ABHILASHI UNIVERSITY

CHAIL CHOWK, TEHSIL CHACHYOT, DISTT.MANDI(H.P.)

Faculty of Ayurveda & Health Sciences

Syllabus for
BACHELOR OF PHYSIOTHERAPY (B.P.T.)
School of Physiotherapy

BACHELOR OF PHYSIOTHERAPY COURSE

Duration: 4 years & 6 months

DURATION OF COURSE:

- BPT course will be a full time course.
- Duration will be four years followed by compulsory six months Rotatory internship.
- This course shall be divided into four professional examinations namely BPT
    - First Professional B.P.T.
    - Second Professional B.P.T.
    - Third Professional B.P.T.
    - Fourth (Final) Professional B.P.T.
    - Internship

Admission criteria and qualifications:

A candidate seeking admission to first year BPT course should have passed senior secondary examination conducted by Boards/Councils/ Intermediate examination established by State/Central Governments or equivalent studies within India or abroad, with English as one of the subjects and Physics, Chemistry and Biology as optional subjects not less than 50%. The candidate should have completed 17 years of age on or before 31st day of December of the year of admission. The selection of students to the physiotherapy course shall be based on:

i) The candidate must appear for Abhilashi University competitive entrance examination and must have come in the merit list by securing not less than 40% marks in Physics, Chemistry and Biology taken together.

ii) The admission to the B.P.T. course shall be made on the terms & conditions prescribed in the Notification issued by the Government from time to time.

English shall be the medium of instruction for study and examination of the Bachelor of Physiotherapy degree course.

ATTENDANCE:

Every candidate should have attendance not less than 75% of total classes conducted in theory and 80% In practical in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University, in each of the subjects prescribed to be eligible to appear for the University examination. A candidate lacking in the prescribed attendance and progress in any subjects in theory or practical/clinical shall not be permitted to appear for the University examination in those subjects.

EXAMINATION &CRITERIA FOR PASSING:

- There shall be an annual university examination at the end of each academic year in the form of theory papers and practical examinations. The candidate shall be required to appear in every subject as specified in the course structure for each year.
- There shall be a provision of internal assessment of 20% marks in each subject of B.P.T. course in theory.
- The minimum number of marks to pass the examination shall be 50% in theory including Internal Assessment and 50%inpractical / clinical in each subject.
- A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with Distinction in that subject provided he/she has passed the examination in first attempt.
- A candidate who passes in one or more subjects shall be exempted from appearing in all subject at a subsequent examination, but the candidate must pass the examination in a maximum of our attempts, failing which he/she shall have to appear in all the subjects,of the next year examination.

DURATION OF EXAMINATION:

- Each theory paper shall be of 3hours duration.

SUPPLEMENTARYEXAMINATION:

A candidate failing in a subject/ subjects will be required to appear in the university examinationafter3 months in that subject/ subjects while attending classes of next year.

If the candidate fails in supplementary examination his/her session will be shifted by one professional year. The candidate will have to take admission in the previous year and pay the tuition fee for the academic year. He/she will have to appear in all the subjects in the examination.

Supplementary examination will be held not earlier than 3 months and later than 6 months from the date of annual University examination.

DEGREE:

The degree of B.P.T. course of the University shall be conferred on the candidates who have pursued theprescribedcourseofstudyfornotlessthanfouracademicyearsandhavepassedexaminationsasprescribedunder the relevant scheme and completed 6 months of compulsory Rotatory internship.

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.
- The Internship should be Rotatory and cover clinical branches concerned with Physiotherapy such as Orthopedics, Cardiothoracic including ICU, Neurology & Neurosurgery, Pediatrics, General Medicine ,General Surgery, 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.

SUBJECTSANDTEACHINGSCHEDULE

Table I :FIRST YEAR
BACHELOR OF PHYSIOTHERAPY
(0-12Months)

		Teaching hours		
Sr.No	**Name of the subject**	**Theory**	**Practical**	**Total**
1.	Anatomy	120	80	200
2.	Physiology	120	80	200
3.	Biochemistry	50	-	50
4.	Electrotherapy–I	100	100	200
5.	Exercise Therapy–I	100	100	200
6.	Computer Application		50	50
7.	English	50	-	50
8.	Clinical Education &Training	-	400	400
	TOTAL			**1000**

Table II: SECOND YEAR
BACHELOR O FPHYSIOTHERAPY (IIBPT)
(13-24Months)

		Teaching Hours		
Sr. No.	**Name of the subject**	**Theory**	**Practical**	**Total**
1.	Pharmacology	50	-	50
2.	Pathology &Microbiology	100	-	100
3	Exercise Therapy-II	150	150	300
4	Electrotherapy-II	150	150	300
5	Bio-mechanics	75	75	150
6	Psychology &Sociology	100	-	100
7	Clinical Education& Training	-	400	400
	TOTAL			**1400**

Table III:
THIRD
YEAR
BACHELOR OF PHYSIOTHERAPY (IIIBPT)
(25-36Months)

Sr. No.	Name of the Subject	Teaching Hours		
		Theory	**Practical**	**Total**
1.	Orthopedics	120	80	200
2.	General Medicine	120	80	200
3.	PT in Ortho-Condition	125	150	275
4.	PT in Medical Condition-I	125	150	275
5.	Research Methodology & Biostatics	50	-	50
6.	Clinical Education &Training	-	400	400
	TOTAL			***1400***

FOURTHYEAR
BACHELOR OF PHYSIOTHERAPY (IVBPT)
(37-48Months)

Sr. No.	**Name of the subject**		**Teaching Hours**	
		Theory	**Practical**	**Total**
1.	General Surgery	100	50	150
2.	Neurology	100	50	150
3.	PT in Neurological Condition	100	100	200
4.	PT in Surgical Conditions	100	100	200
5.	Physiotherapyethics, Administration&&Rehabilitation	100	70	170
6.	Applied therapeutics	60	60	130
7.	Clinical Education& Training	-	400	400
	TOTAL			**1400**

Table V: SCHEME OFEXAMINATIONFORIBPT

Table I: FIRST YEAR BACHELOR OF PHYSIOTHERAPY (BPT)

Sr .No.	Subject Name	Subject code	Marks		Marks		Total
			Theory	Internal Assessment	Practical	Internal Assessment	
1	Anatomy	AUBPT-101	80	20	100	-	200
2	Physiology	AUBPT-102	80	20	100	--	200
3	Biochemistry	AUBPT-103	80	20	-		100
4	Electrotherapy –I	AUBPT-104	80	20	100	-	200
5	Exercise Therapy-II	AUBPT-105	80	20	100	-	200
6	English	AUBPT-106	40	10	-	-	50
7	Computer Application	----------	-	-	50	-	50
	Total						**1000**

Table II: SECOND YEAR BACHELOR OF PHYSIOTHERAPY (IIBPT)

Sr. No.	Name of the subject		Marks				Total
		Subject code	**Theory**	Internal Assessment	**Practical**	**Internal Assessment**	
1	Pathology &Microbiology	AUBPT-201	80	20	-	-	100
2	Pharmacology	AUBPT-202	40	10	-	-	50
3	Exercise Therapy-II	AUBPT-203	80	20	100	-	200
4	Electrotherapy-II	AUBPT-204	80	20	100	-	200
5	Bio-mechanics	AUBPT-205	80	20	50	-	150
6	Sociology &Psychology	AUBPT-206	80	20	-	-	100
	TOTAL						**800**

Table III : THIRD YEAR BACHELOR OF PHYSIOTHERAPY (III BPT)

Sr. No.	Name of the subject		Marks				Total
		Subject code	**Theory**	Internal Assessment	**Practical**	**Internal Assessment**	
1	Orthopedics	AUBPT-301	80	20	100	-	200
2	General Medicine	AUBPT-302	80	20	100	-	200
3	PT in Ortho-Condition	AUBPT-303	80	20	100	-	200
4	PT in Medical Condition	AUBPT-304	80	20	100	-	200
5	Research Methodology &Biostatics	AUBPT-305	80	20	-	-	100
	TOTAL						**900**

Table IV: FOURTH YEAR BACHELOR OF PHYSIOTHERAPY (IVBPT)

Sr. No.	Name of the subject		Marks				Total
		Subject code	**Theory**	Internal Assessment	**Practical**	**Internal Assessment**	
1.	General Surgery	AUBPT-401	80	20	100	-	200
2.	Neurology	AUBPT-402	80	20	100	-	200
3.	PT in neurological Condition	AUBPT-404	80	20	100	-	200
4.	PT in Surgical Conditions	AUBPT-405	80	20	100	-	200
5.	PT in cardiac conditions	AUBPT-406	80	20	50	-	150
6.	Applied therapeutics	AUBPT-407	80	20	50	-	150
	TOTAL						**1100**

1ST Year Syllabus

BACHEOLAR OF PHYSIOTHERAPY

ANATOMY

M. Marks: 200Theory: 100Practical: 100

Course description:

It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies. Studies are concerned with the topographical and functional anatomy of the limbs and thorax .Particular attention is paid to the muscles, bones and joints of the regions. The abdomen, pelvis, perineum, head and neck and central nervous system (CNS) are studies with particular reference to topics of importance to physiotherapists. The study of CNS includes detailed consideration of the control of motor function.

Theory –

1. **General Introduction** **15hrs**
   a. Histology

General Histology, study of the basic tissues of the body;

Microscope, Cell, Epithelium, Connective Tissue, Cartilage ,Bone, Muscular tissue, Nerve Tissue–TS & LS, Circulatory system–large size artery ,medium sized artery ,large sized vein ,lymphoid tissue, Skin and its appendages.

   b. Osteology–
      Theory of structure, function and growth,
      Fracture& repair of bones
      Physical study of all bones in the body
      Also general features and functions of the cartilage, tendon, ligaments, articular capsule,synovial membranes, burse, miscue, intra-articular cartilages.
      Classification of joints with their examples & specific features.
   c. Embryology-Development of muscles, bones, joints and nerves etc.

2. **Systems of the Human Body:** **40 Hrs**
   a. Cardio–Vascular System Mediastinum :Divisions and contents

Pericardium: Thoracic Wall :position, shape and parts of the heart ;conducting System ;blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body– region wise.

   b. Respiratory system

Outline of respiratory passages

Pleura and lungs: position, parts relations ,blood supply and nerve supply ;Lungs–emphasize on bronchopulmonary segments.

Diaphragm: Origin,insertion ,nerve supply and action ,openings in the diaphragm.

Intercostal muscles and Accessory muscles of respiration: Origin, insertion nerve supply and action.

   c. Digestive System–Anatomy of the gastrointestinal tract with special emphasis on surface marking.
   d. Urogenital System –Anatomy of Urinary System, male and female reproductive systems.
   e. Endocrine System-The various endocrine glands with their structure ,functions and neuro-regulation .Also role of hypothalamus.
   f. Integumentary System

3. Neuro Anatomy **20hrs**

Organization of Central Nervous system-Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system

Cranial nerves
Peripheral nervous system
Peripheral nerve
Neuromuscular junction
Sensory end organs
Central Nervous System
Spinal segments and areas
Brain Stem
Cerebellum
Inferior colliculi
Superior Colliculi
Thalamus
Hypothalamus
Corpus striatum
Cerebral hemisphere
Lateral ventricles
Blood supply to brain
Basal Ganglia
The pyramidal system
Pons, medulla, extra pyramidal systems
Anatomical integration

4. MusculoSkeletal Anatomy-(All the topics to be taught in detail) **40hrs**

(A) Myology:

1. The fascia and muscles of upper limb.
2. The fascia and muscles of lower limb.
3. The fascia and muscles of trunk.
4. The fascia and muscles of head, neck and face.
5. Muscles of eye.

(B) Osteology & Artlirology :

1. General structure and classification of all bones of skeleton and their attachments.
2. Classification of joints.
3. Movements of Joints.
4. Factors permitting and limiting movements of joints.
5. Joints of Upper Limb.
6. Joints of Lower Limb.
7. Shoulder girdle
8. Pelvic Girdle
9. Joints of Head &Neck and T.M Joints.
10. Joints of Trunk.

5. Surface &Radiological Anatomy: **15 Hrs**

Surface Anatomy of the body .Radiographic appearance of musculoskeletal system of upper limb lower limb and spine.

PRACTICAL-

List of

Practical/Demonstrations*Topics

1. Surface anatomy: to study identify and mark the surface landmark on the human body.
2. To study the muscles of trunk, lower and upper extremities and face on a dissected human body.
3. To study the Bones of Human Body with special emphasis on origin and insertion of muscles & ligaments.
4. To study the anatomy of joints of upper and lower extremities and vertebral column on a dissected human body.
5. To study the anatomy of C.N.S .and P.N.S. on a dissected human body.
6. To study the gross anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital system on a dissected human body.

PHYSIOLOGY

M. Marks: 200Theory: 100Practical: 100

Subject Description

The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organism,particularly in the human body.

The major topics covered include the following: the cell; primary tissue; connective tissue; skin; muscle ;nervous tissue; blood; lymphoid tissues; respiration; blood vessels; circulation; cardiac cycle; systemic circulation ;sensory receptors ;special senses; motor unit; spinal cord; control of movement ;hypothalamic functions ;gastrointestinal tract ;kidneys ;uterus; urinary tract ;pregnancy ;endocrine system.

Practical classes include hematology experiments, clinical examinations, and recommended demonstrations.

Section—I General Introduction: 20hrs

1. Cell Introduction: Outline of basic concepts of cell structure, functions of components and transport across membranes.
2. Skin: Functions ,blood off low and temperature regulation.
3. Blood and Lymph: Cell renewal system, haemoglobin, erythrocyte granulocyte, lymphocyte, coagulation, regulation of hydrogen within concentration of body fluids, fluid distribution and exchange.

Section —II Physiology of the *system of* the body: 45hrs

1. Digestion: Control of food and water intake and secretion and absorption movements of the alimentary canal.
2. Circulation: Cardio-vascular system, mechanical and electro-physiological activity of the heart regulation of heart, coronary circulation, hemodynamics, circulation through brain, skin and skeletal muscle.
3. Excretion: Renal functions including formation of Urine &Micturition.
4. Respiration ; Respiratory gases, pulmonary gas exchange ,control and mechanics of breathing, hypoxia ,asphyia, dyspnoea, oxygen therapy and resuscitation.
5. Endocrine System: Outline of various hormones and their actions, pituitary gland, thyroid parathyroid ,adrenal glands &Gonads.

6. General Metabolism: Carbohydrate, Protein & Fat Metabolism.

Section — III Neuro -Physiology: 20 hrs

1. Neuron: Properties and functions.
2. Action Potential.
3. Special properties of nerve trunks and tracts.
4. Motor units.
5. Reflex physiology.
6. Synapse and synaptic transmission.
7. Supra spinal control.
8. Cerebellum and basal ganglia.
9. Autonomic nervous system
10. Somatic sensation.
11. Pain
12. Taste ,Olfaction, Auditory and Vision
13. Neuro Physiological Psychology

Section — IV Muscle Physiology: 15 hrs.

1. Structure and function of Muscle tissue –skeletal and cardiac
2. Chemical processes involved in muscle contraction
3. Physiology Of muscle contraction.

Section—V Physiology of exercise and work: 20Hrs

1. Neuromuscular activity, human movement, physiological mechanism in movement behavior ,strength ,endurance, analysis of movement.

2. Circulatory and respiratory response to exercise including effects on the heart blood circulation body fluid changes, pulmonary-ventilation, gas exchange and transport, etc.
3. Effects of exercise and work on other body functions.
4. Metabolic and environmental aspects of exercise and work - metabolism, energy requirement, efficiency of muscular work, nutritional aspects, heat and body temperature regulation & environmental factors.
5. Effects of Exercise training –endurance ,fatigue and recovery.
6. Fitness and health –age sex body type, race ,stress and medical aspects of exercise.

PRACTICAL

To study the following physiological Phenomena: Identification of blood cells and different counts.

1. W.B.C .Count.
2. R.B.C. Count.
3. Hemoglobin percentage and color index.
4. E.S.R .and Blood groups.
5. Bleeding time and clotting time.
6. Respiratory efficiency tests.
7. Artificial respiration and C.P.R.
8. Pulse rate, heart rate and measurement of Blood pressure.
9. Respiratory rate and Auscultation.
10. Normal E.C.G.

11. Reflexes-Superficial Deep.
12. Sensations.
13. Tests for functions of Cerebrum. Tests for functions of Cerebellum

REFERENCEBOOKS:-

- Essentials of Medical Physiology –K. Sembulingam , Prema Sembulingam
- A Textbook of practical Physiology-C.L. Ghai
- Text book of Physiology-Guyton & Hall
- A Textbook of Human Physiology – A.K. Jain
- Concise Medical Physiology-Chaudhuri
- Human Physiology: Dr. C. C. Chatterjee

BIOCHEMISTRY

M. Marks: 100Theory: 100Practical:0

Theory

1. Nutrition -
Introduction, Importance of nutrition Calorific values ,Respiratory quotient–Definition ,and its significance
Energy requirement of a person-Basal metabolic rate: Definition,
Normal values, factor affecting BMR Special dynamic action of food.
Physical activities-Energy expenditure for various activities. Calculation of energy requirement of a person
Balanced diet
Recommended dietary allowances
Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers Role of lipids in diet
Role of proteins in diet: Quality of proteins-Biological value, net protein utilization, Nutritional aspects of proteins-essential and non –essential amino acids. Nitrogen balance, Nutritional disorders.

2. Carbohydrate Chemistry-
Definition, general classification with examples, Glycosidic bond
Structures, composition, sources, properties and functions of Monosaccharide ,Disaccharides ,Oligosaccharides and Polysaccharides .Glycosaminoglycans (mucopolysaccharides)

3. Lipid Chemistry -
Definition, general classification
Definition, classification, properties and functions of Fatty acids, Tri acylglycerol ,Phospholipids ,Cholesterol
Essential fatty acids and their importance
Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies

4. Amino-acid Chemistry-
Amino acid chemistry: Definition, Classification,Peptide bonds
Peptides: Definition, Biologically important peptides
Protein chemistry: Definition, Classification, Functions of proteins,

5. Enzymes -
Definition, Active site, Co factor (Coenzyme, Activator), Proenzyme .Classification with examples ,Factors effecting enzyme activity, Enzyme inhibition and significance,
Iso enzymes, Diagnostic enzymology (clinical significance of enzymes)

6. Nucleotide and Nucleic acid Chemistry-
Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body.
Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.

7. Digestion and Absorption-
General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption– Lactose intolerance,

8. Carbohydrate Metabolism-
Introduction, Glycolysis–Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation.
Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen,
Gluconeogenesis, Cori cycle Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.

9. Lipid Metabolism-
Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fatty acids,
Lipogenesis- Denovosynthesis of fattyacids ,chain elongation ,desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues
Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis),ketosis , Rothera's test.
Cholesterol metabolism: synthesis, degradation, cholesterol transport Hyper cholesterolemia and its effects (atherosclerosis and coronary heart diseases)Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver

10. Amino acid and Protein Metabolism-
Catabolism of amino acids-Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle
Specialized products formed from amino acids-from glycine, arginine, methionine, phenylalanine and tyrosine.

11. Vitamins-
Definition, classification according to solubility,
Individual vitamins-Sources,Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity.

12. Mineral Metabolism-
Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron in detail.

13. Cell Biology -
Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton.

14. Muscle Contraction-
Contractile elements in muscle, briefly on the process of muscle contraction ,Energy for muscle contraction.

15. Biochemistry of Connective tissue -
Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans.

16. Hormone Action -
Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function.

17. Acid-Base balance-
Acids, bases and buffers, PH. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acid base balance, Acid base imbalance.

18. Water balance–
Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst Centre.

19. Electrolyte balance-
Osmolarity. Distribution of electrolytes. Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF.

20. Clinical Biochemistry -
Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea,Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Liver function tests, Renal function tests.

Suggested Readings

1. Murray RK,Garnner K,Mayes P A ,RodwellVW:Harper‟sBiochemistry.26thEd,Appleton&Lange,Connecticut, 1993.

2. Montgomery, Conway, Spector, Chappell : Biochemistry-A Case Oriented Approach. 6thEd, Mos by Publishers, Missouri, 1996.

3. Devlin TM: Text book of Biochemistry with clinical correlation.5thEd, Wiley-Liss, New York, 2002.
4. Nelson DL, Cox MM: Lehinger Principles of Biochemistry.4th Ed, W.H. Freeman, New York, 2005.

5. Apps DK, Cohen BB, Steel CM: Biochemistry–A concise text book for medical students,5thEd, ELB Swith Bailliere Tindall, London, 1992.

6. Deb AC: Fundamentals of Biochemistry.8th Ed, New Central Book Agency, Kolkata, 2004.

7. Satyanarayana U, Chakrapani U: Biochemistry.3rdEd, Aruna bhasen Books & Allied (P) Ltd, Kolkata, 2006.

8. Dandekar SP: Prep manual for Under Graduate Medical Biochemistry. 2nd Ed, Urban & Schwarzenberg P Ltd, New Delhi, 2002.

9. Vasudevan DM, Sree kumari S: Text book of Biochemistry for Medical Students. 5thEd, Jaypee

Brothers, New Delhi, 2007.

10. Chatterjee MN& Shinde R: Text book of Biochemistry.2nd Ed, Jaypee Brothers, New Delhi,1995.

Exercise Therapy (I)

M. Marks: 200Theory: 100Practical: 100

Course Description-
In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in there storation of physical functions.

Section – I **40hrs**

1. Introduction to Exercise therapy, Principles, techniques and general areas of its application, Assessment & its importance.
2. Descriptions of fundamental starting positions and derive position including joint positions, muscle work, stability, effects and uses.
3. **Classification of movements**: Describe the types, technique of application, indications, Contraindications, effects and uses of the following:
    a. Active Movement
    b. Relaxed passive movements, basic knowledge of classification of relaxed passive movements, definition, technique, effects and uses of relaxed passive movements
    c. Active assisted movement
    d. Resisted exercises-Techniques and types of resistance.
    e. **Suspension Therapy**: To study the principles, techniques of application indication at various joints of the upper limbs and lower limbs, Contraindication, Indications, Precautions, effects and uses.
    f. **Posture:** Types, factors responsible for good posture ,factors for poor posture, principles of development of good posture
    g. Bed Rest Complications

Section –II

Manual Muscle Testing **10 hrs**
a) Principles and application techniques of Manual muscle testing.
b) Testing position,procedure and grading of muscles of the upper limb, lower limb and trunk etc.

Section –III

Goniometry: 10hrs

Goniometers and its types

a) Principles, techniques and application of Goniometry.

b) Testing position, procedure and measurement of R.O.M. of the joints of upper limbs, lower limbs and trunk.

c) Causes of restriction of joint movement,prevention of restriction of joint range of motion etc.

Section –IV

Soft Tissue Manipulation (Therapeutic Massage) 20hrs

a) History, various types of soft tissue manipulation techniques.

b) Physiological effects of soft tissue manipulation on the following systems of the body; Circulatory, Nervous, Musculoskeletal, Excretory ,Respiratory, Integumentary system and Metabolism.

c) Classify, define and describe:-effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc.

d) Preparation of patient: Therapeutic Effects, uses, indications and contraindications of the above manipulation

Section –V

Relaxation &Therapeutic Gymnasium 10 hrs

Relaxation

1. Describe relaxation, muscle fatigue, muscle spasm and tension (mental & physical).
2. Factors contributing to fatigue & tension.
3. Techniques of relaxation(local and general)
4. Effects, uses & clinical application.
5. Indication & contraindication.

Therapeutic Gymnasium

a) Setup of a gymnasium & its importance
b) various equipments in the gymnasium
c) Operational skills, effects &uses of each equipment

Exercise Therapy –I (Practical)

1) To practice the entire soft tissue manipulative techniques region wise–upper limb, lower limb, neck, back and face.

2) To practice the measurement of ROM of joints–upper limb, lower limb & trunk.

3) To practice the grading of muscle strength region wise– upper limb, lower limb and trunk.

4) To study the position of joints, muscle work, and stability of various fundamental and derived positions.

5) To study the different types of muscle contraction, muscle work, group action of muscles and coordinated movements.

6) To practice the various types of suspension therapy and its application on various parts of body–region wise.

7) To study & practice local & general relaxation techniques.

8) To study the structure & function along with application of various equipment in a Gymnasium.

Electrotherapy(I)

M. Marks: 200Theory: 100Practical: 100

Course Description-

In this course the student will learn the Principles, Techniques, Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in the restoration of physical function. The objective of this course is that after 240hrs of lectures, demonstration, practical and clinics the student will be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques ,and describe their effects on various conditions.

Section I- **20 hrs**

1. 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.

2. Magnetic Energy: Nature and property of a magnet, magnetic induction snow rule, Mexwel cork screw rule, Electromagnetic induction, Principle of working of choke coil-transformer-rectification of A.C to D.C. Metal Oxide Rectifier, Semi-conductor-Diode and Triode.

3. Valves-Principle working- condenser-principle-Details of charging and discharging, etc. Transistors, measurement of current intensity, EMS and power-moving coil millimeter and voltmeter.

Section II- **5 hrs**

Electrical supply:

a) Brief outline of main supply of electric current.
b) Dangers–short circuits, electric shocks.
c) Precautions–safety devices, earthling, fuses etc.
d) First aid& initial management of electric shock.

Section III- **20hrs**

Low Frequency Currents:

a. Introduction to direct, alternating & modified currents.
b. Production of direct current–Physiological and therapeutic effects of constant current, anodal and cathodal Galvanism, Ionization and their application in various conditions.
c.Iontophoresis–Principles of clinical application, indication, contraindication, precaution, operational skills of equipment & patient preparation.

d. Modified direct current–various pulses, duration and frequency and their effect on Nerve and Muscle tissue. Production of interrupted and surged current & their effects
e. Modified direct current–Physiological and therapeutic effects, principles of clinical application, indications, contraindications, precautions, operational skills of equipment & patient preparation.
f. High Voltage Pulsed Galvanic Stimulation, Diadynamic Currents
g. Transcutaneous Electrical Nerve Stimulations(TENS):
a) Types of Low Frequency, pulse widths, frequencies & intensities used as TENS applications.
b) Theories of pain relief by TENS.
c) Principle of clinical application effects & uses, indications, contraindications, precautions, operational skills of equipment & patient preparation.

Section IV- **20hrs**

Electrical Reactions and Electro–diagnostic tests: 10 hrs
- Electrical Stimuli and normal behavior of Nerve and muscle tissue.
- Types of lesion and development of reaction of degeneration.
- Faradic– Intermittent direct current test.
- S.D. Curve and its application.
- Chronaxie, Rheobase ,F.G. Test etc

Section V- **20hrs**

Infra-red rays – Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation.

Ultraviolet rays (UVR):
a) Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological& therapeutic effects, indications, contraindications, precautions, operational skills of equipment &patient preparation.
b) Dosimetry of UVR.

Section VI- **10 hrs**
Superficial heat-Paraffin wax bath, moist heat, electrical heating pads, Contrast bath, Whirlpool bath, Fluidotherapy
a) Mechanism of production.
b) Mode of heat transfer.
c) Physiological & therapeutic effects.
d) Indications, contraindications, precautions, operational skills of equipment & patient preparation.

Cryotherapy: principles, Physiological effects, uses of cold packs, ice massage, commercial cold packs, ice towels, cold compression units, evaporating sprays.

Electrotherapy I-(Practical)

1. To study the basic operation of electric supply to the equipment & safety devices.
2. To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self.
3. To locate and stimulate different motor points region wise, including the upper& lower limb, trunk
4. Therapeutic application of different low frequency currents Faradic foot bath, Faradism under pressure, Ionotophoresis.
5. To study the reactions of degeneration of nerves, top lot strength duration curves.
6. To find chronaxie and Rheobase.

7. To study hydro collator unit, its operations and therapeutic application of Hot packs–region wise.
8. To study the various types of Infrared lamps and their application to body region wise.

9. To study paraffin wax bath unit, its operation and different methods of application–region wise.
10. To study the different types of Ultraviolet units, their operation, and assessment of test dose and application of U.V.R. – region wise.
11. To study a TENS Stimulator, its operation and application–region wise.
12. To study various forms of therapeutic cold application region wise including–ice, cold packs, vapocoolant sprays, etc.

COMPUTERAPPLICATIONS

M. Marks: 50Theory: 0Practical:50

Note: Only Practical examination will be conducted for this paper.

Basic computers and information science

The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.

Topics to be covered under the subject are as follows:

- To study the various components of a personnel computer.
- To have working knowledge of various hardware and software.
- To have working knowledge of Common Operating Systems.
- To practice the operational skills of common computer applications, including work processing and spread sheet software.
- To have a basic knowledge of utility of multi-media.
- To learn skills of web surfing –For literature, researches relevant to the field of medicine.

English

M. Marks: 50Theory: 50Practical :0

Course Description: The Course is designed to enable students to enhance ability to comprehend spoken and written English (and use English) required for effective communication in their professional work. Students will practice their skills in verbal and written English during clinical and classroom experiences.

Unit	Time(Hrs)	Learning Objectives	Content	Teaching Learning activities	Assessment methods
1.	10	Speak and write grammatically correct English	❖ Review of Grammar ❖ Remedial study of grammar ❖ Building Vocabulary ❖ Phonetics ❖ Public Speaking	-Demonstrate use of dictionary -Class-room conversation -*Exercise on use* Of Grammar -practice in public speaking	Objective type -Fill in the blanks -Para Phrasing
11.	10	Develop ability to read, understand and express meaning fully, The prescribed text.	Read and comprehend passages Note Making	Exercise on: — Reading — Summarizing — Comprehension	Short Answers Essay Types
III	10	Develop writing skills	Various forms of composition — Letter writing — Precise writing — Notice writing — Dairy writing — Report on health	• Exercise on writing: — Letter writing —Précis -Diary — Health problems — Story writing — Resume/CV —Discussion	Assessment of the skills based on the checklist
IV	10	• Develop skill in spoken English	• Spoken English - Oral report - Discussion - Debate -Telephonic conversation	• Exercise on: -Debating -participating in seminar panel symposium, Telephonic conversation	Assessment of the skills based on the check list
V	10	• Develop skill in listening comprehension	• Listening Comprehension -Media, audio, video. Speeches etc.	• Exercise on: —Listening to audio, video, tapes and identify the key points.	Assessment of the skills based on the checklist

BACHELOR OF PHYSIOTHERAPY (BPT)
SECOND YEAR
PATHOLOGY & MICROBIOLOGY

M. Marks: 200Theory: 100Practical: 100

Pathology –

Subject Description

This subject follows the basic subjects of Anatomy, Physiology and Biochemistry and it forms a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology & Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.

Particular effort is made in this course to avoid burdening the student.

Theory –General Pathology

1. Introduction to Pathology.

2. Cell injuries -

   Etiology and Pathogenesis with a brief recall of important aspects of normal cell structure. Reversible cell injury: Types, Sequential changes, Cellular swellings ,vacuolation , Hyaline changes, Mucoid changes .Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis. Pathologic calcification: Dystrophic and Metastatic. Intracellular
   Accumulations - Fatty changes, Protein accumulations, Glycogen accumulations,
   Pigments -Melanin / Hemosiderin.
   Extracellular accumulations: Amyloidosis-Classification, Pathogenesis, Pathology including special stains.

3. Inflammation and Repair-

   Acute inflammation: features, causes, vascular and cellular events.
   Inflammatory cells and Mediators. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
   Repair, Wound healing by primary and secondary union, factors promoting and delaying the process.
   Healing in specific site including bone healing.

4. Immunopathology-

   Immune system: General concepts.
   Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE.
   AIDS- etiology, Modes of transmission, Diagnostic procedures, handling of infected material and heal the ducation.

5. Infectious diseases-

   Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.

Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.Viraldiseases:Poliomyelitis,Herpes,Rabies,Measles,Rickttsia,Chlamydialinfection,HIVinfection.

Fungal disease and opportunistic infections.

Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatidcyst.

6. Circulatory Disturbances -

Hyperemia/Ischemia and Haemorrhage Edema: Pathogenesis and types. Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology Thrombosis and Embolism: Formation, Fate and Effects.

Infarction: Types, Common sites.

Shock: Pathogenesis, types, morphologic changes.

7. Growth Disturbances and Neoplasia

Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia.

Precancerous lesions.

Neoplasia: Definition, classification, Biological behavior: Benign and Malignant, Carcinoma and Sarcoma.

Malignant Neoplasia: Grades and Stages, Local & Distant spread.

Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer.

Benign & Malignant epithelial tumours Eg.Squamous papilloma, Squamous cellcarcinoma, malignant melanoma. Benign & Malignant mesenchymal tumours Eg:

Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdomyosarcoma, Teratoma.

8. Nutritional Disorders-

Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.

9. Genetic Disorders-

Basic concepts of genetic disorders and some common examples and congenital malformation.

Systemic pathology

10. Hematology-

Constituents of blood and bone marrow, Regulation of hematopoiesis. Anemia: Classification, clinical features & lab diagnosis.

Nutritional anemias: Iron deficiency anemia, Folic acid, Vit.B12 deficiency anemia including pernicious anemia. Hemolytic Anaemia: Classification and Investigations. Hereditary hemolytic anaemias: Thalessemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies.

Acquired hemolytic anaemias

i. All immune, Autoimmune

ii. Drug induced, Microangiopathic Pancytopenia-Aplastic anemia.

Hemostatic disorders, Vascular and Platelet disorders &lab diagnosis. Coagulopathies –

(i) Inherited (ii) Acquired with lab diagnosis.

Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoid reaction.

Leukemia: Classification, clinical manifestation, pathology and Diagnosis. Multiple myeloma and disproteinemias.

Blood transfusion; Grouping and cross matching, on toward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

11. Respiratory System

Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

12. Cardiovascular Pathology

Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus.

Endocarditis. Rheumatic Heart disease.

Vascular diseases: Atherosclerosis, monckeberg's medial calcification, Aneurysm and Arteritis and tumours of Blood vessels.

Ischemic heart Disease: Myocardial infarction. Hypertension and hypertensive heart Disease.

13. Alimentary tract:

Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions, Esophagus inflammatory, functional disorders and tumours.

Stomach: Gastritis, Ulcer &Tumours.

Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma.

Pancreatitis and pancreatic tumours: i) Exocrine, ii) Endocrine Salivary gland tumours: Mixed, Warthin's

14. Hepato – biliary pathology. Jaundice: Types, aetio-pathogenesis and diagnosis. Hepatitis:

Acute, Chronic, neonatal.

Alcoholic liver disease

Cirrhosis: Post necrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses; Pyogenic, parasitic and Amoebic. Tumours of Liver

15. Lymphatic System

Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma. Lymphadenitis–Non-specific and granulomatous. Causes of Lymph Node enlargements. Reactive Hyperplasia, Primary Tumours -Hodgkin's and Non Hodgkin’s Lymphomas, Metastatic Tumours.

Causes of Splenic Enlargements.

16. Musculoskeletal System

Osteomyelitis, acute, chronic, tuberculous, mycetoma

Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.

Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma. Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.

17. Endocrine pathology

Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.

Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic.

Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.

18. Neuropathology

Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess

Tuberculosis, Cysticercosis

CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

19. Dermatopathology

Skin tumors: Squamos cell carcinoma, Basal cell carcinoma, Melanoma

Practical

Demonstration of Slides – The students may be demonstrated the common histopathological, hematological and cytological slides and specimens and charts and their interpretations.

MICROBIOLOGY

1. Immunology: Brief description of immune system, immunity, immune responses & immune deficiency Immunology, Hypersensitivity disorders

2. Infectious diseases: Brief description of classification of microorganisms, identification, Sterilization and disinfections with special reference to principles of antisepsis and prevention of communicable diseases in clinical practice

3. Brief description of identification of infectious diseases; principles of prevention of infectious diseases caused by common pathogens - streptococci, staphylococci, gonococci, Meningococci,salmonella,V.cholerae,E.coli,shigella,tetanus,Diphtheria,M.leprae,M.tuberculosis, Poliomyelitis,Rabies,Malaria,Amoebiasis,Helminthiasis,Scabies,ringworm,candidiasis

Suggested Readings:

S.No.	Author	Title	Publisher
1	Chakraborty, P.	Text book of Microbiology	NCB, Calcutta
2	Ananth Narayan,	Text Book of Microbiology	Orient Longman, Madras
3	Chatterjee, K.D.	Parasitology: Protozoology And helminthology	Chatterjee, Calcutta
4	Cotran, Ramzi S	Pathologic Basis of Disease	W.B. Saunders Singapore
5	Vinay Kumar	Basic Pathology	Harcourt
6	Nagalotimath, S.J.	Text book of Pathology	CBS, New Delhi
7	Talib, V.H.	Essential Parasitology	Mehta, New Delhi

Pharmacology

M. Marks: 50Theory: 50Practical :0

Course Description-
This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy. The student after completing the course will be able to understand the general principles of drug action and the handling of drugs by the body. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

1. General action of drugs.
2. Drug allergy and idiosyncrasy
3. Drug toxicity.
4. Metabolic fate of drug.
5. Methods of administration.
6. Chemical character of drugs.
7. Common Drugs acting on Central nervous system, Peripheral nervous system, neuromuscular junction and muscles.
8. Common Drugs acting on cardio-respiratory system.
9. Common Antibiotics &Chemotherapeutic agents.
10. Hormones, Vitamins and drugs affecting endocrine functions.

ExerciseTherapy(II)

M. Marks:
200Theory:
100Practical:
100

Course Description-
In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in there storation of physical functions.

Section – I
Therapeutic Exercises
1. Principle, classification, techniques, physiological & therapeutic effects, indications & contraindications of therapeutic exercises.
2. Assessment & evaluation of a patient to plan a therapeutic exercise program.
3. **Functional re-education**–Generaltherapeutictechniquestore-educateADLfunction.

Section –II
Posture, Balance, Gait:
1. Normal Posture–Overview of the mechanism of normal posture.
2. Abnormal Posture–Assessment, Types, etiogenesis, management, including therapeutic exercises.
3. Static and Dynamic Balance– Assessment & management including therapeutic exercises.
4. Gait –Overview of normal gait& its components.
5. Gait deviations -Assessment, Types, etiogenesis, management, including therapeutic exercises.
6. Types of walking aids, indications, effects & various training techniques.

Section – III
Hydrotherapy:
1. Basic principles of fluid mechanics, as they relate to hydrotherapy.
2. Physiological & therapeutic effects of hydrotherapy, including joint mobility muscle Strengthening & wound care etc.
3. Types of Hydrotherapy equipment, indications, contraindications, operation skills &patient preparation.

Section-IV

Special Techniques:

1. Introduction to special mobilization & manipulation techniques, effects, indications & contraindications
2. Conceptual frame work, principle of Proprioceptive Neuromuscular Facilitation (PNF) techniques, including indications, therapeutic effects and precautions.
3. Principles of traction, physiological & therapeutic effects classification, types, indications, contraindications, techniques of application, operational skills & precautions.
4. Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises.
5. Group Therapy–Types, advantages & disadvantages.
6. Exercises for the normal person - Importance and effects of exercise to maintain optimal health & its role in the prevention of diseases. Types, advantages disadvantages, indications, contraindications precautions for all age groups.
7. Introduction to Yoga — Conceptual framework, various "asanas" the body — mind relationship effects& precautions.

Exercise Therapy – II (Practical)

1. To practice assessment & evaluative procedures, including motor, sensory, Neuro motor coordination, vital capacity, limb length & higher functions.
2. To study & practice the various techniques of mobilization of joints region wise.
3. To study & practice the various techniques of progressive strengthening exercises of muscles region wise.
4. To study & practice the use of various ambulation aids in gait training.
5. To assess & evaluate ADL's and practice various training techniques.
6. To study & practice Mat Exercises.
7. To assess & evaluate normal & abnormal posture & practice various corrective techniques.
8. To assess & evaluate equilibrium / balance & practice various techniques to improve balance.
9. To study the structure & functions of hydrotherapy equipments& their applications.
10. To study & practice various traction techniques, including manual, mechanical & electrical procedures.
11. To study & practice various group exercise therapies.
12. To practice & experience effects of basic Yoga "asanas". 13. To study, plan & Practice exercise programs for normal persons of various age groups.

Suggested Readings:

S. No.	Author	Title	Publisher	Year	Vol.
1	Hollis, M. and Cook, P.F.	Practical Exercise Therapy	Blackwell, Oxford	1999	
2	Gardiner, Dena M.	Principles of Exercise Therapy	CBS, New Delhi	1999	
3	Lippert, Lynn	Clinical Kinesiology for Physical Therapy	Jaypee, New Delhi	1996	
4	Paliarulo, M.A.	Introduction to Physical Therapy	Mosby, London	2001	
5	Jones and Barker,	Human Movement Explained	Butterworth-Hein	2000	
6	Thomson ,Ann	Tidy's Physiotherapy	Varghese, Mumbai	1991	
7	Hislop, H.J. and Montgomery, J.	Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination	W.B. Saunders, Philadelphia	2002	
8	Norkin	Measurement of Joint Motion			

9	Kisner, C. and Kolby, L.A.	Therapeutic Exercise Foundation and Technique	Jaypee, New Delhi	1996	
10	Holey, E. and Cook, E.	Therapeutic Massage	Harcourt, Singapore	1998	
11	Bates, Andrea And Hanson, Norm	Aquatic Exercise Therapy	W.B. Saunders, Philedelphia	1996	

Electrotherapy (II)

M. Marks: 200Theory: 100Practical: 100

Course Description-

In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in there storation of physical function. The objective of this course is that after 240 hrs of lectures, demonstration, practical and clinics the student will be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

Section – I30hrs

1. Review of Neuromuscular Physiology including effects of electrical stimulation.
2. Physiological responses to heat gain or loss on various tissues of the body.
3. Therapeutic effects of heat, cold and electrical currents.
4. Physical principles of Electro –magnetic radiation.
5. Physics of sound including characteristics and propagation.

Section – II60hrs

1. **High frequency currents (Short Wave Diathermy and Micro Wave Diathermy) -** Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
2. **Medium frequency currents(InterferentialTherapyandRussianCurrent)-**Conceptualframework of medium frequency current therapy, production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
3. **High frequency sound waves (Ultrasound) -** Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.

Section–III40hrs

1. **Therapeutic light in Physiotherapy (LASER)** – Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects, techniques of application,indications,contraindications,precautions,operational skills and patient preparation.

2. Therapeutic cold (Cryotherapy) - Sources, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, application technique and patient preparation.
3. **Therapeutic mechanical pressure (Intermittent compression therapy)** – Principle, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, operational skills and patient preparation.
4. **Extracorporeal Shock Wave Therapy**: Principles, Effects and Uses, Indications, Contraindications, Precautions and preparation of the patient

Section –IV20hrs

1. **Electro–diagnosis**–Instrumentation, definition & basic techniques of E.M.G. and Nerve Conduction Velocity Studies
2. **Bio–feedback**–Instrumentation, principles, therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation.

Electrotherapy–II (Practical) 150hrs

1. To study a Short Wave Diathermy unit, its operation and different methods of application–region wise.
2. To study a Micro Wave Diathermy unit, its operation unit, its operation and different methods of application –region wise.
3. To study an Ultra sound unit, its operation and different methods of application–region wise.
4. To study a Laser unit, its operation and different methods of application–region wise.
5. To study an Interferential therapy unit, its operation and different methods of application–region wise.
6. To study various forms of therapeutic cold application region wise including — ice, cold packs, vapor coolant sprays etc.
7. To study a Bio feedback unit, its operation and different methods of application-regionwise.

Suggested Readings:

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

BIOMECHANICS

M. Marks: 200Theory: 100Practical: 100

Biomechanics -

Biomechanics involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of Muskuloskeletal system. Students are taught to understand the various quantitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait area also included.

THEORY

1. Basic Concepts in Biomechanics: Kinematics and Kinetics10hrs

a) Types of Motion
b) Location of Motion
c) Direction of Motion
d) Magnitude of Motion
e) Definition of Forces
f) Force of Gravity
g) Reaction forces
h) Equilibrium
i) Objects in Motion
j) Force of friction
k) Concurrent force systems
l) Parallel force system
m) Work
n) Moment arm of force
o) Force components
p) Equilibrium of levers

2. Joint structure and Function- 20 hrs

- Basic principles of Joint design and a human joint.
- Tissues present in has joint including fibrous tissue, bone cartilage and connective tissue.
- Classification of joints.
- Joint function, Kinematics chains and range of motion.
- Recall anatomy and study the biomechanics of the spine, shoulder girdle, joints of the upper extremity, pelvic girdle and the joints of the lower extremity.

3. Muscle structure and function- 15hrs

- Mobility and stability functions of muscle.
- Elements of muscle structure and its properties.
- Types of muscles contractions and muscle work.
- Classification of muscles and their functions.
- Group action of muscles, Co-ordinated movement.
- Muscle Insufficiency–Etiogenesis of muscle insufficiency (strength, tone, power, Endurance& volume), general techniques of strengthening, effects, indication, Contraindications & precautions.

4. Analysis of Posture and Gait– 30hrs

- Posture—Definition, factors responsible for posture, relationship of gravity on posture.
- Postural limb balance—factors responsible for imbalance in Static and dynamic positions including ergonomics.
- Description of Normal gait, determinants of gait, spatiotemporal features and analysis.

- Gait deviations —Types, Causative factors and analysis.

Practical **75hrs**

1. To study the effects of forces on objects
2. To identify axis and planes of motion at the joints, spine, shoulder, girdle, joints of upper extremity, Pelvic girdle and joints of lower extremity
3. To study the different types of muscle contraction, muscle work, group action of muscles of coordinated movements.
4. Analysis of Normal posture respect to L.O.G. and the optimal position of joints in Anterio-posterior and lateral views.
5. Analysis of normal gait and measurement of spatiotemporal features.

Suggested Readings

1. Levangie PK,Norkins CC:JointStructureandFunction:AComprehensiveAnalysis.3rdEd,JaypeeBrothersMedical Publishers, New Delhi, 2001.
2. Smith,Weiss,Lehmkuhl: Brunnstrom"sClinicalKinesiology.5thEd,JaypeeBrothers,NewDelhi,1998.
3. HollisM, CookPF: Practical ExerciseTherapy.4th Ed, Blackwell, Oxford, 1999.
4. Gardiner DM: Principles ofExerciseTherapy.4th Ed,CBSPublishers, NewDelhi,1999.
5. Lippert LS: Clinical KinesiologyforPhysicalTherapyAssistants.3rdEd,Jaypee Brothers,NewDelhi,2002.
6. Jones and Barker: Human Movement Explained.3rd Ed, Butterworth-Heine, London,2000.
7. NorkinC, WhiteJD: Measurement of Joint Motion:A Guide to Goniometry.2ndEd,JaypeeBrothers,Daryaganj, 1995.
8. Kysner C,KolbyLA: Therapeutic Exercise Foundation and Technique.3rdEd,JaypeeBrothers,NewDelhi,1996.
9. Campion MR: Hydrotherapy: Principles and Practice,1stEd, Butterworth,Oxford2000.
10. Palastanga N, Field D, SoamesR: Anatomy and Human movement–Structure&Function.5thEd,ElsevierLTd, Philadelphia, USA, 2006.

PSYCHOLOGY&SOCIOLOGY

M. Marks: 100Theory: 100Practical:0

Course description -
Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups.

Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied.
The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

PSYCHOLOGY

1. Introduction
- What is psychology?
- Fields of application of psychology
- Scope of psychology

2. Learning
- Theories of learning
- Principles of learning
- Factors affecting learning

3. Memory
- Forgetting
- Theories of memory and forgetting
- Methods to improve memory

4. Intelligence
- Theories of intelligence
- Influence of heredity and environment on the individual
- Tests of intelligence

5. Personality
- Theories of personality
- Factors influencing personality
- Assessments in personality
- Personality disorders

6. Behavior
- Normal and abnormal behavior
- Development and growth of behavior in infancy and childhood ,adolescence, adulthood and old age

7. Thinking
- Definition
- Thinking process
- Problem solving
- Decision making
- Creative thinking

8. Motivation
- Theories
- Types of motivation

9. Emotions
- Theories of emotions
- Stress
- Conflicts
- Frustration

10. Attitudes
- Theories
- Attitudes and behavior

- Factors in attitude change

11. Emotional and behavioral disorders of childhood and adolescence (inbrief)

- Disorders of understand over controlled behavior
- Eating disorders

12. Mental deficiency

- Mental retardation
- Learning disabilities
- Autistic behavior

13. Anxiety disorders

- Phobias, panic disorder
- Generalized anxiety disorder
- Obsessive compulsive disorder
- Post–traumatic stress disorder

14. Somato form and dissociate disorders

- Conversion disorder
- Somatization disorder
- Dissociate amnesia & dissociate fugue

15. Patho-physiological disorders

- Stress and health

16. Severe psychological disorders

- Mood disorders
- Psychosis

17. Counseling

- Definition
- Aims and principles
- Quality of a good counselor

18. Psychotherapy

- Brief introduction to paradigms in psychopathology and therapy

19. Communication

- Effective and faulty
- Audio visual aids and its effects on communication

20. Psychological need of pediatric and geriatric patients

SOCIOLOGY

1. Introduction

- Meaning-definition and scope of sociology
- Its relation with anthropology, psychology, social psychology and ethics
- Methods of sociology-case study, social survey, questionnaire, interview and opinion poll methods
- Importance of its study with special reference to healthcare professionals

2. Socialization

- Meaning and nature of socialization
- Primary, secondary, and anticipatory socialization
- Agencies of socialization

3. Social groups

- Concepts of social groups
- Influence off normal and informal groups on health and sickness
- The role of primary groups and secondary groups in the hospital and rehabilitation settings

4. Community

- Rural community –meaning and features–health hazards of rural population
- Urban community –meaning and features –health hazards of urban population

5. Family

- The family-meaning and definition, functions
- Changing family patterns
- Influence of family on the individual health, family ,and nutrition
- The effects of sickness on family and psychosomatic disease and their importance to physiotherapy

6. Culture and health

- Concept of culture
- Cultures and behavior
- Cultural meaning of sickness
- Culture and health disorders

7. Social change

- Meaning of social changes & factors of social change
- Human adaptation and social change
- Social change and stress
- Social and deviance
- Social change and health program
- The role of social planning in the improvement of health and in rehabilitation

8. Social security

- Social security and social legislation in relation to
- the disabled

9. Social worker

- Meaning of social work
- The role of a medical social worker

10. Social Factors in health and disease

- The meaning of social factors
- The role of social factors and illness

11. Social problems of disabled

- Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems
- Population explosion
- Poverty and unemployment
- Beggary
- Juvenile delinquency
- Prostitution
- Alcoholism
- Problems of women in employment

Suggested Readings

Psychology & Sociology

1 Morgan CT, King RA, Weisz JR, Schopler J:Introduction toPsychology.7thEd, Tata Mc GrawHill, New Delhi, 1993.

2 MunnNL , Farnald LD,FernaldPS:Introduction to Psychology.3rdEd,Hough t on Mifftin Company,Boston or Oxford & IBH Publishers, New Delhi, 1972.

3 WorchleS,S hebilske W:PrinciplesandApplications-Psychology.5thEd,PrenticeHall,EnglewoodCliffs, New Jersy, 1994.

4 NolenHS: AbnormalPsychology.2nd Ed,Mc Graw Hill Higher Education,NewYork,2001.

5 Cushman LA,Scherer MJ:Psychologica lAssessment in Medical Rehabilitation.1stEd,American Psychological Association, USA, 1995.

6 Bond.J.&Bond.S: Sociology & HealthCare–An Introduction for Nurses &other Health

Professions.2ndEd,Churchill Living stone,Edinburgh,1994.
7 Taylor S & FieldD: Sociology forHealth&HealthCare.4thEd,Black well Publishing,USA,2007.
8 Bhusan Vidya, Sachdeva. DR:Introduction toSociology.3rdEd,Kitab Mahal,Patna, 2004.
9 DibyendunarayanB: Sociology forPhysiotherapists.1stEd,JaypeeBrothers,NewDelhi,2006.

BACHELOR OF PHYSIOTHERAPY (BPT)THIRD YEAR

ORTHOPAEDICS

M. Marks: 200Theory: 100Practical: 100

Subject Description

This subject follows the basic science subjects to provide the knowledge about orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

Section — I **15 Hrs**

1. Introduction to Orthopaedics — Introduction to orthopaedic terminology. Types of pathology commonly dealt with, clinical examination, common investigations X-rays & imaging techniques and outline of non-operative management.

2. Principles of operative treatment Lift:

Indications, contraindication and briefly outline principles of: Athrodesis, Artluoplasty, Osteotomy, Bone grafting Tendon —Transfers and Arhroplasty.

3. Sprains, Strains & Contractures: - List common sites of sprain, strains & contractures and describe the clinical manifestations and treatment. Viz. tennis elbow, golfer's elbow. Dequervan's disease, teno vaginitis, trigger, finger, carpal tunnel syndrome and plantar fasciitis etc.

4. Sports Injuries: -Injuries related to common sports their classification and management.

Section — II **30 Hrs**

1. **Fractures and Dislocations:**

General Principles, outline the following:

- Types of Fractures including patterns. Open & closed fractures and fracture dislocations.
- Differences between dislocation & sub location.
- General & Local signs &symptoms of fractures & dislocation.
- Principle of management of fractures & dislocations.
- Prevention & treatment of complication including. Fracture — disease, Volkmann's ischaemic contracture, Sudeek's Atrophy, Carpal Tunnel Syndrome, Myositis ossificans and shoulder — hand syndrome.
- Fracture healing.

2. Upper Limb Fractures & Dislocations

- Enumerate major long bone fractures and joint injuries.
- Briefly describe their clinical features, principles of management and complications.

3. Lower Limb Fractures & Dislocations

- Enumerate major long bone fractures and joint injuries.

- Briefly describe their clinical features, principles of management and complications.

4. Spinal fractures and dislocations

- Outline the mechanism, clinical features, and principles of management and complications of spinal injuries.

5. Recurrent Dislocations: Outline theme mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and patella.

Section III **10 Hrs**

1. Amputations
- Classify amputations, List indication for surgery.
- Outline pre-operative, operative and prosthetic management.
- Outline prevention and treatment of complications.
2. Bone & Joint Infections: Outline the etiology, clinical features, management and complications of septic arthritis osteomyelitis, Tuberculosis (including spinal T.B.).
3. Bones Joint Tumors:-Classify the outline the clinical features, management and complications of the following (benign /malignant bone and joint tumors, esteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multipiemyeloma.

Section IV **20 Hrs**

1. Chronic Arthritis: -Outline of pathology clinical features, mechanism of deformities, management and complications of Rheumatoid arthritis. Osteoarthritis of major joints and spine, Ankylosing spondylitis.
2. Neck & Back Pain, Painful Arc Syndrome, Tendonitis, Fasciitis & Spasmodic Torticollis. Outline the above including clinical features and management.
3. Spinal Deformities: -Classify spinal deformities and outline the salient clinical features, management and complications of Scoliosis, Kyphosis and Lordosis.

Section — V **30 Hrs**

1. Poliomyelitis: Describe the pathology, microbiology, prevention, managements and complications of polio. Outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfers and corrective surgery.
2. Congenital Deformities: - Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (radial club hand and femoral, tibial and tibula deficiencies meningo myelocoele, Arthrogryphosis multiplex congenital and Osteogenesis imperfect, Cerebralpalsy.
3. Peripheral Nerve Injuries:-Outline the clinical features and management, including reconstructive surgery of:
- Radial, median and ulnar nerve lesions.
- Sciatic and lateral popliteal lesions.
- Brachial Plexus injuries including Erbs, Klumpke's and crutch palsy.
4. Hand Injuries: -Outline of clinical features, management and complications of Skin and soft tissue injury, tendon injury, bone and joint injury.
5. Leprosy: Outline of clinical features, management and complications of neuritis, muscle paralysis, tropic ulceration and hand and feet deformities

Practical-Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

GENERALMEDICINE

M. Marks: 200Theory: 100Practical: 100

Subject Description

This subject follows the basic science subjects to provide the knowledge about relevant aspects of general medicine. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various medical conditions.

Section I: 25hrs

1. Introduction to modes of transfer of communicable diseases & general preventive measures.
2. Bacterial Diseases: Tuberculosis, Leprosy, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentery and Measles.
3. Viral Diseases: Herpes—simplex and zoster, Varicella, Measles, Mumps, Hepatitis B and C, AIDS and influenza.
4. Metabolic and Deficiency Diseases: Diabetes, Anemia, Vitamin & Nutritional Deficiency diseases, diseases of the endocrine glands.

Section II: 30hrs

1. **Common Diseases of Respiratory System :** Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis Bronchial Pneumonia ,lung abscess, Emphysema, Empyema, Paralysis of diaphragm and vocal cords, chronic infection of larynx and trachea. Abnormalities of tracheal infract of lungs, chronic passive congestion, chronic obstructive pulmonary disease, chest wall deformities.
2. **Common Diseases of circulatory System:** Thrombosis, Embolism, Gangrene, Valvular disease, Hemorrhage, various diseases of arteries, diseases of blood forming organs, Anemia, Peripheral Vascular diseases, disease of the lymphatic systems : Diseases of the Heart — Hypertension, Hypotension, Aortic Aneurysm. Endocarditis, Pericarditis, Cardiac failure, coronary heart diseases, congenital heart malformation and its manifestation etc.
3. **Diseases of Digestive Systems:-**Pharyngitis, spasm of the Oesophagus, Diverticulum stenosis, Gastriculcer ,Hememesis, Pyloricstenosis, Dyspepsia, Vomiting, Diarrhoea, Duodenal ulcer etc.
4. **Diseases of Liver:-**Jaundice Cirrhosis of liver, Abscess of liver, Ascitis.
5. **Diseases of Kidney:** Polyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi.

Section III: Diseases of Skin 15 Hrs

1. Characteristics of normal skin, abnormal changes, types of skin lesions.

2. Conditions—Leprosy, Acne, Boil, Carbuncles, Impetigo, Infections of skin, Herpes, Urticaria. Skin disorders associated with circulatory disturbances, Warts, Corn, Defects in Pigmentation, Psoriasis, Leukoderma, Fungal infections, Alopecia, Dermatitis, Eczema, Skin-allergies, venereal disease.

Section IV: Paediatrics **15 Hrs**

1. Review normal foetal development & child birth, including assessment of a neonate.
2. Development of abormal child—neuro motor, physical growth, cognitive, intellectual, socialetc.
3. The examination and assessment of a pediatric patient.
4. Congenital & acquired musculoskeletal disorders—etiogenesis, clinical manifestation & principles of management.
5. Congenital & acquired Cardio-pulmonary disorders—etiogenesis, clinical manifestation & principles of management.
6. Congenital & acquired neurological disorders (CNS&PNS)—etiogenesis, clinical manifestation & principles of management.
7. Hereditary disorders—etiogenesis, clinical manifestation & principles of management.
8. Nutritional Vitamins — Deficiency & development disorders — etiogenesis, clinical manifestation & principles of management.
9. Bums, Injuries & accident—Types & principles of management, including preventive case.
10. Surgical intervention—Indications & common surgical procedure.

Section V: Geriatrics **15 Hrs**

1. Normal aging— definition the anatomical, physiological and cognitive changes related to aging.
2. Epidemiology and socio-economic impact of aging.
3. The examination and assessment of a geriatric patient.
4. Musculoskeletal disorders —etiogenesis, clinical manifestation &principles of management.
5. Cardio—pulmonary disorders—etiogenesis, clinical manifestation & principles of management.
6. Neurological disorders (CNS&PNS)—etiogenesis, clinical manifestation & principles of management.
7. Diet & Nutritional requirement of the elderly. Nutritional disorders & their management.
8. Burns, Injuries & accident as related to the elderly & preventive care.
9. Dementia-Types and principles of management.
10. Overview of depressive disorders in the elderly.

Practical-Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment technique sand practice sessions.

Books Suggested:

1. Davidson's Principles and Practices of Medicine—Edward—Churchill Livingstone.
2 Hutchinson's Clinical Methods —Swash—Bailliere Tindall.
3. A Short Text book of Medicine —Krishna Rao—Jaypee Brothers.
4. The Short Text book of Paediatrics— Gupte— Jaypee.
5. A Short Text book of Psychiatry — Ahuja Niraj—Jaypee Brothers.
6. Text book of Paediatrics—Parsarthy—Jaypee.
7. Geriatric Physical Therapy —Guccione—Mosby.
8. Motor Assessment of the Developing infant—Piper & Davrah— W.B. Saunders

P.T.INORTHO CONDITION

M. Marks: 200Theory: 100Practical: 100

1. Brief review of the following surgical condition and various physiotherapeutic modalities, aims, means and technique of physiotherapy should be taught. **10Hrs**
   a. Traumatology General physiotherapeutic approach for the following conditions: **40 hrs**
   I. Fracture and dislocations; Classification and type of displacement, method of immobilization, healing of fractures and factors affecting union, delayed union etc. common sites of fractures. **20Hrs**
   a. Specific fractures and their complete physiotherapeutic management. **20 Hrs**
   - Upper Limb; Clavical, humerus, ulna, radius, crush injuries of land.
   - Lower Limb; fracture neck of femur, shaft of femur patella tibia fibula, pott's fracture, fracture of tarsal and metatarsals.
   - Spine: fracture and dislocations of cervical, thoracic and lumber vertebrate with and without neurological deficits.
2. Surgical procedures; Pre and post-operative management of common corrective procedure like arthroplasty, arthrodesis, osteotomy, tendon transplants, and soft tissue release grafting, including polio residual paralysis and leprosy deformities corrections **15 Hrs**
3. Injuries: Soft tissue injuries, synovitis, capsulitis volkman's ischemic contracture etc .tear of semilinar cartilage and cruciate ligaments of knee, menisectomy, patellectomy, internalderangementofknee.**10Hrs**
4. Amputation; level of amputation of upper limb and lower limb, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training etc. **10Hrs**
5. Deformities:- congenital torticollis and cervical rib, CTEV, Pes cavus, pes planus and other common deformities.

Acquired—Scoliosis, kyphosis, lordosis, coaxvara, genuvalgum, genuvarum and recurvatum.**10hrs**

6. Degenerative and infective conditions : osteoarthritis of major joints, spondylosis, spondylitis spondylolisthesis, PIVD, Periarthritis of shoulder, Tuberculosis of spine, bone and major joint, perthes disease Rheumatoid arthiritis, Ankylosing spondylitis etc. and other miscellaneous orthopaedic conditions treated by physiotherapy. **15Hrs**
7. Principles of sports physiotherapy — causes of sports injury, prevention of sports injuries, management of acute sports injury, common occurred injuries. Role of physiotherapist in sports, principle & advanced rehabilitation of the injured athlete.**15 Hrs**

Practical

150hrs

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated, practiced by the students in clinical setup.

Student must maintain a log book**.** The duty completed log book should be submitted during practical examination.

P.T. IN MEDICAL CONDITION

M. Marks: 200Theory: 100Practical: 100

THEORY

P.T. IN MEDICAL CONDITIONS

M. Marks: 200

Theory: 100

Practical: 100

THEORY

Review:

Review of the pathological & principles of management by physiotherapy to the following conditions:

1. Inflammation—acute, chronic and supprative.
2. Oedema—Traumatic, obstructive, Paralytic, Oedema due to poor muscle and laxity of the fascia.
3. Arthiritis and Allied Conditions (in detail):
    - Osteoarthiritis
    - generalized, Degenerative and traumatic, spondylosis and disorders.
    - Rheumatological conditions- Rheumatoid arthritis, SLE, GOUT, POLYMYOSITIS Still's disease, infective Arthiritis.
    - Spondylitis, Ankylosing Spondylitis.

DERMATOLOGY- Common conditions of Skin- Leprosy- types identification, mangement of neuropathic hand & feet. Care of anesthetic hand and foot; Evaluation, planning and management of leprosy- prescription, fitting and training with prosthetic and orthotic devices.

4. Bacterial scabies, fungal infection, Disorder of skin pigmentation-vitiligo, Auto immune disorders- posiaris, dermatitis, dermatomyositis, ACNE- types, management, disease of scalp dandruff, hair loss- alopecia. Sexually transmitted diseases.

- NEUTRITIONAL DEFICIENCY DISEASES - Rickets, Diabetes, Obesity Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity. Osteoporosis and other deficiency disorders related to Physiotherapy. Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis.

5. Psychiatric Disorders—Psychosis, Psychoneurosis, Seniledementia.
6. DRUG ABUSE/INTOXIFICATION.

1. Bedside assessment of the patient-Adult & Pediatric.
2. Geriatrics: Problems in old age, role of physiotherapy in elderly

3.

PAEDIATRICS

- Describe growth and development of a child from birth to 12 years – physical, social, Adaptive development.
- High risk pregnancy – maternal factors and neonatal factors contributing to HRP –Gestational diabetes, Pregnancy induced HT, Bleeding in mother,
- Chronic maternal diseases such as heart disease, renal failure, TB,
- Epilepsy

1. Describe community programmes – immunization schedule
2. **Cerebral palsy** – Define, etiology, types, clinical findings, examination, management
3. Briefly outline associated defects – MR, microcephaly, blindness, Hearing and speech impairment, squint, convulsion.
4. **Muscular dystrophy** – Define, various forms, clinical manifestation disabilities, management.
5. **Spinabifida, meningomyelocele**– outline development, clinical features, hydrocephalus
6. Medical and surgical management
7. **Still disease** – classification, pathology, clinical findings, treatment.

8. **Normal diet of new born and child** – dietary calorie, requirement for normal child, Malnutrition, rickets, vitamin D deficiency.
9. **Lung infections** – broncheictasis, lung abcess, bronchial asthma

10. **GERIATRICS**
11. **Theories of Aging**
12. **Physiological changes that occur due to aging.**
13. **Diseases commonly encountered in elderly population**
14. 1. Hypertension
15. 2. Ischemic heart disease
16. 3. Cerebrovascular accident
17. 4. Benign prostatic hyperplasia
18. **5.** Cataracts
19. **6.** Falls in Elderly
20. **7.** Senile Osteoporosis
21. **8.** Hypotstatic Pneumonia
22. **9.** Deconditioned status
23. **Practical -** Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
24. 1. Bedside case presentations and case discussions
25. 2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.
26.

PRACTICAL

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in cardio – respiratory, OBG, Skin, and other medical conditions.

2. Student must maintain a logbook**.** The duly completed logbook should be submitted during practical examination.

RESEARCHMETHODOLOGYANDBIOSTATISTICS

M. Marks: 100Theory: 100Practical:0

The objective of this module is to help the students understand the basic principles of research and methods applied to draw in references from the research findings.

RESEARCHMETHODOLOGY

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

BIOSTATISTICS

1. **Introduction**: Meaning, definition, characteristics of statistics. Importance of the study of statistics ,Branches of statistics, Statistics and health science,
   Parameters and Estimates, Variables and their types, Measurement scales.
2. **Tabulation of Data**: Basic principles of graphical representation, Types of diagrams–histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.
3. **Measures of Central Tendency**: Need for measures of central Tendency,
   Definition and calculation of **Mean** – ungrouped and grouped, interpretation and calculation of Median-ungrouped and grouped, Meaning and calculation of Model, Geometric mean & Hormonic mean,Guidelines for the use of various measures of central tendency.
4. **Measures of Dispersion**: Range,mean deviation, standard deviation & variance.
5. **Probability and Standard Distributions:** Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality– skewness, kurtosis.

6. **Correlation & regression:** Significance, correlation coefficient, linear regression & regression equation.
7. **Testing of Hypotheses, Level of significance, Degrees of freedom.**
8. **Chi-square test, test of Goodness of fit & student-test.**
9. **Analysis of variance & covariance:** Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance(ANACOVA)
10. **Sampling:** Definition, Types- simple, random, stratified, cluster and double sampling. Need for sampling -Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors

Forth Year BPT

GENERAL SURGERY

M.Marks:200Theory: 100Practical:100

Section I: 10 Hrs

1. Introduction to principles of surgery and its procedure.
2. Shock—definition, types, clinical, feature, pathology &management.
3. Haemorrhage—common sites, complication, clinical features & management.
4. Blood Transfusion —Blood group matching, indication & complication.
5. Anaesthesia—Principles of anaesthesia, types & procedure.

Section II 20Hrs

1. Wounds, Tissue repair, Classification—Acute Wounds ,Chronic wounds, Scars &their Management.
2. Wound infections: Psychology & manifestation, Types of infections &their management.
3. Tumors and Ulcers:
   a) Tumors —Types of Management
   b) Ulcers—Types & Management.
4. Burns—Causes, Classification, clinical features & Management.
5. Skin Grafting—Indications, Types &Procedures.
6. Hand Infections—Types Management.
7. General Injuries— Types Management.

Section III 10Hrs

- Complications of Surgery.
- Abdominal Surgery —Types of Incisions & common surgical procedures.
- Thoracic and Cardiac Surgery —Types of incision and common surgical procedures.

Section IV 20Hrs

Obstetrics & Gynecology

- Pregnancy, stages of laborandits complications, indications and types of surgical procedures
- Etiology, Examination, Diagnosis and Management of Rectal prolapse, Uterine Prolapse, Salphingitis, Parametritis etc.
- Etiology, Examination, Diagnosis and Management of Incontinence.
- Etiology, Examination, Diagnosis and Management of Pelvic Inflammatory Diseases.

Section–V 20Hrs

Ophthalmology

- Common conditions of eye: Cataract, Glaucoma, Diabetic complications of eye, injuries, inflammations and other infections of eye.
- Ptosis.

- Blindness—common causes &management.
- Refractions—testing, errors &remedies.
- Strabismus—types, features &corrective measures.

SectionVI 20Hrs

Ear, Nose & Throat (ENT)

- Introduction—Outline, mechanism of audition, olfaction & speech.
- Classify causes of hearing impairment, assessment techniques, conservative &surgical management.
- Hearing Aids—types& indications.
- Outline common ENT infections& lesions, which affect hearing, breathing, speech& their management.
- Outline the function of vestibular organ, its common disorder s& their management.

Practical –

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on on student models, treatment techniques and practice sessions.

Suggested Readings:

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

NEUROLOGY

M. Marks: 200
Theory: 100
Practical: 100

1. Nervous system: Disorders of Neurological functions in the light of Anatomy and Physiology (Brief description only) - Cerebrum, Cerebellum, Spinal Cord, Major Nerve Tracts, Motor System, Sensory System, Autonomic System, Reflexes, Communication & CSF

2. Clinical examination of a neurological patient

3. General manifestations of nervous system disease & principles of diagnosis & management

4. Brief Description of Headache, migraine, raised intra-cranial pressure

5. Cranial Nerves and special senses with major emphasis on V, VII, X, XI, & XII

6. Inflammatory conditions (brief description) – meningitis (bacterial, tubercular), viral encephalitis, syphilis, rabies

7. Disorders of cerebral circulation - ischaemia, haemorrhages (CVA), HT encephalopathy

8. Demyelinating diseases (brief description) - acute disseminated encephalomyelitis, multiple sclerosis

9. Extra pyramidal syndromes - Parkinson's disease, Chorea, Athetosis, Dystonia, Hemi-ballismus, Spasmodic Torticollis

10. Convulsive disorders (brief description) - epilepsy (GM, PM, Psychomotor), tetany

11. Developmental and degenerative syndromes – cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy

Section – B

12. Disorders of Spinal cord and CaudaEquina- spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, Neurogenic bladder and bowel

13. Tetanus, botulism

14. Peripheral nerve disorders – traumatic/ compression or entrapment neuropathy, polyneuritis, GB syndrome, diabetic polyneuropathy and spinal radiculopathies. Special emphasis on brachial and lumbo-sacral plexuses and major nerves – radial, ulnar, median, femoral, and sciatic nerve

15. Muscle disorders – Progressive muscular dystrophy, polymyositis, myasthenia gravis, floppy infant syndrome

16. Autonomic nervous system (brief description)– clinical features of autonomic disorders, autonomic dysreflexia, autonomic nervous system and pain

Section – C (Psychiatry)

(Brief outline only)

A) Psychiatric illness and physical therapy link

B) Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -

i. Anxiety neurosis

ii. Depression

iii. Obsessive compulsive neurosis

iv. Psychosis

v. Maniac-depressive psychosis

vi. Drug induced psychosis

vii. Post-traumatic stress disorder

viii. Psychosomatic reactions: Stress and Health, theories of Stress – Illness Link

C) Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses-

i. Organic brain syndrome

ii. Dementia

iii. Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue

iv. Multiple Personality & Depersonalization disorder

D) Mental deficiency- (descriptive)

a. Mental retardation,

b. Learning disabilities

c. Autistic behavior

Practical - Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Suggested Readings:

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S. No.	Author	Title	Publisher	Year	Vol.
1	Bannister, R.	Brain and Bannister Clinical Neurology	Oxford university press, oxford	2002	
2	Chamberlain, E.N.	Symptoms and Signs in Clinical Medicine	John Wright, Bristol	1974	
3	Friedman, H.H.	Problem-Oriented Medical Diagnosis	Little Browne, Boston	1979	3V
4	Swash, Michael	Hutchison's Clinical Method	W B Saunders, London	2000	
5	Rees, Lingford	New Short Text Book Of Psychiatry	Arnold, New Delhi	1988	
6	Walton, John	Brain's Disease of the Nervous System	Oxford university press, Delhi	1998	
7	Haerer, A.F.	Neurological Examination	Lippincott, Philedelphia	1999	
8	Ahuja, Neeraj	Short Text Book Of psychiatry	Jaypee, New Delhi	1999	
9	Haslett, C.	Davidson's Principal and Practice of Medicine	Churchill Living stone, London	1999	
10	Kasper, D.L	Harrison 's Principles of Internal Medicine	Mc-Graw Hill, New York	2005	2V

Physiotherapy in Neurological Conditions

M.Marks:200Theory: 100Practical:100

THEORY

1) Review of basic Neuro- Anatomy and Physiology
2) Physiotherapy evaluation of a neurological patient, electro diagnostic procedures, interpretations and prognosis in different neurological conditions, Upper and Lower motor neuron lesions.
3) Principles of physiotherapy programs, reeducation and retraining techniques in neurological conditions ,approaches like: Bobath's/ neuro developmental therapy, Rood'sapproach, PNF,Vojta techniques, biofeedback, Brunn storm movement therapy, Motor Relearning programming ,sensory integration therapy.
4) Disturbance of speech and aphasia
5) Spinal cord injury:
   Review of anatomy and physiology, Physiotherapy Assessment of Spinal cord injury, Principles of Physiotherapy at various stages of Spinal cord injury Rehabilitation goals and ADL training

6) Assessment and principles of therapeutic management of following neurological conditions:
   - Stroke, meningitis, encephalitis, Parkinson's disease, Cerebral palsy, cerebellar lesions, Brain tumors, Multiple Sclerosis, facial palsy.
   - Hemiplegia, Paraplegia, Tabesdoraslis, cerebellarataxia,extrapyramidallesions, GulllanBarreSyndrome, Parkinsonism.
   - Motor neuron disease, disseminated sclerosis, transverse myelitis, polio, syringomyelia, spinabifida, Amyotrophic lateral sclerosis, Symgomyela subacute combined degeneration of cord motor neuron disease.
   - Neuropathies, neuromuscular junction disorders and myopathies

7) Peripheral nerve injuries, surgical resection & repair:
   - Classification & types
   - Functional assessment, investigation, diagnosis & prognosis

- Physiotherapeutic management
- Polyneuropathy

8) Traumatic brain injury &spinal cord injuries.
   - Types and Mechanisms
   - Clinical features, potential complications
   - Physiotherapy principles of immediate and postoperative therapeutic management

PRACTICAL

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in neurology conditions.
2. Student must maintain log book**.** The duly completed log book should be submitted during practical examination.

BooksSuggested:

1. Cash's text book of neurology & physiotherapists—Downi—J.P.Brothers.
2. Adult Hemiplegia—Evaluation & treatment—Bobath—Oxford Butterworth Heinmann.
3. Neurological Rehabilitation—Carr & Shepherd —Butterworth Heinmann.
4. Tetraplegia & Paraplegia—A guide for physiotherapist —Bromley—Churchill Living stone.
5. Neurological Physiotherapy — A problem solving! Approach — Susan Edwards — Churchill Living stone.,
6. Neurological Rehabilitation—Umpherd-Mosby.
7. Motor Assessment of Developing Infant —Piper & Darrah—W.B., Saunders.
8. Treatment of Cerebral Palsy and Motor Delay—Levitts—Black well Scientific Publications, London.

P.T. in SURGICAL CONDITIONS

M.Marks:200Theory: 100Practical:1 00

SectionI: Physiotherapy management in disorders of obstetrics &gynaecology. 20Hrs

- Antenatal care
- Postnatal care
- Pelvic floor dysfunction
- Commonoperationofreproductivesystem

SectionII: Physiotherapy management in abdominal surgeries.

- Cholecystectomy
- Colostomy
- Ileostomy,
- Gastrectomy
- Hernias

- Appendicectomy
- Neprectomy

SectionIII: Physiotherapy management in cardio-thoracic surgeries.

- Thoracotomy
- Lobectomy
- Segmentectomy
- Bullectomy
- Pleurodesis
- CABG
- Pneumonectomy

Section IV-Physiotherapy management in burns & plastic surgeries. 20Hrs

- Wounds,ulcers,pressuresores
- Bums& their complications

SectionV- Physiotherapy management after breast surgeries.

- Mastectomy
- Lupectomy

Section VI- Physiotherapy management of vertigo, amputation, gangrene, lymphedema.

Section VII- Physiotherapy management in eyes & ENT disorders. 20Hrs

PRACTICAL

Demonstration of physiotherapy modalities and treatment techniques of above mentioned

conditions.Books Suggested:

1. Cash's Textbook of general medical and surgical conditions for physiotherapists —Downie —Jaypee Brothers.
2. Cash's text book of heart ,chest and vascular disorders for physiotherapists—Downie—Jaypee Brothers.
3. Principles and practices of cardio pulmonary physical therapy—Frown Felter—Mosby.
4. Chest physiotherapy in intensive care unit —
5. Mackanzie—Williams & Wilkins.
6. Restoration of Motor Functions in stroke patient A Physiotherapist Approach — Johnstone Churchill Living stone.
7. Physiotherapy in obstetrics and gynaecology - Polden— F.A. Davis.

APPLIED THERAPEUTICS

M. Marks: 200Theory: 100Practical: 100

THEORY

1. Pre exercise evaluation
2. Diet and nutrition

   Measurement of fitness components and sports skills - Measurement of muscular strength, Measurement ofmuscular endurance, Measurement of flexibility, Determination exercise endurance,

3. Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system,Nervous system

4. Sports injuries - Spine – PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction, Hip – muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis, Knee – menisci,cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee,patello-femoral pain syndrome, Leg & ankle – shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, plantar fascitis, turf toe syndrome, Head & face – maxillo-facial injuries, helmet compression syndrome**.**

5. Sports injuries

   Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapulardyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer's elbow, Wrist and hand –carpaltunnel syndrome,gamekeeper'sthumb.
6. Principles of injury prevention.
7. Principles of training & Rehabilitation in sports injuries.

8. Sports in Special age groups : Female athletic triad, Younger athlete- Musculo-skeletal problems, management, children with chronic illness and nutrition. Older athlete- Physiological changes with aging,benefits,risks of exercisein elderly,exercise prescription guidelines for elderly.

PRACTICAL

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

PHYSIOTHERAPY ETHICS, ADMINISTRATION & REHABILITATION

M. Marks: 100Theory: 100Practical:0

Subject Description

The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention.

The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to be masters in Physiotherapy Ethics, Administration& also rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

SectionI: Physiotherapy Ethics 20Hrs

1. History of Physiotherapy.
2. Major Ethical principles applied to moral issue in healthcare.
3. Rules of Professional conduct.
4. Scope of practice.
5. Relationships with patients.
6. Relationships with medical colleagues.
7. Relationships between professionals.
8. Relationships with in the profession

10 Sale of goods.

11. Personnel and professional standard.

12. Professional standard.

Section II: Physiotherapy Administration 10Hrs

1. Responsibility and Confidentially.
2. Provision of services and advertising.
3. Professional and government licensing, Accreditation and Education standards.
4. Laws and Legal concepts:
    - Protection from Malpractice claims, Consumer Protection Act
    - Liability and Documentations.

SectionIII Principles of Rehabilitation

SectionIIIA 20Hrs

1. Conceptual framework of rehabilitation, roles of rehabilitation team members, definitions and various models of rehabilitation.
2. Epidemiology of disability with emphasis on locomotor disability, its implications — individual, family,social,economic andthestate.
3. Preventive aspects of disability and organizational skills to manage it.
4. Community Based Rehabilitation and outreach programmes to rehabilitate persons with disabilities living in rural areas.
5. Schemes of assistance to persons with disability.
6. Role of NGOs in rehabilitation of the persons with disabilities.

Section—III B 15 Hrs

l.Principles of Orthotics—types,indications,contra-indications,assessment (checkout)uses and fitting region wise.

2. Fabrication of simple splints and self-help devices for upper and lower extremity — indications and application.
3. Principles of Prosthetics — types, indications, contra- indications, assessment (check out), uses and fittings upper and lower extremity.

Section III C 10 Hrs

1. Vocational rehabilitation.
2. Communication impairments.

Section— III D 15Hrs

1. Definition, scope & importance of Activities of Daily Living(ADLs).
2. The teaching and training of (a) wheel chair activities, (b) bed activities (c) transfer activities (d)Locomotor activities (e)Self-care activities, such as toilet, eating, dressing etc.

Practical

1. Introduction, Identification & Indications for the application of various aids & appliances like common splints; orthotics &prosthetic devices.
2. Visitto some NGO's dealing with persons with disabilities.
3. Learning basic principles of pre-vocational evaluation & occupational therapy.

4. Learning basic principles of vocational training.

Books Suggested:

1. Physical Rehabilitation— assessment & Treatment— Sullivan & Schmitz— F.A.Davis.
2. Occupational Therapy and Physical dysfunction Principles, Skills & Practices — Turner, Foster & Johnson—Churchill Living stone.
3. Hand Splitting—Wilson— W.B. Saunders.
4. Orthotics in Rehabilitation : Splinting the hand and the body—Mckee & Morgan— F.A. DaVlS.
5. Atlas of Limb Prosthetics — American Academy ofOrthopaedic Surgeon- Mosby.
6. Atlas of Orthotics—American Academy of Orthopaedic Surgeon—Mosby.
7. Knisen's Hand book of Physical Medicine & Rehabilitation — Kottke & Lehmarin — W.B. Saunders.

PHYSIOTHERAPY in CARDIO-THORACIC CONDITION

M.MARKS-100
THEORY-100
PRACTICAL-0

- Review of anatomy & physiology of basic cardiovascular system
- Review of mechanism of normal respiration
- Assessment of Cardio-Vascular and Respiratory system.
- Definition, causes, pathophysiology, signs & symptoms, PT management of the following medical respiratory conditions:
  a) Asthma
  b) COPD
  c) Pulmonary Tuberculosis
  d) Pneumonia
  e) Empyema
  f) Pleural Effusion
  g) Bronchiectasis
  h) Respiratory Failure
  i) Pleurisy
  j) ADRS
  k) Pulmonary embolism

- Definition, causes, pathophysiology, signs & symptoms, PT management of the following medical respiratory conditions:
  a) Congestive cardiac failure
  b) Ischaemic heart disease
  c) Valvular heart diseases
  d) Congenital heart disease
  e) Pulmonary hypertension
  f) Atherosclerosis
  g) Deep vein thrombosis
  h) Buerger's disease

- Physiotherapy techniques to clear secretions

a) Humidification & Nebulization,
b) Breathing exercises
c) Postural Drainage
d) Manual techniques – Percussion, Vibration and Shaking, ACBT
e) Facilitation of Cough and Huff
f) Suctioning

- Investigations and tests –

a) Exercise tolerance Testing
b) ABG
c) Treadmill testing
d) Bronchography

e) Angiography

- Incentive Spirometry
- Cardiopulmonary resuscitation (CPR)
- Mechanical ventilation
- Chest deformities
- Tracheostomy
- Oxygen therapy

- ICU care:
  - Equipment's used in intensive care unit.
  - Care of the unconscious patient.
  - General management of the critically ill in the intensive care unit.

BOOKS SUGGESTED:

1.Manual of Cardiac Rehabilitation: Dr. Peeyush Jain & Dr. R. Panda
2. The steps to a healthy heart: Kowalski R.E
3. Medicine: Davidson2. Surgery: Love and Bailey
4.Cash-Principles of Cardiac Physiotherapy