SYLLABUS FOR THE FIRST YEAR – DEGREE COURSES UNDER ALLIED HEALTH SCIENCES

B.SC. DEGREE IN PHYSICIAN ASSISTANT

S. No.	Subject	Units
FIRST YEAR		
1	Anatomy	3
2	Physiology	3
3	Biochemistry	4
4	Introduction to Computer	2
5	Technical Report Writing	2
*	Inservice Training I (Lab rotation)	10
SECOND YEAR		
6	Introduction to Medicine	3
7	Introduction to Surgery	3
8	Pediatrics & Geriatrics	4
9	Clinical Microbiology	3
10	Obstetrics and Gynaecology	3
*	Inservice Training II (Clinical department rotation)	10
THIRD YEAR		
11	Cardiology & Cardiac Surgery	3
12	Neurology	3
13	Nephrology	3
14	Gastroenterology	3
15	Orthopedics	3
*	Inservice Training III (Surgical department rotation)	10

* - Lab or Clinical or Surgical department

FIRST YEAR

SUBJECT 1: ANATOMY

Unit 1

Introduction to Human Anatomy: Definition and its relevance in medicine and Optometry, Planes of the body, relationship of structures, organ system, **Tissues of the Body:** Epithelium, connective tissue, bone and cartilage. Types of cells, cellular differentiation and arrangements in different tissues,

Unit 2

Skeleton System: Skull bones, Bones and body Joints, Voluntary and involuntary muscles, **Muscles:** Different types of muscles, their functional differentiation, their relationship with different structures, their neural supply, **Cardiovascular system: Heart, Blood Vessels:** Differentiation between arteries and veins, Functional differences between the two, anatomical differences at different locations.

Unit 3

Digestive System: Mouth, Esophagus, Stomach, Small Intestine, Large Intestine, Rectum, Anus, Liver, Spleen, Pancreas, **Respiratory System:** Nose, Bronchi, Lungs, Diaphragm, **The Urinary System:** Kidneys, Urinary bladder structure and functions,

Unit 4

Nervous System: Parts of Nervous system, cell types of nervous system, Blood-brain barrier, Reflex arc, Peripheral Nerves, Spinal nerves, Nerve fibers, Autonomic Nervous system, **Brain and Cranial nerves:** Major parts of Brain, Protective coverings of the Brain, Cerebrospinal Fluid, Brain stem, Cerebellum, Diencephalons, Cerebrum, Cranial nerves, **Skin and Appendages:** Anatomical differences in different area, functional and protective variations, innervations, relationship with muscles and nerves, **Reproductive System:** Male Reproduction System, Female Reproduction System, Pregnancy and child birth

SUBJECT 2: PHYSIOLOGY

Unit 1

Introduction to Physiology: Cell structure, Body fluid compartments. Transport across cell membrane, Homeostasis. Skeletal muscle structure and properties, neuromuscular junction and muscle contraction: **Blood:** Composition and function of Blood, Red blood cells, erythropoisis, anaemia, white blood cells structure and functions. Platelets and blood coagulation, Plasma proteins, blood groups, C**ardiovascular system:** Properties of cardiac muscle, origin and

conduction of heart beat, cardiac cycle. ECG. cardiac output, arterial blood pressure measurement, factors affecting and factor regulating it. heart rate.

Unit 2

Respiration: Mechanics of respiration, lung volume and capacities, transport of oxygen and carbondioxide, regulation of respiration, hypoxia and artificial respiration, **Digestive system:** Movements of GI tract, Secretions and functions of salivary glands, gastric glands, pancreas. small intestine, function of liver, absorption in the intestine, **Excretion :** Structure of Nephron, Renal circulation, formation of urine, micturition, diuretics, normal and abnormal constituents of urine, structure and functions of skin.

Unit 3

Endocrine system: All major endocrine glands, their secretion, action and regulation with hyper and hvposecretion of the glands, **Reproductive system:** Spermatogenesis, male sex harmones, menstrual cycle, pregnancy and lactation, principles of contraceptive methods

Unit 4

Nervous system: Structure of neuron, properties of nerve, nerve impulse conduction, synapse, receptor, spinal cord, reflex action, ascending and descending tracts, structure and function of cerebral cortex. basal ganglia, thalamus, hypothalamus, brain stem, sleep and reticular formation, autonomic nervous system, **Special tissues:** Olfaction, gustation, Hearing and Vision-Structure, Physiology, pathways and applied aspect, **Special senses –** (Elementary), Olfaction - Taste - Hearing

SUBJECT 3: BIOCHEMISTRY

Unit 1

Carbohydrates: Glucose; fructose; galactose; lactose; sucrose; starch and glycogen (properties and tests, Structure and function), **Proteins:** Amino acids, peptides, and proteins (general properties & tests with a few examples like glycine, trytophan, glutathione, albumin, hemoglobinxollagen)

Unit 2

Lipids: Fatty acids, saturated and unsaturated, cholesterol and triacyglycerol, phospholipids and plasma membrane, **Enzymes:** Definition – Nomenclature – Classification – Factors affecting enzyme activity – Active site – Coenzyme – Enzyme Inhibition – Units of enzyme – Isoeznzymes – Enzyme pattern in diseases.

Unit 3

Vitamins: General with emphasis on A, B2, C, E and inositol (requirements, assimilation and properties), **Minerals:** Na, K, Ca, P, Fe, Cu and Se. (requirements, availability and properties), Hormones and their receptors basic concepts in metabolic regulation with examples, insulin, glucagons and thyroxine

Unit 4

Metabolism: General whole body metabolism (carbohydrates, proteins, lipids)

Unit 5

Role of Biochemistry in diagnosis of diseases, clinical manifestations in carbohydrates, lipids and protein metabolism including inborn errors of metabolism and their evaluation, Disorders of kidney and liver and their diagnostic test, blood coagulation disorders and their estimation, clinical enzymology, disorders of ions Ca+ and P+ metabolism and their diagnosis, Endocrine disorders and diagnosis neurotransmitters, Radioactive isotopes in diagnosis, Biochemical tests, Renal function tests, Estimation of myocardial enzymes, Liver function tests, Urine analysis.

SUBJECT 4: INTRODUCTION TO COMPUTER

Unit 1

Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM – kilobytes. MB, GB their conversions – large computer – Medium, Micro, Mini computers – Different computer languages – Number system – Binary and decimal conversions – Different operating system – MS DOS – Basic commands – MD, CD, DIR,TYPE and COPY CON commands – Networking – LAN, WAN,MAN(only basic ideas)

Unit 2

Typing text in MS word – Manipulating text – Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page No's in a document – Printing a file with options – Using spell check and grammar – Find and replace – Mail merge – inserting tables in a document.

Unit 3

Creating table in MS-Excel – Cell editing – Using formulas and functions – Manipulating data with excel – Using sort function to sort numbers and alphabets – Drawing graphs and charts using data in excel – Auto formatting – Inserting data from other worksheets.
Preparing new slides using MS-POWERPOINT – Inserting slides – slide transition and animation – Using templates – Different text and font sizes – slides with sounds – Inserting clip arts, pictures, tables and graphs – Presentation using wizards.
Unit 4

Introduction to Internet – Using search engine – Google search – Exploring the next using Internet

Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation – Sending messages – Attaching files in E-mail – Introduction to "C" language – Different variables, declaration, usage – writing small programs using functions and sub – functions.

SUBJECT 5: TECHNICAL REPORT WRITING

Unit 1

Definition and nature of Technical writing, Basic Principles, Properties of technical writing,The role of technical writing, End-products of technical writing, Information structure/ techniques in technical writing, Distinction Between technical and Literary writing, Formal Definition, Description Mechanism, Process description, Classification, Cause and Effect, Comparison and contrast, analogy.

Unit 2

Styles in technical writing, Types of technical report: Report Layout, Formal Report Format, Memorandum Report, Letter Report, Bulletins, Abstract, Proposal, Research Report, Feasibility Study, Business Letter: Definition and Purpoose, Elements and Characteristics, Format and Styles, Types of Business Letters, Resume and cover letters.

Unit 3

Process and Guidelines in technical writing: Writing process from audience to rough draft, Audience analysis, Task analysis, Power-revision techniques, Libraries, documentation, cross-referencing, Basic patterns and elements of the sentence, Common grammar, usage, punctuation problems, Common spelling problems

Unit 4

Graphic aids: Bar chart, Line chart, Table, Circle or Pie chart, surface or strata chart, Map charts, Flow charts, Flow Sheets, Diagrams, Figures, Photographs, Drawings, Important Points in Handling Graphics, Contemporary Communication: E-mail, Internet, Desktop Publishing, Hypertext.

SECOND YEAR

SUBJECT 6: INTRODUCTION TO MEDICINE

Unit 1

Introduction to Medical Terminology: roots, prefixes and suffixes, vocabulary, **Living Machine Approach:** hierarchy of organization, integrated systems, anatomy and physiology, **Problems:** Genetics, Aging, Infection, Injury

Unit 2

Skeletal System: Bones and Ligaments, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging), Treatments (surgical, medicinal), **Muscular System:** Skeletal, Smooth and Cardiac Muscle, Tendons, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging), Treatments (surgical, medicinal), **Nervous System:** Brain and Spinal Cord, Peripheral Nerves, Sense Organs, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging), Treatments (surgical, medicinal), **Endocrine System:** Glands, cells and hormones, Integration into other body systems, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging and blood work), Treatments (surgical, medicinal)

Unit 3

Cardiovascular System: Heart, blood, and vessels, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging), Treatments (surgical, medicinal, physiological), **Respiratory System:** Air passages, lungs, diaphragm, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging), Treatments (surgical, medicinal, physiological), **Integumentary System:** Skin, hair and nails, Structure (anatomy), Function (physiology), Disorders, Diagnostics (pathology), Treatments (surgical,medicinal), **Immune and Lymphatic system:** White blood cells, antibodies, organs, lymph fluid and vessels, Structure (anatomy), Function (physiology), Disorders, Diagnostics (imaging and blood work), Treatments (surgical,medicinal)

Unit 4

Digestive System: Mouth and throat, stomach, intestines, liver, gallbladder, pancreas, Structure(anatomy), Function, Disorders, Diagnostics (imaging and blood work), Treatments (surgical,medicinal,dietary), **Urinary System:** Kidneys, Ureters, Bladder, Urethra, Structure(anatomy), Function, Disorders, Diagnostics (imaging and blood work), Treatments (surgical,medicinal), **Reproductive System:** Male, Female, Obstetrics, Structure(anatomy), Function, Disorders, Diagnostics (imaging and blood work), Treatments (surgical,medicinal), **Emergency Medicine:** Prioritizing injuries, Evaluation, Treatments, **Medical Ethics**

SUBJECT 7: INTRODUCTION TO SURGERY

Unit 1

History of surgery, role of the surgeon, Importance of team work and anticipating the needs of surgeons; stresses that may arise during operative procedure; surgical terminology, types of incision and indications for the use of particular incision; Hemorrhage-signs and symptoms of internal and external; classification and management; identification of types of tourniquets- reasons for use and duration of application, dangers of use.

Unit 2

Pathogenesis, causes, epidemiology, Clinical Presentation, Investigations, and management of the diseases in the following systems: **Skin**: ulcers and wounds, wound infections, burns, skin infections (boils, carbuncle, abcess), cysts (epidermoid cyst, dermoid),skin tumors(basal cell carcinoma, squamous cell carcinoma, melanoma), **Head and Neck region**: congenital anomalies (cleft lip, cleft palate, branchial cyst and fistula, thyroglossal cyst) swellings of parotid and submandibular glands, oral ulcers, leukoplakia, submucous fibrosis, lichen planus, common jaw tumors, squamous carcinoma of oral cavity, pharynx & larynx, Thyroid swellings (adenomatous goitre, Graves' Disease, papillary and follicular thyroid cancer).Swellings of lymph nodes (tuberculosis, lymphoma, metastatic carcinoma), **Arteries**: Features of

limb Ischaemia, noninvasive vascular diagnostic tests, obliterative atheromatous, disease, aneurysms, Raynaud's syndrome, arterial emboli, **Veins**: varicose veins, deep vein thrombosis , pulmonary embolism.

Unit 3

Breast: mastalgia, ANDI, fibroadenoma, cyst, breast abscess, cancer of the breast, **Oesophagus**: dysphagia, reflux, hiatus hernia, benign and malignant tumours, **Stomach and duodenum**: Peptic ulcer-stomach and duodenum, carcinoma of the stomach, gastritis, **Small intestine**: Small bowel obstruction, intestinal tuberculosis, **Colon and rectum**: Amoebic colitis, Ulcerative colitis, colorectal cancer, **Appendix**: Acute appendicitis, **Anus:** Haemorrhoids, Pruritus ani, Fissure-in-ano, Anorectal abscesses, Fistula-in-ano, cancer of the anus, **Peritoneum and intraperitoneal abscesses:** peritonitis, **Liver:** Hepatic trauma, abscesses, cancer, **Biliary tract:** gall stone disease, carcinoma of the gallbladder, **Pancreas:** Acute panacreatitis, pancreatic cancer, **Acute abdomen, Hernias of the abdominal wall:** Inguinal hernias, femoral hernia, umbilical and epigastric hernia, **Urology:** Diagnostic studies and techniques in the urinary tract, trauma to the urinary tract, urinary calculi, urinary tract infection, prostatic hyperplasia, tumours of the kidney, epididymo-orchitis, hydrocele, tumours of the testicle, carcinoma of the penis, **Neurology:** diagnosis, treatment and rehabilitation of disorders that affect the entire nervous system including the brain, spinal column, spinal cord, peripheral nerves, and extra-cranial cerebrovascular system, Various procedures used such as microdiscectomy, laminectomy, etc.

Unit 4

Importance of personal cleanliness and aseptic techniques; Pre-operative and post-operative care of the surgical patient; Emergency procedures: endotracheal incubation; Tracheotomy.

SUBJECT 8: PEDIATRICS & GERIATRICS

Unit 1

Definition and overview of Pediatrics with special reference to age-related disorders. Population, structure, pattern of morbidity and mortality in children, Maternal, perinatal, neonatal, infant and preschool mortality rates. Definition, causes, present status, and measures for attainment of goals, Current National programmes such as ICDS, RCH, Vitamin A prophylaxis, UIP, Pulse polio, AFP, ARI, Diarrhea control programme etc., IMCI, Other National Programmes, **Growth and development:** Normal growth from conception to maturity, Anthropometry – measurement and interpretation of weight, length/height, head circumference, mid-arm circumference. Use of weighing machines, infantometer, Interpretation of Growth Charts: Road to Health card and percentile growth curves, Abnormal growth patterns – failure to thrive, short stature, Growth pattern of different organ systems such as lymphoid, brain and sex organs, Normal pattern of teeth eruption, Principles of normal development, Important milestones in infancy and early childhood in the areas of Gross Motor, Fine Motor, Language and Personal–Social development. 3-4 milestones in each of the developmental fields, age of normal appearance and the upper age of normal psychological and behavioral problems, Measurement and interpretation of sitting height, US: LS ratio and arm span, Age-independent anthropometric measurement-principles and application.

Unit 2

Nutrition: Normal requirements of protein, carbohydrates, fats, minerals and vitamins for newborn,

children and pregnant and lactating mother. Common food sources, Breast feeding, physiology and lactation, composition of breast milk, Colostrum, Initiation and technique of feeding. Exclusive breast milk. Hazards and demerits of prelacteal feed, top milk and bottle-feeding, Feeding of LBW babies, Infant feeding/weaning foods, method of weaning, Assessment of nutritional status of a child based on history and physical examination, Protein energy malnutrition-Definition, classification according to IAP/Wellcome Trust, acute versus chronic malnutrition. Clinical features of Marasmus & kwashiorkar. Causes and management of PEM including that of complications planning a diet for PEM, Vitamins-Recognition of vitamin deficiencies (A, D, K, C, B Complex). Etiopathogenesis, clinical feature, biochemical and radiological findings, differential diagnosis an management of nutritional rickets & scurvy. Hypervitaminosis A and D. Characteristics of transitional and mature milk (foremilk & hind milk). Prevention and management of lactation failure and feeding problems, Definition, causes and management of obesity, **Immunization:** National Immunization Programme, Principles of Immunization. Vaccine preservation and cold-chain, Types, contents, efficacy storage, dose, site, route, contra-indications and adverse reactions of vaccines – BCG, DPT, OPV, Measles, MMR and Typhoid: Rationale and methodology of Pulse Polio Immunization, Investigation and reporting of vaccine preventable diseases. AFP (Acute Flaccid Paralysis) surveillance Special vaccines like Hepatitis B, H influenza B, Pneumococcal, Hepatitis A, Chicken pox, Meningococcal, and Rabies.

Unit 3

Disorders: Respiratory system, Gastro Intestinal Tract, Central Nervous System, Cardiovascular system, Genito-Urinary system, Hematological disorders, **Infectious diseases:** Epidemiology, basic pathology, natural history, symptoms, signs, complications, investigations, differential diagnosis, management and prevention of common bacterial, viral and parasitic infections in the region, with special reference to vaccine-preventable disease: Diarrhea, LRTI, Tuberculosis, Poliomyelitis, Meningitis, Diphtheria, Whooping cough, Tetanus including neonatal tetanus, Measles, Mumps, Rubella, Typhoid, Viral Hepatitis, Cholera, Chickenpox, Giardiasis, Amoebiasis, Intestinal helminthiasis, Malaria, Dengue fever, AIDS, Kala-Azar, Leprosy, Chlamydia infection

Unit 4

Pediatrics Emergencies: Status epilepticus, Status asthmaticus/Acute Severe Asthma, Shock and anaphylaxis, Burns, Hypertensive emergencies, Gastrointestinal bleed, Comatose child, Congestive cardiac failure, Acute renal failure, **Genetics:** Principles of inheritance and diagnosis of genetic disorders, Down's syndrome.

Unit 5

Physiological and psychological fundamentals of aging process and disorders, major geriatric ailments and management, Identification of common diseases, Diet for the aged; Management of Nutritional disorders, Acute medical problems – infections, dehydration, acute confusional states,) Osteoporosis; Degenerative joint diseases; effects of immobility – prevention of contracture and bedsores, Neurological disturbances – management & rehabilitation, Health of the elderly and preventive measures (e.g., Osteoporosis), Care of elderly in organized and unorganized sectors and role of various health care provider including family, Economic and psychosocial needs of the aged.

SUBJECT 9: CLINICAL MICROBIOLOGY

Unit 1

Introduction to Microbiology, Types of Microorganisms, Physiology of Microorganisms -Nutrition, Enzymes, Metabolism and energy, Microbial Growth

Unit 2

Sterilization and disinfection in the laboratory, Control of Microbial Growth - Antimicrobial methods and Chemotherapy

Unit 3

Microbes versus Humans- The development of Infection, the disease process, pathogenicity virulence , Immune system

Unit 4

Bacteriology - Gram positive,(Staphylococcus aureus, Staphlococcus epidermidis, Streptococcus, propionibacterium, actinomyces, Nocardia) Bacteria including acid fast bacilli (Myobacterium tuberculosis, Myobacterium leprae), Gram negative Bacteria (pseudomonas, haemophiilus, Brucella, Neisseria, Moraxella), Spirochetes (Treponema, Leptospiraceae), Virology: Classification of Viruses, Rubella, Adenovirus, Oncogenic Viruses (HPV, HBV, EBV, Retroviruses), HIV, Fungi : Yeasts, Filamentous, Dimorphic fungi, Intracellular parasites - Chlamydia, Protozoa (Taxoplasmosis, Acanthamoeba) Helminths (Toxocariasis, Filariasis, Onchocerciasis, Trematodes)

SUBJECT 10: OBSTETRICS AND GYNAECOLOGY

Unit 1

Basics Anatomy - Pelvic Organs, Perineum, Pelvic Musculature, Abdominal Wall, Course And Relations Of Ureter, Bony Pelvis – Imp Bony Land Marks Of Obst. Significance, Fetal Skull, Physiology, Hpo Axis, Puberty Physiology Of Menstruation, Changes In Pregnancy, Cardiovascular, Renal, Haematological, Endocrinilogical, Physiology Of Lactation, Menopause

Unit 2

Pathology Of Conception, Abortions – Genetic; Hormonal; Placental Pathology, Gestational Trophoblastic Diseases, Vulva – Cysts; Inflammation, Intraepithelial Neoplasia, Dystrophy, Vagina – Vaginal Cytology, Vaginal Infections, Inflammation, Vaginal Intraepithelial Neoplasia; Carcinoma, Uterus – Endometrium - Endometriosis, Hyperplasia, Atrophy, Endometrial Carcinoma, Fibromyomas Of Uterus, Endometriosis, - Adenomyosis, Cervix – Erosion, Malignancy, Infections In Obstetrics And Gynaecology: Std, Genital Tb, HIV & Torch, Parent To Child Transmission Of HIV

Unit 3

Obstetrics: Diagnosis Of Pregnancy, Antenatal Care, Antenatal Fetal Surveillance, First Trimester Bleeding, Abortions, Ectopic, Hydatidiform Mole, Normal And Abnormal Presentations And Positions, Breech, Brow, Occipito Post, Face, Dystocia Due To Bony Pelvis, Soft Tissue, Abnormal Expulsive Forces, Identification And Management Of High Risk Pregnancies, Iugr; Intrauterine Fetal Demise, Preterm Labour, Prelabour Rupture Of Membranes, Overdistended Uterus, Oligohydramnios, Prolonged Pregnancy, Prolonged And Obstructed Labour, Rupture Uterus, Management Of Women With Previous Cesarean Section Scar, Third Trimester Bleeding, Management Of Pre Eclampsia And Eclampsia, Medical Disorders Complicating Pregnancy, Anaemia, Hypertensivedisorders, Diabetes, Heart Disease, Hepatitis, Urinary Tract Infection, Infections (Hiv), Surgical Emergencies In Obstetrics, Rh Iso Immunisation, Partogram, Ultra Sound In Obstetrics, Intrapartum Fetal Monitoring, Active Management Of Labour, Neonatal Resuscitation, Analgesia And Anaesthesia In Obstetrics, Instrumental Deliveries, Cesarean Deliveries, Management Of Iiird Stage Complications, Pph, Amniotic Fluid Embolism, Postpartum Collapse, Placental Accidents, Normal And Abnormal Puerperium, Lactation And Its Failure, Medical Auditing In Obstetrics – Both Morbidity And Mortality

Unit 4

Gynaecology: Malformation And Maldevelopment Of Female Genital Tract, Injuries Of Genital Tract – V.V.F, R.V.F, Old Cpt, Infections Of Genital Tract – Pid, Genital Tb, Std, Hiv, Sex And Intersexuality, Vulva - Inflammatory Lesions, Ulcers, Atrophy & Dystrophies, Cysts And Neoplasms, Vagina, Leucorrhoea – Normal/Abnormal, Specific Vaginal Infections, Senile Vaginitis, Vain And Vaginal Carcinoma, Cervix, Erosion, Ulcer Cervix, Dysplasia Of Cervix, Carcinoma Of Cervix – Screening, Downstaging, Uterus, Prolapse, Other Displacements (Inversion, Retroversion), Endometriosis, Abnormal Uterine Bleeding, Endometrial Hyperplasia, Benign & Malignant Tumours Of Uterus, Post Menopausal Bleeding, Primary And Secondary Amenorrhoea, Infertility And Pcod, Assisted Reproductive Techniques, Choriocarcinoma, Diseases Of Urinary System – Stress Incontinence, Chronic Pelvic Pain, Cancer Screening For Genital Malignancy And Breast, Outline Of Radiotherapy And Chemotherapy In Gynaecology, Low Backache

Unit 5

Neonatology: Neonatal Resuscitation, Meconium Aspiration Syndrome, Preterm Care, Rds, Neonatal Jaundice, Congenital Anamolies, Birth Injuries, , Radiotherapy - Chemotherapy In Gynaecology, Breast – Disease, Medical Genetics

THIRD YEAR

SUBJECT 11: CARDIOLOGY & CARDIAC SURGERY

Unit 1

Cardiology, the structural basis of cardiovascular diseases, Embryology of Heart, The chambers of the Heart, The Heart Valves, Surface Marking of Cardiovascular system, The Great Vessels, Blood Cardiovascular diseases, Cardiac Cycle, Heart Sounds, The Circulation of Blood, Cardiovascular responses to Exercise, Heart failure and Compensatory Mechanism, The Cellular basis of Cardiovascular Function in Health & Diseases, Heart Cell, Contraction and Relaxation, Excitation, Coronary Perfusion,

Unit 2

The Effects of Cardiovascular Diseases, Angina, Dyspnoea, Fatigue, Pedal edema, palpitation, Clubbing-Cyanosis- Pulse, Blood Pressure, Congenital heart Disease, Development of Heart & Great Vessels, Cyanotic Heart Diseases, Acyanotic Heart Diseases, Hypertension -Essential Hypertension, Malignant Hypertension, Arterial Disease, Structure, Atherosclerosis, Risk factors, Burger's Diseases, Coronary artery disease, Rheumatic heart disease, Congenital heart disease and other paediatric cardiac disorders, Cardiac arrhythmias, Heart failure, Peripheral vascular disorders, Systemic hypertension, Systemic diseases involving heart, Heart muscle diseases, Pericardial diseases, Cardiac trauma, Tumors of heart, Pulmonary thromboembolism and pulmonary hypertension, Geriatric heart disease, Pregnancy and heart disease

Unit 3

Prevention of Heart Diseases: Habits, Food, etc., Diagnostic tools, ECG, Chest X-ray, ECHO cardiography, Cardiac Catheterization & Coronary Angiography, Blood Analysis, Preparing a patient mentally & phisically, Investigations and plan, Pre-operative care, Post operative Management, Rehabilitation Programme, Postoperative care, postoperative complications, Immediate, Late, Rehabilitation, The follow up of postoperative patient.

Unit 4

The Cardiac Surgery, Cardiopulmonary Bypass: Adults, Paediatrics, Various Closed and Open Heart operation, Closed Hearat Operation: PDA ligation, Closed Mitral Valvotomy, Block trussing Shunt, Pulmonary Artery Banding, Pericardiectomy, Pericardial Window, Coarctation of Aorta, Other Shunt operations, Congenital: Atrial Septal Defect Closure, Ventricular Septal Defect Closure, Tetralogy of Fallot Correction, Surgery for Valvular Disease, Surgery for Transpositions, Surgery for Total Anomalies of Pulmonary Venous Connection, Surgery for Truncus Arteriosus, Surgery for Pulmonary Atresia, Other Corrective Surgery, Acquired: Mitral Valve replacement, Valvuloplast, Aortic Valve replacement, Tricuspid valve repair, Coronary surgeries.

SUBJECT 12: NEUROLOGY

Unit 1

Nervous System and its components: Parts of nervous system, neuron meninges, nerve terminals, neuroglia, myelination, degeneration and regeneration, ventricles, CSF, spinal cord and its blood supply. Motor and sensory pathways, cranial nerves, thalamus, cerebellum, limbic and autonomic pathways. Functional cortical areas, motor and sensory cortex and their blood supply, **Central nervous system:** General principles - neurotransmitters, definition and common transmitters, **Nerve–Muscle:** Physicochemical properties of cell membrane, Cell membrane: permeability & transport, Principles of bioelectricity, Genesis of resting membrane potential, Action potential, Properties of nerve-fibres, Functional anatomy of neuromuscular junction, Neuromuscular transmission, Muscle proteins – (Biochemistry), Excitation – contraction coupling, Contraction kinetics of skeletal muscles, Smooth muscle, Injury & repair of nerves and muscles, Energetics of nerve & muscle, Work Physiology

Unit 2

Sensory system: Coding of sensory information, Functional organization of ascending sensory pathways, Thalamus, Sensory cortex, Perception of sensory stimuli, Physiology of pain, **Motor system,** Characteristics and properties of reflexes, Functional organization of motor system, Brain stem reflexes,

stretch reflexes and tendon reflexes, Basal ganglia, Cerebellum, Vestibular neck reflexes: maintenance of equilibrium, Localizing the level of lesion in neurological disease, **Visceral and motivational system:** Autonomic nervous system, Hypothalamus, Limbic system and emotions, EEG, Sleep and wakefulness, Learning and memory , Speech

Unit 3

Neuropathology: Structural Organization, specific cell types, and reaction patterns, Inflammatory disorders : Pyogenic and tuberculous meningitis, brain abscess, tuberculoma, CNS tumors – primary : glioma and meningioma (excluding histopathology) and metastatic, CSF and its disturbances : cerebral edema, raised intracranial pressure,) Cerebrovascular diseases : Atherosclerosis, thrombosis, embolism, aneurysm, Hypoxia, Infarction and Hemorrhage, Peripheral neuropathies and demyelnating disorders, Diseases of muscles, Traumatic lesions of CNS

Unit 4

Neurological diseases: Clinical examination of nervous system, Functional anatomy, physiology and investigations, Major manifestations of nervous system disease, Headache and facial pain, Raised intracranial tension, Faintness, dizziness, syncope & vertigo, Sleep disorders, Disorders of movement Ataxia, Sensory disturbances (numbness, tingling and sensory loss), Acute confusional states, Coma and brain death, Aphasias and other focal cerebral disorders, Speech, swallowing and brain-stem disturbance, Visual disturbances, Sphincter disturbances, Migraine and cluster headaches, Seizures and epilepsy, Cerebrovascular disease, Dementias, Acute and chronic meningitis, Viral encephalitis, Diseases of cranial nerves, Intracranial tumours, Diseases of spinal cord, Multiple sclerosis and other demyelinating diseases, Parkinson's disease and other extrapyramidal disorders, Cerebellar disorders, Motor neuron disease, Peripheral neuropathy, Neurological manifestations of system diseases, Nutritional and metabolic diseases of the nervous system, Myasthenia gravis and other diseases of neuromuscular junction, Diseases of muscle.

SUBJECT 13: NEPHROLOGY

Unit 1

Genito-Urinary System: Parts, position, relations, blood supply, nerve supply and lymphatic drainage of uterus, cervix, vagina, ovary, ovarian duct, testes, epididymis, seminal vesicle, ductus deferens, prostate, kidney, ureter, urinary bladder and urethra, Innervation of urinary bladder in detail, Detailed microscopic structure of kidney, cortex, medulla, pyramids, medullary rays, cortical columns, glomerulus, nephron, glomerular filtration juxtaglomerular apparatus, its structural features and functions, renal interstitium, collecting ducts, renal sinus, minor and major calyces, microcirculation of kidney, histophysiology of the kidney, renal pelvis and ureters, urinary bladder and urethra.

Unit 2

Renal hemodynamics and glomerular filtration: Renal tubular function, Regulation of renal function, Physiological basis of renal function tests, Micturition

Unit 3

Urinary Tract Pathology: Renal structure, basis of impaired function, urine analysis, Glomerulonephritis: Classification, Primary Proliferative and Non Proliferative, Secondary Glomerulonephritis : SLE, Purpura,

Polyarteritis, Amyloidosis, Diabetes, Nephrotic Syndrome, Acute Renal Failure : Acute tubular and cortical necrosis, Progressive renal failure and end stage renal disease, Pyelonephritis, Reflux Nephropathy, Interstitial Nephritis, Renal tumors : Renal cell carcinoma, Nephroblastoma, Renal vascular disorders, kidney changes in Hypertension, Urinary bladder : cystitis, carcinoma, Urinary Tract Tuberculosis, Urolithiasis and Obstructive Uropathy, Renal Malformations : Polycystic kidneys.

Unit 4

Clinical examination of the kidney and genitourinary system, Functional anatomy, physiology and investigations, Major manifestations of renal and urinary tract disease, Dysuria, pyuria, urethral symptoms, Disorders of urine volume, Hamaturia, Proteinuria, Oedema, Obstruction of the urinary tract, Incontinence, Acute and chronic renal failure, Infections of the kidney and urinary tract, Congenital abnormalities of the kidneys and urinary system, Glomerulonephritides, Tubulo-interstitial diseases, Renal involvement in systemic disorders, Drugs and the kidney, Renal vascular diseases, Urinary tract calculi and nephrocalcinosis, Tumors of the kidney and genitourinary tract, Renal replacement therapy.

SUBJECT 14: GASTROENTEROLOGY

Unit: 1

Introduction to clinical gastroenterology, Anatomy of the esophagus, stomach, duodenum, small bowel, abdomen, omentum, colon, rectum and analcanal, Mechanism of stomach and intestinal secretion. Function of stomach, duodenum and gallbladder, function of liver, spleen, colon and rectum. Physiology of defecation.

Unit: 2

Introduction to preventive gastroenterology; diet advise and exercise in prevention of obesity and other GI disorders, Basic knowledge about the drugs used in the clinical and preventive gastroenterology, Giving drug and diet advise to the patients with GERD and other functional disorders of GI tract. Advise to the patients with constipation and dysentery.

Unit: 3

Surgical Asepsis and Hygenic endoscopy Room: Preparation of sterile field - Preparation of tables, equipments, instruments for the procedure - Care of endoscopy room – before, during & after the procedure –Special Precaution in handlings patients with sepsis, blood borne infection – Hep.B, HCV, HIV etc - Cleaning and disinfection of the articles and endoscopy room (with special reference to HIV, HBV & HCV)Terminal disinfection of endoscopy room, Endoscopy Room equipments, Instruments and Maintenance: Basic endoscopy unit – forward viewing, single channel and double channel endoscopy and Specific instruments used in endoscopic and colonoscopic procedures.

Unit: 4

Diagnostic endoscopic procedure- giving oral anaesthetic agent, preparation of patient including transfer & positioning of the patient. Diagnostic colonoscopic procedure- Assisting the anesthesiologist for induction of anaesthesia and positioning the patient.

SUBJECT 15: ORTHOPEDICS

Unit 1

Names of the bones of the body and their position; classification of the bones with examples; general features of the bone and normal development; microscopic anatomy of bone; general pattern of blood supply; ossification of the bones of the limbs for age determination. X-rays of bones, Process of repair of bone.

Unit 2

Bone – general considerations, reactions to injury and healing of fractures, Osteomyelitis : Acute, Chronic, Tuberculous, Mycetoma, Metabolic diseases : Rickets/Osteomalacia, Osteoporosis, Hyperparathyroidisism, Tumors : Primary, Osteosarcoma, Osteoclastoma, Ewing's Sarcoma, Chondrosarcoma, Metastatic, Arthritis: Rheumatoid, Osteo and tuberculous

Unit 3

Fracture:Definition, Classification, Principles of Management, Fracture healing, delayed union, Classification & Management of open fractures, Management of fracture calvicle, dislocation shoulder & fracture shaft humerus, Classificaton of injuries around elbow & management of supracondylar fracture & dislocation of elbow, Monteggia fracture dislocation & fracture both bones of forearm, Volkamann's Ischaemic Contracture, Fracture of lower end of radius fracture scaphoid and metacarpals, Fracture pelvis & dislocation of hip, Fracture neck of femur, Fracture shaft of femur & tibia

Unit 4

Internal Derangements of Knee, Injuries of ankle & foot, Amputations, Congenital malformations: CTEV Torticollis, Congenital Malformation : CDH, Pseudoarthrosis tibia etc., Disorders of the hip : coxa vara, perthes diseases, Deformities of the spine, Acute Pyogenic Ostyeomyelitis, Chronic Pyogenic Osteomyelities, Septic Arthritis, Other Arthritides (Rheumatoid/Ank.Spond.), Osteo-articular tuberculosis: General consideration & principles of management, Tuberculosis: Spine, Poliomyelitis, Bone Tumours: Benign tumors, Bone Tumours: Malignant tumors.