological aspects of blindness, facilities for blind, prevention of blindness.
- M. **Mental Retardation** - Definition and classification, prevention and existing facilities for mentally retarded children.
- N. Outline of Social and Vocational Counseling.
- O. Classification of aids and appliances. Measurement of P.O.P. Cast techniques, Simple splints techniques.
- P. Principles and Check out procedures for static and dynamic alignment, Training.
- a. Spinal orthotics
 - b. L.L. orthotic & prosthetics
 - c. U.L. orthotics & prosthetics

Books Recommended:

- i. Textbook of Preventive and Social Medicine, K. Park-
- ii. Textbook of Rehabilitation, S. Sunder – Jaypee

Research Methodology, Biostatistics and Introduction to Computer Science (Paper- VII)

Non University Examination

Instruction Hrs. Theory - 50

1. Review of literature
2. Study design
3. Sample size
4. Sampling variability & significance
5. Protocol writing
6. Ethical aspects
7. Data Collection analysis, interpretation and presentation
8. Common statistical terms
9. Measures of location, average & percentiles
10. Variability & its measures
11. Normal distribution & normal curve
12. Probability

13. Significance of difference in mean
14. Chi-Square test
15. Correlation & regression
16. Demography & vital statistics
17. Correlation of measures of population & vital statistics
18. Use of Micro Computer in Research

Books Recommended:

- i. Research Methodology by CR Kothari- New Age International Publishers

FINAL BACHELOR OF PHYSIOTHERAPY (1 YEAR DURATION)

SURGERY - II (Paper - I) (Orthopaedics)

Instruction Hrs. Theory - 100
Practical & Demonstration - 100

1. **Fractures and Dislocations including soft tissue injuries.** Pathology of fractures and repairs of bones. Reasons for union, non-union and delayed union fibrous union and myositis. Common fractures of upper extremity, lower extremity including Spine-Management, Complications etc.

Dislocation of Shoulder, Elbow, Hip, Knee and Spine, Rupture, Contusion and Sprain of muscles, tendons and ligaments. Knee injuries - Injury to medial ligament, internal derangement and meniscus tear, Lateral ligament, sprain of ankle. Volkman's Ischaemic contracture, Tennis Elbow.

2. **Deformities:** Common congenital and acquired deformities of foot, knee, hip, shoulder, elbow and wrist including hand and spine. Cervical rib, torticollis, metatarsalgia, claw hand.

3. Inflammatory conditions and lesions of joints and bones. Osteomyelitis, tuberculosis, pyogenic infection, Osteoarthritis, Rheumatoid arthritis T.B. Joints, Tenosynovitis, Synovitis, capsulitis, tendinitis, Osteoporosis and Osteomalacia, sciatica, low back pain, brachial neuralgia.

4. Operative Procedures.

5. Management after A.O. fixation

6. Bone Tumour, classification and Management

7. Management of open wound with external fixator.

Books Recommended:

- i. Essential Orthopedics by Maheshwari & Mhaskar- Jaypee
- ii. Watson – Zones, Fractures and Joint Injuries – Wilson – Churchill Livingstone.
- iii. Clinical Orthopaedic Examination – Mcrae – Churchill Livingstone.
- iv. Concise System of Orthopaedics and Fractures – Apley – Butterworth Heinmann.
- v. Outline of Fractures – Adam – Churchill Livingstone.
- vi. Outline of Orthopaedics – Adam – Churchill Livingstone.
- vii. Physical Examination in Orthopaedics – Apley – Butterworth Heinmann.
- viii. Clinical Orthopaedics Diagnosis – Pandey & Pandey – Jaypee Brothers.

SURGERY - III (Paper - II)
(Neurosurgery)

Instruction Hrs. Theory - 50

1. Principles of Management of cranial & Spinal Trauma.
2. Neurosurgical Intensive Care study
3. Rehabilitation of Neurologically disabled patients.
4. Outline of clinical presentation & management of Brain Tumours & spinal cord compressions.
5. Use of operative microscope, endoscopy, stereotactic Surgery, minimally invasive surgery in neurosurgical perspective.
6. Development anomalies of CNS & their brief management

7. Patho physiology peripheral nerve injuries & principles of Management.
8. Degenerative diseases of spine and outline of management
9. Management of pain syndromes.

Books Recommended:

- i. Brain's Diseases of the Nervous System - Nalton – ELBS.
- ii. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone.

P.T. IN SURGICAL CONDITIONS - II (Paper - III)

Instruction Hrs. Theory - 150
Practical & Demonstration - 150

INTRODUCTION: Brief review of the following surgical conditions and various physiotherapy modalities, aims, means and techniques of physiotherapy should be taught.

I. Traumatology and Orthopedics: General Physiotherapeutic approach for traumatic conditions.

Fractures and Dislocations: Classification; Types of displacement, Methods of immobilisation.

Healing of fractures and factors influencing union, nonunion, delayed union etc. Common sites of fracture.

Specific fracture and their complete physiotherapy management **upper limb:** clavicle, humerus, Ulna and radius, Colles fracture & crush injuries of hand.

Lower Limb: Fracture neck of femur, shaft of femur, patella, tibia and fibula, pott's fracture, fractures of tarsal and metatarsal bones.

Management of fracture spine with (Paraplegia) as well as without neurological deficit.

Injuries: Soft tissue injuries, synovitis, capsulitis, Volkman's Ischaemic Contracture etc. Tear of semilunar cartilage and cruciate ligaments of knee, Meniscectomy and pattelectomy, internal derangement of knee.

Amputations: Levels of amputation of upper and lower Extremity-stump care. Stump bandaging, pre and post fitting prosthesis management, check out.

Deformities: Congenital Torticollis and Cervical rib, C.T.E.V., pes cavus and pes planus and other common deformities.

Acquired: Scoliosis, Kyphosis, lordosis, coxa vara, coxa-valga genu valgum, genu varum and recurvatum.

Degenerative and infective conditions: Osteoarthritis of major joints, Spondylosis, Spondylitis, Spondylolisthesis, prolapsed intervertebral disc lesion. Peri arthritis (Rotator cuff lesion) of shoulder, Tuberculosis of spine, bone and major joints. Perthe's disease.

II. Rheumatoid-arthritis, ankylosing spondylutus etc. And other miscellaneous orthopaedic conditions commonly treated by physiotherapy.

III. Neurosurgery: pre and post operative management of neurosurgery conditions Complications etc. of Peripheral nerve injuries, Non-Operative, Pre and post operative management of nerve repair and grafting. Head injury, Laminectomy, Surgery following brain Tumour etc. craniotomy etc.

Books Recommended:

- i. Essential Orthopedics by Maheshwari & Mhaskar- Jaypee
- ii. Watson – Zones, Fractures and Joint Injuries – Wilson – Churchill Livingstone.
- iii. Clinical Orthopaedic Examination – Mcrae – Churchill Livingstone.
- iv. Concise System of Orthopaedics and Fractures – Apley – Butterworth Heinmann. Outline of Fractures – Adam – Churchill Livingstone.
- v. Brain's Diseases of the Nervous System - Nalton – ELBS.
- vi. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone

P.T. IN SPORTS CONDITIONS (Paper – IV)

Instruction Hrs. Theory - 150

1. Introduction to Sports Sciences
 - a. Nutritional Considerations- Significance of prevent meal and eating disorders
 - b. Protective Sports Equipment-Relevance of protective equipments in sports
 - c. Environmental Factors & Sports Performance-Climatic variations and sports performance
 - d. Special Considerations- Female Athlete, Strength and endurance considerations for adolescent non athletic population
2. Prevention of Sports Injury: Injuries occur and successful rehabilitation is significant to achieve sporting excellence. Emphasis to be placed upon:
 - a. Different causes for sports injury
 - b. Principles of training, methods and exercise prescription

- c. Exercise consideration Special Population: Hypertension, Diabetes Mellitus and other life style disorder
- d. Pre-participation Evaluation
- e. Therapeutic and preventive interventions- Taping, Sports Massage, Bandaging and wrapping techniques, Cryotherapy etc.
- f. Emergency Care & On field Injury Assessment and management
- 3. Physiotherapeutic Aims and objectives for an injured athlete
- 4. Introduction to sports injury: Common etiology, investigation and diagnosis
- 5. Common Sports Injuries involving:
 - a. Spine Injury Patterns, Assessment and Management of common spinal injuries in sports
 - b. Shoulder Joint Complex: Rotator Cuff Injuries in throwing athletes, Fractures of GI Joint Complex- Conservative, Surgical Management and Return to sports criteria for different sports, Design of prevention models etc.
 - c. Elbow Joint, Wrist Joint and Hand Complex: Overuse Injuries, Biomechanical Errors, Conservative, Surgical Management and Return to sports criteria for different sports
 - d. Hip, Pelvis and thigh, Knee Joint Complex: Ligamentous and meniscal injury patterns in different sports, Conservative, Surgical Management and Return to sports criteria for different sports injuries.
 - e. Foot and Ankle Joint Complex: Conservative, Surgical Management and Return to sports criteria for different sports.
- 6. An introduction to exercise and sports physiology
 - a. Cardio respiratory function and performance
 - b. Cardiovascular control during exercise
 - c. Respiratory regulation during exercise
 - d. Cardio respiratory adaptation to training

Books Recommended:

- i. Sports Physiotherapy, Zuluaga et al. - W.B. Saunders.
- ii. Clinical sports medicine, Brukner and Khan - McGraw Hill
- iii. Sports injuries, Assessment and Rehabilitation, Reed W.B. Saunders.
- iv. Principles of athletic training- William Prentice
- v. Rehabilitation techniques in Sports medicine- William Prentice
- vi. Exercise Physiology, Katch & Katch

PHYSICAL DIAGNOSIS & PHYSICAL FITNESS (Paper – V)

Instruction Hrs. Theory - 100
Practical & Demonstration - 100

A. (1) Problem oriented Medical Record - History - Concept - Advantages.

(2) Communication with the patient - Principles and Methods

B. Physical Diagnosis on the basis of

(a) Musculo skeletal system

1) Maitland's concept

2) Cyriax approach

3) Mckenzie's concept

4) Mennel's concept

5) Neural Tension Tests - Normal and abnormal findings

b) Neuro Muscular System : (For CNS Problems)

1) Bobath's approach (Normal movement concept)

2) Motor Relearning Process (MRP)

3) Vojta approach

c) Clinical reasoning and Clinical decision making

d) Rationale of plan of treatment

Industrial Health: Fitness Testing & Ergo Therapeutics

1. Factors responsible for occupational hazards - stress, faulty working conditions (Biomechanical aspects) - Thermal stress, over-use, pollution-noise, air, water, food.

2. Accidents-electrical, mechanical, thermal, chemical.

3. a. Disability evaluation (functional) interpretation and legislation - principles - techniques - suggestions for compensation.

b. Ergonomic evaluation - evaluation of working area, type of work fitness testing for the same.

4. Preventive P.T. measures.

5. Fitness programs for specific work

6. Sports and Industry

7. Planning - developing and management towards work efficiency productivity, avoidance of accidents and other use.

8. Relaxation program for stress.

Books Recommended:

- i. Physical Rehabilitation, O'Sullivan- F.A. Davis
- ii. Orthopedic Physical Assessment- David J. Magee- Elsevier

PROFESSIONAL MANAGEMENT AND ETHICS (Paper - VI)

Instruction Hrs. Theory - 100

A. Professional Ethics and legal issues

1. The implications of and confirmation to the rules of professional conduct.
2. Legal responsibility for their actions in the professional context and understanding liability and obligations in case of medico legal action.
3. A wide knowledge of ethics relating to current social and medical policy in the provision of health care.
4. National and international professional bodies: as a professional association, and education body - Difference between scientific association (Professional body) and statutory body.
5. The role of international health agencies such as WHO.

B. Management studies

1. Definition - Branches of management - Principles of health sector management
2. General principles of management - Theories of management.
3. Personnel management - Policies and procedures, Basic concepts and theories.
4. Financial issues including budget and income generation.
5. Principles of an organisation chart.
6. Organisation of a department - planning, space, manpower, materials, basic requirements.
7. Resource and quality management - planning with change and coping with change.
8. Self-Management
 - 1) Preparing for 1st job
 - 2) Time management
 - 3) Career development