SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)

SYLLABUS

For
BACHELOR OF PHYSIOTHERAPY
COURSE CODE: BPT

DEPARTMENT OF PARAMEDICAL
FACULTY OF PARAMEDICAL

Duration of Course	:4 Year 6 Month
Examination Mode	:Yearly
Examination System	:Non Grading

Swami Vivekanand University, Sironja Sagar (M.P.)
2019-2020

Swami Vivekanand University, Sagar(M.P.)

First Year

HUMAN ANATOMY (BPT-101)

Max. Marks - 100 **Duration : 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

GENERAL ANATOMY

UNIT – I **20 MARKS**

1. **Introduction** - Scope of anatomy cell as a structural and fundamental unit, Organization of tissue organs and system, Anatomical position of the body, Anatomical terms.
2. **Skin** and the appendages of the skin.
3. **Muscles:** Voluntary and Involuntary and Cardiac muscles, short description of the structure of different muscles. Classification of voluntary muscles. Origin and Insertion, Tendon, Aponeurosis, Isometric and Isotonic contraction of muscles.
4. **Bones:** composition and functions, classification of bones according to morphology and development, various terms and markings on the bones. Development of bones, parts of long bones and blood supply of bones, general remarks about bones of skull, thorax, vertebral column and bones of extremities in detail.
5. **Joints:** Definition, classification of joints structure and cartilaginous joints. Structure of synovial joints, Movements of joints, blood supply of bones and joints and Bursae, close pack and loose pack position of the joints.

UNIT - II **20 MARKS**

1. **Nervous system:** Nerve cell, Synapse and reflex. Organization of central nervous systems Spinal Nerves and nerve endings.
2. **Cardiovascular system:** Arteries Veins, Capillaries, and Collateral circulation. Blood as a connective tissue, Gross anatomy of Heart, large blood Vessels.
3. **Respiratory system:** General outline of respiratory passages, gross anatomy of Lung, Pleura. Broncho-pulmonary segments, Inter-costal muscles and Mechanism of respiration.
4. **Digestive system:** General idea or outline of gastro- intestinal tract and associated glands.
5. **Excretory system :** structure and function of kidney, general outline of Ureters Urinary bladder and Urethra.

UNIT - III **20 MARKS**

1. **Reproductive system:** general outline of male and female general organs.
2. **Endocrines:** Definition, Stricture in general.
3. **Lymphatic system:** Lymph circulation, Lymph nodes and Lymphoid tissue. (Neuro-anatomy) Emphasis)- Gross structure of Sulci and Gyri and various areas of cerebral hemispheres,Thalamus, Hypothalamus, Basal Ganglia.
   (i) Cerebellum.(ii) Pons, Medulla (iii) Spinal Cord. (iv) Ascending tracts. (v) Descending tracts (iv) Clinical application of Knowledge of the tracts. (vii) Autonomic nervous system. (viii) Nervous control of the urinary Vander and bladder dysfuction.

UNIT – IV **20 MARKS**

KINESIOLOGY

Basic Concepts, Muscular system, Joints, Machinery Musculo skeletal system, Principles of Motion, Principles of force and work, Basic for the development of motor skill, Principles of stability, Postural principles

UNIT – V **20MARKS**

REGIONAL ANATOMY

. Superior Extremity

Osteology: Clavicle, Scapula, Humerus, Radius, Ulna Carpals Metacarpals

Soft parts: Breast, Pectoral region, Front of arm, Back of arm, Cubital fosa, front of forearm, back of forearm, nerves and vessels of forearm, palm, Dorsum of Hand, Shoulder girdle, joints of hand.

. Inferior Extremity

Osteology: Hip bone, Femur, Tibia, Fibula and Patella, Tarsals, Metatarsals.

Soft parts: Front of thigh- Femoral canal and femoral hernia, Adductor canal, medical compartment of thigh, gluteal region, Back of thigh Popliteal fossa, Anterior compartment of leg, posterior compartment of leg, sol of foot, venous drainage of leg, hip joint, ankle joint, tarsal joints.

.**Trunk:**

Osteology: Cervical, Thoracic and Lumbar Vertebra, Sacrum, Coccyx and Ribs.

Soft tissue: Inter-vertebral joints, costo-vertebral joints, Inter-vertebral Disc; Ligaments and Muscles.

Skull as a whole and mandible. Demonstration of Dissected parts.

Parts of Limbs. Trunk, Brain, Thorax and Abdominal Contents.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Lecture-Demonstration

1. Muscles of the whole body.
2. Demonstration of organs in thorax and abdomen.
3. Demonstration of viscera in head, face and neck.
4. Demonstration of all the glands in the body.
5. Identification of bony prominences on inspection and palpation in the body, especially of extremities.
6. Points to palpate nerves and arteries.
7. Identification of prominent muscles.
8. Extra-ocular muscles and salient points about the eye ball.
9. Demonstration on Brain.

Books Recommended:

1. An Introduction to fundamental of anatomy by David Sindair (Blackwell Publication0.
2. Gray's Anatomy
3. Cunningham's Manual of Practical anatomy
4. Anatomy and physiology by Smout and Macdonald(Edward Arnold)
5. Kinesiology by Katherine (Saunders Co).
6. Clinical Kinesiology by Brunnstrome.
7. Kinesiology and Applied Anatomy by Resch-Bruke(Lee & Febigar)
8. Applied anatomy and Kinesiology by W. Bower & H. Stone(Lee & Febigar)
9. Caties primary anatomy by Bestmaji J.
10. Principles of anatomy and Physiology by Tortora & Grabowski (Harper Collons College Publishers)
11. Anatomy by B.D. Chourasia

Swami Vivekanand University, Sagar(M.P.)

HUMAN PHYSIOLOGY (BPT-102)

Max. Marks 100 **Duration : 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Objectives:

At the end of the course, the candidate will-

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis]
2. Be able describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Female urogenital function and alteration in functions with ageing.
3. Analyze physiological response & adaptation to environmental stresses with special emphasis on physical activity and temperature.
4. Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, cardiovascular & Respiratory system, & Exercise tolerance/ Ergo-graphy. Note: Group discussions, seminars and tutorial will be on the topics covered in didactic lectures.

UNIT - I **20 MARKS**

A. GENERAL PHYSIOLOGY

Structure of cell and its functions, Transport across cell membrane, Body fluids- Homeostasis

B. BLOOD

Composition, function and physical properties of blood, Plasma protein and their functions, Erythropoeisis, leucopoiesis and thrombopoiesis in brief, Haemoglobin and its functions, Structure and function of leukocytes, Immunity, Physiology of clothing mechanism and fibrinolysis, Blood group and physiological basis of transfusion medicine

C. NERVE & MUSCLE

Structure, classification & properties. R.M.P., Action potential, Propagation of nerve impulse. Degeneration & regeneration, Reaction of degeneration [retrograde], Structure-properties- classification-excitation/contraction coupling, Motor unit- Electromyography, Neuro-muscular transmission, Physiological basis of myopathies.

UNIT – II **20 MARKS**

A. NERVOUS SYSTEM

Organization of Nervous system. Neuron and Neuralgia, Synapse: Properties and Synaptic transmission. Reflex arc, its components, properties, type and neurological impairments. General sensations and their properties. Ascending tracts of the Spinal cord and effects of their lesions. Pain and physiological Analgesia. Motor neurons, Descending tracts and their applied aspects. Regulation of Muscle Tone by Spinal and Supra-spinal mechanism. Function of Brain -stem, Cerebellum, Basal Ganglia and Motor cortex. Control of Voluntary movement, Regulation of posture and equilibrium vestibular apparatus. Broad functions of Thalamus, Hypothalamus,

Major lobes of Cerebral cortex and Ascending Reticular Activation System, Limbic System, Learning, memory,speech and conditional reflexes.

B. SPECIAL SENSES

Function anatomy of the Eye, Optics of Vision, Retinal Function, Visual Pathways, Mechanism of Heating. Sensation of Taste and Smell.

C. AUTONOMIC NERVOUS SYSTEM

Functioning of Autonomic Nervous System with social reference to micturation, defecation and labour, Higher neural regulation of ANS.

UNIT - III **20 MARKS**

A. CARDIOVASCILAR SYSTEM

General introduction of cardiovascular systems. Structure and properties of Cardiac muscle. Cardiac cycle and Heart sounds. Interpretation of normal Electrocardiogram. Cardiac output and cardiac failure. Venous return, Heart rate and its regulation. Structure and organization of vascular tree. Arterial blood pressure and patho-physiology of Hypertension. Characterisation of Coronary circulation and patho-physiology of Coronary artery disease, Capillary circulation and physiology basis of Odema. Patho-physiology of Shock.

B. RESPIRATORY SYSTEM

Functional anatomy of Respiratory System. Mechanics of breathing: Mechanism of inspiration and Expiration, intrapleural and intra-alveolar pressures, Compliance, Surfactant, Air-way resistance and work of breathing. Respiratory membrane and diffusion of gases. Composition of gases and Partial pressures. Oxygen and Carbon-dioxide transport. Lung Volume, Capacities and Lung function tests. Nervous and Chemical control of breathing. Physio-clinical aspects of Dyspnoea, Apnoea, Asphyxia, Hypoxia, Cyanosis, Breath holding, high and Low atmospheric pressures.

UNIT – IV **20 MARKS**

A. DIGESTIVE SYSTEM.

Functions of (a) Saliva, (b) Gastric juice, (c) Pancreatic juice (d) Succus entericus, (e) Bile. Movements of G.I.T. Functions of Liver.

B. RENAL SYSTEM

Functions of Kidney, Formation of Urine. Physiology of Micturation- Neurogenic bladder.

C. ENDOCRINE AND REPRODUCTIVE SYSTEM

Role of Hypothalamus as an endocrine gland. Functions and hypo & hyper secretion of hormones of (a) Pituitary (b) Thyroid (c) Parathyroid (d) Adrenal (e) Endocrine part of pancreas. Spermatogenesis. Functions of Testosterone. Ovarian and Menstrual Cycle and their hormonal control. Hormones of Ovary and their functions. Physiological basis of Fertilization, Implantation, Pregnancy, Perpurataion and Lactation. Contraception.

UNIT - V **20 MARKS**

A. SKINS AND BODY TEMPERATURE REGULATION

Functional anatomy of the Skin and its function, Different mechanisms involved in body temperature regulation. Physiological basis of Pyrexia and Hypothermia.

B. EXERCISE PHYSIOLOGY

Effects of acute & chronic exercises, Oxygen/CO2 transport – O2 debt. Effects of Excises on muscle strength, power, endurance, B.M.R., R.Q.- hormonal & metabolic effects- respiratory & cardiac conditioning. AGING. Training, fatigue & recovery. Fitness- related to age, gender,& body type.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

TEXT BOOKS

1. Textbook of physiology- vol. & II – A.K. Jain.
2. Medical physiology – R.L. Bijani.
3. Concise medical physiology – S.Choudhari.

REFERENCE BOOKS

1. Textbook on medical physiology – Guyton & Hall.
2. Review of medical physiology – Ganong.

PRACTICALS

1. Haematology –[Demonstration only]
2. Study of Graphs
   a. Skeletal muscles- (i) Simple muscle twitch (ii) Effect of increasing strength on SMT. (iii) Effect of increasing load on SMT. (iv) Effect of free load & after load (Starting' aw). (v) Effect of temperature. (vi) Effect of two successive stimuli. (vii) Effect of fatigue. (viii) Effect of multiple stimuli & tetanus
   b. Cardiac muscles- (i) Simple myocardiogram. (ii) Effect of temperature on the myocardiogram. (iii) Effect of drugs. (iv) All of none law. (v) Staircase phenomenon.
3. Physiology Fitness- (i) Breath holding, (ii) Mercury column test,
   (i) Cardiac efficiency test – Harvard step test – Master step test
      1. Recording of arterial blood pressure – effects of change in posture & exercise on A.B.P.
      2. Stethography – (a) Effect of deglutition. (b) Effect of voluntary hyperventilation (c) Effect of exercise.
      3. Spirometry - Lung volumes and capacities.
      4. Mosso's finger ergography and bicycle ergography
      5. Perimetry
      6. Clinical examination of (a) Respiratory system. (b) Cardiovascular system. (c) Central Nervous system. (d) Special senses.

Swami Vivekanand University, Sagar(M.P.)

BIO-ELECTRICAL MODALITIES (BPT103)

Max. Marks 80 **Duration : 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course description

This course will enable the student to understand the basic electricity and medical electronics and its application in electrotherapy instruments.

Course objective

The objective of this course is that after 180 hours of lectures, demonstrations, practical and clinics, the student will be able to describe the principles of generation, circuit diagram and testing of electrotherapy apparatus. In addition, the student will be able to fulfil with 75% accuracy (as measured in written, oral and practical internal evaluation) the following objectives of the course.

Note - Emphasis should be given to theoretical part without mathematical derivations; however, final formula must be written.

UNIT - I **16-MARKS**

1. **A.C. Current -** Sinusoidal wave from: Frequency, Wavelength, Amplitude and phase of a sine wave, Average & RMS value of a sine wave.
2. **D.C. Current** - Modern concept of electricity: Fundamental of electric charges (Proton and electron), Bound and free electrons, conductors and insulators, current, Static electric charges, charging of an object, potential and capacitance, potential difference and EMF, Quantity of electricity, magnitude of current, Resistance of conductor and Ohm's law, Resistances in series and parallel, Discharging charged object.
   Capacitor (condenser): - Electric around a capacitor, charging and discharging a capacitor, type of capacitor with application of each physiotherapy Department.
   Rheostat : Series and shunt rheostat with application of each in the physiotherapy department Effect of electric current: Thermal effect, chemical effect (ionization) and magnetic effect, electric shock, causes and its prevention.

UNIT - II **16-MARKS**

1. **Therapeutic Current -** Impulse: Definition, types, pulse duration and pulse Repetition time, Interrupted Galvanic Currents faradic current and surged faradic currents.
2. **Magnetism -** Magnetic and non- magnetic materials, magnet and its poles, the basis of magnetism (Dipole theory), Magnetic lines of force and their properties. Electromagnetism: Magnetic field around a current carrying conductor, electromagnetic induction, Lenz's law strength of induced EMF, Inductor and inductance, type of inductor, reactance and impedance, Static transformer, mutual inductance. Even ratio, step-up, step-down and earth free transformers. Precautions against Earth shock variable and auto transfer.

UNIT - III **16-MARKS**

1.Thermionic Valves - Thermionic emission, Diode valves and triode valves and their characteristics and constants.

2. Semi-Conductor Devices - Intrinsic and extrinsic semi-conductors, advantage of semi-conductors devices over Thermionic valves, semi-conductor diode and transistor. Biasing of Diode and Diode characteristics. Light emitting Diodes, Integrated circuits.

3. Electronic Circuits- Rectifiers and smoothing circuits. Sinusoidal and Non-sinusoidal Oscillators. Pulse generator circuits, short wave diathermy and ultrasound apparatus.

4.A.C. and D.C. Meters - Functions and applications of D.C. current meter, D.C. Voltage meter, series and shunt Ohmmeters, Wheat stone bridge and multi-meter, construction and application of cathode ray oscilloscope.

UNIT -IV **16-MARKS**

Electro-Therapeutic Modalities -Introduction to generation, Circuit diagram, testing of apparatus, Indications and Contraindications of. (i) Low frequency currents, (ii) High frequency currents (iii) Medium frequency currents

UNIT - V **16-MARKS**

Introduction to generation, Circuit diagram, testing of apparatus, Indications and Contraindications of. (i) S.W.D. and Pulsed S.W.D. (ii) M.W.D. (iii) Ultra-Sonics (iv) Infrared (v) U.V.R. (vi) Laser (**Note:** Emphasis is given only to generation, circuit diagram and testing of above apparatus).

Marks Distribution :

Theory -

University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Practical (Demonstration only)

Diode and triode valves, transistor, ammeter, voltmeter, Galvanometer, Rheostat, Resistance box, Transformer. Demonstration of possible electrotherapy unit circuits like stimulator, SWD and testing of apparatus etc.

Book References

1 Basic radio by M. Tepper Vol. I' II' III' and V.
2 Fundamentals of physics by verghese, parvathy Sebastian and anatomy (VAS Publication).
3. Modern College Physics by Harvey E. White (CBS Publication).
4. Electronic Principles by A.P. Malvino (Tata McGraw-Hill Publication).
5. Handbook of electronics by Gupta and Kumar (Pragati Prakashan).
6 Technique of Electrotherapy and its physical and physiological basis by Stafford L. Osborne and Harold J. Holmquest.
7. Clayton's Electrotherapy by Angel Forster and Nigel Palestanga.
8. Therapeutic Electricity by Sydney Litch
9. Medical Electronics Book.
10. Electricity and Magnetism by Brijlal and Subramanyam.
11. Electrotherapy and Light Therapy by Kovac's

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BIO-MECHANICAL MODALITIES (BPT104)

Max. Marks 80 **Duration : 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course will enable the students to understand the basic mechanics and their application in physiotherapy in restoration of physical function.

Course Objective

The objective of the course is that after 180 hours lectures. Demonstration, practicals and clinics, the student will be able to describe the mechanics and their application in physiotherapy. In addition, the student will be able to fulfil the 75% accuracy (as measured in written, oral and practical internal evaluation) the following objectives of the course.

UNIT - I **16-MARKS**

Definition of Mechanics, force, Diagrammatic representation of forces, Measurement of forces, classification of forces, Coplanar and parallel forces, Composition and Resolution of forces. Momentum, Action and Reaction, Friction, Rotation about a Pivot. Angle of Pull of Muscle. Assistance and Resistance of Movements. Moment of a force and practical application. Mechanical Principles applied in physiotherapy like force, momentum, torque etc.

UNIT - II **16-MARKS**

Gravity, Definition, Line of gravity, Center of Gravity. Equilibrium. Supporting base, Stability of equilibrium. Energy Work and Power Energy (Potential and Kinetic), work and Power. Mechanics of position, gravity, line of gravity and center of gravity in human body, base equilibrium, fixation and stabilization. Mechanics of movement – axes and planes, the plane of movement and gravity

UNIT - III **16-MARKS**

A. **Levers** - Lever, Action of the lever, Position of the fulcrum, Orders of Levers, Tools and Other Mechanical devices Pulley block. Examples in human body, levers at home and its work, levers in physiotherapy
B. **Pulleys -** Different type of pulleys and their uses in physiotherapy.

UNIT - IV **16-MARKS**

Elasticity - Definition, Stress, Strain, Hook's law, springs, Properties of Springs, springs in series and parallel. Elastic materials used in physiotherapy like springs (in detail), Rubber elastic and Sorbo rubbers.

UNIT - V **16-MARKS**

Hydrostatics and Hydrodynamics - Archimedes principle, Properties of water, liquids, pressure. Buoyancy, Laws of Floatation. Apparent loss in weight, factors determining up-thrust, effect of buoyancy on movement performed in water. Movement of force, further effects of apparent loss in weight. Equilibrium of floating body, movement of water, Inertia, Movement of Objects in water. Bernoulli's theorem and its application in Atomiser or syrayer. (Only qualitative explanation of the above). Hydrostatic and hydrodynamic principles used in Hydrotherapy.

Marks Distribution :

Theory -
University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Practicals (Demonstration of the following)

1 Mechanical principles applied in physiotherapy like force, Torque center of Gravity etc.
2 Demonstration of different types of lever in human body
3 Demonstration of different types of pulleys and springs used in physiotherapy.
4 Demonstration of axial and pendular.
5 Demonstration of Archimedes's principle of floatation and Bernoulli's Theorems application in Hydrotherapy.

Book Reference
1 Principles of exercise therapy by Dena Gardner.
2 Practical exercise therapy by Margaret hollies.
3 Krusen's textbook of physical medicine and rehabilitation by krusen kortke.
4 Muscle testing by Daniel.
5 Clayton's electrotherapy.
6 Elements properties of matter by D.S. Mathur.

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Psychology & Sociology - (BPT 105)

Max. Marks – 80 **Duration- 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course description

This course will introduce students to the basic sociological concepts principles and social processes, social institutions (in relation to the individual, family and community) and the various social fact affecting the family in rural and urban communities in India.

UNIT - I **16-MARKS**

A. Meaning, Definition and Scope of sociology. Its relation with anthropology, psychology, social psychology and ethics. Methods of sociology – case study, social survey, Questionnaire, Interview and opinion poll methods. Importance of its study with special reference to health care professional.

B. Social Factors in health and disease – The meaning of social factors, The role of social factors in health and illness.

C. Socialization - Meaning and nature of socialization, Primary secondary and anticipatory socialization, Agencies of socialization.

D. Social Groups - Concepts of social group, influence of formal and informal group on health and sickness. The role of primary group and secondary group in hospital and rehabilitation setting.

E. Family - Meaning and definition, Functions, Types, Changing family, Influence of family on the individual's health, family and nutrition, the effects of sickness on family and psychosomatic disease and their importance to physiotherapy.

F. Community – (a) Rural community – Meaning and features, health hazards of ruralities, (b) Urban community – meaning and features, health hazards of Urbanites.

UNIT – II **16-MARKS**

A. Culture and Health - Concepts of culture, Cultures and Behaviour, Cultural meaning of sickness, Culture and Health disorders.

B. Social Change -Meaning of social change, Factors of social change, Human Adaptation and social change, Social change and stress, Social change and deviance, Social change and health programme, The role of planning in the improvement of health and in rehabilitation.

C. Social Problems of 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, (iv) Prostitution, (v) Alcoholism, (vi) Problems of Women in employment.

D. Social Security - Social Security and Social Legislation to the disabled.

E. Social Worker - Meaning of social Work, The role of a medical social worker.

UNIT – III **16-MARKS**

A. What is psychology? Field of application and methods of study of psychology, The respective influences of heredity and environment on the individual, Development and growth of behaviour in infancy and childhood,

B. Motivation: Achievement, affiliation and aggression Maslow's theory. Emotions and emotional development. Learning theories, methods of learning (Pavlov, Thorndike, hull- Toleman). Learning and maturation – special reference to conditioning positive and negative reinforcement interest and in learning.

C. Sensation, perception- Social psychology, influence of individual or groups on behaviour of others leadership and group psychology. Memory, thinking and causes of forgetting.

UNIT - IV **16-MARKS**

A. Introduction: Field of application and short history of clinical psychology. Concept of mind: Conscious and unconscious mind (psychological approach).

B. (i) Intelligence and intelligence testing, kinds of mental deficiency. (ii) Personality: Concept, influencing factors and tests.

UNIT - V **16-MARKS**

A. Major psychological disorders: Psychoneurosis – (i) Anxiety (ii) Phobia (iii) Obsessive- c
B. ompulsive reaction. (iv) Psychosis (v) Schizophrenia (vi) Depression (vii) Psychosomatic disorders, personality disorders (viii) Frustration and conflict. (ix) Stress: Coping mental mechanism with special reference to normal and abnormal conditions.

B. Counselling: Process, approaches –

(i) Directive
(ii) Non-directives
(iii) Counselling skills.

Marks Distribution :

Theory -
University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Book References - Clinical Psychology by Koleman.

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Second -Year

Bio-Chemistry & Pharmscology (BPT-201)

Max. Marks 80 **Duration : 3 Hrs.**

Note – Paper will be divides i nto five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

The course in Pharmacology and Biochemistry provides the student basic knowledge of Biochemistry and Pharmacology in order to understand the general biochemical process of drugs in the body and their importance in physiotherapy treatment.

UNIT - I **16-MARKS**

I. **General Pharmacology -** Definition of drug, Pharmacokinetics and Pharmacodynamics. Broad categories of adverse drug reactions. Alcohols. Analgesics and Antipyretics, anti-inflammatory drugs. Sedatives. Stimulants. Drugs acting on muscles- Muscle relaxants, Muscle stimulants. Anti-parkinsonian agents.

II. Drugs modifying B.P., Hypolipidemia, Anticoagulants. Thyroxin and Anithyroid drugs. Anti-diabetics. Glucocortics. Calcium, Phosphorus, Calcitonin and Pharatharmone. Narrow spectrum antibiotics. Broad-spectrum antibiotics. Anti-cancer drugs.

UNIT - II **16-MARKS**

I. Drugs acting on respiratory systems: Respiratory stimulants and respiratory depressants, Bronchodilators, Expectorants. Anti-Asthmatics, Anti-tussive.

II. Vitamines.

III. Overinhormones, Anabolic steroids, Ostrogen, Progesterone, Androgen.

IV. Locally acting drugs: Anodies Local anaesthetic drugs, Counter-irritants Rubificient, Soothing agent, Anti-microbials.

UNIT - III **16-MARKS**

I. Basic Biophysics: Concept of Acid base, buffer, Henderson- Hasselbach equation, brief knowledge of biophysical process such as Osmosis. Viscosity, Surface tension, Dialysis with special emphasis on their biomedical implication. A brief study of Radio-isotopes and their. Clinical applications.

II. General Biochemistry with Biomedical functions – (i) Carbohydrates: Definition, Classification with example and General functions. (ii) Lipids: Definition Classification and General functions. Essential Fatty Acids, Cholesterol, blood lipids, Brief review of Lipoproteins. (iii) Proteins: Definition, Classification and Biomedical importance, Study of Haemoglobin and Immunoglobins with function, plasma and Functions. (iv) Nucleic Acids: Brief overview of the structure of RNA and DNA including Nucleosides and Nucleotides. Study of few biologically important nucleotides. (v) Enzymes: Definition, Classification with example Factors affecting enzyme action, brief study of enzyme inhibition, clinical importance of enzymes. (vi) Vitamins: Definition, Classification and function. Dietary source, Daily requirements and Deficiency Disorders.

UNIT – IV **16-MARKS**

I. **Bioenergetics :** Study of Plasma Membrane. Review of laws of thermodynamics as application to biological system. Concept of free energy charge. High-energy compounds and Respiratory chain.

II. **Nutrition :** Basic principal of Nutrition of carbohydrates, Protein and lipids. Caloric requirement and Balance diet.

III. **Water and Electrolyte Balance :** General outline of fluid compartments of the body with their water and electrolyte content and balance. Dehydration.

UNIT – V **16-MARKS**

I. General Metabolism

II. Carbohydrate metabolism: Glycolysis, TCA,Glycogen metabolism, blood sugar regulation, Diabetes and Diabetic Ketonocidosis.

III. Lipids Metabolism: Beta-oxidation of Fatty acids, Fatty acid synthesis, cholesterol synthesis, Ketosis and Fatty liver.

IV. Protein Metabolism: General reaction of Amino acids, Formation and fate of Ammonia, Urea cycle.

V. Pyrine and Pyrimidine : Only catabolism of Pyrine to be Stressed in detail with special emphasis on Gout. General breakdown of Pyrimidine and associated disorders.

(Note: A brief outline of metabolic pathway here in is indicated. Details and Structure are to be avoided).

Marks Distribution :

Theory -

University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Book References

1. Textbook of Biochemistry by West and Todd.
1. Textbook of Medical Biochemistry by Chatterjee and Shinde.
2. Principles of Biochemistry by A. Lehninger.
3. Textbook of Biochemistry by A.C. Deb.
4. Essentials of medical Pharmacology by K.D. Tripathi.
5. Textbook of Pharmacology by B.N. Ghose.
6. Pharmacology by Satoskar
7. Clinical Pharmacology by Lawrence.

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PHTHOLOGY AND MICROBIOLOGY - (BPT-202)

Max. Marks – 80 **Duration – 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

UNIT – I **16-MARKS**

I. Concept of Diseases, Classification of Lesions. Deficiency Diseases vitamin, vitamin B12, vitamin C, vitamin D.
II. Clean & Brief concepts of inflammation and Repair, Degeneration, Necrosis and Gangrenes.
III. Vascular disturbances: Oedema, Thrombosis, Embolism, Haemorrhage and Shock.
IV. About Anaemia, Leukaemia, Haemorrhagic disorders.
V. Clear Concepts about Tumours, Definition, Classification, Aetiology and spread of tumours, Benign versus Malignant tumours.

UNIT - II **16-MARKS**

I. **Respiratory diseases-** Pneumonia, Bronchitis Asthma, Emphysema, Tuberculosis, Lung cancers and Occupational Lung diseases.
II. **C.V.S. –** Rheumatic heart diseases, myocardial infarction, Atherosclerosis, congenital heart disease.
III. **Alimentary system –** Peptic ulcer, Carcinoma of stomach, Ulcerative lesions of Intestine.
IV. **Liver –** Hepatitis, Cirrhosis and Hepatoma.
V. **Pancreas –** Pancreatitis, Carcinoma of Pancreas, Diabetes.

UNIT - III **16-MARKS**

I. **(a) Central nervous system –** Meningitis and Encephalitis, brief outline of C.N.S. Tumours and peripheral nerve lesions. **(b) Bones and Joints –** Osteomyelities, Osteoarthritis, Septic, Arthritis, Gout, Rheumatic Arthritis and Bone Tumours. **(c) Muscle –** Poliomyelitis, Myopathies, Volkman's ischemic contracture. **(d) Skin –** Scleroderma, Psoriasis, Autoimmune disorders.
II. **(a) Urinary system – Nephrotic syndrome, Nephritis, lomerulonephiritis. (**b) Prostate – Prostatitis, BPH, Carcinoma of Prostate. (**c) Endocrine –** Thyroid, Thyroiditis, Thyroid Tumours. **(d) Salivary gland –** Salivary gland tumours.

UNIT - IV **16-MARKS**

I. **General Microbiology** - Introduction and historical background. Classification of Micro organisms. Morphology of bacteria. Sterilization and disinfect ion.
II. **Immunity** – Antigens and Antibodies, General overview of antigen antibody reaction and practical applications.

UNIT - V **16-MARKS**

I. **Gram Positive cocci** – Staphlo, Strepto, Pneumnococci. Gram-negative cocci –Goncocci and Meningococci.
II. **Gram positive bacilli –** Tuberculo bacilli, Lepra bacilli, Clostridium tetani, Clostridium perfrigens etc. Gram negative bacilli – Salmonella, Coloforms, pseudomonas, proteus etc.
III. **Anaerobic non –** sporing cocci and bacilli.
IV. **Virology –** General introduction, brief description of polio virus, Rubella Hepatitis-B and AIDS (diagnosis, prevention and treatment). Spirochetes- Syphilis (congenital and acquired).

V. Malaria

VI. Mycology – Actinomycosis, Maduramycosis, Mucosal Candidosis etc.

VII. Applied microbiology as relevant to diseases of bones, joints, Muscles, Skin, Infection and Bums.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 80	University examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

1. Normal total and differential WBC count, Haemoglobin, RBC.
2. Demonstration of slides:
   - Anaemia
   - Leukaemia
   - Acute inflammation – Appendix
   - Chronic inflammation – Non – specific.
   - Tuberculosis of lymph Node – specific inflammation.
   - Leprosy – Skin and Leprabacilli.
   - Squamous cell carcinoma – skin.
   - Osteogenic sarcoma – Bone tumour.
   - Osteoclastoma – Bone tumour.
   - Ewings – Bone tumour.
   - Multiple Myeloma – Bone tumour.
3. Demonstration of collection of clinical specimen.
4. Demonstration of morphology and culture of organisms.
5. Demonstration of simple, Gram's and Ziehi- Nelsen staining.
6. Sterilization and Disinfection techniques.
7. Demonstration of serological tests for syphilis, Hepatitis etc.

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GENERAL SURGERY, OBSTETRICS & GYNAECOLOGY, E.N.T AND OPHTHALMOLOGY -(BPT203)

Max. Marks. 80 **Duration : 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course follows the basic course on Anatomy, Physiology, Psychology, Sociology, Pathology and Microbiology and provides knowledge about relevant aspects of general surgery, Plastic surgery, Paediatrics, E.N.T. Ophthalmology, Obstetrics and Gynaecology and Radiology with emphasis on physiotherapeutic.

Course Objectives

The objective of this course is that students at the end of course should have a broad understanding about common medical diseases, which they would be handing as a physiotherapist. They should have a brief idea about etiology, pathology and type and degree of disability the patient will have as a result of the disease, so that he/she as a Physiotherapist with physician should help the patient to achieve cure and/or ameliorate his/her illness and sufferings

UNIT - I **16-MARKS**

1. Introduction: Description of events frequently accompanying general Anaesthesia, Blood transfusion and physiological response of the body.
2. Wounds, scars, ulcers, boils, carbuncles etc.
3. Principles of pre- and post –operative physical examination, investigations, postoperative complications and their management.
4. Abdominal surgery: Incisions, complications and management of following:
   Naphractomy, Apendectomy, Herniorrphy, Mastectomy, Thyrodectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy, llleostomy, Incisional hernia and its prevention.

UNIT - II **16-MARKS**

1. Plastic Surgery:
   - Principles of plastic surgery, post – operative management and complications.
   - Cineplasty.
   - Principles of cosmetic surgery.
   - Skin grafting.
   - Surgery of Hand with emphasis on management of traumatic & leprosy hand.
   - Burns and plastic surgery management
2. Burns: Causes, Classification, Medical management and precautions in the acute stage, complications of burns and their management.

UNIT - III **16-MARKS**

1. Ophthalmology: Etiology, symptomatology and treatment of visual defects emphasis on Errors of Refraction, Squint, Conjunctivitis, Tracheama, Corneal ulcers, Iritis, Cataract, Retinitis, Detachment of retina and Glaucoma (lecture demonstration only)

2. E.N.T: Aetiology, sysptomatology and treatment of sinusitis, Rhinitis, Acute and Chronic Otitis, Otosclerosis, Mastoldectomy and loss of hearing.

UNIT - IV **16-MARKS**

1. Anatomy and physiology of female reproductive system.
2. Principles of clinical examination, investigation, diagnosis and prognosis in female reproductive and system disorders.
3. Menstruation and disorders of menstruation.
4. Physiological changes during pregnancy.
5. Antenatal care and diagnosis of pregnancy including high-risk pregnancy.
6. Labour, stage of labour, normal and abnormal labour and management of neonate.
7. Purperium & postnatal care, socialobstetrics- maternal & perinatal mortality.
8. Pelvic pain and its management.

UNIT - V **16-MARKS**

1. Importance Gynaecological condition, a short review of PID, Tumours, malignancies, infertility, Endometriosis, Ectopic pregnancym, Vesicular mole.
2. Prolapse Uterus, causes of incontinance of urine, type and management.
3. Abortion and Birth control.
4. Surgical considerations in obstetrics and Gynaecology.

Marks Distribution :

Theory -

University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Practical

Students will be posted for one month in General Surgery, plastic and burns, obstetrics and Gynaecology & Radiology units. They will do clinical checking and ward work to acquaint themselves to General Surgical conditions.

Book References

0. Surgery by Nan.
0. Baily & Love – Short Practice of Surgery by Rain & Ritelife.
0. Gynaecology and Obstetrics in the Health care of a Woman by Seymoul L. Romney, Mary Jane Gray, J. A. Merrill.
0. Shaw's Textbook of Gynaecology.
0. Jeffcoat's Principles of Gynaecology.
0. General Surgical Operations by R.M. Kirk and R.C.N. Williamson.

Swami Vivekanand University, Sagar(M.P.)

GENERAL SURGERY (BPT 204)

Max. Marks. 80 **Duration - 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course follows the basic course on Anatomy, Physiology, Psychology, Sociology, Pathology and Microbiology and provides knowledge about relevant aspects of General Medicine with emphasis on physiotherapeutics.

Course Objective

The objective of this course is these students at the end of course should have a broad understanding about common medical diseases, which they would be handing as a physiotherapist. They should have a brief idea about Aetiology, pathology, Type and Degree of Disability the patient will have as a result of the disease, so that he/she as a physiotherapist with physician should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

UNIT - I **16-MARKS**

I. Infections - Outline briefly the Aetiology, symptoms and brief management of the following disease. Bacterial – Tetanus, Typhoid. Viral – Herpes simplex, Herpes Zoster, Measles, Hepatitis –B. and HIV. Protozoal – Filariasis, Malaria, Amoebiasis.

II. Diseases of blood.

0. Define and describe clinical aspects of Nutritional Anaemias.
0. Brief description of Bleeding Disorder with emphasis to Haemophilia.
0. Lymphadenopathy and splenmegaly.
0. Leukaemia – acute and Chronic.

UNIT - II **16-MARKS**

I. Diseases of Liver

1. Jaundice
2. Viral Hepatitis.
3. Cirrhosis of Liver

II. Renal Diseases

1. Brief description of acute and Chronic renal Failure.
2. Urinary Tract Infection.
3. Acute Nephritis, Nephrotic Syndrome.

III. GIT Diseases - Brief description

0. Peptic Ulcer
0. Diarrhoea and Dysentery.

UNIT - III **16-MARKS**

I. Nutritional and Metabolic Diseases.

1. Balanced normal diet.
2. Protein Calorie Malnutrition
3. Avitaminosis of both water and fat-soluble vitamins.
4. Diabetes mellitus – Definition, diabetes, Classification and complications, brief description of management of diabetes mellitus.

5. Obesity – Aetiology and management.
6. Hyper and Hypo-thyroidism.
7. Calcium Homeostasis.
8. Gigantism and Acromegaly.

II. Diseases of Bones, Joints and Connective tissue

1. Brief introduction to understanding of Autoimmune diseases.
2 Rheumatic fever and Rheumatoid arthritis – Aeotiopathogenesis, Clinical features, complications, diagnosis and briefly outline the management.
3. Brief description of Systemic Lupus Erthomatous.
4. Polyaritis Nodosa, Dermatomyosities, Scleroderma.
5. Osteoarthritis – Aeotiopathogenesis, clinical feature, diagnosis, complication and management.

UNIT - IV **16-MARKS**

Genetics and Diseases

1. Common inherited disorders.
2. Prevention of genetic disorders.
   i. Miscellaneous
3 Allergy
4. Drug reactions.
   i. Dermatology
5. Common skin infections.
6. Psoriasis
7 Leprosy- aetiopthogenesis, clinical features and treatment.
8 Venereal diseases – Syphilis, HIV etc., brief description and prevention (lecture demonstration only).

UNIT - V **16-MARKS**

I. Geriatrics - Common Geriatric Disorders and their management

II. Radiology (Both in normal and Pathology conditions).

0. Radiology of Bone and Joints.
0. Radiology of chest including Heart.
(Lecture demonstration only)

III. Paediatrics

Common Paediatric diseases and their management. (Lecture demonstration only)

Marks Distribution :

Theory -

University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Practicals

Students will be posted for one month in general Medicine ward. They will do clinical checking and ward to acquaint themselves to General Medicine.

Book References

1. Davidso's Principles and Practice of Medicine (Churchill Livigstone)
2. Medicine and Neurology by Davidson.
3. Medicine by Golwala.

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ORTHOPAEDICS- (BPT205)

Max. Marks. 80 **Duration – 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This specially marks the students to understand the common traumatic and orthopaedic conditions, which commonly cause disability. The syllabus us made keeping in mind to avoid details of diagnosis and pathology, which are beyond, their scope.

Objective of Course

At the end of syllabus and instructional course and demonstrations, the student will be able to understand orthopaedic conditions causing disability and manage them by physiotherapy point of view. Theory – 100 hours and Practical 50 hours.

Theory

UNIT - I **16-MARKS**

I. Introduction to Orthopaedics: Terminology, types of common outhology, clinical examination, Common investigation, Outline of management – Operative & Non-Operative.

II. Principles of operative Managements: Osteotomy, Arthrodesis, Spinal Stabilization, Tendon operations, External fixation, Orthtoscopy, total joint replacements, limb re-attachments.

UNIT - II **16-MARKS**

I. Sprain and Strains: Common sites of sprains and muscle strains, their clinical manifestations and treatment.

II. Fractures and Dislocations: Briefly mention Types of fracture and dislocations, symptoms and signs of above injuries and their Principle of management and Complications.

III. Prevention and treatment of common complications: Fracture disease, Volkmans ischaemic contracture, Sudeck's osteo dystrophy, Myositis ossificants, Ligament injuries, Shoulder-hand syndrome etc.

UNIT - III **16-MARKS**

I. Spinal column: fractures, management and complications of Spinal injures spinal deformities like Scoliosis, Kyophosis, and Lordosis etc.

II. Injuries of upper limb and lower limb, enumerate major fracture and joint injuries, brief description of principle of management and complications.

UNIT - IV **16-MARKS**

I. Amputations: Classification, indications, pre-operative, operative and post-operative management.

II. Arthritis: Outline of Pathology, clinical features, management, complications of Rheumatoid arthritis, osteo- arthritis and Ankylosing spondylitis.

III. Bone and Joint infections: Aetiology, clinical feature, management and complications of Septic arthritis, Osteomyelitis, Tuberculosis and leprosy.

IV. Congenital anomalies and other deformities: C.D.H, CTEV, Scoliosis etc.(Salient features only).

V. Low backache: Causes, management.

VI. Frozen shoulder and other painful conditions of shoulder, Painful heel conditions, Tendinitis and Fascitis.

UNIT - V **16-MARKS**

I. Bone and Joint Tumours: Classification, clinical features and management of Osteoma, Osteosarcoma, Osteoclastoma, Ewings tumour, Multiple myeloma and Secondaries.

II. Poliomyelitis: common deformities due to PPRP and their management.

III. Miscellaneous condition: Spondylitis, Prolapse inter-Vertbral disc (PIVD), Tennis elbow. Carpal tunnel syndrome, Spondylolisthesis etc.

Marks Distribution :

Theory -

University examination –80
Internal Assessment – 10+10
(Two test + sessional)

Practicals

Students does clinical checking, ward work, hospital posting for a period of one month to acquaint himself about traumatology and orthopaedic conditions.

Book References

1. Outline of fracture by Adams.
2. Outline of Orthopaedics by Adams.
3. Orthopaedics and Traumtology by Natarajan.
4. Aplay's Orthopaedics.

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ELECTROTHERAPY-(BPT-206)

Max. Marks. 100 **Duration – 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

In this course the student well learn the principles, techniques and effects of electrotherapy as a therapeutic modality in the restoration of physical function.

Course Objective.

The objective of this course is that after 200 hours of lectures, demonstration, practical and clinics, the students will be able to list the indications and contraindications of various types of electrotherapy, modalities and demonstrate the different techniques and describe their effect.

UNIT - I **20-MARKS**

Low Frequency Current

I. Nerve Muscle Physiology- Resting potential, Action potential, propagation of action potential, Motor unit, Synapse and Synaptic transmission of Impulse. Effect of negative and positive electrodes on nerve and accommodation.

II. Faradic Current. - Definition, Characteristic and modified Faradic current, sinusoidal current. Parameters of Faradic stimulation. Physiological and Therapeutic effects of Faradic stimulation. Indications, contraindication and precautions. Techniques of stimulations & Group muscle stimulation. Faradic foot bath, faradic under pressure and pelvic floor muscle re-education.

III. Galvanic Current - Introduction and characteristics, Parameters of Stimulation, Physiological and Therapeutic effect of stimulation. Indications and Contraindications. Principles of treatment and Techniques of stimulation. Precautions.

UNIT - II **20-MARKS**

I. Electro-Diagnosis - F.G. Test, S.D. Curve, Chronaxae and Rheobase, Nerve Conduction, EMG Nerve conduction Velocity Measurement (outline only).

II. Iontophoresis - Definition, Principles of lontophoresis, Physiological and Therapeutic effects, Indications, Techniques of lontophoresis, Principles of treatment, Contraindications and Dangers.

UNIT - III **20-MARKS**

I. TENS - Definition, pain Gate theory, theories of Modulation, principle of I.F.current Indications, Techniques of application, Contraindication and precaution.

II. Medium Frequency Current (Interferential Current).

III. (A) Short Wave Diathermy - Introduction, Physiological effects and therapeutic effects of SWD. Methods of application (Capacitor field method and cable method etc.) Techniques of treatment, indications, Contraindications and Dangers.

(B) Pulsed SWD - Definition, Characteristic, Mechanism of work, physiological effects and Therapeutic effects, Indications, Technique of application, Principles of Treatment and Contraindications.

IV. Microwave Diathermy - Introduction and characteristics, Physiological effects, Therapeutic effects, Techniques of application and principles of treatment., Danger of Microwave diathermy.

UNIT - IV **20-MARKS**

I. Ultraviolet Radiation - Introduction, Physiological effect of UVR, Indications, Contraindications, Dangers of UVR, Techniques of application, Dodage.

II. Infra-Red - Introduction, Therapeutic uses of IR, Techniques of application, Dangers and Contraindications

III. Introduction and Characteristics, Effects on tissue, Therapeutic effects, Principles of application, Introduction, Contraindications and Dangers.

IV. Ultrasonic Therapy - Introduction and Characteristics, U.S. therapy parameters, Coupling media, Therapeutic effects, Indications, Contraindication and Dangers, Testing of Apparatus, Techniques of application and dosage.

V. Other Heating Modalities. - Wax-bath- Introduction, Preparation, Method of application, Effects , Indications and Contraindications, heating pad, Moist heat.

UNIT - V **20-MARKS**

I. Cryo therapy - Introduction, Physical Principles, Physiological effects, Indications, Contraindications. Therapeutic effects & Techniques of Application.

II. Bio Feedback - Introduction, principles of Bio feedback, therapeutic effects of Bio Feedback, Indication and Contraindications, Techniques of Treatment.

III. Advanced Electrotherapy - Computerization in Electrotherapy, Programming of Parameters of treatment, appropriate selection of parameters and combination in therapy, Combined therapy – Principle, Therapeutic uses and indications like U.S. Therapy with stimulation or TENS etc.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical.

0. Testing of above apparatus.
0. Techniques of application of above treatment modalities(Demonstration & Practice)
0. Electro diagnosis (demonstration and Practice of following electro diagnostic Measures)
   F.G. Test
   S.D. Curve.

Swami Vivekanand University, Sagar(M.P.)

EXERCISE THERAPY INCLUDING YOGA- (BPT207)

Max. Marks. 100 **Duration - 3 Hrs.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

In these courses, the student will learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

Courses Objective

The objectives of this course is that after 200 hours of lectures, demonstrations, practical and clinical, the students will be able to list the indications and contraindications of various types of exercise and demonstrate the different techniques and describe their effects. In addition, the students will be able to fulfil with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective s of the course

UNIT - I **20-MARKS**

I. Introduction to Exercise Therapy. Exercise and physiology of body. Psychogenic aspects of exercise. Pharmacological aspects of exercise.

II. Starting positions- Fundamental starting positions. Standing, sitting, Kneeling, Lying and Hanging, All the derived positions of the above five fundamental starting. Muscle work for all the fundamental starting positions.

III. Classification of movements in details.

0. Active voluntary movements, involuntary movements, passive movements.
2. Assisted exercises- Classification, Free exercises, Assisted exercises, Resisted on various systems etc.
3. Free exercises – Classification technique effects of free exercise on various systems etc.
4. Resisted exercises – technique and types of resistance, SET system (heavy resisted exercise, Oxford method, Delorme method, Macqueen's method)
5. Relaxed passive movement- Definition, Classification of relaxed passive movements, Technique, effects and uses of relaxed passive movements.

UNIT - II **20-MARKS**

I. Passive stretching- Aim, Principles, Indications, Techniques & contraindications.

II. Muscle strength – anatomy and Physiology of muscle tissue, Causes of muscle weakness/paralysis, Prevention of muscle weakness/paralysis. Type of muscle works and contractions, Type of muscle work, Principles of muscle strengthening/re-education, Early re-education of a paralysed muscle etc.

III. Joint movement-Classification of joint movements, Causes for restrictions of joint movement, prevention of restriction of joint range of motion etc. principles of mobilization of joint increasing its range of motion, technique of mobilization of stiff joint.

IV. Relaxation: Technique of relaxation, Principle to obtain relaxation in various positions.

V. Posture.

UNIT - III **20-MARKS**

I. Neuromuscular coordination and P.N.F.
II. Functional Re-education Exercises.
III. Suspension Therapy: Principles of suspension, Type of suspension, Therapeutic effects and uses of suspension therapy, their application either to mobilize a joint or to increase muscle power.
IV. Hydrotherapy.
V. Massage: Definition of massage, local effects of individual manipulation (physiological effects), Contraindications, Techniques of application of manipulations, Kneading and picking up, rolling (back) Clapping, Tapping, Friction.

UNIT – IV **20-MARKS**

I. Isometric exercise and Isotonic exercise. Exercises of the shoulder and hip and evaluation. Exercise of hand, food and evaluation. Exercise of the knee and elbow and evaluation. Spinal exercises including neck exercises.
II. Normal gait analysis. Pathological gaits. Gait training. Crutch walking. Types of paraplegic gaits.
III. Oedema: Types and treatment.
IV. Manipulation therapy: Introduction, Principles of therapy, Indications and Contraindication (no clinical application of these techniques).
V. Traction: Types, Principles, Indications and Contraindications.
VI. Group Therapy: Indication, contraindication, types.
VII. Therapeutic Gymnasium.
VIII. Endurance training.
IX. Strengthening technique.
X. Goniometry.
XI. Manual muscle assessment.
XII. Walking aids and crutch walking.

UNIT - V **20-MARKS**

Yoga, Yogasanas and their scientific studies, Concept of total yoga discipline. Psycho physiological aspects yoga procedures. Psychological aspects of yoga , Psycho-social aspects of yoga. Yogasanas for physical culture, relaxation and meditation. Application of Yogasana in physical fitness, flexibility, cardio-respiratory rehabilitation. Neuro motor learning. Yoga – A holistic approach.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practicals

. Demonstration and practice of movement to Upper limb. Lower limb, Cervical and Lumbar spine.
. Massage: Demonstration and practice of all types of massage manipulation, stroking, Effelurage, Kneading – Circular Kneading. Thumb kneading., Finger kneading, Picking up. Skin rolling (back) Clapping etc.

The above various types of manipulations should be demonstrated and practiced to Upper limbs. Lower Limbs. Neck and Face appropriately.

0. Suspension Therapy
   Demonstration and practice of putting suspension to shoulder & Elbow joint in Upper limb, hip joint and knee joint in lower limb for all movements (except circumduction at shoulder and hip joint).
0. Demonstration of total suspension.
0. Demonstration and Practice of Techniques of all joints of Upper limb and Lower limb.
0. Demonstration and Practice of Techniques of Strengthening.
0. Demonstration of exercises at different joints of Upper limb, Lower limb and Spine.
0. Demonstration of normal and pathological gaits and crutch walking.
0. Demonstration and Practice of Functional Re-education Technique.

Book Reference

. Science and medicine of exercise and sports by Warren R. Johnson.
. Basic Athletic training by Cramer.
. Anatomy and physiology of yogic practice by M.M. Gone.
. The yogi philosophy of physical well being by Yogi Tamacharaka.
. Yoga stretching and relaxation for sports men by Capt. M. Rajan.
. Principles of Exercise therapy by M.Dena Gaeder.
. Practical Exercise Therapy by Hollis M.
. Aids to P.T. by J.M. Lee.
. Therapeitic Exercise by Basmajian.
. Aliimco Volumes.

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Third Year

NEUROLOGY AND NEUROSURGERY
CARDIO-THORASIC DISEASE SURGERY
(BPT301)

Max. Marks - 80 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

UNIT - I **16-MARKS**

A. Basic Neurophysiology
- a) Motor (Pyramidal, extrapyramidal & cerebellar)
- b) Sensory
- c) Reflexes, Bladder and Bowel Control.

. Principle of Clinical Examination, Diagnosis, Differential diagnosis and Prognosis of Neurological disorders.

. Salient clinical Feature and Management of Common Neurological Disorders
- a) Cerebral Palsy
- b) Strokes
- c) Neuro-infections - Meningitis, Encephalitis, Poliomyelitis

D. Movement disorders (Parkinsonism, Dystonia, Chorea, Tremors And Writer's Cramps, Cerebellar Ataxia, Friedreich's Ataxia etc.)

E. Motor Neuron Disease.Dementia.

G. Diseases of Spinal Cord - Compressive (Spondylytic, Tumours); Non-compressive.

H. Peripheral Neuropathies - G.B. Syndrome, Diabetic; Entrapment neuropathies.

I. Muscle Disorders - Dystrophies; Polymyositis; Myasthenia Gravis

UNIT - II **16-MARKS**

A. Neurophysiology- Reviews in brief the neurophysiological basis of tone and Disorders of tone and Posture, Bladder control, Muscle convection, Movement and Pain. Clinical Features and Management

B. Briefly outline the clinical features and management of the following neurological disorders.
1. Congenital and Childhood disorders
   - a) Hydrocephalus.
   - b) Spinal Bifida.

C. Trauma - Broad localization, first aid and management of sequelae of Head injury and Spinal Cord injury.

D. Diseases of the Spinal Cord:
- a) Craniovertebral junction anomalies.
- b) Syringomyelia.
- c) Cervical and lumbar disc disease
- d) Tumours.
- e) Spinal archnoiditis.

E. Peripheral Nerve Disorders:
- a) Peripheral nerve injuries: Localization and Management
- b) Entrapment Neuropathies.

F. Intracranial tumours: Broad Classification, Signs and Symptoms. Miscellaneous:

G. Pre-operative assessment, Indications and Contraindications for Neurosurgery.

H. Management of Pain, Electrical Stimulation of Brain and Spinal cord.

UNIT – III **16-MARKS**

CARDIO - THORACIC DISEASES

A. Brief idea of Anatomy and Physiology of Cardio- respiratory systems.

B Outline Aetiopathogenesis of Cardio-respiratory disorders, Investigations, Diagnostic, Differential diagnosis and principles of management.

C. Cardio - Vascular System

i) Cardiac failure - Definition, Causes, Symptoms, Signs, and Brief management of Cardiac failure.

ii) Rheumatic Fever - Definition, Brief description of Aetiology, Clinical features, Complication and Treatment.

iii) Congenital Heart Diseases: Classification and brief outline of diseases like ASD, VSD, PDA, Fallots's Tetrology with complication.

iv) Ischemic Heart Disease - Aetiopathogenesis, Classification. Symptoms

D. Diagnosis and Medical and Surgical treatment.

. Hypertension - Definition, Classification, Symptomatology, Complications and Treatment,

. Infective Endocarditic - Brief aetiopathogenesis, clinical features, Diagnosis and Treatment.

E. Brief description of Deep Vein Thrombosis and Pulmonary embolism.

F. Vascular Disease: Atherosclerosis, Burgers disease, Phlebitis etc.

UNIT - IV **16-MARKS**

A. Respiratory System - (Respiratory diseases including diseases of chest wall)

1. Chronic Bronchitis and Emphysema, Definition. Clinical features, and investigation, complication and treatment.

B. Bronchial asthma - Definition, Aetiopathogenesis, clinical features, Diagnosis and Treatment.

C. Pneumonia - Definition, Classification, clinical features, Complications and Treatment.

D. Tuberculosis - Aetiopathogenesis, clinical test of pulmonary tuberculosis, Diagnosis Complication & Treatment.

E. Lung abscess and Bronchiectesis - Definition, clinical features, Diagnosis and Treatment.

F. Chest wall deformities- Describe various deformities of chest wall, its effect and Pulmonary diseases associated with it.

G. Occupational Lung Diseases - Clinical features, Diagnosis and Treatment.

H. Respiratory failure - Classification, Causes and Treatment.

UNIT - V **16-MARKS**

A. Cardiothoracic surgery- Introduction, types of incision, pre and post operative assessment, management and com0plicationa of cardio thoracic surgery and their management.

B. Cardiac Surgery - Outline indication, contra indication, site of incision, pre and post Operative management and complications of the following:

1. Valvoctomy and Valve Replacement.
2. Open heart surgery/ cardiac by pass surgery
3. Surgery of pericardium
4. Heart transplantation

5. Pacemaker
6. Coronary angioplasty
7. Balloon angioplasty and vascular surgery

C. Outline surgery and artery and veins

D. Thoracic Surgery
1. Outline clinical features and management of the following; fracture of ribs, Flail chest, stove in chest, Pneumo thorax, Haemothorax, Lung contusion and Laceration and injury to vessels and bronchus.
2. Outline indications, contradiction, site of incision, pre and post operative management and complication of following- Lobotomy, Pneumonectomy, segentectomy, pleuro-pneumonectomy, Thoracoplasty, decortion, Tracheostomy.
3. Outline clinical features and management of carcinoma of lung.
4. Describe in detail the following procedure: management of endotracheal tubes, tracheal Suction, Weaning the patient from ventilator, Extuation and Post-extubation care.
5. Describe the principles of cardio-pulmonary Resuscitation, cardiac Massage, Artificial respiration, defibrillators and their use.

Marks Distribution :

Theory -

University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Practical

Clinical assessment of neurological function to be taught through bedside or demonstration in clinics, of the following:

0. Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved.
0. Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language
3. Assessment of Cranial nerves.
4. Assessment of Motor system.
5. Assessment of Sensory function, Touch, Pain and Position.
6. Assessment of Tone-Spasticity, Rigidity and Hypotonia.
7. Assessment of Cerebral function.
8. Assessment of Higher cortical function - Ataxia etc.
9. Assessment of Gait Abnormalities.

Book References

1. Davidson's Principles and Practice of Medicine
2. Brains Clinical Neurology.
3. Medicine and Neurology by Golwala.
4. Surgery by Nan.
5. Baily & Love's - Short Practice of Surgery.
6. Davidson’s Principles and Practice of Medicine.
7. Harrison’s internal Medicine.
8. Surgery
9. Geneva Surgical Operations - by Kirk! Williamson.
10. Surgery by Nan.
11. Baily and Love’s - Short Practice of Surgery.

Swami Vivekanand University, Sagar(M.P.)

PHYSIOTHERAPEUTIC-I (BPT302)

Max. Marks - 100 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course serves to integrate the knowledge gained by the students in clinical Orthopaedics with the skills gained in Exercise therapy, Electrotherapy and Physical evaluation, thus enabling them to apply these in clinical situations of dysfunction due to musculoskeletal pathology.

Course objective

The objective of this course is that after 170 hours of lectures, demonstrations, Practical and Clinics, the student will be able to identify disability due to musculoskeletal Dysfunction, set treatment goals and apply their skills in Exercise therapy and Electrotherapy in Clinical Situations to restore musculoskeletal function. In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral and practical internal evaluation), the following objectives of the course.

UNIT - I **20-MARKS**

A. Traumatology and Orthopaedics
   a) Classification of feature causes and Types.
   b) Signs and symptoms of fracture,
   c) Complications of Fracture.
   d) Healing and factors affecting it.

B. Principles of fracture management.
   a) Principles of Physiotherapy management.
   b) Physiotherapy management of complication.

C. Dislocation - Common sites, signs and symptoms.
   Principles of physiotherapy Assessment and Management in shoulder dislocation, Hip dislocation etc.

UNIT - II **20-MARKS**

A. Specific fractures and their complete physiotherapy Assessment and management.
B. **Upper Limb:** Scapula, Clavicle, Humerus, Ulna and Radius, Colle's fracture and Crush injuries of Hand,
C. **Lower Limb:** Fracture of Pelvis, Neck of Femur, Shaft of Femur, Patella, Tibia and Fibula, Pott's Fracture, Fractures of Tarsal and Metatarsal bones.
D. Management of Fracture of Spine with or without neurological deficit.
E. **Soft Tissue injuries -** Soft tissue injuries. Synovitis, Capsulitis, Volkmans ischaemic contracture etc. Tear of semilunar cartilage and cruciate ligament of knee. Rotator cuff tendinitis, Ankle sprains, Tennis elbow, Golfer's Elbow, CT. Bursitis, Retrocalcaneal bursitis

UNIT - III **20-MARKS**

A. Degenerative and infective Conditions. Osteoarthritis of major joints. Spondylosis, spondylitis.
B. Prolapsed intervertebral disc. Lesion, Spondylolithesis, periarthritis, Rotatorcuff lesion of shoulder.
C. Tuberculosis of spine, Bone and Major joints, perthe's disease.

D. Rheumatoid arthritis.
E. Ankylosing spondlytis, etc. and other miscellaneous orthopaedic conditions commonly treated by physiotherapy.

UNIT - IV **20-MARKS**

Deformities

A. **Congenital:** Torticollis and Cervical rib, C.T.E.V., Pes cavus and Pes Planus and Other common deformities.
B. **Acquired:** Scoliosis, Kyophosis, Lordosis, Coxavera, Genu Valgum, Genu varum and Genu recruvatum etc.
C. **Orthopaedic Surgery:** Pre and Post operative assessment and management of surgeries like Orthroplaty, Arthrodesis, Osteotomy, Tendon transplant, Soft tissue release, Grafting, Partial and complete joint replacement, Arthroscopy, spinal Stabilisation, reattachment of limbs, Illizarove techniques, operation in C.P. and Polio.

UNIT - V **20-MARKS**

A. **Amputations:** Levels of Amputation of upper and lower extremity, stump bandaging.
B. Pre and Post Prosthesis fitting assessment and management (check-out of Prosthesis Training etc.)
C. Complications of Amputations and their management.
D. Manipulation Therapy Assessment, Principles and Techniques of Therapy and Factors considered in therapy.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

Various physiotherapy modalities and treatment techniques for the above-mentioned conditions to be demonstrated and practiced by the students.

Book References

1. Cash’s textbook of Orthopaedics and Rheumatology.
2. Physiotherapy in Rheumatology.
3. Physiotherapy in disorders of brain.
4. Clinical Orthopaedics for Physical Therapy - by Campbell
5. Tidy’s Physiotherapy.
6. Clinical Orthopaedics for Physical Therapy - by Richardson’s & Sadowsky.

Swami Vivekanand University, Sagar(M.P.)

PHYSIOTHERAPEUTIC -II (BPT303)

Max. Marks 100 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course serves to integrate the knowledge gained by the student in normal neurology with the skills gained in exercise therapy and Electrotherapy enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system

Course objective

The objective of this course is that after 170 hours of lectures. Demonstration, Practical, and clinics, the student will be able to identify, Disability due to neurological dysfunction, Set treatment goals and apply their skills in exercise therapy and electrotherapy in clinical situation to restore neurological function.

In addition, the student will be able to fulfil with 75% accuracy (as assured by written oral and practical internal evaluation) the following objectives of the course.

UNIT - I **20-MARKS**

A. Review of Basic Neuro-Anatomy and Physiology.
B. Symptomatology of Neurological disorders, Role of investigations in differential diagnosis, diagnosis and clinical examination of C.N.S. functions including cranial nuclei,
C. Principles of examination of higher function and applicability in training.

UNIT - II **20-MARKS**

A. Developmental disorders of C N S Early detection of brain damaged child, Risk babies, Neuro - Paediatric examination.
B. Developmental programmes and Delayed milestones. Neuro - developmental screening test.
C. Minimum Brain Damage.
   i. Sensory, Motor, Functional Psycho-social behaviours of a child, Perception development and training.

UNIT - III **20-MARKS**

Neuro developmental approaches (like Bobath technique, Rood's approach, Vojta technique, Biofeed-back. Yoga etc.), Primitive patterns and abnormal motor behaviour due to brain damage, its control and training with reference to gait and hand function.

UNIT - IV **20-MARKS**

A. Assessment and Treatment techniques in Stroke, Meningitis, Encephalitis, Parkinson's diseases. CR., Cerebellar Ataxia. Friedreich's Ataxia, Head Injury, Brain tumours.
B. Assessment and Treatment of spinal cord lesions such as Motor Neuron Disease, Disseminated sclerosis, Transverse myelitis, spinal tumors) poliomyelitis, syringomyelia, Spinal cord injury and Sub acute combined degeneration of spinal cord.
C. Assessment and treatment of neuropathies and Nerve injuries.
D. Assessment and treatment of Myopathies.
E. Pre and Post surgical assessment and treatment in Neurosurgery.

UNIT - V **20-MARKS**

Electro-diagnostic procedures and prognosis in neurological disorders.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

Various physiotherapy modalities and treatment techniques for the above-mentioned conditions to be demonstrated and practiced by the students.

Book References

1. Cash's Textbook of Neurology for Physiotherapist by John Cash.
2. Key issue in Neurological Physiotherapy by Ada/Canning.
3. Elements of Paediatric Physiotherapy by Eckersy.
4. Tidy's Physiotherapy.

Swami Vivekanand University, Sagar(M.P.)

PHYSICAL EVOLUTION - (BPT304)

Max. Marks 100 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

These course servers to Integrate the knowledge gained by the student in basic and clinical medical science with the skills gained by basic Physiotherapy subjects. Thus enabling them to apply these in Evaluation of functions and Measurements in General and in Clinical situations of dysfunction of different systems.

Course Objective

The objective of this course is that after 160 hours of lectures, Demonstrations, practical and clinics, the students will he able to acquire concept of Evaluation of functions and Measurements in general and in disorders of different systems. Thus physical abnormality can be identified and measured by the students to facilitate physiotherapy management programme

In addition, the student will be able to fulfil with 75% accuracy (As measured by written oral, practical and Internal evaluation) the following objective of the course.

UNIT - I **20-MARKS**

Physical Evaluation – Introduction, General considerations, Cardio-respiratory system. Physical evaluation of cardio respiratory normal and pathological condition, Posture (recumbent, erect orthopoeic)

UNIT - II **20-MARKS**

A. Breathing pattern and breath hold (rate, rhythm, use of accessory muscle)
B. Chest deformity, Cough, Sputum, Tactile and vocal fermitus.
C. Mobility of thoracic spine and rib cage, Percussion, Breath sound.
D. Chest expansion measurements
   (i) Measurement of lungs volumes and lung capacities
   (ii) Blood gas level exercise tolerance test etc.
   (iii) Heart rate, blood pressure, heart Sound, pulse rate (volume and pressure)
   (iv) Exercise tolerance test

UNIT - III

Nervous system **20-MARKS**

A. Evaluation of function and measurement in general and with reference to:
   (i) Upper motor and lower motor neuron lesions.
   (ii) Myotones and Dermatones
   (iii) Nerve entrapments
   (iv) Muscle Tone Voluntary movement and voluntary control tests (isolated and skilled)
   (v) Test for disorder of programmes (i.e. cerebellum basal ganglia lesions) etc. and co-ordination tests.
   (vi) Abnormal movements -Clonus, Tremor, Chorea Athetosis etc.
B. Reflexes (Superficial Reflexes and Deep Reflexes, Primitive Reflexes etc), Neural control of bladder

UNIT - IV **20-MARKS**

A. **Musculoskeletal System –** Goniometry, Manual muscle testing, Postures and postural disorder evaluation, Physical examination of joints in non-vial and patho-mechanical conditions, Muscle strength and endurance, Range of motion at joints flexibility, Measurement of muscle girth. leg-length. pelvic inclination, segmental, Measurement of body part (femur, tibia etc.), Angle of scoliotic curve etc, Gait analysis in pathological conditions and measurement of gait parameters

B. Assessment of pelvic floor muscle strength and function
   (i) Digital evaluation of Vagina
   (ii) Perionometer
   (iii) Pad Test

UNIT - V **20-MARKS**

A. **Disability Evaluation -** Gait and Gait parameter percentage of disability, temporary or permanent, Functional Evaluation

B. **Functional Evaluation -** Mobility in bed. Transfer, Ambulation, Personal care – Eating, Dressing, Washing, Bathing etc., House hold Jobs, Work and Recreation

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

Various physiotherapy modalities and treatment techniques for the above-mentioned conditions to be demonstrated and practiced by the students.

Book References

1. Rehabilitation Medicine - Rusk
2. Tidy's Physiotherapy
3. Cash's Text Book for Physiotherapist (all volumes).
4. Physical Rehabilitation Assessment and Treatment by Osulivion

Swami Vivekanand University, Sagar(M.P.)

BIOMECHANICS & BIOENGINEERING-(BPT305)

Max. Marks. 80 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Descriptions

This course supplements the knowledge of anatomy and enable the student to have a better understanding of the principals of biomechanics and their applications in musculoskeletal function and dysfunction and bioengineering appliances manufacture and uses

Course Objective

The objective of this course is that after 120 hours of lectures demonstrations and practical, the student will be able to demonstrate an understanding of the principles of biomechanics and kinesiology and their applications in health, disease and bioengineering.

In addition, the student will be able to fulfil with 75 % accuracy ~as measured by written and oral evaluation), the following objectives of the courses:

UNIT - I

BIOMECHANICS **16-MARKS**

A. Introduction Definition and Aim, Scope and Importance in physiotherapy bioengineering.
B. Force axes and planes, centre of gravity, levers classifications of force system.
C. The linear force system, resultant force equilibrium Development of Biomechanics.
D. Definition of kinetics and kinematics Origin of human movements and its significance
E. Forms of human movements and their characteristics and factor affecting them

16-MARKS

UNIT - II

BIOMECHANICS - Bone tissue collagenous tissue and muscle, Spine, Upper extremity joints, Lower extremity joints, Locomotion, Activities of daily living and Sports, and Work analysis.

16-MARKS

UNIT - III

BIO-ENGINEERING – Introduction, Prosthesis and Orthosis - Definition, Biomechanical Principles and Design Materials used in manufacturing.

16-MARKS

UNIT - IV

A. Designing and Manufacturing of Upper and Lower extremity Orthosis and Spinal orthosis including indications and Check Out.
B. Upper Extremity and Lower Extremity Prosthesis, Indications, Biomechanical principles of Design, fitting and Checkout,
C. Prescription and Design of foot wear and modification.

UNIT - V **16-MARKS**

A. Wheel Chairs.
B. Walking Aids
C. Design and Construction of Adoptive devices.

Marks Distribution :

Theory -

University examination – 80

Internal Assessment – 10+10
(Two test + sessional)

Book References

1. Normal Human Locomotion - Published by ALIMCO
2. Applied Kinesiology and Biomechanics.
3. A Premier of Orthopaedic Biomechanics by George van B. Cochran.
4. Basic Biomechanics of the skeletal system by Victor H. Frankel. Margareta Nordin.
5. Structural Kinesiology by E.P. Braham U.N. Wooten.
6. Atlas of Orthotics.

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Fourth Year

PHYSICAL DIAGNOSIS AND PRESCRIPTIONS -(BPT401)

Max. Marks 100 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course serves to integrate the knowledge gained by the students in both basic and Clinical Medical science subjects and physiotherapy subjects, thus enabling them to apply these in evaluation of functions and measurements in general and in clinical situations of dysfunctions of systems in order to reach a state of diagnosing the physical problems presented by the patients.

Course Objectives

The objective of this course is that after 200 hr of Lectures Demonstration. Practical and Clinics, the student's wilt is able to acquire the concept of evaluation of functions and measurements in general and in disorders of different systems. Thus, the student shall be able to diagnose and measure the physical problems presented by the patients. In addition, the student will be able to fulfil with 75% accuracy (as Measured by written, oral, Practical and Internal Evaluation) of the following objectives of the course

UNIT - I **20-MARKS**

A. Dev lopmental Disorders;
   a) Neonatal behaviour abnormalities.
   b) Sensory motor integration and infant behaviour
   c) Perceptual motor dysfunction.
   d) Movement disorders in brain damaged children

B. Developmental deformities and congenital abnormalities:
   a) Persistence of Embryonic attitudes and alignments.
   b) Congenital dislocation of hip and congenital foot deformities
   c) Deformities in poliomyelitis.
   d) Meningo Myelocele and Hydrocephalus.
   e) Arthrogryposis.

C. Posture and Alignment, (Biomechanical and Neural factors),

UNIT - II **20-MARKS**

A. Pulmonary function test, Spirometry and Gas analysis.

B. Cardiac Efficiency Tests:
   a) Principles of E. CO. Ultra sonography.
   b) Clinical Efficiency Tests:
   c) Clinical Monitoring.
   d) Stress EGG, Treadmill and Ergometrv.

UNIT - III **20-MARKS**

A. Work Physiology and Exercise prescription:
   a) Ergonomics considerations for Exercise
   b) Work Physiology Considerations.

c) Exercise Analysis and Planning
d) Work adjustment as per Biomechanical and Clinical Consideration

UNIT - IV **20-MARKS**

A. Review of Electro-physiology.
B. Surface and Needle Electro myograpv.
C. Nerve conduction velocity Test (Motor and Sensory),
D. Reflex Study.
E. 'H' and 'F Waves.
F. Cerebral Evoked Potential S.D. curve and E.M.C.
G. Analysis in Normal and Pathological conditions. Like peripheral Nerve Injuries, Myopathy etc.

UNIT - V **20-MARKS**

A. Principles of Investigative Methods in Modern Medicine like EEC, MRI, CT Scan etc.
B. Biophysical Measurements.
C. Prescription Writing - Principles of writing Prescriptions and Therapeutic Modalities.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

Various physiotherapy modalities and treatment techniques for the above-mentioned conditions to be demonstrated and practiced by the students.

Book References

1. Text Book of Physical Diagnosis —. by Mark M. Swartz.
2. Rehabilitation medicine — by Joel A. Delisa.
3. Differential Diagnosis in Physical Therapy — Goodman and Snyder.
4. Manual of Exercise Testing — CRDET
5. Clinical Electromyography — by Basmajian.

Swami Vivekanand University, Sagar(M.P.)

PHYSIOTHERAPY IN CARDIO THORACIC CONDITIONS
BPT402

Max. Marks-100 **Duration – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course serves to integrate the knowledge gained by the students in clinical cardio respiratory conditions with the skills gained in Exercise therapy Electrotherapy thus enabling them to apply those in clinical situations of dysfunction due to cardio respiratory pathology.

Course Objective

The objective of this course is that after 170 hr. of lecture, Demonstration, Practical and Clinics, the student will be able to identify cardio respiratory dysfunction. treatment goals and apply their skills in Exercise therapy and Electrotherapy in clinical situations to restore cardio respiratory function.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral and practical internal evaluation), the following objectives of the course

UNIT - I **20-MARKS**

A. Review of basic cardio-Respiratory anatomy and Physiology.
B. Symptomatology of Cardio-Respiratory disorders, investigations, Diagnosis Differential Diagnosis and Prognosis.
C. Clinical examination of respiratory system Disorders.

UNIT - II **20-MARKS**

A. Principles and techniques of physiotherapy in diseases of Respiratory system.
B. Physiotherapy assessment and management technique in the following:
   (i) Bronchitis
   (ii) Asthma
   (iii) Bronchiectasis
   (iv) Pulmonary Embolism
   (v) Pulmonary Tuberculosis
   (vi) Emphysema
   (vii) Pleurasy & Empyema
   (viii) Atelectasis
   (ix) Pneumothorax,
   (x) Bronchopulmonary
   (xi) Fistula etc.

UNIT - III **20-MARKS**

Pulmonary Rehabilitation:

A. Definition Aims and Objectives.
B. Patho-Physiology of Diseases
C. Physiotherapy Assessment
D. Techniques of Rehabilitation including Bio-feedback
E. Clinical Examination of Cardio-vascular systems Disorders. Principles and Techniques of Physiotherapy in Cardio-vascular diseases.
F. Physiotherapy Assessment and Techniques of Management in the following Cardio-vascular diseases.
   (i) Congestive heart failure,

(ii) Myocardial infarction,
(iii) Endocarditis.
(iv) Valvular diseases of heart,
(v) Congenital vascular diseases,
(vi) Hypertension,
(vii) Thrombosis, Phlebitis and Phlebothrombosis,
(viii) Burger's Disease
(ix) Varicose Veins and ulcers.

UNIT - IV **20-MARKS**

A. Cardio-Thoracic Surgery, Incision. Types, Indications & Contra Indications.
B. Pre and Post Operative Evaluation. Principles and techniques of Physiotherapy management of Heart and Vascular surgery.
C. Evaluation, Principles and Techniques of Physiotherapy, Management in Traumatic and Surgical conditions of Chest, Lung, Pleura and Mediastenum.
D. Principles of chest Physiotherapy in I.T.U. and I.C.C.U.
E. Pre and Post Operative Physiotherapy assessment and management in the following conditions, Segmental Resection, Lobectomy, Pneumonectomy, Decortication, Thoracoplasty, Pneumothorax, Bronchopulmonary Fistula, Valvotomy and Valve Replacement, Surgery on Pericardium, Open Heart Surgery and Heart Transplant, Congenital Abnormalities of Heart, Peripheral Vascular Disorders.

UNIT - V **20-MARKS**

A. Cardiac Rehabilitation: Definition, Aims and Objectives, Patho-Physiology of Diseases, Physiotherapy Assessment, Techniques of Cardiac Rehabilitation including Yoga and Biofeedback.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

Various physiotherapy modalities and treatment techniques for above mentioned Surgical and Medical conditions should be demonstrated and practiced by the student.

Book References

1. Cash's text Book of General Medical and Surgical conditions for Physiotherapist.
2. Cash's Text Book of Chest, Heart and Vascular disorders for Physiotherapist.
3. The Brompton Guide to chest physiotherapist — D.U. Gasked (Completed)
4. Physiotherapy of Paediatrics — Shepherd.
5. Elements of Paediatric Physiotherapy by Pamel M. Eckersly.
6. Essentials of Cardiac-pulmonary Physical Therapy by Hillegass and Sandowsky.
7. Cardiac pulmonary Symptoms in physical Therapy practice Cohen and Michael.
8. Chest Physiotherapy in Intensive care Unit by Mackenzie.

Swami Vivekanand University, Sagar(M.P.)

SPORTS PHYSIOTHERAPY (BPT 403)

Max. Marks -100 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course enables the student to understand about basic principles of Sports training, Mechanism of Sports injuries and their management in physiotherapy.

Course Objectives

The objectives of this course s that after 170 hours *of* Lectures, Demonstrations, Practical and Clinics, the student will be able to acquire concept of evaluation of sports and Sports injuries, and also will be able to provide Sports Training and Physiotherapy in particular to Sports injuries.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral, practical and internal evaluation) of the following objectives of the course.

UNIT - I **20-MARKS**

A. Introduction to Sport Physiotherapy
B. Sports - Evaluation of Sports, Evaluation of Physical, Cardio-respiratory Psycho-social and Emotional, aspect of sports.
C. Dietetics and Nutrition in sports.
D. Sports and Sports Training
E. Evaluation of Pre-requisite for sports and sports Training.

UNIT - II **20-MARKS**

A. Principles of Sports Training.
B. Instrumentation in sports Training. Isokinetic Exercise, Treadmill with Cardio respiratory evaluation apparatus etc.
C. Modern Principles of Sports Analysis and Training.

UNIT - III

A. Sports and Sports Injuries **20-MARKS**
   a) Introduction.
   b) Frequency and site of injury.
   c) Aetiological Factors.
   d) Investigation in sports injury.
   e) Diagnosis and prognosis.

UNIT - IV **20-MARKS**

A. Sports Injuries Management.
   a) Principles of sports injuries managements at the following stages
      i) Immediately after injury
      ii) Acute stage
      iii) Chronic stage
      iv) Rehabilitation stage
B. Soft tissue injury management.

UNIT - V **20-MARKS**

A. Injuries and management in the following.

a) Hip, Knee, ankle and Foot injuries.
b) Shoulder, Elbow, wrist and Hand injuries
c) Spine, Head and Neck Injuries.
d) Chest, abdomen and Pelvic Injuries.

B. Pharmacology in Sports.

C. Rehabilitation in Sports.

Marks Distribution :

Theory -		**Practical -**	
University examination	– 100	University Examination	– 60
Internal Assessment (Two test + sessional)	– 10+10	Internal Assessment	– 20

Practical

Various physiotherapy modalities and treatment techniques for above mentioned Surgical and Medical conditions should be demonstrated and practiced by the student.

Book References

1. Cash's Text Book of Rheumatology for Physiotherapist.
2. Modern Principles of Athletic Training — by Corl E. Klafs and Physiotherapist.
3. Sports Injuries: Diagnosis and Management for Physiotherapist
4 The Children's Sports injuries by David Kennedy.
S Dynamics of Clinical Rehabilitative Exercise by Order
6. Basic athletic Training by Cramer.

Swami Vivekanand University, Sagar(M.P.)

COMMUNITY MEDICINE(BPT404)

Max. Marks - 80 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

Course Description

This course enables the student to understand the effects of the environment and the community dynamics on the health of the individual with special emphasis on disability limitation specific protection and rehabilitation.

Course Objective

The objective of this course is that after 60 hours of lectures, demonstrations, practical, clinics and filed visits, the student will be able to demonstrate and understanding of the influence of social and environmental factors on the health of the individual and society. In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral and practical evaluation), the following objectives of the course.

UNIT - I **16-MARKS**

A. General Concepts of health and diseases with reference to natural history of disease with pre-pathogenic and pathogenic phase. The role of socio-economic and cultural environment in health and disease. Epidemiology and scope. Role of Epidemiological investigation in public health,

B. **Public Health Administration —** Overall view of the health administration setup at Central State and Local self-government levels. Role of Non-Government Organisations in public health care delivery system.

C. **The National Health Programmes —** Highlighting the role of social, economic and cultural factors in the implementation of the National Programmes, Primary Health Care, objectives and implementation.

D. **Health Problems of vulnerable groups —** Pregnant and Lactating women Infants and Pre-school children, Occupational groups (see below) and Geriatrics.

E. **Occupational Health** - Definition, scope, occupational diseases, prevention of occupational diseases and hazards. Role of E S .5. In occupational health of industrial workers.

UNIT - II **16-MARKS**

A. Social security and other measures for the protection of occupational hazards, accidents and diseases. Details of Factory Act, Environmental safety and Compensation acts, ES. .5. Acts.

B. **Family Welfare Programme —** Objectives of National Family Welfare Programme and Family Planning Methods. A general idea of advantages and disadvantages of methods Reproductive Child Health Services, Concept, of plan d pregnancies, population dynamics.

C. **Mental Health —** Community aspects of Mental Health: Role of Physiotherapists. Therapist in Mental Health Problems such as Cerebral Palsy, Mental retardation etc.

D. **Communicable diseases —** Diseases transmission concepts, an overall view of communicable diseases (Malaria, Filaria, Tuberculosis, Leprosy, Poliomyelitis, and Viral Encephalitis etc.) classified according to principal mode of transmission, Role of Insects and other Vectors in disease transmission. Control and prevention of communicable diseases, universal immunization programme, Programmes such as ARI, Diarrhoea and Polio Control Programmes.

E. International Health Agencies and National NGOs.

F. Non-communicable diseases, Blindness, Accidents, Cancer, IHD, Hypertension, Stroke (CVA).

G. **Vital and health statistics —** Basic concepts, Morbidity and Mortality rates, Period, Age and Cause of specific death rates and role of these rates as indicators of health and diseases.

UNIT - III **16-MARKS**

A. Health education philosophy, Main principles and objectives, Health education versus health legislation, Education versus Propaganda.

B. Review of Beliefs, Values, Norms, Habits and Taboos among practices. Mores in human groups and their importance in learning and change process.

C. Review of concepts of perception, Attitudes, socialization process, Learning and Theories of learning, social change and change process, Motivation needs and drives.

D. Principles and process of communication.

E. Methods and tools of health education, individual and group methods, A critical evaluation of the theories, toll and health education

F. Role of health personnel in Health Education, Coordination and Cooperation, Health Education with other members of the health team. Health education component in National Health Programmes

G. Elements of planning a Health Education Programme with special emphasis on community participation.

UNIT – IV **16-MARKS**

A. Community Physiotherapy -

Health care delivery programme in Urban and Rural areas Population studies and Health statistics. Disabilities surveys, Epidemiological aspects and demands or' Physiotherapy services, Concept of rural camps and integration of infrastructural service and voluntary agencies. Extension services and mobile units.

B. Parental education programmes.

C. Home exercise programme - packets in various physiotherapy conditions, Community awareness and participation in preventive aspects of health disorders, disability evaluation and screening for deformities and developmental disorders, paediatric disorders screening and advice, maternal care and home advice, Sports, Industrial and Occupational disorders, and preventive programme, Geriatric diseases.

UNIT - V

16-MARKS

A. History of Physiotherapy.

B. Philosophy and Philosophical Statements.

C. Major Ethical principles applied to moral issues in health care.

D. Rules of professional conduct scope of practice.

(i) Relationship with patients
(ii) Relationships with medical colleagues
(iii) Relationships between professionals with careers
(iv) Relationships with the profession.
(v) Confidentially and Responsibility
(vi) Provision of Services and Advertising

E. Sale of Goods.

(i) Personal and Professional Standard.
(ii) Professional and Governmental Licensing, Accreditation and Education Standards.

F. Laws and Legal concepts.

(i) Protection from Malpractice claims, Consumer Protection Act
(ii) Liability and Documentations.

Marks Distribution :

Theory -
University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Practical
Various physiotherapy modalities and treatment techniques for above mentioned Surgical and Medical conditions should be demonstrated and practiced by the student.

Book References

- Textbook of Preventive and Social Medicine by Dr J E Park.
- Rehabilitation Medicine by Joel A. Delosa.
- Krusens, Handbook of Physical Medicine and Rehabilitation by Stiwell and Lehmann.
- British Journal of Physiotherapy – 1994 Issue.
- Medical Ethics by C.M. Francis.

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REHABILITATION THERAPY & BIOSTATISTICS -(BPT 405)

Max. Marks - 80 **DURATION – 3 HRS.**

Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

UNIT - I **16-MARKS**

A. The Philosophy and need of rehabilitation.
   1. Principles of Physical medicine.
   2. Basic principles of Administration and Organisation.

B. 1. The evaluation process and treatment planning
   2. Principles of prescription writing.

UNIT - II **16-MARKS**

Principles of Orthotics - Lower Extremity Orthotic, Upper Extremity Orthotic, Spinal Orthotic

UNIT - III **16-MARKS**

Principles of Prosthetics - Lower Extremity Prosthetics, Upper Extremity Prosthetics

UNIT - IV **16-MARKS**

Principal of Rehabilitation - Nursing , Communication problems, Social Problems, Vocational Problems and Vocational Placement

UNIT -V **16-MARKS**

A. Introduction, uses of statistical methods of Physiotherapy, measurement scales, variables & their measurements, symbolic Data, operations.

B. Statistical data, Tabulation, Calculation of Central tendency & dispersion, Linear regression & correlation, presentation of data in diagrammatic & graphic form.

C. Probability & sampling as a mathematics system, population & samples, sampling distribution, sampling methods.

Marks Distribution :

Theory -

University examination – 80
Internal Assessment – 10+10
(Two test + sessional)

Books Recommended

1. Statistics: Theory, methods and application by Sancheti and Kapoor.
2. Statistical Methods by S.P. Gupta.
3. Bio-Statistics by Dr. Mahajan.

Collateral Reading

1. Statistical methods by Snedecor
2. Research methods by C.R. Kothari
3. Statistics in biology by N.T.J. Beiley
4. A short textbook of medical statistics by A.B. Hills.

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ELEMENTRY COMPUTERS APPLICATIONS - (BPT406)

Theory : Max. Marks -60 Duration – 3 Hrs.
Practical: Max. Marks -40 Duration – 2 Hrs.
Note – Paper will be divides into five units. Each unit will consist of one essay type and two short answer type questions. Students are required to attempt either essay type or two short answer type question from each unit. All unit carry equal marks.

UNIT - I **12-MARKS**

Introduction to Information Technology, evolution and generation of computers, type of computers, micro, mini, mainframe and super computer. Architecture of a computer system: CPU,ALU, Memory (RAM, ROM families) cache memory, input/output devices, pointing devices.

Number system (binary, octal, decimal and hexadecimal)and their inter conversions, character codes (ASCII, EBCDIC and Unicode). Logic gates, Boolean algebra, machine, assembly and high level languages including 3GL and IV GL.

UNIT - II **12-MARKS**

Concept of operating system, need and types of Operating Systems, batch, single user, multiprocessing, distributed and time shared operating systems, Process and memory management concepts,. Introducing to UNIX,LINUX, Windows, Windows NT systems and their simple commands.

Word processing packages, Standard features like tool bar, word wrap, text formatting, paragraph formatting, effect to text, mail merge.

UNIT - III **12-MARKS**

Presentation packages: Slide creation, slide shows, adding graphics, formatting, customizing and printing.

Multimedia technology: Introducing framework for multimedia devices, image compression standards, JPEG, MPEG and MIDI formats.

UNIT - IV **12-MARKS**

Data Base Management System : Data, field and records, information database, creation of a database file, insertion, deletion and updating of records, modifying structure, editing and browsing of records, searching, sorting and indexing of records, retrieving of records and report generation. Data processing in government organizations.

UNIT - V **12-MARKS**

Computer Networking: Type of networks. LAN,MAN and WAN concept of topology, Bridges and Routers. Gate ways, Modems, ISDN and Leased lines. Teleconferencing and videoconferencing.
Internet : Concepts, email services, world wide web, web browsers, search engines, simple programs in HTML, type of HTML documents, document structure element, type and character formatting, tables frames and forms.
E-commerce : Concept of E-commerce, benefits and growth of E-commerce, security considerations and hazards of virus and other security risks. Antivirus software, electronic payment system.

LABORATORY : The laboratory exercise will be designed to help in the understanding of concepts of computer and the utilization in the areas outlined in the theory syllabus. The emphasis should be on practical usage rather than on theoretical concepts only. In addition, MS-Office package has to be practiced in the lab.

Note : Passing in theory and practical examination separately shall be necessary by securing at least 36 percent marks each. Maximum marks for theory will be 60 and Maximum Marks for practical paper will be 40. Minimum marks for theory and practical shall be 22 and 14 respectively.

The practical examination scheme should be as follows-

a. Record/Sessionals	6 Marks
b. Viva – voce	6 Marks
c. Practical Exercise (DOS)	7 Marks
d. Practical Exercise (Window 98)	7 Marks
e. Practical Exercise (MS Word)	7 Marks
f. Practical Exercise (MS Excel)	7 Marks

Duration for practical examination shall be of 2 Hours and more than 2 batches of 30 students each should be examined in a day by single examiner.