

Government Physiotherapy College, Raipur, C.G.

SYLLABUS

Bachelor of Physiotherapy

First Year

2
ANATOMY

COURSE DESCRIPTION

The study of Anatomy will include identification of all gross anatomical structures. Particular Emphasis will be placed on description of bones, joints, muscles, the brain, cardio-pulmonary and nervous systems, as these are related to the application of Physiotherapy.

COURSE OBJECTIVES

The objective of this course is, after 150 hrs. of lectures and 100 hrs of demonstrations & practical, the student will be able to demonstrate knowledge in human anatomy as is necessary for the study and practice of Physiotherapy.

SECTION – A

- I General Anatomy - 10 hrs.
- II Superior Extremity – 35 hrs
- III Neuro Anatomy – 35 hrs
- IV Head & Neck - 15hrs

SECTION – B

- I Inferior Extremity- 35 hrs
- II Thorax- 10hrs
- III Abdomen- 10hrs

SECTION - A

I. GENERAL ANATOMY:-

- 1. Introduction** - Anatomical position of body, Anatomical terms.
- 2. Bones** – Composition, Function, Classification, parts of young bone, blood supply, terms used, general remarks about bones of extremities, vertebral column, thorax and skull.
- 3. Arthrology**
 - a) Classification of joints
 - b) Construction of joint
 - c) Motion of joint
 - d) Articulation
- 4. Muscular system-**
 - a) Type of muscles
 - b) Characteristics of muscles.
 - c) Origin, insertion, nerve supply

5. Nervous system-

- a) Introduction and parts.
- b) Nerve cell, nerve fibres, synapse and reflex arc.

6. Cardiovascular system-

- a) Introduction
- b) Arterial and venous system.
- c) Lymphatic system.

7. Connective Skin tissue & ligaments**II. REGIONAL ANATOMY – (Under Following Headings)**

- Osteology
- Soft parts
- Demonstration of dissected parts
- Surface anatomy
- Radiological Anatomy

SUPERIOR EXTREMITY

- **Osteology** – Clavicle, Scapula, Humerus, Radius, Ulna, Articulated hand.
- **Soft parts** – Breast, Pectoral region, Axilla including Axillary artery and brachial plexus
Scapular region, Cubital fossa, Front & Back of arm, front and back of forearm, Palm,
Nerves and Vessels of Arm, Forearm & Hand, Joints, Venous drainage, Lymphatic
drainage.
- **Demonstration of dissected part.**
- **Surface Anatomy.**
- **Radiological Anatomy.**

NEUROANATOMY

- Spinal cord, Parts of brain, CSF, Introduction to Medulla, Pons and Mid Brain so as to know the positions of tracts.
- Cerebellum – Parts, Functions and Dysfunctions, Ventricle's of Brain, IV th ventricle in detail.
- Cerebrum - Sulci and Gyri and various functional areas of cerebral hemispheres, Blood supply and clinical anatomy.
- Thalamus, Internal capsule, Basal ganglia, Blood supply and clinical anatomy.
- Sensory - motor pathway and related clinical anatomy.

HEAD AND NECK

Osteology – Introduction to skull i.e. names of Bones forming skull.

Soft parts –

1. Muscles of Face
2. Extra cranial course of facial nerve, facial palsy

3. Carotid arteries
4. Jugular venous system
5. Introduction endocrine and thyroid glands (in details)
6. Salivary glands – parotid in detail
7. Introduction to Eye ball and extra ocular muscles – name, nerve supply, action
8. Other important muscles – Sterno- mastoid, Muscles of Mastication
9. Introduction to Cranial Nerves – Names and distribution(V, VII, XII in detail)
10. Tongue
11. Temporo mandibular joint.

Demonstration of dissected parts

- **Surface Anatomy** – Bony prominence, Points to palpate nerves, Identification of important muscles.
- **Radiological Anatomy**

SECTION - B

INFERIOR EXTREMITY –

- **Osteology** – Hip bone, Femur, Patella, Tibia, Fibula, Articulated foot.
- **Soft parts** – Front of thigh including Femoral canal and hernia, Adductor canal, Medial compartment of thigh, Gluteal region, Popliteal fossa, Back of thigh, Anterior, Posterior, Medial and Lateral compartments of Leg & Sole, Foot, Joints - Hip, Knee, Ankle and Tarsal, Arches of foot, Venous and Lymphatic drainage.
- **Demonstration of dissected parts**
- **Surface Anatomy**
- **Radiological Anatomy**

THORAX

- **Osteology** – Sternum, ribs, thoracic vertebrae.
- **Soft parts** – Thoracic wall, Inter costal spaces, Movements of Respiration, Respiratory passage, Pleura, Lungs, Heart and Great vessels, Inter vertebral joint and Costo vertebral joint, Inter vertebral disc.
- **Demonstration of dissected parts** – Thoracic wall, Lung, Heart.
- **Surface Anatomy**
- **Radiological Anatomy**

ABDOMEN

- **Osteology** – Sacrum, Lumbar vertebrae.
- **Soft Parts-**
 1. Introduction to Abdominal wall, including nine quadrants of abdomen.

2. Digestive system – General idea of GIT and associated glands, stomach in detail.
 3. Urinary system – General idea, Kidney in detail.
 4. Reproductive system – General outline of male and female reproductive system, Testis and Uterus in detail.
 5. Introduction to Liver & Spleen
- **Demonstration of dissected parts**
 - **Surface Anatomy**
 - **Radiological Anatomy.**

* Emphasis should be given to bones, muscle, nerves and joints of limbs.

TEXT BOOKS RECOMMENDED

- 1] Human Anatomy- by Snell
- 2] Anatomy & Physiology by Smout and McDowell
- 3] Anatomy by Chaurasia-all 3 volumes
- 4] Kinesiology by Katherine Wells[soundersco.]
- 5] Neuro-anatomy by Inderbir Singh

REFERENCE BOOKS

- 1] Gray`s Anatomy
- 2] Extremities by Quining Wasb

PHYSIOLOGY

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objective of this course is, after 150 hrs. of lectures and 50 hrs of demonstrations and practical, the student will be able to demonstrate knowledge in human Physiology as is necessary for the study and practice of Physiotherapy.

1. GENERAL PHYSIOLOGY [2 HOURS]

- Cell: Morphology. Organelles: their structure and functions
- Transport Mechanisms across the cell membrane
- Body fluids: Distribution, composition. Tissue fluid – formation.

2. BLOOD [10 HOURS]

- Introduction: Composition and functions of blood.
- Plasma: Composition, formation, functions. Plasma proteins.
- RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-endothelial system (in brief), Haemoglobin - Anemia (in detail), types of Jaundice. Blood indices, PCV, ESR.
- WBC: Classification. Morphology, functions, count, its variation of each. Immunity
- Platelets: Morphology, functions, count, its variations
- Hemostatic mechanisms: Blood coagulation–factors, mechanisms. Their disorders, Anticoagulants.
- Blood Groups: Landsteiner’s law. Types, significance, determination, Erythroblastosis foetalis.
- Blood Transfusion: Cross matching. Indications and complications.
- Lymph: Composition, formation, circulation and functions.

3. NERVE MUSCLE PHYSIOLOGY [20 HOURS]

- Introduction: Resting membrane potential. Action potential – ionic basis and properties.
- Nerve: Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibres. Nerve injury – degeneration and regeneration.
- Neuroglia: Types and functions.
- Muscle: Classification. Skeletal muscle: Structure. Neuromuscular junction : Structure, Neuromuscular transmission, myasthenia gravis. Excitation- Contraction coupling. Rigor

mortis. Motor unit. Properties of skeletal muscles, Strength- Duration curve, Length-tension relationship, fatigue, load.

- Smooth muscle: Structure, types, mechanism of contraction. Plasticity.

4. CARDIOVASCULAR SYSTEM [25 HOURS]

- Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organization of CVS. Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties.
- Conducting system: Components. Impulse conduction Cardiac Cycle: Definition. Phases of cardiac cycle. Pressure and volume curves. Heart sounds – causes, character. ECG: Definition. Different types of leads. Waves and their causes. P-R interval. Heart block.
- Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation. Their variations
- Arterial Blood Pressure: Definition. Normal values and its variations. Determinants. Peripheral resistance. Regulation of BP.
- Arterial pulse.
- Shock – Definition. Classification–causes and features
- Regional Circulation: Coronary, Cerebral and Cutaneous circulation.
- Cardiovascular changes during exercise.

5. RESPIRATORY SYSTEM [20 HOURS]

- Introduction: Physiological anatomy – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system. Respiratory muscles.
- Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration. Chest expansion. Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations. Surfactant – Composition, production, functions. RDS
- Spirometry: Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume.
- Dead Space: Types and their definition.
- Pulmonary Circulation. Ventilation-perfusion ratio and its importance.
- Transport of respiratory gases: Diffusion across the respiratory membrane. Oxygen transport –Different forms, oxygen-haemoglobin dissociation curve. Factors affecting it. P50, Haldane and Bohr Effect. Carbon dioxide transport: Different forms, chloride shift.
- Regulation of Respiration: Neural Regulation. Hering-Breuer's reflex. Voluntary control. Chemical Regulation.

- Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization Hypercapnoea. Asphyxia. Cyanosis – types and features. Dysbarism
- Disorders of Respiration: Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea, tachypnoea. periodic breathing – types
- Artificial respiration
- Respiratory changes during exercise.

6. DIGESTIVE SYSTEM [5 HOURS]

- Introduction: Physiological anatomy and nerve supply of alimentary canal. Enteric nervous system
- Salivary Secretion: Saliva: Composition. Functions. Regulation. Mastication (in brief)
- Swallowing: Definition. Different stages. Functions.
- Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer. Gastric motility. Gastric emptying, Vomiting.
- Pancreatic Secretion: Composition, production, function. Regulation.
- Liver: Functions of liver. Bile secretion: Composition, functions and regulation. Gall bladder: Functions.
- Intestine: Succus entericus: Composition, function and regulation of secretion. Intestinal motility and its function and regulation.
- Mechanism of Defecation.

7. RENAL SYSTEM [8 HOURS]

- Introduction: Physiological anatomy. Nephrons – cortical and juxtamedullary. Juxtaglomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.
- Mechanism of Urine Formation: Glomerular Filtration: Mechanism of Glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Insulin clearance. Creatinine clearance.
- Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: T_mG. Renal threshold for glucose.
- Tubular Secretion: Secretion of H⁺ and K⁺. PAH clearance.
- Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics.
- Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder.
- Acid-Base balance (very brief)

- Artificial Kidney: Principle of haemodialysis.
- Skin and temperature regulation.

8. ENDOCRINE SYSTEM [10 HOURS]

- Role of hypothalamus as an endocrine gland
- Functions and hypo & hyper – section of hormones of
 1. Pituitary
 2. Thyroid
 3. Parathyroid
 4. Adrenal gland
 5. Endocrine part of pancreas.

9. REPRODUCTIVE SYSTEM [5 HOURS]

- Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation disorder
- Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.
- Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones: Oestrogen and Progesterone-action, regulation of secretion. Menstrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods.

10. CENTRAL NERVOUS SYSTEM [25 HOURS]

Outline of nervous system-

- General nervous system –
 - A. Synapse - definition, physiological anatomy, sequence of events of synaptic transmission, properties. Significance of synaptic transmission and applied aspect.
 - B. Neurotransmitters – in brief.
 - B. Receptors – definition, classification with examples. Properties (state each property with underlying mechanism and significance), homeostasis, conscious awareness of environment, tone, posture, protection.
 - C. Sensations – different modalities, classification with examples and significance – sensation of touch, pain, proprioception .
 - D. Reflexes – definition , classification and examples, reflex arc and its components, properties with basis and importance,

- E. Stretch reflex – definition, muscle spindle (details with innervations, role of gamma motor neurons, role of supra spinal control – in brief , functions of stretch reflex regulation of muscle tone, inverse stretch reflex.
- F. Polysynaptic reflex – withdrawal reflex.
- Tracts : Ascending and Descending tracts – details of each tract (situation and extent in spinal cord, origin, course, termination)
 - Posture and Equilibrium : Definition, classification of postural reflexes & their functions, Vestibular apparatus: Physiologic anatomy, modes of function of utricle, saccule, semicircular canals, vestibulospinal reflexes
 - E.E.G – Definition, different waves, Characteristics and functional significance of each wave
 - Cerebellum – Introduction, functional classification, intracortical circuit, deep cerebellar nuclei, connection of different lobes, functions of cerebellum, cerebellar function test, effect of lesion in brief.
 - Basal ganglia- Introduction, classification of nuclei, connection, intracortical circuits, functions, lesions, parkinsonism.
 - Cerebral cortex - Gross anatomy and divisions, concept of Brodmann's mapping with diagram, Parietal lobe- anatomical and functional divisions, details of each functional parts as regards connections, topographic organization, functions. Frontal lobe – excitomotor cortex – anatomical and functional parts, details of each part as regards connections, topographic organization, functions. Prefrontal cortex- different areas, connections in brief, functions.
 - Speech – afferent and efferent mechanism and role of cortical centres in speech, concept of cerebral dominance in development of speech, vocalization.
 - Memory – Definition, stages, types, physiological basis, factors affecting, applied - Amnesias in brief
 - Learning – Definition, types with examples, stages factors influencing, role of motivation (positive and negative reinforcement, reward and punishment), physiological basis – role of different parts of CNS, structural biochemical changes.
 - Conditioned reflexes – Definitions, difference between unconditioned and conditioned reflexes, development of conditioned reflexes, properties and significance.
 - Autonomic nervous system – Organization and function of Parasympathetic and Sympathetic and their control
 - CSF – Introduction, composition, normal CSF pressure, formation and circulation, functions, applied aspect - blood brain barrier, blood CSF barrier in brief.

11. BODY TEMPERATURE REGULATION – [5 HOURS]

- Homeothermia – balance between heat gain and heat loss
- Regulation of body temperature.

12. PHYSIOLOGY OF EXERCISE [15 HOURS]

- Effects of acute and chronic exercise on
 - 1) O₂ transport
 - 2) Muscle strength/power/endurance
 - 3) B.M.R./R.Q.
 - 4) Hormonal and metabolic effect
 - 5) Cardiovascular system
 - 6) Respiratory system
 - 7) Body fluids and electrolyte
- Effect of gravity / altitude /acceleration / pressure on physical parameters
- Physiology of Age

PRACTICAL [30 Hours]

1. Study of Microscope and its uses.
2. Demonstration of RBC count, WBC count, leukocyte count, estimation of hemoglobin, blood grouping, bleeding time, clotting time, ESR, PCV.
3. To be done by the students- Examination of Radial pulse, blood pressure, CVS, respiratory system, Sensory system, Motor System, reflexes & cranial nerves.
4. Recommended Demonstrations [20 Hours]
 1. Spirometry
 2. Artificial Respiration
 3. ECG
 4. Perimetry
 5. Mosso's Ergometry

RECOMMENDED TEXT BOOKS

1. Text book of medical physiology – Guyton Arthur
2. Concise medical physiology – Chaudhary Sujit K.
3. Human Physiology – Chatterjee C.C.
4. Text book of practical Physiology – Ranade.
5. Text of Physiology – A.K.Jain.
6. Basics of Medical physiology- Venkatesh D & Sudhakar H H
7. Manipal Manual of Physiology – Prof. C N Chandrashekar

REFERENCE

1. Review of Medical Physiology – Ganong William F.
2. Physiological basis of Medical practice – Best & Taylor

BIO-CHEMISTRY

COURSE DESCRIPTION

This course supplements the knowledge of biochemistry and enables the students to have a better understanding of carbohydrates, proteins, enzymes, metabolism etc.

COURSE OBJECTIVE

The objective of this course is that after 60 hours of lectures, demonstrations, practical and clinics the student will be able to demonstrate an understanding of Biochemistry.

1. BIOPHYSICS

Concepts of pH and buffers, acid base equilibrium osmotic pressure and its physiological applications.

2. CELL

Morphology, structure & Kinetics of cell, cell membrane, Nucleus, Chromatin, Mitochondria, Endoplasmic Reticulum, Ribosomes.

3. CARBOHYDRATES:

Definition, functions, sources, classifications, Monosaccharides, Disaccharides, Polysaccharides, Mucopolysaccharides and its importance.

4. LIPIDS

Definition, functions, sources, classifications, Simple lipid, compound lipid, derived lipid, unsaturated fatty acid, essential fatty acid, and their importance, Blood lipids and their implications, cholesterol and its importance.

5. PROTEINS

Definition, sources, kinetics, classifications, simple protein, conjugated protein, derived proteins, properties & verities of proteins.

6. NUCLEIC ACID

Structure & function of DNA & RNA, nucleotides, genetic code, Biologically important nucleotides.

7. ENZYMES

Definition, classifications, mode of action, factors affecting enzyme action, clinical importance of enzyme.

8. VITAMINS

Classification, fat soluble vitamins, A, D, E & K, water soluble vitamin B complex & C, daily requirements, physiological functions & diseases of vitamin deficiency.

9. BIOENERGETICS

Concept of free energy change, Exogenic & Endogenic reactions, concepts regarding energy rich compounds, Respiratory chain & Biological oxidation.

10. CARBOHYDRATE METABOLISM

Glycolysis, HMP shunt pathway, TCA cycle, Glycogenesis, Glycogenolysis, Glucogenesis, maintenance of Blood Glucose, interconversions of different sugar.

11. LIPID METABOLISM

Fatty acid oxidation, Fatty acid synthesis, Metabolism of cholesterol, Ketone bodies, Atherosclerosis and obesity.

12. PROTEIN METABOLISM

Transamination, Transmethylation, Deamination, Fate of ammonia, urea synthesis & synthesis of creatine, inborn errors of metabolism.

13. WATER & ELECTROLYTE

Fluid compartment, daily intake and output sodium and potassium metabolism.

14. NUTRITION

Balance diet, metabolism in exercise and injury, Diet for chronically ill and terminally ill patients.

15. CONNECTIVE TISSUE

Mucopolysaccharide connective tissue proteins, glycoproteins, chemistry & Metabolism of bone and tooth, metabolism of skin.

16. NERVE TISSUE

Composition, metabolism, chemical mediators of Nerve activity.

17. HORMONES

General characteristics and mechanism of hormone action insulin, glucagone Thyroid and Parathyroid hormones, cortical & sex hormones.

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

TEXT BOOKS RECOMMENDED

- 1] Biochemistry- By Dr. Deb Jyoti Das,
- 2] Biochemistry- By Dr Satyanarayan
- 3]Text book of Biochemistry for Medical students. By-Dr Vasudevan/ Shri kumar

REFERENCE BOOKS

- 1] Review of Biochemistry [24th edition] by Harpar

SECTION A- SOCIOLOGY

COURSE DESCRIPTION

The study of sociology will include basic sociological concepts, principles and social process social institutions (in relation to the individual, family and community) and the various social factors affecting the family in rural and urban communities in India.

COURSE OBJECTIVE

The objective of this course is that after 50 hrs. of lectures, demonstrations and practical, the student will be able to demonstrate and understand the role of socio cultural factors as determinants of health and behavior in health and sickness.

A. Introduction -Meaning, definition and scope of sociology, its relation with anthropology, Psychology, social psychology and ethics.

Methods of sociology - Case study, social survey, questionnaire, interview and opinion poll methods.

B. Social change – Meaning & Factors of Social change, Human adaptation and social change, Social change and deviance, social change and stress, Social change and health programme.

The role of social Planning in the improvement of health and rehabilitation.

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 groups on health and Sickness

The role of primary groups in hospital and rehabilitation settings

E. Social Institution

F. Family

Meaning and definition,

Function and types of family

Changing family patterns Influence of family on the individual's health, family and nutrition,

The effect of Sickness on family

Psychosomatic diseases and their importance to Physiotherapy.

G. Community

Rural Community – meaning and features, health of ruralites

Urban Community- meaning, and features, health hazards of urbanites

H. Culture and health –

Concepts of culture

Culture and behaviour

Cultural and health

Culture and health disorders

I. Social problems of disabled - Major social problems

J. Social factors in health and disease -The meaning of social factors in health and illness

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

L. Social work - Meaning of social work. The role of medical social worker.

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

BOOKS RECOMMENDED

1. Introduction to the study of sociology – Sachdeva and Vidyabushan.
2. Text books of Sociology for Graduates Nurses and Physiotherapy students – Indrani T. K. – J.P. Brothers, New Delhi, 10.

SECTION B- PSYCHOLOGY

COURSE DESCRIPTION

The course will enable the student to understand specific psychological factors and effects in physical illness and thus help them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge.

COURSE OBJECTIVE

The objective of this course is that after 50 hrs. of lectures, demonstrations and practical , the student will be able to recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients illness, death, bereavement and medical – surgical patients /conditions . They should also understand the elementary principle of behavior for applying in the therapeutic environment.

1. Schools (2Hours)

Structuralism, functionalism, behaviourism & Psychoanalysis.

Branches: Pure psychology and applied psychology.

Methods: Introspection, observation, inventory and experimental method.

2. Growth and development (3 Hours)

Infancy, childhood, adolescence, adulthood, middle age and old age.

3. Motivation (3Hours)

Motivate cycle (Need, drive, incentive, reinforcement)

Classification of motives.

Maslow's theory of need hierarchy.

Frustration: Sources of frustration.

Conflict: types of conflict.

Stress: Sources and management of stress.

4. Learning (4 Hours)

Factors affecting learning.

Theories of learning: Trial and error learning classical conditioning, operant conditioning,

Insight learning.

The effective ways to learn ; massed vs. spaced, whole vs. parts, recitation vs. reading, serial vs. free recall, incidental vs. intentional, knowledge of results association, organization, mnemonic methods.

5. Memory (3 hours)

Types of memory

Forgetting: curve, theories, and determinants of forgetting.

Methods to improve memory

6. Attention and perception (3 hours)

Attention: Characteristics and determinants

Perception: characteristics and laws of perceptual organization, determinants, errors.

7. Personality (4hours)

Approaches to personality: Types and trait, psychoanalytic and behaviourist approach

Determinants

Personality assessment

8. Intelligence (3hours)

Theories of intelligence

Distribution of intelligence

Assessment of intelligence

9. Abnormality

Concepts of abnormality and viewpoints (2 hours)

Classification of mental disorders (8 hours)

Anxiety disorders: Phobias, OCD, Conversion dissociative disorders, Somatization, PTSD (6 hours)

Psychotic disorders: Types of Schizophrenia, behavioural problems in disabled (4 hours)

Affective disorders: Depression, Mania and bipolar disorders (3 hours)

Management- ECT, chemotherapy, psychotherapy, cognitive behaviour therapy, behaviour therapy. (4 hours)

RECOMMENDED TEXT BOOKS

1. Feldman.R.H(1996). Understanding Psychology. New Delhi: Tata McGraw hill.
2. Morgan et al(2003). Introduction to Psychology. New Delhi: Tata McGraw hill.
3. Lefton. Psychology. Boston: Alwin & Bacot Company.
4. Mangal, S.K (2002). Advanced Educational Psychology. New Delhi: prentice hall.
5. Atkinson(1996). Dictionary of Psychology.

BIO PHYSICS

COURSE DESCRIPTION

The course will enable the student to understand specific psychological factors and effects in physical illness and thus help them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge.

COURSE OBJECTIVE

The objective of this course is that after 100 hrs with 75 hrs of lectures, and 25 hrs of demonstrations and practical, the student will be able to explain the physical rationale for the use of physical agent modalities.

SECTION –A

1. PHYSICAL PRINCIPLE

- a. Electricity: Definition and types. Therapeutic uses. Basic physics of construction. Working Importance of currents in treatment.
- b. Static Electricity: Production of electric charge. Characteristic of a charged body. Characteristics of lines of forces. Potential energy and factors on which it depends. Potential difference and EMF.
- c. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt
- d. Condensers: Definition, principle, Types: construction and working, capacity and uses.
- e. Alternating current.
- f. Magnetism: Definition. Properties of magnets. Electromagnetic induction. Transmission by contact.. Magnetic field and magnetic forces. Magnetic effects of an electric field.
- g. Conductors, Insulators, Potential difference, Resistance and intensity
- h. Ohm's law and its application to DC and AC currents. Fuse: construction, working and application.
- i. Transmission of electrical energy through solids, liquids, gases and vacuum.
- j. Rectifying Devices-Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits.
- k. Display devices and indicators-analogue and digital.
- l. Transformer: Definition, Types, Principle, Construction, Eddy current, Working uses
- m. Chokes: Principle, Construction and working, Uses.

2. EFFECTS OF CURRENT ELECTRICITY

- a. Chemical effects-Ions and electrolytes, Ionisation, Production of an EMF by chemical actions.
- b. Electromagnetic Induction.
- c. Electromagnetic spectrum.

3. ELECTRICAL SUPPLY

- a. Brief outline of main supply of electric current
- b. Dangers-short circuit, electric shocks.
- c. Precaution-safety devices, earthing, fuses etc.
- d. First aid and initial management of electric shock

4. VARIOUS AGENTS

- a. Thermal agents: Physical Principles of cold, Superficial and deep heat.
- b. Ultrasound: Physical Principles of Sound
- c. Electro magnetic Radiation: Physical Principles and their Relevance to Physiotherapy Practice
- d. Electric Currents: Physical Principles and their Relevance to Physiotherapy Practice.

5. CIRCUIT DIAGRAMS

- a. SWD
- b. US
- c. MWD
- d. LASER.

SECTION – B**1. MECHANICAL BASIS OF MOVEMENT**

Force and force Systems, Motion and its Laws, Levers, Angle of Pull, Pulleys and its types, Pendulum, Friction, Work, Energy and Power, Friction, Stress and Strain.

2. SKELETAL BASIS OF MOVEMENT

Planes and Axes, Joints and their Classification. Classification of Movement, Degrees of Freedom, Bones and their Classification.

3. MUSCULOSKELETAL BASIS OF MOVEMENT

Structure of Muscle and its Classification, Muscle Tension, Muscle Fiber, Group Action of Muscles, Torque & angle of pull

4. GRAVITY

Effects, Centre of gravity, Line of Gravity and their Alterations, Role in Human Body and Movement.

5. EQUILIBRIUM

Effects, Supporting Base, Role in Human Movement.

6. SIMPLE MACHINES

Levers and their Functions and classification, Pulleys and their Functions and classification, Inclined Planes and their Functions and classification.

7. ELASTICITY

Stress, Strain, Hooke's Law, Springs and their properties

8. HYDROSTATICS AND HYDRODYNAMICS - Principles, Application

9. FUNDAMENTAL AND DERIVED POSITIONS

10. TRACTION: PRINCIPLES

RECOMMENDED BOOKS

1. Practical Exercise Therapy- Hollis and Cook
2. Principles of Exercise Therapy- Gardiner
3. Clayton's Electrotherapy
4. Physical Principles Explained by Low and Reed