SPEED POST

BERHAMPUR UNIVERSITY,
BHANJA BIHAR, BERHAMPUR -760007(GANJAM) ODISHA.

No. 6129 /Acad-I/BU/2022 Date 26/7/2022

NOTIFICATION

It is for information of all concerned that, the Vice-Chancellor in exercising the power conferred under Act-6 (15) of O.U. Act., 1989 has been pleased to approve the Syllabus for Bachelor in Physiotherapy (BPT) a four and half year course for implementation in Berhampur University from the Academic Session 2021-22 onwards. The same syllabus shall be available in the Berhampur University website.

By order

Deputy Registrar

Memo 61
Date 6130 Copy to

No. 26/7 **/Acad-I/BU/2022**

1. The Principal, respective college, Under Berhampur University, for information and necessary action.
2. The Controller of Examinations, Berhampur University for information and necessary action.
3. The Section Officer, Question Setting Unit, Berhampur University for information and necessary action.
4. The Section Officer, Examination General / Confidential Prof. Sections, Berhampur University for information and necessary action.
5. The Web Administrator, Berhampur University, with a request to upload the same Syllabus in the University website.

Deputy Registrar

REGULATIONS AND SYLLABUS FOR THE BACHELOR OF PHYSIOTHERAPY (4 ½ YEAR DURATION) SEMESTER PATTERN W.E.F. 2021-2022 SESSION

BERHAMPUR UNIVERSITY
BHANJA BIHAR
BERHAMPUR – 760007

COURSE REGULATIONS

GOVERNING THE SEMESTER SYSTEM BASED BACHELOR OF PHYSIOTHERAPY COURSE (FOUR YEARS SIX MONTHS DURATION) OF BERHAMPUR UNIVERSITY

W.E.F. 2021–2022 ACADEMIC SESSION

I.CRITERIA FOR ADMISSION: Candidate for admission to the first year Degree of Bachelor of Physiotherapy (BPT) shall be required to have passed the:

+2 Science with the subjects Biology, Physics, Chemistry and English with minimum aggregate of 50% marks in Physics, Chemistry and Biology when taken together.

II. ACADEMIC SESSION:

a. The students shall be admitted into the college/course affiliated to the Berhampur University by the end of September or as per the counselling dates of the state govt. each year.
b. In exceptional cases, the Syndicate may permit THREE weeks more for the admission.
c. Classes for the odd semesters will begin from October each year.

III. AGE: Minimum and maximum age of the candidate - 17 and 21 years respectively at the time of admission or will complete this age on 31st December of the year of his/her admission to the course.

IV. DURATION OF THE COURSE: The course shall extend over a period of four academic years each year comprising of two Semesters and the candidates will be full time students.

V. INTERNSHIP: There shall be compulsory full-time internship extending over a period of six months in an institution approved by the University in consultation with the affiliated college after having passed all the Examinations prescribed in the scheme of Examination.

VI. ELIGIBILITY FOR THE DEGREE: A candidate shall be eligible for the degree of Bachelor of physiotherapy when,

a) He/ She has undergone the prescribed course of study for a period of not less than four years in an institution approved by the University.
b) He/ She has passed the prescribed examinations in all subjects,

and

c) He/ She has completed a compulsory period of internship lasting a period of six months, in institutions approved by the University after having passed all the examinations prescribed in the scheme of examinations.

VII. ELIGIBILITY FOR ADMISSION TO THE BACHELOR OF PHYSIOTHERAPY EXAMINATION: A candidate will be permitted to appear for the University Semester Examinations in the concerned subjects only if.

a) He/ She secures not less than 75% of attendance in that semester in each subject. In exceptional cases 15% of attendance may be condoned by the competent authority.

b) He/ She earns a certificate from the head of the institution of having satisfactorily completed the course of study prescribed in the subject as required by the regulations and his/ her conduct has been satisfactory.

VIII. UNIVERSITY EXAMINATIONS:

a) Examination shall be in theory, practical and oral (whenever prescribed).

b) The University Examination of odd semesters (I, III, V, VII) shall begin from 1st Monday of March & should be completed within March of each year and for even semesters (II, IV, VI, VIII) the University Examination shall begin from 1st Monday of September & should be completed within September of each year.

c) However, if the above days are falling on any public holiday, then the next working day shall be considered to begin the classes/examination.

IX. UNIVERSITY EXAMINATION FEES:

As regulated by the Berhampur University in case of similar professional undergraduate courses like B.Sc. Nursing (four-year course) etc.

X. INTERNAL ASSESSMENT:

a) There shall be total two examinations for each paper, where the internal assessment marks have been allotted. The pattern of examination shall be on the pattern of university examination.

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

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

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

XI. PROCEDURE FOR COMPLETING THE COURSE:

a) A candidate will be permitted to proceed to the next semester without break; even though he/she has failed in one or more subjects of previous semester. If a student fails in a paper (s) he/she shall be allowed two consecutive chances to clear the back

paper failing which he/she has to appear in all papers of that semester, however the internal, practical and oral marks shall be carried forward.

b) The candidate must pass all the University Examinations (Semester I to VIII) i.e., minimum 8 attempts in regular and maximum of 12 attempts & shall also complete the compulsory full-time internship extending over a period of six months within seven years from the date of admission to the Bachelor of Physiotherapy Course.

XII. EXAMINATION PATTERN:

The examination shall be conducted by means of written, printed or typed papers. Each theory paper of 75 marks shall be of THREE hours duration and oral & practical examination of 75 marks shall be TWO hours duration. Each theory paper of 35 marks shall be of ONE AND HALF hour's duration and oral & practical examination of 35 marks shall be of ONE AND HALF hour's duration.

XIII. PASSING MARKS:

a) In order to pass, the candidate must have to secure minimum of 50% marks in theory and oral & practical examinations separately.

b) A candidate who secures not less than 60% of the mark in aggregate shall be declared to have passed the examination with First Class and not less than 75% in any subject for getting Honors in the said subject, provided he/she has passed all the subjects in the first attempt.

XIV. PUBLICATION OF RESULT AND ELIGIBILITY FOR DEGREE AWARD:

a) As soon as possible after all University examinations the syndicate shall furnish a list of candidates who have passed, in alphabetical order.

b) Results of VIII semester shall be published as soon as possible, but not later than 30th November of the concerned year

c) Each successful candidate shall receive the Degree of Physiotherapy in the prescribed format.

XV. VACATION: The Head of the institution /college shall declare maximum of six weeks' vacation in an academic year to the students. The period of vacation shall be decided by the heads of the institution.

XVI. GENERAL GUIDELINES:

a. Each academic year will be divided into two semesters. The teaching of subjects of later semester of the said year can be started in previous semester, if required, in order to complete the syllabus. However, the syllabus should be completed before the examination.

b. Students should be present/attend the classes throughout the year except during vacation.

c. Ordinarily study leave/preparatory leave before the examination of each semester shall not be granted.

d. There shall be TWO examiners per Oral & Practical examination having one internal and one external examiner. Both the examiners shall jointly plan the overall conduct the entire examination together.
e. There should be clear cut 100 teaching days of 6 periods each day in every semester and each class shall have one hour duration.

XVII. DIPLOMA FOR THE DEGREE OF BACHELOR OF PHYSIOPTHERAPY:

This is to certify that _____of (_____ College Name_____) who passed all the examinations for the degree of Bachelor of Physiotherapy (Four years and six months duration) was this day admitted to the Degree.

VICE CHANCELLOR
BERHAMPUR UNIVERSITY

BHANJA BIHAR
BERHAMPUR
Date: - _____

SCHEME OF EXAMINATION

SEMESTER – I

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Psychology & **Sociology** **Section-A** Psychology-50 marks **Section-B** Sociology 50 marks	Theory	NIL	100	50	100	50	150
II.	Therapeutics-I **Section A** Exercise Therapy-I **Section B** Electro-Therapy-I	Theory Oral & Practical	25 Nil	75 100	50 50	200	100	150 100
					Total	300	Total	400

SEMESTER – II

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Anatomy	Theory Oral & Practical	NIL NIL	100 100	50 50	200	100	100 100
II.	Physiology	Theory Oral & Practical	NIL NIL	50 50	25 25	100	50	50 50
III.	Biochemistry	Theory	NIL	50	25	50	25	50
IV.	Therapeutics-II **Section A** Exercise Therapy-II **Section B** Electro-Therapy-II	Theory Oral & Practical	25 NIL	75 100	50 50	200	100	150 100
V.	Environmental Science	Theory Field Work	25 NIL	75	50	100	50	45 05
					Total	650	Total	650

SEMESTER – III

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Pathology, Micro-biology & Pharmacology **Section A** Pathology, Micro-biology **Section B** Pharmacology	Theory	NIL	100	50	100	50	100
II.	Biomechanics & Kinesiology	Theory	NIL	100	50	100	50	100
III.	Community Medicine	Theory	NIL	50	25	50	25	50
					Total	250	Total	250

SEMESTER – IV

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Surgery-I	Theory Oral & Practical	NIL NIL	100 100	50 50	200	100	100 100
II.	Medicine-I	Theory Oral & Practical	NIL NIL	100 100	50 50	200	100	150 100
III.	Medicine-II **Section A** Cardiology & Work Physiology **Section B** Paediatrics	Theory	NIL	50 50	25 25	100	50	100 50
IV.	Physiotherapy in Cardio-Pulmonary Conditions **Section A** PT in Cardiovascular Conditions **Section B** PT in Pulmonary Conditions	Theory Oral & Practical	25 NIL	75 100	50 50	200	100	200 100
					Total	700	Total	900

SEMESTER – V

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Alternative Medicine	Theory	NIL	100	50	100	50	200
II.	Physiotherapy in Surgical Conditions	Theory Oral & Practical	25 Nil	75 100	50 50	200	100	200 100
					Total	300	Total	500

SEMESTER – VI

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Medicine -III (Neuroscience)	Theory Oral & Practical	NIL NIL	100 100	50 50	200	100	175 100
II.	Medicine-IV (Psychiatry)	Theory	Nil	100	50	100	50	100
III.	Surgery-II (Orthopaedics)	Theory Oral & Practical	NIL NIL	100 100	50 50	200	100	100 50
					Total	500	Total	525

SEMESTER – VII

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Rehabilitation Science	Theory	NIL	100	50	100	50	150
II.	Physical Diagnosis & Physics Fitness	Theory Oral & Practical	25 NIL	75 100	50 50	200	100	200 100
III.	Professional Management & Ethics	Theory	25	75	50	100	50	100
IV.	Research Methodology, Biostatics & Introduction to Computer Science	Theory (Non-University Examination)						50
					Total	400	Total	600

SEMESTER –VIII

Paper	Subject	Examination Method	Internal Marks	University Marks	Passing marks Int + Uni.	Aggregate marks each subject	Aggregate pass marks in each subject	Hours of Study
I.	Physiotherapy in Neurological Conditions	Theory Oral & Practical	25 NIL	75 100	50 0	200	100	100 150
II.	Physiotherapy in Musculoskeletal Conditions	Theory Oral & Practical	25 NIL	75 100	50 50	200	100	100 150
III.	Project Based on Research Methodology & Biostatistics		50	NIL	25	50	25	150
					Total	450	Total	650

SEMESTER - I
PAPER – I
PSYCHOLOGY AND SOCIOLOGY

Instruction Hrs.:
Theory – 150

Section-A: Psychology (90hrs)

I. GENERAL PSYCHOLOGY (50 hrs)

1. Definition of psychology
   a. Science of mind, consciousness and behaviour
   b. Scope and branches of Psychology
2. Methods of introspection, observation and experimentation
3. Hereditary and environment
   a. Relative importance of hereditary and environment
   b. Physical characteristics intelligence and personality
   c. Nature Vs. nurture controversy
4. Learning: Types of learning
   a. Trial and error
   b. Classical learning
   c. Instrumental learning
   d. Insight for learning
5. Memory
   a. Steps of memory
   b. Measurement of memory
   c. Causes of forgetting
   d. Concept of STM & LTM
6. Perceptual process
   a. Nature of perceptual process
   b. Structural and functional factors in perception
   c. Illusion and hallucination
7. Emotion
   a. Emotion and feeling
   b. Physiological changes
   c. Theories of emotion (James – Lange and Cannon - Bird)
8. Motivation
   a. Motive, need and drive
   b. Types of motive: Physiological, psychological and Social
9. Intelligence
   a. Definitions: theory and assessment
10. Personality: Definition: Types and measurements

II. CHILD PSYCHOLOGY (10 hrs.)

1. Concept of child psychology
   a. Meaning: nature and subject matter of child psychology.

b. Practical importance of studying child psychology for rehabilitation professionals.

2. Methods of studying child development
   a. Baby biography
   b. Case history
   c. Behaviour rating

III. INDUSTRIAL PSYCHOLOGY (30 hrs.)

1. Human engineering
   a. Importance of human engineering
   b. Development of human engineering
   c. Problems in human engineering
2. Decision making
   a. Process and steps in decision making
   b. Individual decision making
   c. Decision making in origination
3. Stress and mental health
   a. Causes and reaction to stress
   b. Stress management
4. Work culture, morale and rewards of work discipline
5. Guidance and counselling
   a. Meaning, types and objectives of counselor.

Section-B: Sociology (60 hrs)

1. INTRODUCTION

Definition of sociology, Sociology as a science, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.

2. SOCIOLOGY AND HEALTH

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

3. SOCIALISATION

Meaning of socialization, influence of social factors on personality, socialization in hospital and socialization in rehabilitation of patients.

4. SOCIAL GROUPS

Concepts of social groups influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospital and rehabilitation setting.

5. FAMILY

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

6. CULTURE

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

7. CASTE SYSTEM

Features of the modern caste system and its trends.

8. SOCIAL

Meaning of social control, role of norms, folkways, customs morals religion, law and other means of social control in the regulation of human behaviour, social deviance and disease.

9. SOCIAL PROBLEMS OF THE DISABLED

Consequences of the following social problems in relation to sickness and disability. Remedies to prevent these problems.

i. Population explosion
ii. Poverty and unemployment
iii. Beggary
iv. Juvenile delinquency
v. Prostitution
vi. Alcoholism
vii. Problems of women in employment

10.SOCIAL SECURITY

Social security and social legislation in relation to the disabled

11.SOCIAL WORKER

The role of a medical social worker

Paper II
THERAPEUTICS – I

Section A – EXERCISE THERAPY-I (125 hrs)

Instruction Hrs:
Theory - 75 hours
Practical – 50 hours

1. Basics Physics in Exercise Therapy
   Mechanics: Force, Gravity, line of gravity, centre of gravity in human body, Base, equilibrium, Axes and planes, Mechanical principals - Lever, order of lever, examples in human body, pendulum, spring, Friction, Weight & pulley circuit, friction.

2. Massage Definition of massage: Types of massage, general effects and uses of massage, local effects of individual manipulation --------- effects).
   Contra-indications, techniques of application all manipulations – Stocking, Effleurage, Kneading and picking up skin rolling (back), clapping, tapping, friction etc.

Practical:

Demonstration and practice of all types of massage manipulation: Stroking, Effleurage, Kneading-circular kneading. Thumb kneading, finger kneading (to joints) etc. picking up, skin rolling (back) clapping etc.
The above various types of manipulation should be demonstrated and practiced to upper limbs, lower limbs, back and face appropriately.

3. Introduction to Exercise therapy

4. Starting positions: Fundamental starting positions - standing, sitting, kneeling, lying and hanging. All the derived positions of the above five fundamental starting positions. Muscle work for all the fundamental starting positions, Derived positions.
5. Classification of movements in details:
   Active Movement, Voluntary movements, involuntary movements, Passive movements.
6. Voluntary movements: Free exercise, assisted exercises, resisted exercises.

7. Assisted exercise: Technique and uses

8. Free exercises: Classification, technique, effect of free exercises on various systems etc.

9. Resisted exercises- Technique and types of resistance, SET system (Heavy resisted exercises, Oxford method, Delorme's method, and McQueen's method).

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

Practical:

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

11. Bed rest: complication Effects of physiological standing & use of tilt table.

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

Practical:

Demonstration and practice of putting suspension to shoulder joint, elbow joint in upper limb, hip joint and knee joint in lower for all movements.

13.Posture:

Types, factors responsible for good posture, factors to poor posture, Principles of development of good posture. Faulty posture, correcting techniques.

Section-B: ELECTRO THERAPY-I (125 Hrs)

Instruction Hrs:
Theory - 75 hours
Practical – 50 hours

1. Electrical Fundamentals -

   a. Physical Principles-Structure and properties of matter, molecular atom, proton, neutron, electron, ion, etc.
   b. Electrical Energy: Nature of electricity-Current-Static electricity Current-Electric potentials generated by cell-Gem's Law, Joule's Law.

   c. Magnetic Energy: Nature and property of a magnet, magnetic induction-Snow rule -Maxwell's cork & screw rule.
   d. Electromagnetic induction - Principle and working of choke coil-Transformer - Rectification of AC to DC, Metal Oxide rectifier, Semiconductor- Diode and Triode.

   e. Valves-Principle of working-condenser-principle-Details of charging and discharging etc. Transistor's measurement of current intensity, EME and power-moving coil mill ammeter and voltmeter.

   f. Wiring of components in series and parallel. Distribution of electrical energy-Earth Shock and electrical Shock, Safely Devices.

2. Low frequency currents:

    a. Nature and principles of production of muscle. Stimulating currents: Types of Low frequency currents used for treatment. Therapeutic electric stimulation-iontophoresis. High voltage galvanic current, Rectifying currents.

    b. Electrogenic membrane response - chemo responsive electrogenic system.
    c. Neuromuscular junction - synapses -Muscle electrogenic - Electro physiology of C.N.S.

    d. Constant direct and interrupted direct currents - Modified current - Physiological and therapeutic effects and users, Technique and method of application - precautions against dangers.

    e. Accident and treatment of them if they occur.

    f. Muscle stimulating current - To innervated and denervated muscle - long and short duration - various pulses - Accommodation.

    g. Principles of electro diagnosis - Strength duration curve - Chronaxie and Rheobase - Their relationship etc.

3. **Therapeutic heat:** Definition, production, physiological & therapeutic effect, uses, contraindication, technique of application of following.

    a. Moist heat
    b. Paraffin wax bath
    c. Contrast bath
    d. Whirl pool bath
    e. Fluido therapy
    f. Electric heating pads

Practical

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

- Stimulation of motor points
- Stimulating the muscles of extremity, back and face through the motor points
- Quadriceps inhibition
- Deltoid inhibition
- Faradism under pressure
- Faradism under tension
- Nerve conduction method
- Diagnostic Test
    - FG Test
    - SD Curve
    - Fatigue Test

- Uses of surged faradism and interrupted Galvanism in various peripheral nerve lesions:
  - Neuropraxia
  - Axonotemesis
  - Neurotemesis
- Pain-physiology, pain modulation & Tens.

SEMESTER – II

Paper I

ANATOMY

Instruction Hrs
Theory – 100
Practical & Demonstration – 100

General Anatomy (16 HRS)
Introduction to anatomy:

Cell:	Parts, name of cytoplasmic organelles and inclusion with their functions)
Epithelium:	Types with examples and light microscopic structure.
Connective tissue:	Classification with emphasis to tendon.
Cartilage:	Types with example.
Bone:	Types with examples, types of ossification (Stages of ossification not required), blood supply, fracture repair.
Joints:	Classification with example, emphasis to synovial joint.
Muscles:	Types (details of E M picture not required)
Nervous Tissue:	Structure of a neurone, synapse relax arc, degeneration and regeneration of nerve.

REGIONAL ANATOMY

Superior extremity (32 Hrs.)

Theory – (14 Hrs.)

Axilla, brachial plexus, shoulder joint, sternoclavicular joint, axillary lymph nodes, elbow joint, superior radio-ulnar joint, nerves of arm and fore arm, synovial bursa of hand and palmar space, ulnar nerve in hand, cutaneous distribution according to dermatome, clinical anatomy, surface anatomy.

Practical /demonstration (18 Hrs.)

Pectoral Region, Axilla, Scapula and Clavicle, Humerus, Muscles of arm (Front & Back), Radius, Front of forearm, ulna, back of forearm, muscles of palm &arterial arches, articulated hand (carpals and meta carpals name and arrangements in order only).

Inferior extremity (32Hrs)

Theory-13(Hrs.)

Lumbar plexus, inguinal group of lymph nodes, hip joint, femoral triangle and femoral sheath, knee joint, venous drainage of inferior's extremity, sciatic nerve and its distribution, obturator nerve, arches of foot, mid tarsal and sub talar joint, cutaneous distribution according to myotome, clinical anatomy, surface markings.

Practical/demonstration (19Hrs)

Hip bone, Gluteal Muscles, Femur, front to thigh, back of thigh, medial side of thigh, tibia, anterior compartment of leg, fibula, lateral compartment of leg, back of leg, articulated foot (Identification of tarsal meta tarsal only).

Abdomen and Pelvis (34 Hrs.)

Theory - (15 Hrs.)

Abdominal wall, inguinal canal, stomach, liver, pancreas, kidney with ureter and spleen, small intestine, large intestine, abdominal aort, a portal vein, diaphragm, Sacral plexus, Sacro-iliac joint, intervertebral disc.

Practical/demonstration (19 Hrs.)

Abdominal visceras, sacrum, bony pelvis, visceras of pelvis and blood vessels.

Thorax (16 Hrs.)

Theory (7Hrs)

Thoracic cage and mediastinum, heart with its internal and external features, blood vessels, typical spinal nerve, typical intercostals space, mechanism of respiration, surface markings of heart and lungs.

Practical/demonstration (9 Hrs)

Superior mediastinal structures, sternum, ribs (only general features), vertebrae (Identification, general features, functional components, development, vertebral column with weight transmission), heart, ploura & lungs.

Head & Neck (22 Hrs)

Theory (11 Hrs)

Tempero mandibular joint, atlanto-occipital and atlanto-axial joint, cutaneous distribution of trigeminal nerve.

Practical/demonstration (11 Hrs)

Mouth cavity, nasal cavity, pharynx and larynx (Parts, sensory distribution), cranial bones (Identification of individual bone general features, different foramina in relation to cranial nerve, cranial fossae and their relations to brain and hypophysis).

Identifications of anterior and posterior triangles of neck with their contents.

Nervous system (24 Hrs)
Theory- (12 Hrs)

General introduction and classification, autonomic nervous system (Idea about sympathetic and par sympathetic with their difference in distribution and function).

Spinal cord with its meninges, spinal Reflex, Pyramidal and extrapyramidal tracts (detail Nucleus not required) Blood supply.

Parts of brain, meninges, Gross discussion of Hind Brain, Mid Brain
(Cranial nerve nucleus position should be mentioned).
Fore brain- cerebral hemisphere, functional areas and blood supply.

Practical/demonstration (11 Hrs)
Spinal cord and parts of brain.

Cranial nerve (12 Hrs)
Names in order, individual cranial nerve distribution, idea about upper motor neurone and lower motor neurone, applied anatomy.

Histology Practical (12 Hrs)
Epithelium (Simple, Compound)
Connective tissue (Cartilage & Bone)
Muscle (Smooth & Skeletal)
Nervous tissue (Neuron)
Blood vessels (Large artery and vein)

Paper – II
PHYSIOLOGY

Instruction Hrs.
Theory -50
Practical & Demonstration –50

GENERAL PHYSIOLOGY

1. Introduction and scope of physiology

2. Cell and tissue – Its structure, principal constituents, properties and functions including cell division.

3. Body fluid -
   a. Blood: composition and general function of plasma. Blood cells – structure and function – red blood cells, white blood cells – including numbers and approximate length of life – position, structure and function of cells reticulo endothelial system.

   b. Blood clotting including bleeding time and clotting time, factors accelerating or slowing the process. Blood groups and their significance, Rh factor, Haemoglobin and E. S. R.

   c. Formation of blood, tissue fluid and lymph.

4. Cardio-Vascular System:
   a. Structure and properties of Heart Muscles and nerve supply of Heart.
   b. Structure and function of arteries, capillaries and veins.
   c. Cardiac cycle and Heart sound.
   d. Cardiac output measurements, factors affecting Heart Rate and its regulation, cardiovascular reflexes.
   e. Blood pressure, its regulation, physiological variation, peripheral resistance, Factors controlling Blood pressure.
   f. Haemorrhage.

5. Respiratory System:
   a. Mechanism of Respiration changes in diameters of thorax-intra-pleural and intrapulmonary pressure.
   b. Quantities of lung volume tidal and residual volume, vital capacity.
   c. Gaseous interchanges in lung and tissues.
   d. Control of respiration – Nervous and chemical significance of changes in rate and depth, transportation of oxygen and carbondioxide.
   e. Respiratory states – anoxia, asphyxia cyanosis acclimatization.
6. Digestive System:
   a. General arrangement of alimentary canal, liver, pancreas-position, structure and functions.
   b. Nutrition and Diet – carbohydrates, protein, fat, salts, water, vitamins and minerals digestion, absorption and metabolism.
7. Reproductive system:
   a. Sex determination and development of puberty, male sex hormones. Spermatogenesis, female sex hormones, menstrual cycle. Ovulation, pregnancy, function of placenta, lactation.
8. Excretory System:
   a. Gross and minute structures of kidney, renal circulation, mechanism of formation of urine, glomerular filtration rate and tubular function, renal function and renal tests. Physiology of micturation.
9. Endocrine system
   a. Structure and function of pituitary (anterior and posterior). Thyroid, parathyroid, adrenal cortex, adrenal medulla. Thymus and pancreas. Blood sugar regulation.

10. Skin: structure and functions.

11. Neuromuscular physiology
   a. Cell membrane – ionic and potential gradient and transport Muscle – types of muscular tissue – gross and microscoic structure – function. Basics of muscle contraction – changes in muscle contraction, electrical biphasic and mono-phasic action potentials, chemical, thermal and physical changes, isometric and isotonic contraction.
   b. Motor units and its properties – clonus, tetanus, all or none law, Fatigue.

c. Nerve – Gross and microscopic structure of nervous tissue, one neurone – Generation of action potential – Nerve impulse – condition. Neuromuscular junction:
d. Degeneration – Regeneration of peripheral nerves Wallerian degeneration, Electrotonus and Diflagus law. Types and properties of receptions types of sensations, synapse, reflex are its properties occlusion, summation, subminal fatigue etc.

e. Tracts – ascending and descending and extrapyramidal tracts.

f. Functions of E.E.G

g. Functions of Cerebral cortex, cerebrum, cerebellum, Basal ganglia. Thalamus – connection and functions.

h. Reticular formation - tone, posture & equilibrium, autonomic nervous system.

i. Special senses eye - errors of refraction, lesions of visual path ways.Speech and its disorders. Ear and vestibular apparatus, taste, olfaction somatic sensations.

12. Work physiology
a. Neuromuscular activity, human movement, physiology mechanism in movement behaviour, skill, strength, endurance, analysis of movement.

b. Circulatory and respiratory response to exercises and work, the heart, blood circulation, body fluid changes, pulmonary ventilation, gas exchange and transport.

c. Effects of exercise and work on other body functions.

Paper-III

BIOCHEMISTRY

Instruction Hrs.
Theory-50

1. BIOPHYSICS:
Concepts of PH and buffers, Acid-base equilibrium, osmotic pressure and its physiological applications.

2. CELL:
Morphology, Structure and functions of cell, cell membrane, Nucleus, Chromatin, Mitochondria, Endoplasmic reticulum, Ribosome.

3. CARBOHYDRATES:
Definition, function, sources, classification, Monosaccharides, Disaccharides, Polysaccharides, Mucopoly saccharides and its importance.

4. LIPIDS:
   Definition, functions, sources, classification, simple lipids, compound lipids, derived lipids. Saturated and unsaturated fatty acids. Essential fatty acids & their importance, Blood lipids and their implications, cholesterol and its importance.

5. PROTEINS:
   Definition, Sources, Functions, Classification, Simple protein, Conjugated proteins and Derived proteins, Properties and reactions of proteins.

6. NUCLIC ACIDS:
   Structure and functions of DNA, RNA, Nucleotides.
   Nucleotides Genetic code, Biologically important Nucleotides.

7. ENZYMES: Definition, Classification, Mode of action, factors affecting enzyme action, Clinical importance of enzymes.

8. VITAMINS:
   Classifications, Fat soluble vitamins A, D, E, K, Water soluble
   Vitamins-B Complex and Vitamin C. Daily requirement, Physiological functions, and diseases of vitamins deficiency.

9. BIOENERGETICS:
   Concept of free energy change, Exogenic reaction and endogenic reactions, Concepts regarding energy rich compounds, Respiratory chain and Biological oxidation.

10. CARBOHYDRATE METABOLISM:
    Glycolysis, HMP shunt pathway, TCA
    Cycle, Glycogenesis, Glycogenesis, Glycogenesis, Maintenance of blood Glucose, Interconversion of different sugars.

11. LIPID METABOLISM:
    Fatty acid oxidation, Fatty acid synthesis, Metabolism of cholesterol, Ketone bodies, Atheroscleriosis and obesity.

12. PROTIEN METABOLISM:
    Transamination, Transmethylation, Deamination, Fate of ammonia, Urea s synthesis and synthesis of creatinine, Inborn Errors of Metablism.

13. WATER AND ELECTROLYTES:
    Fluid compartments, Daily intake and output, Dehydration, Sodium and Potassium Metabolism.

14. MINERAL METABOLISM:
    Iron, Calcium, Phosphorous, Trace elements

15. NUTRITON:
    Nutritional aspects of carbohydrate, fat and proteins. Balance diet, Metabolism in exercise and injury, Diet for chronically ill and terminally ill patients.

16. CONNECTIV E TISSUE:
    Mucopolysaccharides, Connective tissue, Proteins, Glyco proteins, Chemistry and Metabolism of bone and teeth. Metabolism of skin.

17. NERVE TISSUE:
    Composition, Metabolism, Chemical mediators of nerve activities.

18. MUSCLE TISSUE:
    Structure, Metabolism of muscles, Muscle contraction.

19. HORMONES:
    General Characteristic and Mechanism of Hormone action, Insulin, Glucagon, Thyroid and Parathyroid hormones, Cortical and sex hormones.

20. ISOTOPES:
    Isotopes and their role in diagnosis and treatment of diseases.

Paper-IV

THERAPEUTICS - II

Instruction Hrs.
Theory – 150
Practical & Demonstration – 100

Section A – EXERCISE THERAPY II

Theory-75 hrs
Practical-50 hrs

1. Muscle strength:
   Anatomy and physiology of muscle tissue, causes of muscle weakness/paralysis, prevention of muscle weakness/paralysis. Types of muscle work and contractions, Range of muscle work. Muscle assessment M.R.C. grading. Principles of muscle strengthening / Re- education, Early Re-education of paralysed muscles.

   Practical

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

2. Relaxation:
   Technique of relaxation, principles obtaining relaxation in various position, effects & uses.

3. P.N.F.: basic theory of proprioceptive –
   Neuro muscular facilitation techniques. Different types of PNF techniques, their effects and uses.

4. Hydrotherapy:
   Introduction, various types of hydrotherapy unit's construction and equipment's used in hydrotherapy. Principles, indications, contraindications, effects and uses of hydrotherapy. Precautions towards patient, towards therapist, equipment unit etc.
5. Traction:
   Manual and mechanical traction. Biomechanics of traction.
   Physiological effects and therapeutic uses. Technique of application.

6. Joint movement:
   Classification of joint movements causes for restriction of joint movement, prevention of restriction of joint range of motion etc.
   Principles of mobilization of a joint in increasing its range of motion.
   Technique of mobilization of stiff joints, goniometry.
   Practical:
   Demonstration and practice of techniques to improve joint range of motion, of hip joint, knee joint, ankle foot in lower limb, shoulder joint, elbow joint, radio - Ulnar joint, wrist in upper limb.
   Demonstration and Practice of free exercises to improve joint range of motion (small joints, e.g., hand, finger, toes etc.)

   Passive stretching: Technique of passive stretching to Stermomastoid muscle, shoulder abductors, flexors, elbow flexors, supinator, wrist and finger flexors in upper limb. Passive stretching to hip flexors, adductors, illo-tribal band, tensor-fascia-lata, Quadriceps, knee flexors, tendo achilis etc. in lower limb.

7. Co-ordination exercises:
   Definition of co-coordinated movements in coordinated movements. Factors for coordinated movements, causes of incoordination, principles of re-education of coordinated movements, technique of coordination exercise.
   Practical
   Demonstration and practice of technique of Dr. Frenkel's exercise to improve co-ordination.
8. Gait:
   Analysis of normal gait with muscle work, various pathological gaits.
   Practical
   Demonstration of various pathological gaits.
9. Crutch gait:

Introduction, crutch measurement, crutch balance, various types of crutch gait in details. Measurement of crutches, walking aids, strengthening of crutch muscles, crutch balance, demonstration and practice to all crutch gaits.

10. Breathing exercises:
    Physiology of respiration, types of exercises, techniques of various types of breathing exercise, its effects and uses. Breathing exercises:
    Practical
    Demonstration and practice of Diaphragmatic breathing, localized expansion exercises.
11. Individual, group and mass exercise. Maintenance exercise, plan of treatment, tables and schemes.

Book Reference (Both Theory and Practicals).

1. Principles of exercise therapy – by Dena Gardiner
2. Progressive exercise therapy – by Conson & Collision
3. Human movement – by Callie
4. Exercises I water – by Doffield
5. Practical exercise therapy – by Hollis. M
6. Muscle testing – by Daniels.
7. Principles & practices of therapeutic massage – A.G. Sinha
8. Muscle testing – by Kendal.

Section B- ELECTROTHERAPY II

Instruction Hrs
Theory – 75
Practical & Demonstration- 50

1. Physics of high frequency currents-production of high frequency currents- principles Bio Physics of heat, physiology of heat and cold. Production, Physiological and therapeutic effects and users, technique of treatment, dangers and precautions – contraindication etc. of the following:
   a. Short wave diathermy
   b. Ultrasound
   c. Micro wave diathermy
2. Medium frequency current:
   Definition, production (Brief), physiological & therapeutic effects uses, contra indication, technique of application of followings.
   a. Interferential current
   b. Russian current

3. Actinotherapy:

   Definition, production (Brief), physiological & therapeutic effects uses, contra indication, technique of application of followings.

   a. Infrared radiation
   b. Laser
   c. Ultraviolet radiation
   d. Helio therapy

4. Cryotherapy:

   Principals, physiological effects, uses, techniques of application and contra indication of followings.

   a. Cold packs
   b. Ice massage
   c. Commercial cold packs
   d. Ice towels
   e. Cold compression units
   f. Evaporating sprays.

5. Electromyography & bio feedback: Basic principles of amplifiers, Oscillators, cathode ray tube, Records, Sigma processing, display devices and indication their principles and uses in Electromyography.

6. Principle and application of Biofeedback & functional electrical stimulation.

Practical

1. Short wave diathermy – setting up of apparatus including selection of method and electrodes. Technique – preparation of patient – checking contra indications – Application of SWD for various conditions and various part of the body – These must be practiced by the students.
2. Microwave diathermy – Same as above.
3. Ultrasonic's - Setting up of apparatus – selection of dose – Technique of application of various conditions and to various parts of the body.

Books Reference for both Theory and Practical:

1. Clayton's electrotherapy and Actinotherapy
2. Principles and practice of electrotherapy – by Kahn
3. Electrotherapy of Wolf
4. Electrotherapy explained – John Low and Annreed.

PAPER-IV
ENVIRONMENTAL STUDIES

Instruction Hrs:
Theory:45 hrs
Field Work:5hrs

1. **Multidisciplinary nature of environmental studies**
   a. Definition, scope and importance (2 lectures) Need for public awareness. III
2. **Natural Resources:**
   a. Renewable and non-renewable resources: Natural resources and associated problems.
   b. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
   c. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
   d. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
   e. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
   f. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
   g. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

3. **Ecosystems**
   Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: - Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

4. **Biodiversity and its conservation**
   a. Introduction – Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels.
   b. India as a mega-diversity nation. Hot-sports of biodiversity. Threat to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
   c. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
5. **Environmental Pollution**
   a. Definition Cause, effects and control measures of:
      i. Air pollution
      ii. Water pollution
      iii. Soil pollution
      iv. Marine pollution

v. Noise pollution
vi. Thermal pollution
vii. Nuclear hazards

b. Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
c. Role of an individual in prevention of pollution. Pollution case studies.
d. Diester management: floods, earthquake, cyclone and landslides. (8 lectures) VI

6. **Social Issues and the Environment**

a. From Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management.
b. Re-settlement and rehabilitation of people; its problems and concerns. Case Studies.
c. Environmental ethics: Issues and possible solutions.
d. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. Wasteland reclamation.
e. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act.
f. Issues involved in enforcement of environmental legislation. Public awareness.

7. **Human Population and the Environment**

a. Population growth, variation among nations.
b. Population explosion – Family Welfare Programme. VII. Environment and human health. Human Rights. Value Education.
c. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Case Studies.

8. Field work

a. Visit to a local area to document environmental assets river / forest / grassland / hill /mountain.
b. Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.
c. Study of common plants, insects, birds.
d. Study of simple ecosystems-pond, river, hill slopes, etc.

Book Reference:

Environmental Biology – By K.C.Agrawal

The Biodiversity of India

Hazardous Waste – By Brunner R.C.

Marine Pollution – By Cark R.S.

Environmental Encyclopedia – By Cunningham W.P.

Environmental Chemistry – By De A.K.

Water in Crisis – By Gleiek H.P.

Encyclopedia of Indian History – By Hawkind RE

SEMESTER- III

PAPER-I
PATHOLOGY, MICRO BIOLOGY AND PHARMACOLOGY

Instruction Hrs
Theory-100

Section A – PATHOLOGY AND MICRO BIOLOGY:

1. Aims and objectives of study of pathology.
2. Brief outline of cell injury, degeneration, necrosis and gangrene.
3. Inflammation: Definition, Vascular and cellular phenomenon, difference between Transudate and exudates. Granuloma.
4. Circulatory disturbance: Haemorrhage, Embolism Thrombosis Infarction, shock, Volkman's, Ischaemic contracture
5. Neoplasia: Definition, characteristic features
    a. Benign and malignant Tumor
    b. Spread of tumors.
6. General approach to immunity and hypersensitivity Reaction SLE.
7. General approach to Bacterial, Viral, mycotic and parasitic infection with special importance to Tuberculosis, Syphilis and leprosy.
8. Diabetes Mellitus.
9. Blood disorder: Anaemia, Leukemia
    a. Bleeding disorder
10. CVS : Heart and Blood vessels
    a. Rheumatic heart disease, coronary heart diseases
    b. Aneurysm, Atherosclerosis
11. Respiratory System:
    a. COPD: Bronchiectasis, Emphysema, Asthma, Bronchitis
12. Bones and Joint: Rheumatoid arthritis, Septic arthritis
    a. Osteoarthritis, Spondyloarthropathy
    b. Including ankylosing spondylitis
    c. Bone tumor
13. Skin: Scleroderma, psoriasis

14. PNS and Muscles: Neuropathies
    a. Poliomyelitis
    b. Myopathies
15. CNS: Infection, Malformation, CVA
    a. Demyelinating disease
    b. Degenerative disease
    c. CNS tumors.

Section-B <u>PHARMACOLOGY</u>

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

PAPER – II

<u>BIOMECHANICS & KINESIOLOGY</u>

Instruction hrs.
Theory – 100

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

II. Kinematic concepts
III. Kinetic aspects of limb movement
    a. Classification of levers
    b. Physiological significance of negative mechanical advantage
    c. muscle function and performance

IV. Lower extremity kinematics
    a. Hip and thigh
    b. Hip joint motion and forces of hip joint
    c. Two leg stances and one leg stances
    d. Varus and valgus of femoral neck
    e. Other factors affecting hip joint forces
    f. Effect of cane by lever approach
V. Knee and leg kinematics
    a. Motion of knee joint
    b. Forces of knee joint
    c. Patellofemoral joint

VI. Ankle and foot kinematics
    a. Motion of ankle
    b. Forces of ankle joint
    c. Stability of ankle joint
    d. Weight bearing of foot
    e. Arches of foot

VII. Biomechanics of gait
    a. Gait
    b. Parameters of gait
    c. Myokinetics of human gait
    d. Gait devation
    e. Crutch and cane exercises
    f. Biomechanics of walking aids
VIII. Posture
    a. Anatomical aspects of posture
    b. Factors affecting posture

IX. Biomechanics of upper extremity
    a. Shoulder joint
    b. Elbow joint
    c. Wrist joint and hand
    d. Vicarious movement

X. Biomechanics of spine

PAPER – III

COMMUNITY MEDICINE

Instruction Hrs.
Theory – 50

1. Outline the objectives.

a. Outline the various measures of prevention and methods of intervention-especially for diseases with disability.
b. Outline the national care delivery system and the public health administration system of the central and state level.
c. Outline selected national health programmes.
d. Define Occupational health and list methods of prevention of Occupational diseases and hazards.
e. Outline the Employees State Insurance scheme and its various benefits.
f. Describe the social security measures for protection from occupational hazards, accidents, diseases and the workman's compensation act.

2. Family Welfare Programme.

a. Define community based and Institution-based rehabilitation. Describe the advantage and disadvantages of institution and community-based rehabilitation.

b. Describe the following communicable diseases with reference to reservoir, mode of transmission, route of entry and levels of prevention.
   i. Poliomyelitis
   ii. Meningitis
   iii. Encephalitis
   iv. Tuberculosis
   v. Filariasis
   vi. Leprosy
   vii. Tetanus
   viii. Measles.
c. Describe the Epidemiology of Rheumatic heart disease. Cancer, Chronic degenerative disease and cerebrovascular accidents.
d. Outline the influence of nutritional factors such as protein Energy Malnutrition, Anaemia, Vitamin deficiency and minerals on disability.
e. List the principles of health education, methods of communication and role of health education in rehabilitation services.
f. Define the role of community leaders and health professionals in health education.
g. Outline the role of international health agencies in rehabilitation of the disabled.

Semester – IV

Paper – I

SURGERY -I

Instruction Hrs
Theory-100
Practical & Demonstration – 100

Section A – General Surgery, Obstetrics & Gynaecology

1. General Surgery
    a. Principles of General Surgery and Anaesthesia including: blood transfusion and physiological response of the body to surgery.
    b. Principles of pre and postoperative management of surgical patients.
    c. Role of physiotherapy in general surgery.
    d. Describe the abdominal surgical incisions.
    e. Outline the post operative complications and management in
        i. Nephrectomy,
        ii. Appendicectomy.
        iii. Herniorraphy,
        iv. Mastectomy
        v. Thyroidectomy
        vi. Colostomy
        vii. Adrenalectomy
        viii. Cystectomy
        ix. Hysterectomy
        x. Prostatectomy
        xi. Cholecystectomy
        xii. IIeostomy

2. Obs. and Gyn.:
    a. Pregnancy – stage of pregnancy
    b. Labour – stages of labour – delivery.
    c. Common gynaecological problems.

Section B – Cardiothoracic Surgery and Plastic Surgery

1.Cardiothoracic Surgery
    a. Incisions for cardiothoracic surgery
    b. General pre and post operative management of cardio–thoracic surgery
    c. Various surgical procedures for various chest and cardiac conditions / diseases.

2.Plastic Surgery

a. Burn - Degrees of Burns
b. Managements and Reconstructive Surgery following
c. Burns and complication of burns.
d. Types of Skin Graft and flaps
e. Principles of Tendon Transfers/ Transplant.
f. Cosmetic Surgery
g. Surgery of the hand with emphasis on reconstructive surgery and replantation surgery in trauma and leprosy.

Paper-II
MEDICINE-I

Instruction Hrs
Theory – 150 Hrs
Practical - 100 Hrs

1. General Medicine
    a. Definition
    b. Etiopathogenesis
    c. Pathology
    d. Clinical Features
    e. Diagnosis
    f. Different Diagnosis
    g. Principles of Management
2. Introduction to Medicine.
3. General principles of patient evaluation and management including over all idea about use of laboratory and imaging techniques.
4. Diseases of Respiratory system
    a. Approach to a patient with Respiratory disease
    b. Chronic obstructive Pulmonary Disease
    c. Bronchial asthma
    d. Pneumonia
    e. Lung abscess
    f. Bronchiectasis
    g. Pleural effusion
    h. Empyema Thoracis
    i. Pneumothorax
    j. Pulmonary tuberculosis
5. Diseases of GIS Hepatobiliary Disorders,
    a. Approach to a patient of GIS Disease
    b. U. G. IT. Bleed

c. Jaundice
d. Viral Hepatitis
e. Cirrhosis of liver

6. Diseases of Kidney
    a. Approach to a patient of renal disease
    b. Acute glomerulonephritis
    c. ARF
    d. CRF
    e. Nephrotic Syndrome
7. Hematologic Diseases
    a. Approach to a patient of hematologic disease
    b. Anaemia: Iron deficiency anaemia, Haemolytic anaemia, Megaloblastic anaemia
8. Oncology
    a. Lymphomas
9. Endocrine & metabolic diseases
    a. Acromegaly & gigantism Dwarfism
    b. Hypothyroidism
    c. Hyperthyroidism
    d. Adrenal hyper function & Hypofunction
    e. Diabetes Mellitus
    f. Hypoglycaemia
    g. Vit D & Calcium metabolism & parathyroid gland disorders
10. Nutritional diseases
    a. Obesity
    b. Protein energy malnutrition
11. Connective tissue diseases
    a. Approach to a patient of connective tissue diseases
    b. Rheumatoid arthritis
    c. Gout
12. Infectious diseases
    a. Malaria
    b. Filarial
    c. Tetanus
    d. Leprosy
13. HIV & AIDS
14. Diseases of Skin
    a. Scabies

b. Fungal infections

15. Diseases due to Environmental factors & poisons
    a. Heat Stroke
    b. Radiation Injury
    c. Snake bite
    d. Organophosphorus Poisoning
    e. Oleander poisoning

Paper – III
Medicine-II

Instruction Hrs
Theory – 50

Section-A: Cardiology & Work Physiology

1. Cardiology

a. Basic anatomy of heart, coronary circulation and development of heart.
b. Normal cardiac contraction and relaxation: mechanism and diagnosis.
c. Acute rheumatic fever: Aetiology, Diagnosis and management.
d. Valvular heart diseases: Mitral stenosis, mitral regurgitation, aortic regurgitation and aortic stenosis: diagnosis and management.
e. Ischaemic heart disease: Clinical features, diagnosis and management.
f. Hypertension: classification and treatment
g. Congestive heart failure: aetiology diagnosis and management.
h. Peripheral vascular disease, deep vein thrombosis: Aetiology and management.

2. Work Physiology

a. Physiology of exercises
b. Cardiac output and cardiac cycle during regulation of exercise
c. Cardiac rate during exercise
d. Oxygen consumption of the body at rest, during exercise and after exercise
e. Effect of exercise on:
    i. Calorie intake
    ii. Coronary circulation
    iii. Metabolism
    iv. Renal blood flow
    v. Contractility of myocardium
    vi. Blood pressure
    vii. Haemo dynamics variable
    viii. Increase in Carbon dioxide tension and mixing venous blood
    ix. Increase in pulmonary ventilation

f. Equipment for work physiology

Ergo meter – cycle type

Ergo meter – treadmill type

Section-B: Paediatrics (50 hrs)

1. Describe growth and development of a child from birth to 12 year including physical, social, adaptive development.
2. List the maternal and neonatal factors contributing to high risk pregnancy.
3. The neonate: inherited diseases, maternal infection viral and bacterial, maternal diseases incidental to pregnancy, such as gestational diabetes, pregnancy induced hypertension, chronic material diseases such as heart disease, renal failure, tuberculosis, diabetes, epilepsy, bleeding to mother at any trimester.
4. Briefly describe community programmes: international (WHO), national and local for prevention of poliomyelitis, blindness, deafness, mental retardation and hypothyroidism. Outline ht eimmunisation schedule for children.
5. Cerebral palsy: define and briefly outline etiology of prenatal, perinatal and postnatal causes, briefly mention pathogenesis, types of cerebral palsy (classification), findings on examination, general examination of C.N.S. musculoskeletal and respiratory system.

6. Briefly outline associated defects: mental retardation, microcephally, blindness, hearing and speech impairment, squint and convulsions.

7. Prevention: appropriate management of high-risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems.

8. Muscular dystrophy: outline various forms, modes of inheritance and clinical manifestation physical finding in relation to disabilities progression of various form and prognosis. Describe e treatment goals in forms which are and are not fatal.
9. Spinabifida, meningomyelocele: Outline development, clinical sfeatues – lower limbs, bladder and bowel control, complications UTI & hydrocephalus, medical treatment and surgical treatment.
10. Still's disease: Classification, pathology in brief, physical findings, course & prognosis. Outline treatment, prevention and correction of deformity.
11. Acute C.N.S. infections: classify (Bacterial and viral) and outline the acute illness, CSN sequelae leading to mental retardation, blindness, deafness, speech defect, motor paralysis, bladder and bowel problems, seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.
12. Normal diet of new born and child: list dietary calorie, fat protein, mineral and vitamin requirement in a normal child and in a child with malnutrition. Classify and outline etiology, findings and treatment of Rickets: vitamin D deficiency and resistant rickets.

Paper – IV

Physiotherapy in Cardio-Pulmonary conditions

Instructions Hrs
Theory- 200 hrs
Practical – 100 hrs.

Section-A: PT in Cardio Vascular Conditions
Theory – 50
Practical – 50

1. Cardiac anatomy
2. Cardiac physiology
3. Congenital heart diseases
4. Acquired heart diseases
5. Ischemic heart diseases
6. Life span development cardiovascular system
7. Peripheral Vascular diseases, Physiotherapy management for common arterial venous and lymphatic conditions
8. Evaluation for cardio vascular system
9. Cardio pulmonary resuscitation
10. Cardiac rehabilitation
11. Incisions for Cardiac surgeries, Drainage tubes and bottles, ventilators - uses and functions of ventilators
12. Post - operative complications, Pre and post operative physiotherapy management of open heart and closed heart surgeries.

Section-B: PT IN Pulmonary Conditions (150 hrs)

Instruction Hrs
Theory – 100
Practical – 50

1. Respiratory anatomy & physiology
2. Respiratory pathology of obstructive restrictive and infective conditions
3. A comparative neonatal and pediatric respiratory anatomy, physiology with adults
4. Respiratory assessment
5. Respiratory investigations
6. Breathing strategies, chest clearance techniques, exercise testing & training. Managing chest conditions using these conditions.
7. Incisions for pulmonary surgery, Drainage tubes and bottles, ventilators - uses and functions of ventilators
8. Post-operative respiratory complications, Physiotherapy for pulmonary surgeries, Pre and post operative physiotherapy management of the following conditions.

a) Thoracolomy
b) Lobectomy
c) Thoraco plasty
d) Pneumonectomy

9. Management of atelectasis, Pneumothorax, fistula
10. Monitoring in ICU
11. Role of chest physiotherapy in ICU
12. Pulmonary rehabilitation
13. Pediatric chest physiotherapy: Lung infections: outline the clinical findings, complications and medical treatment of Bronchiectasis, lung abscess and bronchial asthma, cystic fibrosis, primary complex in infant and children. Acute paediatric respiratory distress syndrome, intensive pediatric care. Intensive neonatological and pediatric surgical care Cardio respiratory rehabilitation in children.

SEMESTER-V
Paper – I
ALTERNATIVE MEDICINE

Instruction Hrs
Theory – 100
Practical – 100

1. Yoga: Definition – History – Principles – Concepts, General effects of yoga posture on Musculo skeletal system. Specific effects of individual yogic posture on Musculo skeletal system. Yoga and therapy rationale

2. Naturopathy: Definition – History – Principles – Concepts. General effects of Naturopathy.

3. Acupuncture & Acupressure

   a. Acupuncture points and meridians – their function extra meridians.
   b. Forbidden points
   c. Complications
   d. contraindications
   e. Specific important points (Luo and source point's horary points.)
   f. Mechanism of acupuncture – physiology
   g. Techniques
   h. Equipment
   i. Methods for asepsis, sterilization.
   j. Relevance of acupuncture to physical therapeutics Trigger points
   k. Electro – acupuncture.

Paper-II

PHYSIOTHERAPY IN SURGICAL CONDITIONS

Instructions Hrs
Theory-200
Practical-100

1. Abdominal Surgery:

Pre and post operative Physiotherapy management of the following abdominal surgical conditions. (Incision, pre and post operative complications must be explained).

   a. Total Gastrectomy,
   b. Partial Gastrectomy,
   c. Appendectomy,
   d. Herniorrhaphy,
   e. Cholecystectomy
   f. Hysterectomy
   g. Radical mastectomy
   h. Colostomy.

2. Obstetrics and Gynaecology:
   a. Antenatal and post-natal training,
   b. Prolapsed uterus,
   c. Urogenital dysfunction,
   d. Pre and post operative management of pelvic floor surgery,
   e. Common Gynecological conditions.

3. Plastic Surgery and Burns:
   a. Degrees of burns
   b. Physiotherapy approach,
   c. Pre and post operative physiotherapy of skin grafting, re-constructive surgery of hand, Tendon transfer etc.

Semester-VI
Paper – I

Medicine-III: NEUROSCIENCE

Instruction Hrs
Theory-175
Practical & Demonstration – 100

1. General principles of neurological diagnosis.
2. Cerebro vascular diseases. Cerebro vascular accident. Cerebral thrombosis, embolism & haemorrhage.
3. Intra cranial tumours.
4. Acute infection of CNS: Encephalitis, Meningitis, Poliomyelitis.
5. Traumatic injury of the Head & spine.
6. Parkinsonism and other extrapyramidal disorders.
7. MS & other demyelinating diseases.
8. ALS (amyotropic lateral sclerosis) and other motor neurone diseases.
9. Diseases of Peripheral Nerves, cranial nerves, G.B.S. including Peripheral nerve injury & principle of management
10. Myasthenia Gravis.
11. Diseases of muscles
12. Seizure and epilepsy.
13. Headache.
14. Dementia.
15. Cerebral Palsy.
16. Principles of management of cranial & spinal trauma.
17. Development anomalies of CNS & their brief management.
18. Degenerative diseases of spine and outline of management.
19. Management of pain syndromes.
20. Outline of clinical presentation & management of brain tumours & spinal cord compressions.
21. Neurosurgical intensive care study
22. Use of operative microscope, endoscopy, stereotactic Surgery, minimally invasive surgery in Neurosurgical perspective.
23. Rehabilitation of neurologically disabled patients

Paper – II

Medicine-IV: PSYCHIATRY

Instruction hrs
Theory – 100

1. Neurosciences Neuroanatomy Neurotransmitter study etc.
2. Examination and diagnosis of psychiatric cases.
3. Clinical manifestations of psychiatric disorders.
4. Classification of mental disorders.
5. Theories of personality and psychoanalysis.
6. Neuropsychiatric aspects of
    a. Cerebrovascular disorders
    b. Brain tumours
    c. Epilepsy
    d. Traumatic brain injury
    e. Movement disorders
    f. Multiple sclerosis
    g. HIV infection and aids
    h. Headache
    i. Neuromuscular disorders
7. Delirium, dementia, amnestic and other cognitive disorders
8. Substance related disorders – alcohol, amphetamine, cannabis, opiod, caffeine, nicotine, hallucinogens etc.
9. Schizophrenia
10. Other psychotic disorders.
    a. Schizo-affective disorders,
    b. Schizophrenifom and brief psychotic disorders.
    c. Delusional disorders, shared psychotic disorder
    d. Acute and chronic psychotic disorder
    e. Postpartum psychotic syndromes
11. Mood disorders
12. Anxiety disorders – GAD, phobias, panic disorders, ASD, PTSD, OCP
13. Somatoform disorders
    a. Conversion disorder
    b. Somatisation disorder

   c. Hypochondriasis
   d. Pain disorder
   e. Body dysmorphic disorder
   f. Chronic fatigue syndrome
14. Factitious disorder
15. Dissociative disorders
16. Normal human sexuality and sexual and gender indentify disorders
17. Eating disorders
18. Sleep disorders
19. Impulse control disorders not classified elsewhere
20. Adjustment disorders
21. Personality disorders
22. Psychological factors affecting medical conditions
23. Disaster-types, psychiatric co-morbidities and management
24. Biological therapies
    a. Dopamine receptor antagonists
    b. Serotonin-dopamine antagonist
    c. Benzodiazepine receptor agonists 2 and antagonists
    d. Mood stabilizers – lithium, valproate, carbamazepine, etc.
    e. Tricyclices and tetracyclics
    f. Selective serotonin reuptake inhibitors
    g. SNRI
    h. Antihistaminics
    i. Electro convulsive therapy
25. Mental retardation
26. Suicide
27. Early onset schizophrenia
28. Attention deficit disorder
29. Conduct disorders
30. Tic disorders
31. Feeding and eating disorders of infancy and early childhood
32. Psychotherapies
33. Medical ethics

Paper III

SURGERY-II: ORTHOPAEDICS

Instruction Hrs
Theory -100
Practical & Demonstration – 50

1. Fractures and dislocations including soft tissue injuries.
    a. Pathology of fractures and repairs of bones.
    b. Reasons for union, non-union and delayed union fibrous union and myositis.
    c. Common fractures of upper extremity, lower extremity including spine-management, complications etc.
    d. Dislocations of shoulder, elbow, hip, knee and spine,
    e. Rupture, contusion and sprain of muscles, tendons and ligaments.
    f. Knee injuries – injury to medial ligament, internal derangement and meniscus tear, lateral ligament sprain of ankle.
    g. Volkman's Ischaemic contracture, tennis elbow

2. Deformities: common congenital and acquired deformities of foot, knee, hip, shoulder, elbow and wrist including hand and spine. Cervical rib, Torticollis, metatarsalgia, claw hand.
3. Inflammatory conditions and lesions of joints and bones. Osteomyelitis, tuberculosis, pyogenic infection, osteoarthritis, rheumatoid arthritis T.B. joints, tenosynovitis, synovitis, capuslitis, tendonitis, osteoporosis and osteomalacia, sciatica, low back pain, brachial neuralgia.
4. Operative procedures
5. Management after A.O. fixation.
6. Bone tumour, classification and management.
7. Management of open wound with external fixator.

Semester-VII

Paper-I

Rehabilitation Science

Instruction Hrs
Theory – 150

1. Introduction

    a. Define the term rehabilitation, Explain its aim and principles, scope of rehabilitation.

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

2. Therapeutic techniques

a. Agencies involved in rehabilitation of a physically handicapped.
b. Legislations for physically handicapped (in brief)
c. Limitations of each team member in rehabilitation of a physically disabled individual.

3. Communication Problems

a. Identify communication problems, classify these and outline principles of treatment, outline of speech therapy & hearing aids.

4. Behavioral Problems

a. Identify behavioral problems in the disabled and outline the principles of management.

5. Mobility Aids

a. Demonstrate knowledge of the indications for different types of mobility aids and their functions, e.g. wheelchairs, walkers, crutches.

6. Pre-vocational Evaluation

a. Discuss methods and team involvement in pre-vocational evaluation and training.

7. Architectural barriers

a. Describe architectural barriers and possible modifications with reference to rheumatoid arthritis, cerebrovascular accident, spinal cord injury and other disabling conditions.

8. Disability Evaluation

a. Outline the principles of disability evaluation and discuss its use.

9. Legal aspects

a. Outline legal aspects of disability in terms of compensation for disability and benefits available to the disabled.

10. Social implications

a. Outline the social implications of disability for the individual and for the community.

11. Community based rehabilitation module

a. Describe a CBR MOUDLE and compare this with an institution-based rehabilitation system.

12. Visual disability

a. Definition and classification, mobility technique, communication skills, sensory re-education, emotional and psychological aspects of blindness, facilities for blind, prevention of blindness.

13. Mental retardation –
a. Definition and classification, prevention and existing facilities for mentally retarded children.

14. Outline of social and vocational counselling

15. Classification of aids and appliances.
a. Measurement of P.O.P. Cast techniques
b. Simple splints techniques
16. Principles and check out procedures for static and dynamic alignment training.
a. Spinal orthosis
b. L.L. orthotic & prosthetics
c. U.L. orthotics & prosthetics

PAPER-II

PHYSICAL DIAGNOSIS & PHYSICAL FITNESS

Instruction hrs
Theory – 200 hours
Practical – 100 hours

Section A: Physical Diagnosis

1. Problem oriented medical record – history – concept – advantages
2. Communication with the patient – Principles and methods
3. Physical Diagnosis on the basic of
   a. Musculo skeletal system
      i. Maitland's concept Kaltenborn
      ii. Cyriax approach
      iii. McKenzie's concept
      iv. Mennel's concept
      v. Neural tension tests – normal and abnormal findings
   b. Neuro Muscular system: (For CNS Problems)
      i. Motor learning
      ii. Bobath's approach (Normal movement concept)
      iii. Voijta approach

c. Clinical reasoning and clinical decision making
d. Rationale of plan of treatment

Section B: Physical Fitness & Ergo Therapeutics

1. Factors responsible for occupational hazards-stress, faulty working conditions (Biomechanical aspects) – Thermal stress, over-use, pollution-noise, air, water, food.
2. Accidents-electrical, mechanical, thermal, chemical.
3. Disability evaluation (functional) interpretation and legislation-principles-techniques-suggestions for compensation.
4. Ergonomic evaluation-evaluation of working area, type of work fitness testing for the same.
5. Preventive P.T. measures
6. Fitness programmes for specific work
7. Sports and industry
8. Planning, developing and management towards work efficiency, productivity, avoidance of accidents and other use.
9. Relaxation programme for stress.

Paper – III

PROFESSIONAL MANAGEMENT AND ETHICS

Instruction Hrs
Theory- 100

Section A Professional Ethics and legal issues

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

Section B Management studies

1. Definition–Branches of management, Principles of health sector management.
2. General principles of Management-Theories of management, Basic concepts and theories.
3. Personnel Management–Policies and Procedures, Basic concepts and theories.

4. Financial issues including budget and income generation.
5. Principles of an organization chart.
6. Organization of a department–Planning, space, manpower, materials, basic requirements.
7. Resource and quality Management–Planning with change and coping with change.
8. Self- Management:
   a. Preparing for first job
   b. Time management
   c. Career development

Paper – IV
RESEARCH METHODOLOGY, BIOSTATISTICS AND INTRODUCTION TO COMPUTER SCIENCE

Non-University Examination
Instruction hrs
Theory – 50

1. Review of literature
2. Study design
3. Sample size
4. Sampling variability & significance
5. Protocol writing
6. Ethical aspects
7. Data collection analysis, interpretation and presentation
8. Common statistical terms
9. Measures of location, average & percentiles
10. Variability & its measures
11. Normal distribution & normal curve
12. Probability
13. Significance of different in mean
14. Chi-Square test
15. Correlation & regression
16. Demography & vital statistics
17. Correlation of measures of population & vital statistics
18. Use of micro computer in research

SEMESTER- VIII

Paper I

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Instruction Hrs
Theory – 100hours
Practical – 150hours

1. Introduction
    a. Brief review of the following medical conditions and various modalities of physiotherapy, aims, means and techniques of physiotherapy should be taught.
2. UMN lesions
    a. Hemiplegia
    b. Cerebral palsy
    c. Multiple sclerosis
    d. Monoplegia, Paraplegia, Tetraplegic syndrome
    e. Sub-acute combined degeneration of spinal cord
    f. Syringomyelia
    g. Transverse myelitis
    h. Parkinson's disease
    i. Extra pyramidal lesions
    j. Motor neuron disease
    k. Ataxia
    l. Tabes dorsails
    m. Acute CNS infection
    n. Pre and post operative management and complications etc. of head injury. Laminectomy, Surgery following brain Tumour etc. craniotomy etc.
3. Muscle disorders and LMN lesions
    a. Myopathy and muscular dystrophies
    b. Poliomyelitis
    c. Polyneuritis
    d. Peripheral neuropathy
    e. Leprosy
    f. Peripheral nerve injuries
    g. Erb's palsy
    h. Sciatica
    i. Brachial neuritis and neuralgia
    j. Facial palsy and bell's palsy
    k. Peripheral nerve injuries - (Non-Operative) – Pre and post operative management of nerve repair and grafting
    l. General and physiotherapeutic management of psychiatric patients

Paper – II

PHYSIOTHERAPY IN MUSCULOSKELETAL CONDITIONS

Instruction Hrs
Theory – 100hrs
Practical – 150hrs

1. Introduction:
   a. Brief review of the following surgical conditions and various physiotherapy modalities, aims, means and techniques of physiotherapy should be taught.
2. Traumatology: General Physiotherapeutic approach for traumatic conditions. Fractures and Dislocations:
   a. Classification- Types of displacement Methods of immobilization.

   b. Common sites of fracture: Healing of fractures and factors influencing union, non-union, delayed union etc
3. Specific fracture and their complete physiotherapy management
   a. upper limb: Clavicle, humerus, Ulna and radius, Colles fracture & crush injuries of hand.
   b. Lower limb: Fracture neck of femur, shaft of femur, patella, tibia and fibula, Pott's fracture, fractures of tarsal and metatarsal bones.
   c. Management of fracture spine with (paraplegia) as well as without neurological deficit.
4. Dislocation of shoulder, hip, ACJ, SCJ, elbow
5. Soft tissue injuries, synovitis, capsulitis, Volkman's Ischemic Contracture etc.
6. Tear of semilunar cartilage and cruciate ligaments of knee, Menisectomy and patellectomy, internal derangement of knee. Sprain, strain, overuse syndrome, tendinits, tendinosis, bursitis.
7. Amputations: Levels of amputation of upper and lower. Extremity-stump care, stump bandaging, pre and post fitting prosthesis management (check out of prosthesis, training etc.)
8. Deformities:
   a. Congenital: Torticollis and Cervical rib, C.T.E.V., pes cavus and pes planus and other common deformities.
   b. Acquired: Scoliosis, Kyphosis, Lordosis, coxa Vera, genu valgum, genu valgum, genu varum and recurvatum.
9. Degenerative and infective conditions: Osteoarthritis of major joints, Spondylosis, spondylitis, spondylolisthsis prolapsed intervertebral disc lesion. Periarthitis (Rotator cuff lesion) of shoulder, Tuberculosis of spine, bone and major joints. Perthe's disease.
10. Rheumatoid arthritis, ankylosing spondylitis, Psoriatic arthritis, Syphilitic arthritis, Scleroderma etc and other miscellaneous orthopaedic conditions commonly treated by physiotherapy.

11. Growth and development, maternal and neonatal factors contributing to high-risk baby, CP, Myopathy, spina bifida, Hydrocephalus, Still's disease. CTEV, CDH, Arthrogryposis multiplex congenital. Rickets, torticoils, Osteogenesis Imperfecta.

Paper – III

PROJECT BASED ON RESEARCH METHODOLOGY & BIOSTASTICS

Instruction Hrs – 150