STAREX UNIVERSITY

SCHOOL OF PARAMEDICAL SCIENCE

Diploma in Physiotherapy (1st to 4th semester)

Bachelor in Physiotherapy (1st to 8th semester)

Syllabus (DPT/BPT)

Instruction for paper setter:

Total marks: 75

Timing: 3 hrs.

The question paper will consist of four sections A, B, C & D or four units 1, 2, 3, 4 as the case may be. Paper-Setter will set nine questions in all, selecting two questions from each section/unit.

Question no. 1 will be of 15 marks and consists of short answer type questions of 2 to 3 marks each covering the entire syllabus e.g.

Q.1 (a) Prove that a non-abelian simple group is not solvable.

(b) Give an example of a subnormal series which is not a normal series.

(c) Prove that every homomorphic image of a nilpotent group is also nilpotent.

(d) Define field extension and degree of extension.

(e) Show that C (field of complex no's) is a normal extension of R.

The duration of the examination will be of 3 hours.

Each question will carry equal marks i.e. 15

Attempt any five questions out of nine.

Question no.1st is compulsory.

SYLLABUS

Paper Code	Nomenclature of paper/course	Credit C(L-T-P)
	Semester 1st	
	General pathology (101)	6(3-1-2)
	UNIT I Introduction to Pathology & Hematology. Formation, Composition and function of Blood. Haemopoisis (Erythropoiesis, Leucopoiesis & Thrombopoisis), Anticoagulant, Mode of Action, Uses, Advantages & Disadvantages. Collection, Preservation, Transportation & Handling and disposable of Blood Sample. Standard& Universal Precautions in Hematology. Hematological Stain, Principle, Composition & procedure of Staining. Preparation of Blood Smear and their significance. Hem cytometer, principle, working procedure Care & Maintenance. **Unit-II** Haemoglobin, its synthesis and types, normal and abnormal hemoglobins, extravasccular and intravascular hemolysis. Anaemia and its classification, Morphological and etiological, pathogenesis, laboratory investigations and management, Iron deficiency anaemia, metabolism of iron, pathogenesis, laboratory investigations and management, principle and procedure of special test Megaloblastic anaemia, pernicious anaemia, pathogenesis, laboratory investigations Cell Injury and Cellular Adaptations- Normal Cell**,** Cell Injury- types of cell injury, etiology of cell injury, and morphology of cell injury, cellular swelling, and Cell death: types- autolysis, necrosis, and apoptosis. Inflammation- Acute inflammation - vascular event, cellular event, inflammatory cells Chronic Inflammation - general features, granulomatous inflammation **Unit III** Tissue Renewal and Repair, healing and fibrosis, cirrhosis, introduction of oedema, hyperaemia, congestion, haemorrhage, haemostasis, thrombosis, embolism, infarction, shock and hypertension.	

	Neoplasia: Definition, how does it differ from hyperplasia, difference between benign tumor and malignant tumor. Healing-Definition, different phases of healing, factors influencing wound healing. **Unit IV** Infectious Diseases: pathogenesis & overview of modes of infections, prevention and control with suitable examples like Typhoid, Dengue Cancer: Definitions, nomenclature, characteristics of benign and malignant neoplasm, metastasis, Carcinogens and cancer, concept of oncogenes, tumour suppressor genes, DNA repair genes and cancers stem cells. **PRACTICALS** 1. Collection of blood Sample by Venous & Capillary Method 2. Estimation of Hb By Sahli 's & CMG Method 3. Determination of RBC, WBC & Platelet Counts By Hem cytometer 4. Preparations of EDT & Sodium Citrate Vials 5. Preparation of thin & thick blood smear 6. Separation of Buffy Coat 7. Determination of ESR by Win Trobe& Western Green Method 8. Any other practical's based on theory paper 9. Blood group **RECOMMENDED BOOKS** 1. Text Book of Pathology- Hares Mohan 2. Text Book of Pathology- Robbins 3. Practical Hematology- JV Decie & Lewis 4. Hematology- William J William, Ernest Butter 5. Lynch's MLT – Raphels 6. Atlus of Hematology – George, A Mcdolald, TC Codde 7. Blood & its Diseases- Chanari **Human Anatomy & Physiology-I (102)** **Unit I** Introduction to medical sciences. Organization of human body and integrated physiology:- Cell, Tissue, Organ, Organ system & body. Anatomical terms: - Body position, Section, Cavity & their related term. **Unit II** Respiratory system: - Anatomy & physiology of nose and nasal cavity, pharynx, larynx, trachea, lungs. Mechanism of respiration. Lungs capacity. Lobes of lungs, layers of lungs Integumentary system: - Anatomy & physiology of skin & its layer, nails, hairs, structure and function of skin, care of skin.	6(3-1-2)

Unit III

Digestive system: - Anatomy & physiology of mouths, pharynx, esophagus, stomach: parts, structure function, blood supply. intestine: parts, structure, function and blood supply. Pancreas: parts, structure, ducts, functions. Liver: structure, lobes, quadrants, blood supply and function .gall bladder: bile, duct, Mechanism of digestion.

Skeletal system:- Anatomy & physiology of bones, structure of bone, parts of bone, types of bone, blood supply of bone, Joints and its types with eg., .Upper limb, Lower limb, Vertebral column, Thorax/ chest, skull.

Unit IV

Muscular system:-skeletal muscle, cardiac muscle, smooth muscle, Physiology of muscular contraction and controlling them various types of Joints and their physiology, neuromuscular junction

Cardiovascular system: - Anatomy & physiology of blood vessels, heart structure, chambers of heart, function of heart, systematic circulation, valves, pressure, circulation in adults & fetal, blood, artery, vein, capillary.

PRACTICALS

1. Demonstration of Human cell, Cell division Mitosis & meiosis - from chart& slides.
2. Demonstration of various tissue- Epithelial, Connective.
3. Demonstration of Individual Bones & Respiratory System from Chart
4. Measurement of Blood Pressure, Respiration & Heart Beat
5. Demonstration of Body Organ like Eye, Nose, Tongue etc.
6. Any other practical's based on theory paper

RECOMMENDED BOOKS

1. Anatomy & physiology- Rose & Wilson
2. Anatomy & Physiology- Tortora
3. Text book of Anatomy & physiology- B D Chaurasia
4. Text book of Anatomy & physiology- CC Chaterjee
   Text book of physiology- K Sabuingum

6(3-1-2)

Basics of Biochemistry (103)

Unit I

Introduction to Clinical Biochemistry and role of Medical Lab Technologist, ethics, responsibility, safely measure and hazards in clinical biochemistry lab and first aid in laboratory accidents. Basic awareness of laboratory in respect to equipments & glassware (Unit of Measurements, and calibration of volumetric apparatus. Colorimetry, spectrophotometery , flame photometry , analytical balance etc, (principles instrumentations & applications) Preparation and storage of reagents standard solutions, buffer solutions and pH determination. Biophysics, techniques-osmosis, dialysis, surface tension, sedimentation and viscosity – principles &applicatons.

Unit II

Henderson – Hassalbach equation and it's clinical applications. Acid base disturbances and their clinical significance Acid –base –buffer and pH-simple calculations. Concept of clinical sensitivity and specificity and factors affecting the clinical results. Collection of blood specimens avoiding Haemolysis, de- proteinization& separation of serum/plasmas.

Unit-III

Preparation of solution and reagents, normal solution, molar solutions, percent solution, buffer solution, dilutions, w/v, v/v, standard solution, aqueous solutions, concepts of acid and base

Units of measurement: SI unit, reference range, conversion factor, units for measurement of bio metabolite, enzymes, protein, drugs, hormones, vitamins

Unit-IV

Specimen collection and processing of blood, urine & CSF, separation of serum and plasma, deproteinization of sample, Handling of specimens for testing, preservation of specimen, transport of specimen, factors affecting the clinical results, effect of storage on sample

Physical, chemical and microscopic examination of urine, Bence Jones Proteinuria and its clinical significance, qualitative test of urine for reducing sugars, protein, ketone bodies, bile Salt, bile pigments, urobilinogen, occult blood, uric acid, urea and Creatinine, quantitative estimation of 24 hrs urine for protein and their clinical significance.

PRACTICALS

1. Cleaning of Laboratory Glass wares.
2. Preparation of distilled Water.
3. Preparation of 0.1N NaOH, 5M $\mathbf{H_2SO_4}$ &0.2N HCl Solution
4. Preparation of 0.2 Molar Sod Bicarbonate &70 % Ethanol Solution
5. Preparation of Hypertonic, Hypotonic & Norm tonic Solution & their Clinical Significance.
6. Collection of Blood Sample, serum & plasma separation

7. Any other practical's based on theory paper

RECOMMENDED BOOKS

1. Practical Clinical chemistry- H Varley.
2. Lynch's MLT –Raphel
3. Clinical chemistry- Principle & technique- Henry
4. Practical biochemistry- HW Cole
5. Clinical biochemistry – teiz
6. Principal of Biochemistry by Lehninger

6(3-1-2)

General Microbiology (104)

Unit I

History & Introduction of Medical Microbiology. Importance of Medical Microbiology. Discovery of Microorganism. Contribution of Robert Koch, Bordet, Paul Ehrlich, Alexander Flaming, etc. Scope& Relevance of Safety Measures of Medical Microbiology. Bacterial Structure- Cell wall, Outer membrane, Lipopolysaccharide, Cytoplasmic membrane, Nucleus and Morphology - Shape, Capsule, Flagella, fimbriae, capsule, spore.

Unit II

Growth and Nutrition requirement (Oxygen, Carbon di-oxide, Temperature, Moisture and drying, Hydrogen Ion concentration and Light) of Bacteria, Autotrophs, Heterotrophs.Bacterial Growth (Lag phase, Log phase, Stationary phase and Phase of Decline) Curve. Products of Bacterial growth and Bacterial enzymes.

Different types of staining: Simple stains, Negative stain, Impregnation Method, Differential stain. Gram's stain- preparation of stain and staining methods. Ziehl–Neelsen stain.

Unit-III

General safety measures used in Microbiology laboratory, Sterilization and disinfection: Various physical methods of sterilization – heat, UV radiation, ionizing radiation, filtration, characters affecting sterilization, auto clave control and sterilization indicators.

Biomedical waste management in a Medical Microbiology laboratory: Types of the waste generated, Segregation, Treatment, Disposal

Unit-IV

Antiseptics & Disinfectants: Definition, types and properties, mode of action, use, qualities of good disinfectants. Chemical disinfectants – phenol and its compounds, alcohol, halogen, heavy metals and quaternary ammonium compounds, aldehyde, gaseous compound. use and abuse of

	disinfectants. precautions while using the disinfectants. **PRACTICALS** 1. Preparation of smear. 2. Perform Ziehl-Neelsen staining. 3. Perform Gram's staining 4. Perform Negative staining 5. Perform capsule staining 6. Perform spore staining 7. Any other practical's based on theory paper **RECOMMENDED BOOKS** 1. Practical Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi 2. Text Book of Medical Microbilogy by Satish Gupta; JP Brothers, New Delhi 3. Text Book of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House; Mumbai **Biophysics** **(105)** **SUBJECT DESCRIPTION -** To understand the concept and basic principles to know electrotherapy equipments is given under this topic. The student will be taught about physics related to electrotherapy and application on human body tissues. **Unit I** **Physical principles** Structure and properties of matter -solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity. Structure of atom, molecules, elements and compound Electricity: Definition and types. Therapeutic uses. Basic physics of construction. Working Importance of currents in treatment. Static Electricity: Production of electric charge. Characteristic of a charged body. Characteristics of lines of forces. Potential energy and factors on which it	6(3-1-2)

	depends. Potential difference and EMF. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt Condensers: Definition, principle, Types- construction and working, capacity & uses. Magnetism: Definition. Properties of magnets. Electromagnetic induction. Transmission by contact. Magnetic field and magnetic forces. Magnetic effects of an electric field. Conductors, Insulators, Potential difference, Resistance and intensity Ohm's law and its application to DC and AC currents. Fuse: construction, working and application. Transmission of electrical energy through solids, liquids, gases and vacuum. Rectifying Devices- Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits. Display devices and indicators-analogue and digital. Transformer: Definition, Types, Principle, Construction, Eddy current, working uses Chokes: Principle, Construction and working, Uses **Unit II** **Effects of Current Electricity** Chemical effects-lons and electrolytes, lonisation, Production of an EMF by chemical actions. Ionization: Principles, effects of various technique of medical ionization. Electromagnetic Induction. Electromagnetic spectrum. **Unit III** **Electrical Supply** Brief outline of main supply of electric current Dangers-short circuit, electric shocks: Micro/ Macro shocks Precaution-safety devices, earthing, fuses etc. First aid and initial management of electric shock Burns: electrical & chemical burns, prevention and management **Unit IV** **Various agents** Thermal agents: Physical Principles of cold, Superficial and deep heat. Ultrasound: Physical Principles of Sound Electro- magnetic Radiation: Physical Principles and their Relevance to Physiotherapy Practice Electric Currents: Physical Principles and their Relevance to Physiotherapy Practice.	

	Therapeutic Electricity **Practical** 1. Thermal agents: Superficial and deep heat 2. Ionization 3. Physical Principles 4. Electrical Supply	
	COMPUTER SCIENCE-I (106) **Unit 1** Introduction to Computer**:** Meaning or Definition of Computer**,** Evolution of computer**,** Features of Computer**,** Main Operation of the Computer**,** Main Elements of Computer System**,** Bits, Bytes and Words**,** Device in Computer**,** Various Input & output Device. **Unit II** Applications of computer**:** advantages and limitations of computers. Memory**:** overview of storage devices. main memory, storage evaluation criteria, random access memory, read only memory, secondary storage devices. **Unit-III** Generation of Computers and their Classification Generation of Computers**,** Classification of Computers. **Unit-IV** Operating System Meaning of Operating System**,** Function of Operating System**,** Language Translators Database Meaning Of Database**,** Data Processing System**,** Function of Data Processing**,** Objectives of Database**,** Type of Database**,** Functions of Database Management System(DBMS)**,**Advantages & Disadvantages of DBMS**,** Various Database Structures or database models.	0(0-0-0)

Semester 2nd
Human Anatomy & Physiology-II (201)

6(3-1-2)

Unit I

Lymphatic system: Lymphatic organs, lymphocytes, Spleen, Bone marrow etc. primary & secondary immune response, Immunity. Primary defense mechanism of human body against pathogenic microbes.

Physiology of various body fluids: CSF, peritoneal, Pericardial, Pleural and synovial fluids.

Cartilage, ligaments, tendons.

Unit II

Excretory system: Anatomy & physiology of Kidney, Ureters, Bladder & Urethra. Mechanism of urine formation, GFR, mechanism of GFR, Nephrons diagram and its function.

Sense organ: Anatomy & physiology of eye, diagram of eye, diagram of ear, nose & tongue.

Unit-III

Nervous system: Anatomy& physiology of Neurons structure and function, Brain and its parts, Spinal cord, Central & Peripheral nervous system.

Endocrine system: Anatomy & physiology of hormones, glands, Pituitary gland & hypothalamus, thyroid gland, parathyroid glands, adrenal glands, pancreas, pineal gland & mechanism of action.

Unit-IV

Reproductive system: Male- Anatomy & physiology of Primary & secondary reproductive organs, sperm diagram and its function, spermatogenesis, testis, prostate gland,

Female-Anatomy & physiology of Primary & secondary reproductive organs, ovary, ovum, uterus, Oogenesis, mensuration cycle

PRACTICALS

1. Collection of body Fluids
2. Estimation of sugar in CSF fluid
3. Demonstration of Semen
4. Analysis of Semen
5. Estimation of Insulin Hormone
6. Examination of Urine
7. Demonstration of Reproductive System by Chart
8. Demonstration of Glands in chart in human body
9. Demonstration of Sense Organ
10. Demonstration of spinal & Cranial Nerve
11. Any other practical's based on theory paper

RECOMMENDED BOOKS

1. Anatomy & physiology- Rose & Wilson
2. Anatomy & Physiology- Tortora
3. Text book of Anatomy & physiology- B D Chaurasia
4. Text book of Anatomy & physiology -CC Chaterjee
5. Text book of physiology- K Sabuingum

Electrotherapy
(202)

6(3-1-2)

Unit I

Low frequency Currents

Direct Current: types, physiological &therapeutic effects.

Alternating Current

Types of Current used in Therapeutics

Modified D.C

Faradic Current

Galvanic Current

Modified A.C

Sinusoidal Current

Diadynamic Current.

Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers.

Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles.

Sinusoidal Current & Diadynamic Current in Brief.

HVPGS – Parameters & its uses

Ionization / Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, would healing.

Cathodal / Anodal galvanism.

Micro Current & Macro Current

Types of Electrical Stimulators

- NMES- Construction component.
- Neuro muscular diagnostic stimulator- construction component.

- Components and working Principles

Unit II

Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode – Waterbath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.

Nerve Muscle Physiology: Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, and Stimulation for Tissue Repair.

TENS: Define TENS, Types of TENS, Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications.

Pain: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail.

Electro-diagnosis

FG Test

SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle, Characters of Completely denervated Muscle, Chronaxie & Rheobase.

Nerve conduction velocity studies

EMG: Construction of EMG equipment.

Bio-feedback.

Medium Frequency

Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications.

Russian Current

Rebox type Current

Thermo & Actinotherapy (High Frequency Currents)

Electro Magnetic Spectrum.

SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters.

Unit III

Pulsed Electro Magnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME.

Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.

Ultrasound: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continuous& Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Non-thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound. Phonophoresis: Define Phonophoresis, Methods of application, commonly used drugs, Uses. Dosages of US. [8 Hours]

IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication. [2 Hours]

UVR: Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp

LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power density [8 Hours]

Unit IV
Superficial heating Modalities

Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.

Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.

Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.

Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications.

Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.

Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications.

Magnetic Stimulation, Principles, Therapeutic uses, Indications & contraindication.

Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages.

PRACTICAL

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

1. Electrical stimulation for the muscles supplied by the peripheral nerves
2. Faradism under Pressure for UL and LL
3. Plotting of SD curve with chronaxie and rheobase
4. Demonstrate FG test
5. Practical on EMS
6. Demonstrate treatment method using IFT for various regions
7. Calculation of dosage and technique of application of LASER
8. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy
9. Demonstrate the treatment method using whirl pool bath

Foundation of Exercise Therapy and Therapeutic Massage (203)

Unit I

EXERCISE THERAPY

Introduction to Exercise Therapy - The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment.

6(3-1-2)

Methods of Testing

Functional tests

Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses, Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints

Tests for neuromuscular efficiency

Electrical tests

Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine.

Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf.

Unit II

Static power Test

Dynamic power Test

Endurance test

Speed test

Tests for Co-ordination

Tests for sensation

Pulmonary Function tests

Measurement of Limb Length: true limb length, apparent limb length, segmental limb length

Measurement of the angle of Pelvic Inclination.

Relaxation

Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation- Principles & uses: General, Local, Jacobson's, Mitchel's, additional methods.

Unit III

Passive Movements

Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses , Techniques of giving passive movements.

Active Movements

Definition of strength, power & work, endurance, muscle actions.

Physiology of muscle performance: structure of skeletal muscle,

chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation.

Causes of decreased muscle performance

Physiologic adaptation to training: Strength & Power, Endurance.

Types of active movements

Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses.

Unit IV

Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses

Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

THERAPEUTIC MASSAGE

History and Classification of Massage Technique

Principles, Indications and Contraindications

Technique of Massage Manipulations

Physiological and Therapeutic Uses of Specific Manipulations

PRACTICAL

1. Different test methods
2. Demonstrate relaxation techniques.
3. Demonstrate to apply the technique of passive movements
4. Demonstrate various techniques of Active movements
5. Demonstrate massage technique application according to body parts.
6. Demonstration on different Types of resisted exercises

Introduction to Quality and Patient Safety (204)

Unit I

Quality assurance and management - The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.

6(3-1-2)

Concepts of Quality of Care

Quality Improvement Approaches

Standards and Norms

Quality Improvement Tools

Introduction to NABH guidelines

Basics of emergency care and life support skills - Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden

cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:
Vital signs and primary assessment
Basic emergency care – first aid and triage
Ventilations including use of bag-valve-masks (BVMs)
Choking, rescue breathing methods
One- and Two-rescuer CPR
Using an AED (Automated external defibrillator).

Unit II

Bio medical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:
Definition of Biomedical Waste
Waste minimization
BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
BMW Management & methods of disinfection
Modern technology for handling BMW
Use of Personal protective equipment (PPE)
Monitoring & controlling of cross infection (Protective devices)

Unit III

Infection prevention and control - The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include –
Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],
Prevention & control of common healthcare associated infections,
Components of an effective infection control program, and
Guidelines (NABH and JCI) for Hospital Infection Control

Unit IV

Antibiotic Resistance-

	History of Antibiotics How Resistance Happens and Spreads Types of resistance- Intrinsic, Acquired, Passive Trends in Drug Resistance Actions to Fight Resistance Bacterial persistence Antibiotic sensitivity Consequences of antibiotic resistance Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals **Disaster preparedness and management**- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include- Fundamentals of emergency management, Psychological impact management, Resource management, Preparedness and risk reduction, Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms. **Practical** 1. BLS 2. CPR 3. BMW 4. PPE **Communication Skills and Personality Development (205) (Non credit)** **Unit I** Listening Comprehension • Speeches • Interviews • audio-video clippings followed by exercises • Introduction to Communication • Importance of Communication • Barriers to Communication and ways to overcome them **Unit II** Conversation Skills	0(0-0-0)

	• Greetings and Introducing oneself • Framing questions and answers • Role play • Buying: asking details etc • Word formation strategies Vocabulary building: Antonyms, Synonyms, Affixation, Suffixation, One word substitution **Unit-III** Reading Comprehension • Simple narration and Stories • Newspaper and articles clippings • Sentence types • Note Making • Paragraph Writing • Comprehension • Report Writing: types, characteristics **Unit –--IV** Writing Comprehension • Letters: types, format, style • Précis Writing • Paragraph: Order, Topic sentence, consistency, coherence • Report and Proposal • Project Writing: Features, Structure **Computer Science-II (subsidiary subject) (206)** **Unit I** Windows Graphical User Interface, Windows, Features of Windows, Control Button of windows, Various Icons on Desktop Microsoft Word(INTRODUCTION) **Unit II** Microsoft Excel (INTRODUCTION) Microsoft PowerPoint (INTRODUCTION) Internet – Features, Different type of network. **Unit-III** Patient Management Medical Establishments using Computer, Computer, Network, Software, Training, Service Operators of System Computerization	0(0-0-0)

	in Hospitals and Nursing Homes**,** Features of a Hospital Software Packages**,** Password Protection **,**Various Application of Different Medical **,**Software and Support **Unit-IV** Picture archiving communicating system, DICOM,RIS,HIS, Uses of computer in hospitals in different department Online reporting system, different types of software used in medical fields. **Semester 3rd** **Exercise Therapy** **(301)** **Unit I** **Specific exercise regimens** Isotonic: de Lormes, Oxford, MacQueen, Circiut weight training Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometrics Isokinetic regimens **Proprioceptive Neuromuscular Facilitation** Definitions & goals Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb Procedure: components of PNF Techniques of facilitation Mobility: Contract relax, Hold relax, Rhythmic initiation Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal **Suspension Therapy** Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy Types of suspension therapy: axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb **Unit II** **Functional Re-education**	6(3-1-2)

	Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities. **Aerobic Exercise** Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training. **Stretching** Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching. **Manual Therapy & Peripheral Joint Mobilization** Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions. **Unit III** **Balance - Definition** Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal, biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining. **Co-ordination Exercise** Anatomy & Physiology of cerebellum with its pathways Definitions: Co-ordination, Inco-ordination Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise. Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise. **Posture** Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education.	

Walking Aids

Types: Crutches, Canes, Frames; Principles and training with walking aids.

Unit IV

Basics in Manual Therapy & Applications with Clinical reasoning

Examination of joint integrity

Contractile tissues

Non contractile tissues

Mobility - assessment of accessory movement & End feel

Assessment of articular & extra-articular soft tissue status

Myofascial assessment

Acute & Chronic muscle hold, Tightness,Pain-original & referred

Basic principles, Indications & Contra-Indications of mobilization skills for joints & soft tissues.

Maitland, Mulligan, Mckenzie, Muscle Energy Technique, Myofascial stretching, Cyriax, Neuro Dynamic Testing

MMT muscle strength using the principles and technique of MMT

Hydrotherapy

Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipment, techniques, Effects and uses, merits and demerits

Individual and Group Exercises

Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports

PRACTICAL

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients. They must be able to

1. Demonstrate the technique of measuring using goniometry
2. Demonstrate muscle strength using the principles and technique of MMT
3. Demonstrate the PNF techniques
4. Demonstrate exercises for training co-ordination – Frenkel's exercise
5. Demonstrate the techniques of massage manipulations
6. Demonstrate techniques for functional re-education
7. Assess and train for using walking aids
8. Demonstrate mobilization of individual joint regions
9. Demonstrate to use the technique of suspension therapy for

	mobilizing and strengthening joints and muscles 10. Demonstrate the techniques for muscle stretching 11. Assess and evaluate posture and gait 12. Demonstrate techniques of strengthening muscles using resisted exercises 13. Demonstrate techniques for measuring limb length and body circumference. **Basic Principles of Biomechanics (302)** **Unit I** **Basic Concepts in Biomechanics: Kinematics and Kinetics** Types of Motion, Location of Motion, Direction of Motion, Magnitude of Motion, Definition of Forces, Force of Gravity(LOG and COG in relation with human body). Reaction forces, Equilibrium, Objects in Motion, Force of friction, Concurrent force systems, Parallel force system, Work, Moment arm of force, Force components, Equilibrium of levers **Unit II** **Joint structure and Function -** Joint design, Materials used in human joints, General properties of connective tissues, Human joint design, Joint function, Joint motion, General effects of disease, injury and immobilization. **Unit II** **Muscle structure and function -** Mobility and stability functions of muscles, Elements of muscle structure, Muscle function, Effects of immobilization, injury and aging **Unit IV** **Biomechanics of the Thorax and Chest wall -** General structure and function Rib cage and the muscles associated with the rib cage Ventilatory motions: its coordination and integration Developmental aspects of structure and function Changes in normal structure and function I relation to pregnancy, scoliosis and COPD **The Temporomandibular Joint-** General features, structure, function and dysfunction	6(3-1-2)

Practical

1. Equilibrium
2. Moment arm of force
3. Force of Gravity (LOG and COG in relation with human body).
4. Practical on joints structure and function.
5. Practical on muscle structure and function.
6. Demonstration on movements and abnormality of rib cage and TMJ.

Clinical Orthopedics and Traumatology-I (303)

6(3-1-2)

Unit I
Introduction

- Introduction to orthopedics.
- Clinical examination in an orthopedic patient.
- Common investigative procedures.
- Radiological and Imaging techniques in Orthopedics.
- Inflammation and repair, Soft tissue healing.

Traumatology

- Fracture: definition, types, signs and symptoms.
- Fracture healing.
- Complications of fractures.
- Conservative and surgical approaches.
- Principles of management – reduction (open/closed, immobilization etc.).

Unit II
Fractures and Dislocations of Upper Limb

Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

- Fractures of clavicle and scapula.
- Fractures of greater tuberosity and neck of humerus.
- Fracture shaft of humerus.
- Supracondylar fracture of humerus.
- Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.
- Side swipe injury of elbow.

- Both bone fractures of ulna and radius.
- Fracture of forearm – monteggia, galaezzi fracture –dislocation.
- Chauffer's fracture.
- Colle's fracture.
- Smith's fracture.
- Scaphoid fracture.
- Fracture of the metacarpals.
- Bennett's fracture.
- Fracture of the phalanges. (Proximal and middle.)

Unit III

Dislocations of Upper Limb –

- Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's) etc.
- Recurrent dislocation of shoulder.
- Posterior dislocation of shoulder – mechanism of injury, clinical features and management.
- Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.

Fracture of Spine

- Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia).
    - Clay shoveller's fracture.
    - Hangman's fracture.
    - Fracture odontoid.
    - Fracture of atlas.
- Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions.
- Fracture of coccyx.
- Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

Unit IV

Fractures and Dislocations of Lower Limb

Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical

	management of the following fractures: • Fracture of pelvis. • Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. • Fractures of trochanters. • Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. • Supracondylar fracture of femur. • Fractures of the condyles of femur. • Fracture patella. • Fractures of tibial condyles. • Both bones fracture of tibia and fibula. • Dupuytren's fracture • Maisonneuve's fracture. • Pott's fracture – mechanism of injury, management. • Bimalleolar fracture • Trimalleolar fracture • Fracture calcaneum – mechanism of injury, complications and management. • Fracture of talus. • Fracture of metatarsals • Fracture of phalanges. **Dislocations of Lower Limb -** mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. • Anterior dislocation of hip. • Posterior dislocation of hip. • Central dislocation of hip. • Dislocation of patella. • Recurrent dislocation of patella. **Practical** 1. Practical on fracture and dislocation of upper limb. 2. Practical on fracture and dislocation of lower limb. 3. Practical on fracture of spine. **Pharmacology**	

	(304) **Unit I** **General Pharmacology –** Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects. **Autonomic Nervous system –** • General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System • Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants. **Unit II** **Cardiovascular Pharmacology –** • Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators • Antiarrhythmic Drugs • Drugs used in the treatment of vascular disease and tissue ischemia : Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease. **Neuropharmacology –** • Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines • Antianxiety Drugs: Benzodiazepines, Other Anxiolytics • Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium • Antipsychotic drugs **Unit III** **Disorders of Movement -** • Drugs used in Treatment of Parkinson ’s disease • Antiepileptic Drugs • Spasticity and Skeletal Muscle Relaxants **Inflammatory/Immune Diseases -** • Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, • Glucocorticoids: Pharmacological Uses of Glucocorticoids,	6(3-1-2)

	adverse effects, Physiologic Use of Glucocorticoids • Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, • Gout • Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematous, • Scleroderma, Demyelinating Disease • Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis. **Unit IV** **Digestion and Metabolism -** Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic **Geriatrics -** Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension. **Practical** • Routes of drug administration • Demonstration of Adverse effects of different drugs. **Medical Physiotherapy Law and Ethics (305)** • Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice. • Medical/ Physiotherapy ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice". Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the	6(3-1-2)

legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Few of the important and relevant topics that need to focus on are as follows:

Unit I

1. Medical ethics versus medical law - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy

Unit II

1. Autonomy and informed consent - Right of patients
2. Care of the terminally ill- Euthanasia
3. Organ transplantation
4. Medical diagnosis versus physiotherapy diagnosis.

Unit III

1. Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
2. Professional Indemnity insurance policy
3. Development of standardized protocol to avoid near miss or sentinel events
4. Obtaining an informed consent.

Unit IV

1. Biomedical ethical principles
2. Code of ethics for physiotherapists
3. Ethics documents for physiotherapists
4. Laws affecting physiotherapy practice.

Practical

1. Consent form
2. Code of conduct of physiotherapist for the treatment of patient.
3. Basic principles of medical ethics – Confidentiality
4. Records management.
5. Medical diagnosis versus physiotherapy diagnosis.
6. Development of standardized protocol to avoid near miss or sentinel events

Semester 4th

	Biomechanics and Kinesiology **(401)** **Unit I** **Biomechanics of the vertebral column -** • General structure and function • Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region • Muscles of the vertebral column • General effects of injury and aging **Unit II** **Biomechanics of the peripheral joints -** • The shoulder complex: Structure and components of the shoulder complex and their integrated function • The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury. • The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand. • The hip complex: structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur. **Unit III** • The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease. • The ankle and foot complex.: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches, muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus **Unit IV** **Analysis of Posture and Gait –** Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation; general features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running, effects of age, gender, assistive devices, disease,	6(3-1-2)

	muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait; Movement Analysis : ADL activities like sitting – to standing, lifting, various grips , pinches. **PRACTICAL-** 1. Shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton. **General Surgery including Obstetrics and Gynecology (402)** **Unit I** GENERAL SURGERY INCLUDING BURNS AND PLASTIC SURGERY Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ; Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post – Operative Complications and its management. Reasons for Surgery; Types of anaesthesia and its affects on the patient; Types of Incisons; Clips Ligatures and Sutures; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery. Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.	6(3-1-2)

Disorders of the Chest Wall, Lung and Mediastinum.

Unit II

Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of insision, muscles cut and complications. Lung surgeries: Pnumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extracardiac Operations, Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications.

Diseases of the Arteries and Veins : Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.

Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostectomy.

Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps.

ENT: Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy.

Ophthalmology: Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles- surgical management.

Unit III

OBSTETRICS AND GYNECOLOGY

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

Describe the normal and abnormal physiological events during the puberty, labor, puerperium, post – natal stage and menopause.

Discuss the various complications during pregnancy, labour, puerperium and post – natal stage, pre and post-menopausal stage and various aspects of urogenital dysfunction and their management in brief.

Acquire the skill of clinical examination of pelvic floor

Acquire the skill of clinical examination of pregnant woman.

	Anatomy and physiology of the female reproductive organs. Puberty dynamics Physiology of menstrual cycle – ovulation cycle, uterine cycle, Cx cycle, duration, amount Hormonal regulation of menstruation, Hormonal disorders of females-obesity and female hormones Pregnancy Diagnosis of pregnancy Abortion Physiological changes during pregnancy Importance of antenatal care exercise High risk pregnancy, prenatal common complications investigation and management Musculoskeletal disorders during pregnancy Multiple child birth,Normal labor **Unit IV** Child birth complications, investigation and management Normal puerperium, lactation and importance of post-natal exercises Family planning. Medical termination of pregnancy Infection of female genital tract including sexually transmitted diseases, low backache Prolapse of uterus and vagina Principle of common gynaecological operations – hysterectomy, D&C, D&E, Pop smear Menopause: Its effect on emotions and musculoskeletal system Urogenital dysfunction – pre and post-natal condition Sterility: Pathophysiology, investigations, management, Malnutrition and deficiencies in females. Surgical procedures involving child birth. Definition, Indications and Management of the following surgical procedures – pelvic repair, caesarian section, nephrectomy, Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposopy, Hysterectomy. Carcinoma of female reproductive organs – surgical management in brief Mastectomy – Simple, radical. Hysterectomy. Incontinence – Types, Causes, Assessment and Management. **Practical**	

	1. Type of incisions. 2. Difference between thoracic disorders. 3. Anti-natal care exercises. 4. Pre-natal care exercise. 5. Post-natal care exercise. 6. Demonstration on different surgical procedure. **Clinical Orthopedics and Traumatology-II (403)** **Unit I** **Soft Tissue Injuries -** Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: • Meniscal injuries of knee. • Cruciate injuries of knee. • Medial and lateral collateral injuries of knee. • Lateral ligament of ankle. • Wrist sprains. • Strains- quadriceps, hamstrings, calf, biceps, triceps etc. • Contusions- quadriceps, gluteal, calf, deltoid etc. • Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc. **Hand Injuries -** mechanism of injury, clinical features, and management of the following – • Crush injuries. • Flexor and extensor injuries. • Burn injuries of hand. **Amputations -** Definition, levels of amputation of both lower and upper limbs, indications, complications. **Traumatic Spinal Cord Injuries -** Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia. **Deformities -** clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities. **Unit II** Congenital Deformities – • CTEV. • CDH. • Torticollis.	6(3-1-2)

- Scoliosis.
- Flat foot.
- Vertical talus.

Acquired Deformities –

- Acquired Torticollis.
- Scoliosis.
- Kyphosis.
- Lordosis.
- Genu varum.
- Genu valgum.
- Genu recurvatum
- Coxa vara.
- Pes cavus.
- Hallux rigidus.
- Hallux valgus.
- Hammer toe.
- Metatarsalgia.

Disease of Bones and Joints: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions:

- Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
- Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints.
- Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Gaint cell tumor. Multiple myeloma. Metastatic tumors.
- Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.
- Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.

Unit III

Inflammatory and Degenerative Conditions: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions:

- Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints.
- Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

Syndromes: Causes, Clinical features, complications, management-conservative and surgical of the following:
Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.

Neuromuscular Disorders: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions:

- Cerebral palsy.
- Poliomyelitis.
- Spinal Dysraphism.
- Leprosy.

Cervical and Lumbar Pathology: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following:

- Prolapsed interverbral disc (PID),
- Spinal Canal Stenosis.
- Spondylosis (cervical and lumbar)
- Spondylolysis.
- Spondylolisthesis.
- Lumbago/ Lumbosacral strain.
- Sacralisation.
- Lumbarisation.
- Coccydynia.
- Hemivertebra.

Orthopedic Surgeries: Indications, Classification, Types, Principles of management of the following Surgeries:

- Arthrodesis.
- Arthroplasty (partial and total replacement).
- Osteotomy,
- External fixators.
- Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating) etc ,
- Limb re attachments.

Unit IV

Regional Conditions: Definition, Clinical features and management of the following regional conditions

- Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.
- Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis.
- Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger

	Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. • Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. • Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). • Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma. **Practical** 1. Soft Tissue Injuries 2. Hand Injuries **General Medicine, Paediatrics and Psychiatry (404)** **Unit I** **Infection :** Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gastroenteritis sexually transmitted diseases – HIV infections and Aids. **Poisoning:** Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation. **Food and Nutrition: Assessment –** Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications. **Unit II** **Endocrine diseases:** Common presenting symptoms of Endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus: Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes. **Diseases of the blood:** Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management ; Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated hemorrhages –	6(3-1-2)

complications due to therapy.

Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract ; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Viral Hepatitis, Wilson's Disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholycystitis.

Unit III

Diseases of the Skin: Examination and clinical manifestations of skin diseases; Causes, clinical features and management of the following skin conditions: Leprosy, Psoriasis, Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections.

Pediatrics : Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood, Cerebral Palsy causes, complications, clinical manifestations, treatment ; Spina Bifida – management and treatment, Epilepsies – types, diagnosis and treatment; Recognizing developmental delay, common causes of delay ; Orthopedic and Neuromuscular disorders in childhood, clinical features and management ; Sensory disorders – problems resulting from loss of vision and hearing ; Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child.

Unit IV

Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. Modalities of psychiatric treatment, Psychiatric illness and physiotherapy, Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -. Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Maniac-depressive psychosis, Post-traumatic stress disorder, Psychosomatic reactions: Stress and Health, theories of Stress – Illness.

Etio-pathogenesis, manifestations, and management of psychiatric illness

- Drug dependence and alcoholism,
- Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue,
- Personality disorders
- Child psychiatry - manifestations, and management of childhood disorders -attention deficit syndrome and behavioral disorders.
- Geriatric psychiatry.

Practical

	1. Practical on delayed miles stones and development of an infant. 2. Practical on CP. 3. BMI 4. Practical on sensory disorders of an infant. **Professionalism and Values** **(405)** The module on professionalism will deliver the concept of what it means to be a professional and how physiotherapy profession is different from a usual vocation. It also explains how relevant is professionalism in terms of healthcare system and how it affects the overall patient environment. **Unit I** 1. Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility. 2. Personal values- ethical or moral values 3. Attitude and behavior- professional behavior, treating people equally 4. Code of conduct , professional accountability and responsibility, misconduct 5. Differences between professions and importance of team efforts 6. Cultural issues in the healthcare environment 7. Entry level health care practitioner, direct access, autonomy in profession, practitioner of practice and evidence based practice. **The five roles of the Physiotherapist -** **1. The Physiotherapist as Patient/Client manager** • Evaluation and diagnosis • Diagnosis as clinical decision making • Prognosis • Discharge planning and discontinuance of care • Discontinuance of care • Outcomes • Clinical decision making h.Referral relationships • Interpersonal relationships • Ethical and legal issues • Informed consent • Managed care and fidelity. **Unit II** **2. The Physiotherapist as Consultant**	6(3-1-2)

- Physiotherapy consultation
- Building a consulting business
- The consulting process
- The skills of a good consultant
- Trust in the consultant/client relationship
- Ethical and legal issues in consultation
- Components of a consulting agreement.

Unit III

3. The Physiotherapist as Critical Inquirer

- History of critical inquiry
- Evidence-based practice
- Outcomes research
- Whose responsibility is research?
- Roles of the staff physiotherapist in critical inquiry
- Collaboration in clinical research
- Ethical and legal issues in critical inquiry.

Unit IV

4. The Physiotherapist as Administrator

- History of physiotherapy administration
- Contemporary physiotherapy administration
- Patient/client management
- First-line management
- Midlevel managers and chief executive officers
- Leadership
- Ethical and legal issues.

5. The Physiotherapist as Educator

- History of physiotherapy education
- Contemporary educational roles of the physiotherapist
- Teaching opportunities in continuing education
- Academic teaching opportunities
- Theories of teaching and learning in professional education
- Ethical and legal issues in physiotherapy education.

Practical

1. The Physiotherapist as Patient/Client manager
2. The Physiotherapist as Consultant
3. The Physiotherapist as Critical Inquirer
4. The Physiotherapist as Administrator
5. The Physiotherapist as Educator.

Semester 5th

Community Medicine

	(501) **Unit I** **Health and Disease:** Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease. **Epidemiology** definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types ofscreening. **Epidemiology of communicable disease:** Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, 0besity, Blindness, Accidents and Injuries. **Unit II** **Public health administration-** an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups. **Health programmes in India:** Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme. **Unit III** **Demography and Family Planning:** Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods. **Preventive Medicine in Obstetrics, Paediatrics and Geriatrics:** MCH	6(3-1-2)

problems, Antenatal, Intranatal and post-natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics.

Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.

Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.

Unit IV

Hospital waste management: Sources of hospital waste, Health hazards, Waste management.

Disaster Management: Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.

Occupational Health: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.

Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation.

Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.

Practical

- Hospital waste management
- Occupational Health
- Disaster Management
- Practice of health education.

Diagnostic Imaging for Physiotherapist (502)

	Unit I **IMAGE INTERPRETATION** • History • How a Medical Image Helps • Radiography(x-rays) • Computed Tomography (CT) • Magnetic Resonance Imaging (MRI) **Unit II** **RADIOGRAPHY AND MAMMOGRAPHY** • Equipment components • Procedures for Radiography & Mammography • Benefits versus Risks and Costs • Indications and contraindications. **FLUOROSCOPY** • What is Fluoroscopy? • Equipment used for fluoroscopy • Indications and Contra indications • How it helps in diagnosis • The Findings in Fluoroscopy • Benefits versus Risks and Costs. **Unit III** **COMPUTED TOMOGRAPHY (CT)** • What is Computed Tomography? • Indications and Contra indications • How it helps in diagnosis • The Findings in Computed Tomography • Benefits versus Risks and Costs. **Unit IV** **MAGNETIC RESONANCE IMAGING (MRI)** • What is MRI? • Indications and Contra indications • How it helps in diagnosis • The Findings in MRI • Benefits versus Risks and Costs • Functional MRI. **Practical**	6(3-1-2)

	• Demonstration of X-ray film. • Demonstration of CT film. • Demonstration of MRI film. **Physiotherapy In Orthopedics and Sports (503)** **Unit I** **PT assessment for Orthopedic conditions -** SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait. On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination – ROM – active and passive, resisted isometric tests, limb length-apparent, true and segmental , girth measurement, muscle length testing-tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination- dermatomes, myotomes and reflexes, special tests and functional tests. Prescription of home program. Documentation of case records, and follow up. **Fractures -** types, classification, signs and symptoms, complications. Fracture healing - factors affecting fracture healing. Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing. PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long term goals. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period. **Unit II** **Specific fractures and dislocations:** PT assessment and management of upper limb fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis. PT assessment and management spinal fractures. **Selection and application of physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions.** **Principles of various schools of thought in manual therapy. (Briefly**	6(3-1-2)

	Maitland and Mc kenzie). **Degenerative and inflammatory conditions:** Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder. **Infective conditions:** Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints - knee and hip. **Define, review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program.** **Deformities:** Review in detail the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT. assessment and management of the following conditions: Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum. **Cerebral palsy:** Definition, etiology, classification, clinical features, complications, deformities, medical and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections. **Poliomyelitis:** Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program. **Leprosy:** Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively. **Unit III** **Amputations:** Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management. **Spinal conditions:** Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida	

occulta.

Osteoporosis- causes, predisposing factors, investigations and treatment.

Orthopedic surgeries: Pre and post-operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty-partial and total - Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant, Soft tissue release-tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy.

Shoulder joint: Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation. Rotator cuff tears-conservative and surgical repair. Subacromial decompression - Post operative PT management.

Elbow and forearm: Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management.

Unit IV

Wrist and Hand: Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management.

Hip: Joint surgeries - hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - Management.

Knee: Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome- conservative management. TKR-rehabilitation protocol. Patellar tendon ruptures and Patellectomy-rehabilitation.

Ankle and foot: Ankle instability. Ligamentous tears- Post operative management.

Sports Physiotherapy: Physical fitness. Stages of soft tissue healing. Treatment guidelines for soft tissue injuries- Acute, Sub acute and chronic stages. Repair of soft tissues- rupture of muscle, tendon and Ligamentous tears. Soft tissue injuries- prevention and rehabilitation of, Lateral ligament sprain of ankle. Rotator cuff injuries. Collateral and Cruciate injuries of knee. Meniscal injuries of knee. Supraspinatus and Bicipital tendonitis. Pre patellar and Sub-acromial
bursitis. Tennis and Golfer's elbow. Hamstring strains, Quadriceps contusion, TA rupture. Dequervain's tenosynovitis. Trigger and Mallet finger. Plantar fasciitis. Wrist sprains.

PRACTICAL –

	Practical shall be conducted for all the relevant topics discussed in theory in the following forms: • Bedside case presentations and case discussions • Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions. • Assessment format for the patient suffering from orthopedics and sports injury. **Semester 6th** **Physiotherapy In General Medicine and General Surgery (601)** **Unit I** • Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy) • Applied Yoga in Obstetric and Gynecological conditions • Geriatrics – handling of old patients and their problems. • Complication common to all operations **Unit II** • Abdominal incisions. • Physiotherapy in pre and post-operative stages. • Operations on upper G.I.T.- oesophagus, stomach, duodenum • Operations on large and small intestine – Appendisectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, hernioraphy, hernioplasty. **Unit III** • Physiotherapy in dentistry • Burns and its treatment – physiotherapy in burns, skin grafts, and reconstructive surgeries. • Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars-U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated Scars Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues. **Unit IV**	6(3-1-2)

	• Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases. • 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. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices. • ENT – sinusitis, non-suppurative and chronic suppurative otitis media, osteosclerosis, labrynthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo – laryngectomy, facial palsy. **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. **Clinical Neurology and Neurosurgery (602)** **Unit I** Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. Classification of neurological involvement depending on level of lesion. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement.	6(3-1-2)

Unit II

Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo.

Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm,

Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.

Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.

Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.

Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical& surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes &investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders.

Unit III

Movement disorders: Definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease.

Cerebellar and coordination disorders: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.

Spinal cord disorders: Functions of tracts, definition, etiology, risk factors,

pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis.

Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management.

Infections of brain and spinal cord: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome. Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.

Unit IV

Motor neuron diseases: - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.

Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.

Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism.

Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia.

Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.

Practical

1. Lower cranial nerve paralysis
2. Cerebro-vascular diseases:
3. Movement disorders

	4. Cerebellar and coordination disorders. **Clinical Cardiovascular and Pulmonary (603)** **Unit I** **Anatomy and Physiology** **Respiratory system** Upper respiratory tract Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments Respiratory unit, hilum of lung. Muscles of respiration Pleura, intra pleural space, intra pleural pressure, surfactant Mechanics of respiration – Chest wall movements, lung & chest wall compliance V/Q relationship, airway resistance Respiratory centre, Neural & chemical regulation of respiration Lung volumes and lung capacities, Spiro meter, lung function test Pulmonary circulation, Lung sounds, cough reflex **Unit II** **Cardiovascular systems** Chambers of heart, semi lunar and atria ventricular valves Coronary circulation, conductive system of heart Cardiac cycle, ECG, Heart sounds Blood pressure, pulse, cardiac output Define, etiology, pathogenesis, clinical features, complications, b.Conservative and surgical management of the following conditions Ischemia heart disease Myocardial infarction Heart failure Cardiac arrest Rheumatic fever Hypertension Infective endocarditis Myocarditis & cardiomyopathy **Unit III**	6(3-1-2)

Cardiovascular Disease : Examination of the Cardiovascular System Investigations : ECG, Exercise Stress Testing, Radiology ; Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart : Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest ; Examination and Investigations of diseases of arteries and veins ; Hypertension : Definition, causes, classification, types, assessment, investigations and management.

Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease : Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetraology of Fallot, Transposition of Great Vessels ; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic **Heart Disease –** Coronary Artery Disease, Cardiac tumors.

Unit IV

Respiratory System

Respiratory Disease : Examination of the Respiratory System – Investigations : Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis ; Clinical manifestations of Lung disease ; Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall ; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management.

Chest wall disorders- Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum. Carcinoma of the female breast.

Practical

- Measurement of BP
- Demonstration of ECG
- Evaluation of x rays of various pulmonary and cardiac disorders.

Semester 7th

	Physiotherapy In Cardiovascular, Pulmonary and Intensive Care **(701)** **Unit I** Anatomical and Physiological differences between the Adult and Pediatric lung. Bedside assessment of the patient-Adult & Pediatric. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP. **Unit II** Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning. Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit. Physiotherapy in Obstructive lung conditions. Physiotherapy in Restrictive lung conditions. **Unit III** Management of breathlessness. Pulmonary Rehabilitation. Physiotherapy following Lung surgeries Respiratory failure – Oxygen Therapy and Mechanical Ventilation. Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.	6(3-1-2)

Unit IV

Physiotherapy management following cardiac surgeries.

Cardiac Rehabilitation.

Physiotherapy management following PVD.

Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.

Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes.

PRACTICAL:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Assessment format for the patient suffering from cardio vascular and pulmonary disorders.
2. Bedside case presentations and case discussions.
3. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Physiotherapy In Neurology and Psychosomatic Disorder (702)

6(3-1-2)

Unit I

Neurological Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes – Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis.

Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented

	approach, Muscle re-education approach and Constraint induced movement therapy. **Unit II** **Paediatric Neurology:** Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia. **Evaluation and Management of Brain and Spinal Cord Disorders :** History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis, and Multiple sclerosis. **Unit III** **Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders :** History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post-Polio Syndrome. **Evaluation and Management of Peripheral Nerve Injuries and Disorders :** History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions,	

	Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy. **Unit IV** **Assessment and management of Neurological gaits:** Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait. **Pre and post-surgical assessment and treatment following conditions -** Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis , Arteriovenous malformations, and Spina bifida. **PRACTICAL:** Practical shall be conducted for all the relevant topics discussed in theory in the following forms: • Bedside case presentations and case discussions • Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions. • Assessment format for the patient suffering from neurology disorders. **Biostatistics and Research Methodology (703)** The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings. **RESEARCH METHODOLOGY** **Unit I** 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, Problems encountered by researchers in India.	6(3-1-2)

	Research problem: Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design Sampling Design: Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design 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. **Unit II** Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules. Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions. Processing & analysis of data: Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship. Testing of hypothesis: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis Computer technology: Introduction to Computers, computer application in research, computers & researcher. **Unit III** **BIOSTATISTICS** Introduction: Meaning, definition, characteristics of statistics., Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve. Measure of Central Tendency: Need for measures of central Tendency, Definition and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped., Meaning and calculation of mode, Comparison of the mean, median and mode, Guidelines for the use of various measures of central tendency. **Unit IV**	

	Probability and Standard Distributions: Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skew ness, kurtosis. Sampling techniques: Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance. Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA). Format of scientific documents. (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis). **Practical** • Demonstration of various type of measurement and scaling techniques. • Demonstration of various type of data collection. • Demonstration on different type of computer application used in research. **Semester 8th** **Health Promotion and Fitness** **(801)** **Unit I** **Prevention practice: a holistic perspective for physiotherapy** Defining Health Predictions of Health Care Comparing Holistic Medicine and Conventional Medicine Distinguishing Three Types of Prevention Practice. **Unit II** **Healthy People** Definition of healthy people Health education Resources Physiotherapist role for a healthy community. **Unit III** **Key concepts of fitness** Defining & Measuring Fitness Assessment of Stress with a Survey Visualizing Fitness Screening for Mental and Physical Fitness Body Mass Index calculations.	6(3-1-2)

Unit IV
Fitness training
Physical Activities Readiness Questionnaire
Physical Activities Pyramid
Exercise Programs
Evidence-Based Practice.

- Health, fitness, and wellness issues during childhood and adolescence
- Health, fitness, and wellness during adulthood
- Women's health issues: focus on pregnancy:
- Prevention practice for older adults
- Resources to optimize health and wellness
- Health protection.
- Prevention practice for musculoskeletal conditions
- Prevention practice for cardiopulmonary conditions
- Prevention practice for neuromuscular conditions
- Prevention practice for Integumentary disorders
- Prevention practice for individuals with developmental disabilities
- Marketing health and wellness.

Practical

- Demonstration of various technique of fitness training.
- Key concepts of fitness

Community Physiotherapy (802)

6(3-1-2)

Unit I
Rehabilitation: Definition, Types.
Community: Definition of Community, Multiplicity of Communities, The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community oriented programme, Community participation and mobilization

Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR.
Principles of Community based Rehabilitation. W.H.O.`s policies-about rural health care- concept of primary /tertiary health centers-district hospitals etc-Role of P.T.-Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person , Agencies involved in

	rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped. Planning and management of CBR Programmes, CBR Programmed planning and management, Ownership and Governance, Decentralization and CBR, Management of CBR, Programmed sustainability, Communication and Coordination, Community participation, mobilization and awareness, CBR programme influence on promoting and developing public policies. **Unit II** Disability: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Disability in developed countries, Disability in developing countries. Disability Surveys: Demography. Screening: Early detection of disabilities and developmental disorders, Prevention of disabilities- Types and levels. Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings. Role of Government in CBR: Laws, Policies, Programmes, Human Rights Policy, Present rehabilitation services, Legal aspects of rehabilitation. Role of Social work in CBR: Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS. **Unit III** National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assisstive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities. Screening and rehabilitation of paediatric disorders in the community: Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioural disorders, Immunization programmes, Early intervention in high risk babies, Genetic counselling.	

	Extension services and mobile units: Introduction, Need, Camp approach. Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services. **Unit IV** Geriatrics- Physiology of Aging /degenerative changes-Musculoskeletal /Neuromotor /cardio respiratory-/Metabolic, Endocrine, Cognitive, Immune systems. Role of Physio Therapy in Hospital based care, Half-way homes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation. Few conditions:- Alzheimer's disease, Dementia, Parkinson's Disease, Incontinence, Iatrogenic drug reactions, etc. Ethics of Geriatric Rehabilitation. Industrial Health & Ergonomics Occupational Hazards in the industrial area -- Accidents due to Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, Chemical agents-Inhalation, local action, ingestion, Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses per hierarchy sedentary table work –executives, clerk, inappropriate seating arrangement- vehicle drivers constant standing- watchman- Defense forces, surgeons **PRACTICAL:** This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio- respiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials. **Assignment (Project Work)** **(803)**	4(4-0-0)