U.P. STATE MEDICAL FACULTY

PRAMEDICAL SYLLABUS

1- DIPLOMA IN PHYSIOTHERAPY
2- DIPLOMA IN OPTOMETRY
3- DIPLOMA IN O.T. TECHNICIAN
4- DIPLOMA IN CARDIOLOGY TECHINCIAN
5- DIPLOMA IN DYLASIS TECHNICIAN
6- DIPLOMA IN C.T. SCAN TECHNICIAN
7- DIPLOMA IN M.R.I. TECHNICIAN
8- DIPLOMA IN BLOOD TRANSFUSION TECH.
9- DIPLOMA IN EMERGENCY & TR. CR. TECH.
10- DIPLOMA IN SANITATION
11- DIPLOMA IN LAB TECHNICIAN
12- DIPLOMA IN X-RAY TECHNICIAN
13- CER. IN EMERGENCY & TRAUMA CR. ASSISTANT

UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN PHYSIOTHERAPY

DURATION: 02 YEARS

SYLLABUS

FIRST YEAR

TOPICS

1. Introduction to Physiotherapy
2. Anatomy
3. Physiology
4. Elementary Nursing
5. Elementary Biochemistry, Pathology and Microbiology
6. Hygiene and Sanitation
7. Nutrition and dietics
8. Biomedical Waste Management
9. First Aid
10. Disaster Management
11. Anatomy and physiology as relevant to physiotherapy
12. Medical and Surgical Nursing
13. Elementary Pharmacology
14. Human relations
15. Community Health Nursing & Communicable diseases
16. Equipment management

SECOND YEAR

TOPICS

1. Pathology
2. Orthopaedics
3. Massage manipulation, exercises and physical drill and yoga
4. Management of Medical and Surgical Emergencies
5. Pharmacology
6. Medical Subjects
7. Elementary Physics and Minor Crafts
8. Physics of heat and heat therapy
9. Physics of light and light therapy
10. Physics of electricity and electro-therapy
11. Hydrotherapy
12. Occupational Therapy

FIRST YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	51	Anatomy & Physiology	03 HRS	15	**100**
	96	Elementary Nursing		15	
	15	Elementary Biochemistry, Pathology and Microbiology		15	
	12	Hygiene and Sanitation		05	
	15	Nutrition and dietics		05	
	7.5	Biomedical Waste Management		05	
	93	First Aid		10	
	7.5	Disaster Management		5	
	INTERNAL ASSESMENT			**25**	
PAPER II	90	Anatomy and physiology as relevant to physiotherapy		25	
	90	Medical and Surgical Nursing	03 HRS	15	**100**
	30	Elementary Pharmacology		10	
	30	Human relations		05	
	30	Community Health Nursing & Communicable diseases		10	
	30	Equipment management		10	
	INTERNAL ASSESMENT			**25**	
Practical	150	Anatomy & Physiology(gen and as relevant to physiotherapy)	03 HRS	15	**100**
	100	Fundamental Nursing, Medical Nursing and Surgical Nursing		15	
	60	Elementary Pathology, Microbiology, and Biochemistry		10	
	90	First Aid, Bandaging and Casualty Evacuation		10	
	100	Medical and Physiotherapy Equipment		15	
	100	General Biomechanics		10	
	INTERNAL ASSESMENT			**25**	

SECOND YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	15	Pathology	03 HRS	10	100
	15	Orthopaedics.		10	
	150	Massage manipulation, exercises and physical drill and yoga		15	
	45	Management of Medical and Surgical Emergencies		15	
	15	Pharmacology		05	
	36	Medical subjects		15	
	24	Elementary Physics and Minor Crafts		05	
	INTERNAL ASSESMENT			**25**	
PAPER II	75	Physics of heat and heat therapy.	03 HRS	20	100
	75	Physics of light and light therapy.		20	
	75	Physics of electricity and electro-therapy.		20	
	30	Hydrotherapy		05	
	45	Occupational Therapy.		10	
	INTERNAL ASSESMENT			**25**	
Practical	50	General Duties	03 HRS	05	100
	75	Massage manipulation, exercises and physical drill and yoga		10	
	100	Physics of heat and heat therapy.		15	
	100	Physics of light and light therapy.		15	
	100	Physics of electricity and electro-therapy.		15	
	50	Occupational Therapy.		05	
	75	Hydrotherapy		05	
	50	Activity analysis		05	
	INTERNAL ASSESMENT			**25**	

S NO	COURSE CONTENT OF FIRST YEAR	NO OF PERIODS (45 MINS EACH)	NO OF HOURS
	FIRST YEAR PAPER I		
1.	Introduction to Physiotherapy	02	03 Hrs
	Orientation to college and Department	01	
	Details of the Diploma Programe	01	
2	**ANATOMY**	44	33 Hrs
(i)	Introduction - Tissues of the body	01	
(ii)	Skeletal System - The skull, the thorax, the vertebral column, the pelvic girdle, the upper limb, the lower limb	05	
(iii)	Arthrology - Types characteristics, varieties and movements. - Special joints - Sternoclavicular, acromioclavicular, shoulder, elbow, radioulnar, wrist, hip, knee, tibiofibular, ankle and joints of the hand and foot.	05	
(iv)	Myology - Muscles of head and face, chest, abdomen, back, upper and lower extremities. - Anatomical spaces.	05	
(v)	Circulatory System - Heart and blood vessels	05	
(vi)	Lymphatic system	02	
(vii)	Alimentary system - Alimentary canal and accessory organs.	03	
(viii)	Respiratory system - Respiratory passage, lungs and pleura.	02	
(ix)	Endocrine glands	02	
(x)	Urinary system - Kidney, Ureter and Urinary bladder.	02	
(xi)	Nervous system - Meninges, brain, spinal cord, nerves and their plexuses.	05	

(xii)	Organs of special senses - Tongue, nose, eye, ear and skin.	05	
(xiii)	Reproductive system - Male and female.	02	
3.	**PHYSIOLOGY**	24	18 Hrs
(i)	Circulatory system - Blood - Cardiac cycle and circulation of the blood - Blood pressure and pulse	03	
(ii)	Digestive system - Food - Digestion of food	02	
(iii)	Physiology of respiration	02	
(iv)	Metabolism	02	
(v)	Function of Endocrine Glands	03	
(vi)	Renal function	04	
(vii)	Nervous system and cerebrospinal fluid.	04	
(viii)	Taste, sight, smell and hearing.	04	
4.	**ELEMENTARY NURSING**	128	96
(i)	**HISTORY OF NURSING** : - Pre-Nightingale reforms. St. Vincent De Paul and Mile Le Gras, John Howard, Elizabeth Fry, the work of the Fleidners at Kaisersworth. - Florence Nightingale – Her life, her work in the Crimean war, the founding of Nursing School at St. Thomas Hospital. Her interest in India, in Military hospital and sanitation. - Contemporary developments – Discoveries of Pasteur, Lister and Koch. The relationship of nursing to hospital reform. - Nursing in India in modern days, the introduction and growth of Nursing in India, developments of schools, examination and registration, a brief review of organization in India today.	04	
(ii)	Bed making - Materials used for hospital beds and bedding. - Bed making - Special types of beds. - Positions in bed. - Moving and lifting of patients. - Additional appliances used for beds	24	

(iii)	Observation of patient's conditions - Importance of habit of observation, positions, expressions, delirium, appetite, sleep, cough, expectoration, vomit, tongue, mouth and skin, fluid intake and output. - Temperature, clinical thermometer and its care, taking of temperature, varieties of temperature. - Pulse : Definition, character, how to take pulse, abnormal pulse. - Respiration :Mechanism of normal respiration, measure rate of respiration. - Recording of temperature, pulse and respiration on charts. - Giving and writing of reports.	24	
(iv)	Caring of sick. - Daily toilet of the patient, bathing in the bed and the bathroom. - Care of hair and the mouth tray. - Bed sores and tropic ulcers and their prevention. - Giving of bedpans and urinals, spittoons. - Feeding of the bed-ridden cases.	20	
(v)	Aspiration and continuous drainage of stomach and duodenum.	06	
(vi)	Artificial feeding	04	
(vii)	Administration of oxygen.	04	
(viii)	Inhalations.	04	
(ix)	Preparation of patient for examination.	08	
(x)	Dressings and instruments commonly used in the wards.	15	
(xi)	Prepare nursing trays and trolleys.	15	
5.	**ELEMENTARY BIOCHEMISTRY, PATHOLOGY & MICROBIOLOGY**	20	15 Hrs
(i)	Biochemistry - Basics & fundamentals of biochemistry - Lab reports: Normal and abnormal values	01	
(ii)	Characteristics of bacteria, virus, fungi and diseases produced by different kinds of organisms.	02	
(iii)	Manner in which organisms enter the body and produce disease. Local and general effects, immunity	01	

(iv)	Sources of infection. soil, water, air, food, insects and animals.	02	
(v)	Mode of spread. persons, ward articles, food, clothing, insects (emphasis on the fly as a carrier of disease), droplets and dust.	02	
(vi)	Destruction of bacteria. sterilization, pasteurization, disinfection. Meaning and importance of cross-infection, prevention of cross-infection in wards, meaning of medical and surgical asepsis. Control of contact infection, hand washing, laundry, food, milk, surgical dressings, instruments, thermometers.	02	
(vii)	Routes of Infection- Skin and mucous membrane, gastro-intestinal, mouth, stomach, colon, respiratory, nose and throat.	01	
(viii)	Types of antimicrobial lotions and their use	01	
(ix)	Control of infection.	01	
(x)	Inflammation, healing and repair.	01	
(xi)	Infection, wounds, ulcers, blisters, boils, fractures, burns, scalds, gangrene and haemorrhage.	02	
(xii)	Urine - Characteristics of normal urine, variations in diseases, collection of samples and routine tests.	02	
(xiii)	Faeces - Characteristics of normal faeces, variation in diseases, collection of samples and routine tests.	01	
(xiv)	Sputum and vomit - Characteristics in different diseases, collection of samples.	01	
6.	**HYGIENE AND SANITATION**	16	12 Hrs
(i)	Definition and historical background.	01	
(ii)	Personal hygiene - Sleep, washing, eating and drinking, exercises, skin disease and their prevention.	02	
(iii)	Water Sources - Rain, surface, underground. Purification - Reasons, principles and methods. Sterilization - Physical and chemical methods, individual water sterilizing outfit and its use. Storage - Water bottle, chagul, pakhal, canvas and iron cisterns, water truck. Water point. Water borne disease.	08	

(iv)	Water supply	03	
(v)	Spray techniques	02	
7.	**NUTRITION AND DIETETICS**	20	15 Hrs
(i)	Food and nutrition - Composition of food. - Common articles of diet.	02	
(ii)	Principles of Nutrition and dietetics.	02	
(iii)	Food requirements.	02	
(iv)	Cookery - Reasons for cooking and dietetics. - Effects of different methods on cooking. - Storage of food in ward.	02	
(v)	Preparation of tray and serving of food.	02	
(vi)	Preparation of - Tea, coffee, cocoa, imperial drink, barley water, lemon squash, fruit juices. - Lockey, junket curds, buttermilk, jelly ice cream.Eggs flip, albumin water.	02	
(vii)	Calories, BMR and caloric requirements.	02	
(viii)	Common articles of diet.	01	
(ix)	Special diets.	02	
(x)	Sick room recipes.	01	
(xi)	Nutritional diseases	02	
8.	**BIO MEDICAL WASTE MANAGEMENT**	10	7.5 Hrs
(i)	- Definition, Hazards and infection control, Principles - Categories of BMW - Color coding - Waste management in hospital - Present scenario, System, Steps - Waste treatment and disposal - Bio safety	10	

9.	**FIRST AID AND BANDAGING**	124	
(i)	Definition of first aid, scope, principles and essentials, methods of approach and qualifications of a first aider.	10	
(ii)	First field dressing and shell dressing, routine dressing, bandaging including use of triangular bandage.	08	
(iii)	Fractures - Varieties, general signs and symptoms, general rules for treatment, padding of splints, individual fractures and treatment. Thomas splint.	15	
(iv)	Injuries to joints and muscles, sprains and strains.	07	
(v)	Wounds – Types, first aid and treatment.	10	
(vi)	Snake bite, bite by rabid animal, and stings of insects.	10	
(vii)	Haemorrhage - Varieties, arrest of external haemorrhage, arrest of haemorrhage from special regions, mouth nose and ear.	10	93 Hrs
(viii)	Artificial respiration.	10	
(ix)	Asphyxia - Definition and causes.	07	
(x)	Poisons, classification, general rules for the treatment of poisoning.	10	
(xi)	Burn injury	06	
(xii)	Shock	06	
(xiii)	Effects of heat and cold.	06	
(xiv)	BLS, ATLS, ACLS	09	
10.	**DISASTER MANAGEMENT**	10	
(i)	Introduction, Principle, Outline plan and disaster cycle	01	
(ii)	Basics of NBC warfare	02	
(iii)	Pre hospital phase, Hospital phase, Triage	02	7.5 Hrs
(iv)	Supportive services and misc- Responsibilities of various organization, Disaster management protocol	02	
(v)	Effects and their management, Prevention and mitigation	01	
(vi)	Preparedness and response	01	
(vii)	Present setup	01	

FIRST YEAR PAPER II			
11.	**ANATOMY AS RELEVANT TO PHYSIOTHERAPY**	100	
(i)	Bones- revision with special reference significance of grooves, ridges, processes, surfaces and borders. Ligamentous and muscular attachments, arches of the foot and their functions.	05	
(ii)	Joints-revision with special reference to types of movements, their limitations, muscles acting on various joints, ligaments tendons and cartilages.	04	
(iii)	Muscles- muscle groups of the body, their origin, insertion and actions, nerve supply of main muscles, fasciae and aponeurosis of main muscles.	04	
(iv)	Nerves-cranial nerves, their origin and areas of distribution, spinal cord and spinal nerves, main nerve plexuses and their trunks, autonomic nervous system.	04	
(v)	Blood vessels-blood supply of bones, joints and muscles	04	
(vi)	Skin-structure and function	04	
(vii)	Radio Anatomy- - Introduction : Principles of radiography, identification of anatomical features in plain radiographs. - Radiographs of : - Upper Limb - Shoulder region,Elbow region, Wrist and hand. - Lower Limb - Hip region, Knee region, Ankle region and Foot. - Abdomen - Plain Radiograph, AP/Lat - Thorax- Plain Radiographs : Male, female. - Head, Face & Neck - Plain Radiograph skull, AP, Lat, Plain Radiograph Neck, AP	10	75 Hrs
(viii)	Living/ Surface Anatomy :- **Upper Limb** Joints (DEMONSTRATION OF MOVEMENTS) : Shoulder girdle, Shoulder joint, Elbow joint, Radio-	60	

	ulnar joints, Wrist joint, 1st carpo- metacarpal joint, MP and IP joint,. Muscles (DEMONSTRATION OF ACTION) : Principle of testing : Trapezius, Serratus anterior, Latissimusdorsi, Pectoralis major, Deltoid, Biceps Brachii, Brachioradialis, Brachialis, Extensors at the elbow, Supinators, Wrist extensors, Wrist flexors, Small muscles of the hand. Nerves : Dermatomes, Ulnar nerve thickening in Leprosy. Vessels (PALPATION OF) : Axillary artery , Brachial artery, Radial artery Others : Axillary groups of lymph nodes, Anatomical snuff-box (boundaries) **Lower Limb** : Bony Landmarks (PALPATION OF) : Anterior superior iliac spine, Iliac crest ,tubercle of the iliac crest, Ischial tuberosity, Greater trochanter, Adductor tubercle, Head and neck of fibula, Lateral and medical malleoli, Tibial tuberosity, subcutaneous surface of tibia, Patella Joint (DEMONSTRATION OF MOVMENTS): Hip, Knee, Ankle, Subtalar Joints Muscles (DEMONSTRATION ACTION) : Principles of testing - Sartorius, quadriceps, femoris, psoas major, Gluteus maximus, gluteus medius, hamstring muscles, Gastronemius, soleus, popliteus, tibialis- anterior, tibialis posterior, peroneus longus & peroneus brevis, Hip- Flexors, Extensors, Abductors, Adductors, Knee- Flexors, Extensors : Ankle- Dorsiflexors , Plantar flexors, Subtalar- Invertors, Evertors Nerves : Dermatomes, Thinckening of common personeal nerve in Leprosy Vessels : (PALPATION OF) : Femoral , Popliteal, Dorsalispedis, Posterior tibial Others :Ligamentum patellae, Inguinal lymph nodes. Tendons : Semitendinosus, Semimembranosus, Biceps femoris, Iliotibial tract **Abdomen** : Bony Landmarks (PALPATIONOF) : Anterior superior iliac spine, Pubic tubercle. Joints (DEMONSTRATION OF MOVMENTS) : Intervertebral		

	Nerves : Dermatomes **Thorax** : Bony Landmarks (PALPATION OF): Sternal angle, Counting of ribs, Inter costal spaces, locating thoracic spines. Joint (DEMONSTRATION OF MOVMENTS) : Intervertebral Others : Apex beat, Apices of the lungs, Triangle of auscultation. **Head, Face, Neck** : Bony Landmarks (PALPATION OF) : Nasion, Glabella, Inion,Mastoid process, Superameatal triangle, Symphysismenti, Hyoid bone, Thyroid cartilage, Cricoid cartilage, Tracheal rings, Suprasternal notch, Transverse process of atlas, Spine of C7 Joints (DEMONSTRATION OF MOVEMENTS): Temporomandibular joint, Atlantooccipital joint, Cervical joints Muscles (DEMONSTRATION ACTION) : Of Mastication, Face, Sternocleidomastoid, Neck flexors and extensors Cranial nerves : Testing of oculomotor, trochlear, trigeminal, abducent, facial, glossopharyngeal, accessory, hypoglossal. Others: Thyroid gland, Cervical lymph nodes, (Horizontal and vertical) Midline structures in the neck.		
(ix)	Limb length measurement (only lower limb- apparent, true supratrochanteric) and girth measurements	05	
12.	**PHYSIOLOGY AS RELEVANT TO PHYSIOTHERAPY**	20	15 Hrs
(i)	Nervous system- general features of central nervous system and spinal cord, structure of nerve fibers, degeneration and regeneration.	10	
(ii)	Muscles:- - Varieties of muscles-voluntary, involuntary and cardiac. - Striated muscle-composition, nerve supply, excitability, mechanical changes and properties.	10	

13	**MEDICAL NURSING.**	80	60 Hrs
(i)	General application: - - Pyrexia and hyper pyrexia. - General treatment for reducing temperature - Administration of oxygen	20	
(ii)	Minor procedures :- - Enema – varieties, how to administer enema. - Flatus tube. - Nasogastric aspiration and gastric lavage. - Suction and airway patency	20	
(iii)	Procedures: - Types of procedures: lumbar puncture, bone marrow aspiration, pleural and asitic taps - Preparation of procedure trays and collection of samples	40	
14.	**SURGICAL NURSING.**	40	30 Hrs
(i)	Principles of sepsis and anti-sepsis - General principles, definition and methods used. - Preparation of hands and use of gloves. - Sterilization of instruments, dressings, rubber goods, utensils: ligatures and sutures, sponges, mackintosh, towels, trays, syringes. - Care and maintenance of the above.	40	
15.	**PHARMACOLOGY**	40	30 Hrs
(i)	Weights and measures.	10	
(ii)	Routes and Mode of administration	10	
(iii)	Forms of medicament – powder, pills, lotions.	10	
(iv)	Common drugs used in OPDs and wards.	10	
16.	**HUMAN RELATIONS**	40	30 Hrs
(i)	Hospital Public relation management - Introduction, Human behavior, PR - Operation methods, KRA - Communication skills - Care of dying & dead	20	
(ii)	Doctor patient relationship - Right & duties of patient - Right & duties of doctors - Consent - CPA - MLC - Medical ethics - The female patient	20	

17.	**COMMUNITY HEALTH NSG & COMMUNICABLE DISEASES**	40	30 Hrs
(i)	Health Determinants	01	
(ii)	Indicators of Health	01	
(iii)	Levels of Health Care	01	
(iv)	Primary Health Care	01	
(v)	National Health Policy, National Population Policy	01	
(vi)	National Health Programmes - NAMP - RCH - RNTCP - NACP - Pulse Polio	05	
(vii)	Immunization schedule.	02	
(viii)	Preventable diseases - Classification and mode of spread. - Common disease and their prevention - diarrhoeas and dysenteries, malaria, rabies, round worm, small pox, tuberculosis, typhoid, typhus, veneral diseases.	10	
(ix)	Life history and prevention against housefly and mosquito.	02	
(x)	Effects of heat and cold and their prevention.	02	
(xi)	Hygiene and sanitation of ward and ancillaries.	02	
(xii)	Infection, Isolation, Disinfection methods.	02	
(xiii)	Communicable diseases: Nursing care -general management, Specific diseases : Diphtheria, measles, whooping cough, chicken pox, mumps, influenza, typhoid and paratyphoid, typhus, dysentery, food poisoning,cholera, plague, tetanus, malaria, dengue, HIV/AIDS.	10	
18.	**EQUIPMENT MANAGEMENT**	40	30 Hrs
(i)	General Medical Equipments - Pulse oximeter - Nebulizer - Glucometer	10	

	- ECG machine - Cardiac monitor - Defibrillator - Total patient bed side monitor - SWD - Oxygen concentrator		
(ii)	Equipments of Physiotherapy - Smart-Bristow Faradic Battery. - Portable galvanic battery. - Combines treatment table. - Surgical sinusoidal apparatus. - Radiant heat cradles- small, medium and large. - Radiant heat clamp with stand. - Infra-red lamp with stand - Radiant heat cabinet. - Ultra-violet lamp (Hanovia) - Shortwave diathermy apparatus. - Sehnee bath (4 cells) with electrodes. - Zinc electrodes for low tension currents of varying sizes and shapes. - Protective goggles for ultra-violet ray treatment. - Flexible drum electrodes for shortwave diathermy. - Portable vibrator. - Valves for shortwave diathermy apparatus. - Carbon filament lamps for radiant heat treatment - Paraffin wax bath.	30	
19.	**PRACTICAL**	600 Hrs	
(i)	Anatomy and Physiology - General - As relevant to Physiotherapy	150 Hrs	
(ii)	Elementary, Medical and Surgical Nursing	100 Hrs	
(iii)	Elementary Biochemistry, Pathology and Microbiology	60 Hrs	
(iv)	First Aid and Bandaging	90 Hrs	
(v)	Equipment Management	100 Hrs	
(vi)	General Biomechanics : - Force- Analysis of Force - Mechanics to Position -Gravity, Centre of Gravity, Line of Gravity, Base Equilibrium,Fixation & Stabilisation - Mechanics of movements -Axes & planes, Speed, Velocity, Work, Mechanical Advantage, Energy, Power, Acceleration, Momentum - Inertia & Friction Simple Machine :- - Levers: Types & Uses, Angle of Pull - Pulleys- Types & Uses - Pendulum - Elasticity - Springs	150	

SECOND YEAR PAPER I			
16.	**PATHOLOGY**	20	
(i)	Inflammation and repair.	02	
(ii)	Wounds, ulcers, sinuses.	03	
(iii)	Bones:-fracture, types of fractures, healing of fractures, factors affecting the healing of fractures, delayed union, common fractures of upper and lower extremity, methods of fixation, complications.	03	
(iv)	Joints:-dislocation of the major joints of upper and lower extremities-displacement, fixation, complications, internal derangement of knee, sacroiliac strain, Synovitis, acute and chronic Osteo-Arthritis, Rheumatoid Arthritis	03	15 Hrs
(v)	Muscles-sprain, wounds, rupture, scars, burns, amputations, fibrositis, Myalgia, Myositis.	03	
(vi)	Nerves-inflammation and repair, degeneration, lesions of upper motor neuron, hemiplegia, paraplegia, lesions of lower motor neutron-acute anterior polio myelitis, facial palsy, neuritis, neuralgia.	03	
(vii)	Deformities of upper and lower extremities, Sprengel shoulder, Dupuytren's Contracture, Genu Valgum, Genu Varum, Flat foot, Metatarsalgia.	03	
17.	**ORTHOPAEDICS**	20	
(i)	Plaster of Paris techniques	06	
(ii)	Different types of splints, slings and bandages used in physiotherapy.	07	15 Hrs
(iii)	Orthopaedic apparatus, manufacture of appliances like dynamic and static splints.	07	
18.	**MASSAGE**	70	
(i)	General principles of massage treatment.	05	
(ii)	Points to be considered in giving massage.	05	52.5 Hrs
(iii)	Classification of manipulations-stroking, pressure, percussion and shaking, effects and uses of different manipulations and their contraindications.	10	

(iv)	Physiological effects of massage on the different systems of the body excretory, circulatory, muscular and nervous systems.	10	
(v)	Manual muscle testing.	05	
(vi)	Elements of electro-therapy.	05	
(vii)	Suspension therapy.	10	
(viii)	General technique of massage for the different parts of the body.	10	
(ix)	Modifications for special conditions and their contraindications.	10	
19.	**EXERCISE AND PHYSICAL DRILL**	60	45 Hrs
(i)	Mechanics of movement-centre of gravity, equilibrium, axis and planes of movement, levels, range of path of movement.	20	
(ii)	Classification of movements, and passive and active movements	20	
(iii)	Effects of movements on the different parts of the body	20	
20.	**YOGA**	70	52.5 Hrs
(i)	Principles of Yoga, Basic Yogic postures & their physiological effects :	10	
(ii)	In Standing Position - Padahastasana/Padangusthanasana - Trikonasana - Utkatasana - Tadasana	15	
(iii)	In Siting position - Padmasana/ Siddhasana/ Sukhasana - Paschimottanasana - Yogamudrasana - Virasana - Vajrasana - Gomukhasana	15	
(iv)	In Supine Lying Position - ArdhaHalasana / Halasana - Setubandhasana - Pavan- muktasana - Sarvangasana - Shavasana	15	

(v)	In Prone Position - Bhujangasana - Ardha- Shalabhasana/ Shalabhasana - Dhanurasana - Naukasana	15	
21.	**MANAGEMENT OF MEDICAL AND SURGICAL EMERGENCIES**	60	45 Hrs
(i)	- Shock - Haemorrhage - Asphyxia - Injuries - Fractures - APH & PPH - Burns - Effects of Heat - Poisoning - Snake bite - Syncope - Myocardial Infarction - Dehydration - Paediatric Emergencies - Anaphylaxis - Head Injuries - Spine Injuries - Chest Injuries	60	
22.	**PHARMACOLOGY**	20	15 Hrs
(i)	Drug Pharmaco-kinetics, Pharmacology-advese reaction, factors modifying drug effects	03	
(ii)	Drug Activity of CNS : Introduction, Alcohols, Sedatives & Hypnotics, Anti- convulsants.	03	
(iii)	Drugs acting on peripheral nervous system: Adrenergic, Cholinergic.	02	
(iv)	Drug therapy in Parkinsonism	02	
(v)	Skeletal muscle relaxants	02	
(vi)	Vitamin D, Calcium, Phosphorus, Magnesium.	02	
(vii)	Analgesics & Drugs used in Gout & Rheumatoid Arthritis	02	
(viii)	Psycho Therapeutics	02	
(ix)	General anaesthetic, Local anaesthetic.	02	

23.	**MEDICAL SUBJECTS**	48	36Hrs
(i)	General psychology and child psychology.	04	
(ii)	Postures, gaits and analysis of different movements	04	
(iii)	Disease of nervous system-Frenkel's exercises for tabesdorsalis, Weit-Mitchell treatment of neurasthenia	04	
(iv)	Diseases of heart and circulatory system-anatomy of heart, compensation, how to obtain compensation by carefully graduated schemes of exercises and contraindications.	05	
(v)	Diseases of respiratory system-anatomy of respiratory system, chest exercises for the different respiratory conditions, chest clapping, unilateral breathing exercises for empyema and emphysema.	04	
(vi)	Abdominal conditions-treatment by massage, exercises and treatment of atonic muscles by Faradism and contraindication	05	
(vii)	Deformities- treatment of early deformities in children by fixation massage and manipulation, post operative treatment of severe cases, examination of spine-postural and structural scoliosis mobility exercises in the treatment of postural scoliosis, active and passive corrective exercises in the treatment of structural scoliosis, self corrective exercises and use of mirrors to help in self correction.	06	
(viii)	Diseases of bones, joints and synovial sheaths and bursae and bursae-treatment by heat, light and medical electricity	04	
(ix)	Muscle dystrophies-amyotonic and myasthenic reactions to faradic current.	04	
(x)	Diseases of nervous system-treatment of conditions by means of low-tension current and contra-indications.	04	
(xi)	Functional disease-treatment of hysterical paralysis by Faradic Stimulation and suggestion	04	

24.	**ELEMENTARY PHYSICS** ,	12	9 Hrs
(i)	Structure of matter ,definition of molecule, atom, proton, electron, and ion.	12	

25.	**MINOR CRAFTS**	20	15 Hrs
(i)	Cleanliness of the Physiotherapy and Occupational Therapy Department. .	04	
(ii)	Care and maintenance of Occupational Therapy equipment.	04	
(iii)	Professional etiquette in the care patients.	04	
(iv)	Sterilisation of instruments and proper handling of dressings.	04	
(v)	Organisation of ward class or class in Gymnasium	04	
	SECOND YEAR - 2ND PAPER		
26.	**PHYSICS OF HEAT AND HEAT THERAPY**	100	75 Hrs
(i)	Methods of heating :- - Conduction, convection, radiation. - Application of these methods in heat therapy.	20	
(ii)	Paraffin wax baths. - Effects and uses. - Technique of application. - Conditions treated by means of these baths.	40	
(iii)	Infra-red radiations - Discovery in the spectrum of light - Properties of radiations. - Classification according to wave lengths and penetrability. - Sources of infra-red radiation-luminous and non-luminous sources, the carbon filament lamp, its use in radiant heat baths, cradles. - The non-luminous infra-red generators. - Effects of infra-red radiations on the human body. - Indications and contra-indications for infra red therapy. - Technique of treatment-general and local treatments and dangers and precautions.	40	

27.	**PHYSICS OF LIGHT AND LIGHT THERAPY**	100	
(i)	The wave theory of light	06	
(ii)	Electro-magnetic spectrum	06	
(iii)	The position of ultra violet and infra-red radiations in the electro-magnetic	08	
(iv)	Wave lengths and their measurement	08	
(v)	Laws of reflection of light.	08	
(vi)	Properties of rays	08	
(vii)	Transmission and absorption of radiations.	08	
(viii)	Laws of refraction.	08	
(ix)	Intensity of rays.	08	75 Hrs
(x)	Law of inverse squares.	08	
(xi)	Production of ultra violet radiations:- - The carbon-arc lamp, advantages and disadvantages of carbon-arc lamps, - Mercury vapour lamps and the electronic discharge tube and operation and care of lamps. - Digress of erythematic factors affecting the intensity of radiations. - Dosage and frequency of treatment. - Dangers and precautions.	08	
(xii)	Effects of exposure to radiations-physical and biological	08	
(xiii).	Technique of treatment-indications and contra-indications.	08	
28.	**PHYSICS OF ELECTRICITY AND ELECTRO-THERAPY**	100	
(i)	Simple electrical phenomena explained according to the electron theory-electric charges, conduction, insulation, capacity ionization.	10	
(ii)	Simple static, magnetic and electro-magnetic phenomena:- - Electrical circuits, potential difference, electromotive force resistance, intensity of current - Definition of volt, amp, ohm, milliamp, watt, farad, Henry, microfarad, kilowatt-hour.	60	75 Hrs

	- Low tension currents:- - Galvanic current, source of galvanic current-the voltaic cell, dynamo, direct current ammeter and voltmeter shunts, medical galvanism technique, ionization-use of ions and their polarity, how ions are driven into the body, uses of galvanic current for ionization, technique and effects of human body. - Sinusoidal current-methods of production A.C. dynamo, alternating current ammeter. - Faradic current-methods of production, induction coil, Smart Bristow Faradic battery. - Uses and effects of Low tension currents on human body, electric burns, Sheen bath treatments. - Diagnosis of lesions of muscle and nerve, electrical responses in health and disease, motor points, reaction of degeneration and its estimation, maintenance of charts and notes		
(iii)	High frequency currents. - The D'Arsonval transformer, valve diathermy, effects of diathermy, technique of application, indications and contra-indications. - Short wave or ultra diathermy-effects and uses, technique of application, conditions treated and precautions.	30	
29.	**HYDROTHERAPY**	40	30 Hrs
(i)	Principles, Description of the Tank, Application, Effects, Indications & contraindications.	40	
30.	**OCCUPATIONAL THERAPY**	60	45 Hrs
(i)	Definition, history and scope of occupation therapy.	06	
(ii)	Principles of occupation therapy.	06	
(iii)	General aim and object of occupational therapy.	08	
(iv)	Activities in occupational therapy.	08	
(v)	Classification of different crafts with their therapeutic values - Wood work with study of motions and muscles	08	

	involved at different joints, sawing, sanding, filing, gig-saw cutting on bicycle, gig-saw or fret saw, wood turning, hammering and nailing. - Weaving with study of motions and muscles involved, floor loom weaving, table loom weaving, spinning and winding tread, braid weaving and cord knotting. - Printing with study of motions and muscles involved, composition, inking and printing.		
(vi)	Application of occupational therapy in different conditions:- - Occupational therapy in physical disabilities like paraplegia, hemiplegia, crush injuries. - Occupational therapy in paediatrics such as cerebral palsy, polio, traumatic injuries, congenital deformities, mentally retarded. - Helping in teaching activities of daily living. - Pre-vocational testing and evaluation.	08	
(vii)	Recreational therapy:- - Uses of music as therapy - Uses of following various sports and games as therapy, out-door games such as volley ball, bowling, cricket, basket/net ball and teniquoit, indoor games such as carrom, table tennis, Chinese checkers, dart game.	08	
(viii)	Walking aids eg Calipers, braces.	08	
31.	**PRACTICALS**	600	
(i)	General Duties - Take independent charge of a Physiotherapy Department in a hospital. - Take care of and carry out minor repairs of all apparatus in the department. - Assist in all procedures in Physiotherapy Deptt, - Assist in physiotherapy of all ward patients	50	
(ii)	Massage manipulation, exercises and physical drill and yoga	75	
(iii)	Physics of heat and heat therapy.	100	
(iv)	Physics of light and light therapy.	100	
(v)	Physics of electricity and electro-therapy.	100	
(vi)	Hydrotherapy	75	

(vii)	Occupational Therapy.	50
(viii)	Activity analysis-crafts and realistic mechanical and electrical task analysis.	50

RECOMMENDED BOOKS	
(i)	Sr. Nancy- Principles and Practice of Nursing, N.R Brothers, M.Y. Road. Indore
(ii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-1, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-2, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iv)	Patricia A, Potter, RN, MSN, PhD, CMAC, FAAN, Anne Griffin Perry, RN, MSN, EdD, FAAN- Fundamentals of Nursing, Printed and bound at International Print-O-Pac-Limited C/4-11, Phase-II Extn, NOIDA-201201 (U.P)
(v)	L.C Gupta, MD,MNAMS, Abhitabh Gupta- Manual of Fist Aid, JaypeeBorthers Medical Publishers (PVT) LTD, B-# EMCA House, 23/23B Ansari Road, Daryaganj,, Post Box 7193,New Delhi-11002
(vi)	Virendra N Shgal, GovindSrivastava- Diagnosis and Treatment of Common Skin Diseases, Jaypee Brothers Medical Publishers (P) LTD New Delhi
(vii)	Lippincott Williams & Wilkins - Pharmacology, A Wolters Kluwer Company Philadelphia
(viii)	Annamma Jacob, Rekha R, JadhavSonaliTarachand- Pharmacology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(ix)	Virendra N Sehgal- Textbook of Clinical Dermatology, Jaypee Brother Medical Publishers (P) LTD New Delhi
(x)	S Nambi- Psychiatry for Nurses, Jaypee Brother Medical Publishers (P) LTD , B-3, EMCA House, 23/23B Ansari Road. Daryaganj Post Box 7193,New Delhi
(xi)	BT Basavanthappa- Psychiatric Mental Health Nursing,Jaypee Brother Medical Publishers (P) LTD New Delhi
(xii)	Harsh Mohan - Textbook of Pathology, Jaypee Brother Medical Publishers (P) LTD New DelhiT K Indrani- Nursing Manual of Nutrition and Therapeutic Diet, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xiii).	K Park- Preventive and Social Medicine, M/s BanarsidasBhanot, Publishers, 1167, Prem Nagar, Jabalpur -482001 (India)
(xiv)	RattnLalIchhpujani, Rajesh Bhatia- Microbiology for Nurses, Jaypee Brother Medical

	Publishers (P) LTD New Delhi
(xv)	Ross and Wilson- Anatomy and Physiology, Edinburgh
(xvi)	PR Ashalatha- Text book of Anatomy and Physiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xvii)	UN Panda- Essentials of Physiotherapy,Jaypee Brother Medical Publishers (P) LTD New Delhi
(xviii)	Praveen Kumar, ParvathiRaju, Venkata Prasad- Fundamentals of Physiotheraphy, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xix)	Carolyn Kisner- Therapeutic Exercise,Jaypee Brother Medical Publishers (P) LTD New Delhi
(xxi)	S Dutta Ray- Yogic Exercises, Jaypee Brother Medical Publishers (P) LTD New Delhi

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN OPTOMETRY

DURATION: 2 YEARS

SYLLABUS:

FIRST YEAR

TOPICS

1. General Anatomy & Physiology
2. Ocular Anatomy
3. Ocular Physiology
4. Physical Optics
5. Prism & Lenses
6. Retinoscopy & Refraction Technique
7. Transposition
8. Refractive Error

SECOND YEAR

TOPICS

1. Disease of Eye
2. Diagnostic Instrument
3. Pharmacology, Pathology & Microbiology
4. Mechanical Optics
5. Public Health
6. Community Ophthalmology

SYLLABUS FOR DIPLOMA IN OPTOMETRY

FIRST YEAR

Paper	Duration of Study (Hrs.)	Subjects	Duration of Paper	Marks	
Paper I	50	General Anatomy & Physiology	3 Hrs.	15	100
	300	Ocular Anatomy		30	
		Ocular Physiology		30	
		INTERNAL ASSESSMENT		25	

Paper	Duration of Study (Hrs.)	Subjects	Duration of Paper	Marks	
Paper II	250	Physical Optics	3 Hrs.	10	100
		Prism & Lenses		10	
		Retinoscopy & Refraction Technique		15	
		Transposition		10	
		Refractive Error		30	
		INTERNAL ASSESSMENT		25	

PRACTICAL

Paper	Duration of Study (Hrs.)	Subjects	Duration of Paper	Marks	
Practical	600	General Anatomy & Physiology	3 Hrs.	15	100
		Ocular Anatomy & Physiology		30	
		Physical & Physiological Optics		30	
		WARD MARKS		25	

SYLLABUS FOR DIPLOMA IN OPTOMETRY

SECOND YEAR

Paper	Duration of Study (Hrs.)	Subjects	Duration of Paper	Marks	
Paper I	350	Disease of Eye	3 Hrs.	45	100
		Diagnostic Instrument		20	
		Pharmacology, Pathology & Microbiology		10	
		INTERNAL ASSESSMENT		25	

Paper	Duration of Study (Hrs.)	Subjects	Duration of Paper	Marks	
Paper II	250	Mechanical Optics	3 Hrs.	45	100
		Public Health		10	
		Community Ophthalmology		20	
		INTERNAL ASSESSMENT		25	

PRACTICAL

Paper	Duration of Study (Hrs.)	Subjects	Duration of Paper	Marks	
Practical	600	Disease of Eye	3 Hrs.	20	100
		Mechanical Optics		20	
		Diagnostic Instrument		15	
		Pharmacology, Pathology & Microbiology		10	
		Community Ophthalmology		10	
		WARD MARKS		25	

Sl.No.	Course Content of First Year (First Paper)	No. of Periods (45 Min.)	No. of Hours
GENERAL ANATOMY & PHYSIOLOGY			
1.	Introduction to Anatomical Terms	15	50 Hrs.
2.	Organization of Body Cells, Tissue, Organ, Systems	5	
3.	Cardio Vascular System	10	
4.	Respiratory System	10	
5.	Musculo Skeletal System	10	
6.	Digestive System	5	
7.	Excretory System	5	
8.	Endocrine System	5	
9.	Nervous System	10	
10.	Reproductive System	5	
OCULAR ANATOMY & PHYSIOLOGY			
1.	An Outline of Visual System	10	300 hrs.
2.	Ocular Embryology	30	
3.	Bony Orbit & Adnexa	15	
4.	Extra Ocular Muscles	15	
5.	Coats of Eye Ball	10	
6.	Conjunctiva Structure & Function	12	
7.	Sclera & Episclera	10	
8.	Cornea Structure & Function	20	
9.	Limbus	5	
10.	Uveal Tract	15	
11.	Anterior Chamber & Angle	20	
12.	Pupil	15	
13.	Aqueous Humor	10	
14.	IOP Measurement	10	
15.	Posterior Chamber	5	
16.	Crystalline Lenses	20	
17.	Vitreous	5	
18.	Retina	20	
19.	Vitamin A Cycles.	5	
20.	Visual Pathway	10	
21.	Blood Supply to Eye ball	10	

Sl.No.	Course Content of First Year (First Paper)	No. of Periods (45 Min.)	No. of Hours
22.	Nerves Supply to Eye ball	10	
23.	Cranial Nerves	10	
24.	Eyelids	15	
25.	Lacrimal System: Structure & Function	15	
26.	Tear Film	15	
27.	Near Vision Reflex	5	
28.	Visual Acuity	10	
29.	Stereopsis	10	
30.	Binocular & Color Vision	10	
31.	Visual Fields & Perimeter	15	

Sl.No.	Course Content of First Year (Second Paper)	No. of Periods (45 Min.)	No. of Hours
	PHYSICAL & PHYSIOLOGICAL OPTICS		
1.	Introduction	2	250 Hrs.
2.	Light – Definition & Theory	10	
3.	Properties of Light	10	
4.	Reflection & Refraction	7	
5.	Diffraction & Dispersion	10	
6.	Transmission & Absorption	6	
7.	Geometrical Optics	20	
8.	Spherical Lenses	15	
9.	Astigmatic & Toric Lenses	15	
10.	Prism	15	
11.	Vergence of Light	10	
12.	Magnification of Lenses	15	
13.	Homocentric Lenses System Gausse's Theorem	15	
14.	Optical Aberration of images -Spherical Aberration - Chromatic Aberration	15	
15.	Lasers Fundamental	10	
16.	Schematic & Reduced Eye Angle Alpha	5	
17.	Visual Acuity	12	
18.	VA-Testing	12	
19.	Retinocopy	20	
20.	Cycloplegic Drugs & Mydriatics	8	
21.	Subjective Refraction	10	
22.	Simple & Toxic Transposition	10	
23.	Spherical Equivalent	5	
24.	Accommodation & Convergence	7	
25.	**Refractive Error**	**60**	
	Myopia		
	Hypermetropia		
	Astigmatism		
	Aphakia		
	Prebyopia		
26.	**Computer Programming**	10	

Sl.No	Course Content of Second Year (First Paper)	No. of Periods (45 Min.)	No. of Hours

Sl.No	Course Content of Second Year (First Paper)	No. of Periods (45 Min.)	No. of Hours
(A)	**General Introduction For Disease Of Eye**	**1**	
1.	Eyelids:- Congenital Anomalies, Blepherospasm, Ectropion, Entropion,	20	
2.	Ptosis/ Eyelids Tumor	5	
3.	Conjunctiva : Inflammation, Degeneration	15	
4.	Cornea : Keratitis, Keratoconus, Keratoplasty, Refractive Surgery.	15	
5.	Sclera	6	
6.	Vitreous	5	
7.	Lens: Cataract, Other anomalies, Cataract Surgery.	30 30	**350 Hrs**
8.	Uveal Tract: Iridocyclitis, Other anomalies	15	
9.	Primary Glaucoma, Secondary Glaucoma Glaucoma Surgery	30 20	
10.	Retina: RD, RP, Retina Surgery	15 10	
11.	Optic Nerve : Optic Neuritis, Papilloedema, Optic Atrophy	15	
12.	Injuries To Eye: Burns	15	
13.	Lacrimal System : Dacrocystitis	15	
14.	Amblyopia	8	
15.	Color Blindness	5	
16.	Vitamin A Deficiency	7	
17.	Dry Eyes	7	
(B)	**Diagnostic Instruments General Information**	**1**	
1.	Refractrometer	15	
2.	Lensometer	5	
3.	Lens Gauge or Geneva Lens	5	
4.	Keratometer	5	
5.	Ophthalmoscope	15	
6.	Slit Lamp	10	
7.	Corneal Loupe	5	
8.	Operating Microscope	5	
9.	USG Ophthalmology	5	
10.	Perimeter	5	

Sl.No	Course Content of Second Year (First Paper)	No. of Periods (45 Min.)	No. of Hours
11.	Tonometer	5	
12.	Gonioscope	5	
13.	3 Mirror Fundus lens.	5	
14.	Hruby Lens	5	
15.	Placido's Disc	5	
16.	Pachymeter	5	
17.	Reflective Unit	5	
18.	Exophthalmometer	5	
19.	ERG, EOG, VER	5	
(C)	**Pathology & Microbiology Teratology**	**1**	
1.	Inflammation, Infection & Transmission	5	
2.	Immunity	5	
3.	Microorganism, Phathogenic & Nonpathogenic Organism Affecting Eye	5	
4.	Degeneration & Repair	5	
(D)	**Pharmacology General**	**1**	
1.	Routes of Drug Administration	5	
2.	Pharmacokinetics & Pharmacodynamics	5	
3.	Classification of Drugs	5	
4.	Drugs used in Ophthalmology	5	
5.	Tear Substitutes	5	
6.	Local Anaesthetics	5	
7.	Dyes Used as Diagnostic Drugs	5	

Sl.No	Course Content of Second Year (Second Paper)	No. of Periods (45 Min.)	No. of Hours
(A)	**Mechanical Optics**		**250 Hrs**
1.	A Brief History of Ophthalmic Lenses, Spectacles	4	
2.	Terms Used in Lens Workshop	5	
3.	Ophthalmic Lens Material	20	
4.	Lens Standard	10	
5.	Ophthalmic Lens Blank Manufacture- Glass & Plastic	15	
6.	Ophthalmic Prescription Lens Making	15	
7.	Lens Defects	5	
8.	Ophthalmic Lens Designs	15	
9.	Types of Ophthalmic Lenses : Aspheric, High Index, Multifocal, Bifocal & Trifocal Lenses, Photo Chromatic Lenses, Polaroid Lenses, Tinted Lenses, Protective Lenses.	30	
10.	Spectacles Frames: History, Nomenclature & Terminology, Classification.	15	
11.	Types of Frame Material	15	
12.	Types of Human Faces, Choice of Frames	10	
13.	Cosmetic & Functional Dispensing of Spectacles	10	
14.	Measurement for Ordering Spectacles : IPD, VD	10	
15.	Special Measurement for Fitting Special Types of Lenses	10	
16.	Fitting of Lenses in Various Types of frames	10	
17.	Spectacles Intolerance	10	
18.	Special types of Spectacles	20	
19.	Dispensing of Prisms, Prismatic effect of lens	20	
20.	Contact Lenses	20	
21.	Low Vision Aids	10	
22.	Magnification by Lenses	20	
(B)	**Public Health & Community Ophthalmology**		
1.	Introduction	2	
2.	National Programme for Control of Blindness	5	
3.	National Immunization Programme	10	
4.	Blindness : Causes and its Prevention	15	
(C)	**Computer Programming**	**3**	

TEXT BOOK RECOMMENDED

1.	Ophthalmology : A.K. Khurana, Comprehensive Ophthalmology
2.	Modern Ophthalmology: L.C. Dutta
3.	Recent Advances in Ophthalmology : H.V. Nema, Nitin Nema
4.	Basic Ophthalmology : Renu Jogi
5.	Essentials of Ophthalmology : Samar K. Basak, Dr. V.K. Dadda
6.	Parsons Disease of the Eye: Ramanjit Sihata, Radhika Tandon
7.	Duke-Elder's Practice of Refraction : David Abrams
8.	Anatomy of the Eye and Its Adnexa : H.V. Nema, V.P. Singh
9.	Strabismus Simplified : Pradeep Sharma
10.	Adler's Physiology of the Eye: William M.Hart
11.	The Retinoscopy Book : Johan Mcerboy
12.	Hand Book of General Anatomy : B.D. Chaurasia
13.	Essential of Medical Pharmacology : K.D. Tripahti
14.	Clinical Procedures for Ocular Examination : Daniel Kurtz and Nancy B. Carlson
15.	Optometry A-Z, 1e : Nathan Efron
16.	Eye Examination and Refraction (MODERN OPTOMETRY) : Robert Fletcher and D. Still
17.	The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease (Rhee, The Wills Eye Manual): Justis P. Ehlers, Chirag P. Shah, Gregory L. Fenton and Eliza N. Hoskins
18.	Optometry Practice Start Up Business Plan : Bplanxchange
19.	The Complete Optometric Assistant: Sarah Morgan
20.	System for Ophthalmic Dispensing : Clifford W. Brooks OD and Irvin Borish

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN OPERATION THEATRE TECHNICIAN

DURATION: 02 YEARS

SYLLABUS:

FIRST YEAR

TOPICS

1. Anatomy & Physiology
2. Microbiology, Elementary Pathology
3. Hygiene, Nutrition, Nutritional Disease
4. Biomedical Waste Mgt
5. First Aid
6. Disaster Mgt
7. Elementary Nsg
8. General Pharmacology
9. Human Relations
10. Community Health Nsg & Communicable Diseases
11. Hygiene chemicals and its uses
12. Equipment management

SECOND YEAR

Care of patient undergoing surgery (Pre and Intra operative), after care of Equipment.
Anaesthesia drugs, Equipment & special operation theatre tray set up.
Infection control in operation theatre, Role of the Theatre Assistant.
Surgical procedures and monitoring Operation Theatre Ethics, safety for Operation room, Operation Theatre Techniques, surgical procedures (disinfection on sterilization) care of patient in Emergencies

FIRST YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	105	Anatomy & Physiology	03 HRS	30	**100**
	15	Microbiology, Elementary Pathology		15	
	41.25	Hygiene, Hygiene chemicals and its uses Nutrition, Nutritional Disease		10	
	8.25	Biomedical Waste Mgt		5	
	120	First Aid		10	
	7.5	Disaster Mgt		5	
		INTERNAL ASSESMENT		**25**	
PAPER II	206.25	Elementary Nsg	03 HRS	40	**100**
	37.5	General Pharmacology		10	
	11.25	Human relations		5	
	37.5	Community Health Nsg & Communicable diseases		10	
	7.5	Equipment management		10	
		INTERNAL ASSESMENT		**25**	
Practical	600	Fundamental Nsg - Bed making & Tray setting	03 HRS	40	**100**
		Medical Equipment		10	
		First Aid - Bandaging, Casualty Carriage Thomas splint		25	
		Ward Marks		**25**	
SECOND YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	225	Care of patient undergoing surgery (Pre and Intra operative), After care of Equipment	03 HRS	55	100
	75	Anaesthesia drugs, Equipment & special operation theatre tray set up		20	
		INTERNAL ASSESMENT		**25**	
PAPER II	187.5	Infection control in operation theatre, Role of the Theatre Assistant	03 HRS	25	100
	112.5	Surgical procedures and monitoring Operation Theatre Ethics, safety for Operation room , Operation Theatre Techniques, surgical procedures (disinfection on sterilization) care of patient in Emergencies		50	
		INTERNAL ASSESMENT		**25**	
Practical	600	Essential Critical Care and nursing skills (Advanced procedure)	03 HRS	75	100
		INTERNAL ASSESMENT		**25**	

S NO	COURSE CONTENT OF FIRST YEAR	NO OF PERIODS (45 MINS EACH)	NO OF HOURS
	FIRST YEAR PAPER I		
1	**HISTORY OF NURSING** :	04	03 Hrs
(i)	Pre-Nightingale reforms, St. Vincent De Paul and Mile Le Gras, John Howard, Elizabeth Fry, the work of the Fleidners at Kaisersworth.	01	
(ii)	Florence Nightingale – Her life, her work in the Crimean war, the founding of Nursing School at St. Thomas Hospital. Her interest in India, in Military hospital and sanitation.	01	
(iii)	Contemporary developments – Discoveries of Pasteur, Lister and Koch. The relationship of nursing to hospital reform.	01	
(iv)	Nursing in India in modern days, the introduction and growth of Nursing in India, developments of schools, examination and registration, a brief review of organization in India today.	01	
2	**ANATOMY**	80	60 Hrs
(i)	Introduction - Tissues of the body	02	
(ii)	Skeletal System - The skull, the thorax, the vertebral column, the pelvic girdle, the upper limb, the lower limb	08	
(iii)	Arthrology - Types characteristics, varieties and movements. - Special joints - Sternoclavicular, acromioclavicular, shoulder, elbow, radioulnar, wrist, hip, knee, tibiofibular, ankle and joints of the hand and foot.	08	
(iv)	Myology - Muscles of head and face, chest, abdomen, back, upper and lower extremities. - Anatomical spaces.	08	
(v)	Circulatory System - Heart and blood vessels	10	
(vi)	Lymphatic system	03	
(vii)	Alimentary system - Alimentary canal and accessory organs.	05	

(viii)	Respiratory system - Respiratory passage, lungs and pleura.	05	
(ix)	Endocrine glands	05	
(x)	Urinary system - Kidney, Ureter and Urinary bladder.	05	
(xi)	Nervous system - Meninges, brain, spinal cord, nerves and their plexuses.	08	
(xii)	Organs of special senses - Tongue, nose, eye, ear and skin.	08	
(xiii)	Reproductive system - Male and female.	05	
3.	**PHYSIOLOGY**	60	45 Hrs
(i)	Circulatory system - Blood - Cardiac cycle and circulation of the blood - Blood pressure and pulse	10	
(ii)	Digestive system - Food - Digestion of food	04	
(iii)	Physiology of respiration	06	
(iv)	Metabolism	06	
(v)	Function of endocrine glands	10	
(vi)	Renal function	08	
(vii)	Nervous system and cerebrospinal fluid.	08	
(viii)	Taste, sight, smell and hearing.	08	
4	**ELEMENTARY PATHOLOGY AND MICROBIOLOGY**	20	15 Hrs
(i)	Characteristics of bacteria, virus , fungus	02	
(ii)	Sources of infection.	02	
(iii)	Mode of spread.	02	
(iv)	Destruction of bacteria.	02	
(v)	Control of infection.	01	
(vi)	Inflammation, healing and repair.	01	
(vii)	Infection, wounds, ulcers, blisters, boils, fractures, burns, scalds, gangrene and haemorrhage.	05	

(viii)	Urine - Characteristics of normal urine, variations in diseases, collection of samples and routine tests.	02	
(ix)	Faeces - Characteristics of normal faeces, variation in diseases, collection of samples and routine tests.	02	
(x)	Sputum and vomit - Characteristics in different diseases, collection of samples.	01	
5.	**HYGIENE, SANITATION AND USES OF HYGIENE CHEMICALS –**	30	22.5 Hrs
(i)	Definition and historical background.	01	
(ii)	Personal hygiene - Sleep, washing, eating and drinking, exercises, skin disease and their prevention.	02	
(iii)	Water Sources - Rain, surface, underground. Purification - Reasons, principles and methods. Sterilization - Physical and chemical methods, individual water sterilizing outfit and its use. Storage - Water bottle, chagul, pakhal, canvas, iron cisterns and water truck. Water points Water borne disease.	12	
(iv)	Water supply	05	
(v)	Spray techniques	05	
(vi)	Various hygeine chemical, their dosage & usage	05	
6.	**NUTRITION AND DIETETICS**	25	18.75 Hrs
(i)	Food and nutrition - Composition of food. - Common articles of diet.	02	
(ii)	Principles of Nutrition and Dietetics.	02	
(iii)	Food requirements.	03	
(iv)	Cookery - Reasons for cooking and dietetics. - Effects of different methods on cooking. - Storage of food in ward.	05	
(v)	Preparation of tray and serving of food.	02	

(vi)	Preparation of - Tea, coffee, cocoa, imperial drink, barley water, lemon squash, fruit juices. - Lockey, junket curds, buttermilk, jelly ice cream, Eggs flip, albumin water.	03	
(vii)	Calories, BMR and caloric requirements.	02	
(viii)	Common articles of diet.	01	
(ix)	Special diets.	02	
(x)	Sick room recipes.	01	
(xi)	Nutritional diseases	02	
7.	**BIO MEDICAL WASTE MANAGEMENT**	11	8.25 Hrs
(i)	- Definition, Hazards and infection control, Principles - Categories of BMW - Color coding - Waste management in hospital - Present scenario, System, Steps - Waste treatment and disposal - Bio safety	11	
8.	**FIRST AID AND BANDAGING**	160	120 Hrs
(i)	Definition of first aid, scope, principles and essentials, methods of approach and qualifications of a first aider.	10	
(ii)	First field dressing and shell dressing, routine dressing, bandaging including use of triangular bandage.	08	
(iii)	Fractures - Varieties, general signs and symptoms, general rules for treatment, padding of splints, individual fractures and treatment. Thomas splint.	15	
(iv)	Injuries to joints and muscles, sprains and strains.	07	
(v)	Wounds – Types, first aid and treatment.	12	
(vi)	Snake bite, bite by rabid animal, and stings of insects.	12	
(vii)	Haemorrhage - Varieties, arrest of external haemorrhage, arrest of haemorrhage from special regions, mouth, nose and ear.	15	
(viii)	Artificial respiration.	10	

(ix)	Asphyxia - Definition and causes.	07	
(x)	Poisons, classification, general rules for the treatment of poisoning.	20	
(xi)	Burn injury	08	
(xii)	Shock	08	
(xiii)	Effects of heat and cold.	08	
(xiv)	BLS, ATLS, ACLS	20	
9.	**DISASTER MANAGEMENT**	10	7.5 Hrs
(i)	Introduction, Principle, Outline plan and disaster cycle	01	
(ii)	Basics of NBC warfare	02	
(iii)	Pre hospital phase, Hospital phase, Triage	02	
(iv)	Supportive services and misc- Respond of various organization, Disaster management protocol	02	
(v)	Effects and their management, Prevention and mitigation	01	
(vi)	Preparedness and response	01	
(vii)	Present setup	01	
	FIRST YEAR PAPER II		
10.	**ELEMENTARY NURSING**	275	206.25 Hrs
(i)	Bed making - Materials used for hospital beds and bedding. - Bed making - Special types of beds. - Positions in bed. - Moving and lifting of patients. - Additional appliances used for beds	60	
(ii)	Observation of patient's conditions - Importance of habit of observation, positions, expressions, delirium, appetite, sleep, cough, expectoration, vomit, tongue, mouth and skin, fluid intake and output. - Temperature, clinical thermometer and its care, taking of temperature, varieties of	60	

	temperature. - Pulse : Definition, character, how to take pulse, abnormal pulse. - Respiration :Mechanism of normal respiration, measure rate of respiration. - Recording of temperature, pulse and respiration on charts. - Giving and writing of reports.		
(iii)	Caring of sick. - Daily toilet of the patient, bathing in the bed and the bathroom. - Care of hair and the mouth tray. - Bed sores and tropic ulcers and their prevention. - Giving of bedpans and urinals, spittoons. - Feeding of the bed-ridden cases.	50	
(iv)	Aspiration and continuous drainage of stomach and duodenum.	10	
(v)	Artificial feeding	05	
(vi)	Administration of oxygen.	05	
(vii)	Inhalations.	05	
(viii)	Preparation of patient for examination.	20	
(ix)	Dressings and instruments commonly used in the wards.	30	
(x)	Prepare nursing trays and trolleys.	30	
11.	**PHARMACOLOGY**	50	37.5 Hrs
(i)	Weights and measures.	05	
(ii)	Forms of medicament – powder, pills, lotions.	05	
(iii)	Mode of administration.	20	
(iv)	Common drugs used in OPDs and wards.	20	
12	**HUMAN RELATIONS**	15	11.25 Hrs
(i)	Hospital Public relation management - Introduction, Human behaviour, PR - Operation methods, KRA - Communication skills - Care of dying & dead	07	
(ii)	Doctors patient relationship - Right & duties of patient - Right & duties of doctors - Consent	08	

	- CPA - MLC - Medical ethics - The female patient		
13	**COMMUNITY HEALTH NSG & COMMUNICABLE DISEASES**	50	37.5 Hrs
(i)	Health Determinants	01	
(ii)	Indicators of Health	01	
(iii)	Levels of Health Care	01	
(iv)	Primary Health Care	01	
(v)	National Health Policy, National Population Policy	01	
(vi)	National Health Programmes (i) NAMP (ii) RCH iii) RNTCP (iv) NACP (v) Pulse Polio	08	
(vii)	Immunization schedule.	05	
(viii)	Preventable diseases - Classification and mode of spread. - Common disease and their prevention - diarrhoeas and dysenteries, malaria, rabies, round worm, small pox, tuberculosis, typhoid, typhus, veneral diseases.	15	
(ix)	Life history and prevention against housefly and mosquito.	02	
(x)	Effects of heat and cold and their prevention.	01	
(xi)	Hygiene and sanitation of ward and ancillaries.	02	
(xii)	Infection, Isolation, Disinfection methods.	02	
(xiii)	Communicable diseases: Nursing care -general management, Specific diseases : Diphtheria, measles, whooping cough, chicken pox, mumps, influenza, typhoid and paratyphoid, typhus, dysentery, food poisoning, cholera, plague, tetanus, malaria, dengue, HIV/AIDS.	10	
14.	**EQUIPMENT MANAGEMENT**	10	7.5 Hrs
	- Pulse oximeter - Nebulizer - Glucometer - ECG machine	10	

	- Cardiac monitor - Defibrillator - Total patient bed side monitor - SWD - Oxygen concentrator		
15.	**PRACTICAL**	600 Hrs	
(i)	General duties- - Tour of hospital and various departments - Personal discipline. - Ward discipline and discipline of the patients - Standing orders. - Admission procedure in MI Rooms and wards. - Cleanliness of the ward, pantry and the sanitary block including materials used for cleaning. - Sick parades. - Care of the dying and the dead.	100 Hrs	
(ii)	Must be able to - Clean ward and ancillaries. - Write reports - Take care of convalescent patients	30 Hrs	
(iii)	Must be able to maintain correctly – - Charts. - Case sheets. - Other documents.	30 Hrs	
(iv)	Must be conversant with - - Admission and discharge procedure. - Standing orders. - Storage, care and maintenance of linen, - utensils, crockery and furniture.	100 Hrs	
(v)	Local applications - Hot application - Application of cold. - Poultices and plasters. - Liniments, ointments, pastes and paints.	50 Hrs	
(vi)	General procedure - General treatment for reducing temperature, methods of reducing temperature, sponging, cold packing, Brand's bath, ice cradling. - Application of heat, hot baths, hot sponging, radiant heat, hot wet pack, hot dry pack, vapour bath, hot air bath, and medicated bath.	100 Hrs	

(vii)	Enema and lavage - Enema : Varieties, how to administer enema. - Flatus tube. - Lavage : Rectum, colon and gastric lavage.	40 Hrs	
(viii)	Principles of sepsis and antisepsis - General principles, definition and methods used. - Preparations of hands and use of gloves. - Sterilization of instruments, dressings, rubber goods, utensils, ligatures and sutures, sponges, mackintosh, towels, trays, syringes. - Care and maintenance of the above.	100 Hrs	
(ix)	Disposal of waste products - Faeces : Methods of disposal in permanent, semi permanent and temporary camps, deep and shallow trench latrines. - Urine : Methods of disposal.	50 Hrs	
	SECOND YEAR PAPER I		
16.	**Care of patient undergoing surgery (Pre and Intra operative), after care of Equipment** : must be conversant with	300	225 Hrs
	- Responsibilities of an Operating Room Assistant in OT in a surgical unit in peace and war. - Reception and preparation of patients for operations, observation of patients during operations and management of patients in the immediate post-operative period in the recovery room. - Preparation of patients for anaesthesia and positioning of patients for different operations. - Application of bandages and dressings after operations. - Methods of application of tourniquets and their dangers. - Plaster of Paris technique and preparation of plaster of Paris bandages assist in the application and removal of plaster casts. - Methods of application and uses of different types of splints. - Duties and role of ORA in a Central Sterile Supply Room (CSSR). - Duties and role of ORA in Intensive Care Units - Care of Critically ill Patients in ICU including use of	300	

	Ventilators - Use, Care and Maintenance of all OT and ICU related equipment including Gas & Cylinder systems - Responsibilities in cases of Cardiac Arrest, Trauma and Resuscitation - Triage of trauma and surgical cases - Organization and function of mobile surgical units: Role in War - Familiarity with Information Technology: Computer hardware and office-based software - **Administrative responsibilities of Operating Room Assistant in** ; (i) Running of Operation Theatre, (ii) Allotment of duties, (iii) Maintenance of day-night duty cycles, (iv) OT scheduling and precedence of surgical cases, (v) OT Record Keeping and Workload reporting		
17.	**Anaesthesia drugs, Equipment & special operation theatre tray set up:** Must be conversant with –	100	75 Hrs
	(a) Introduction and Concepts of Anaesthesia (b) Pre-anaesthesia Evaluation (PA Checkup) (c) Pre-anaesthesia Medication and optimization of surgical patient (d) Types of Anaesthesia incl General Anaesthesia, Neuraxial Blocks (Spinal, Epidural and Combined Spinal Epidural Anaesthesia), Regional Blocks, Local Anaesthesia and Dissociative Anaesthesia (e) Arrangement and preparation of Drugs in OT (f) Equipment preparation for anaesthesia – Anaesthesia Machines, Circuits, Monitors, Transducers, Airway devices and Pre-anaesthesia Checks ('Cockpit Drill'). (g) Conduct of General Anaesthesia incl observation and assessment of patient (h) Preparation and arrangement for neuraxial and regional anaesthesia (j) Conduct of Neuraxial Blocks – Spinal Epidural and CSE (k) Conduct of Regional Anaesthesia and plexus Blocks	100	

	(l) Monitored Anaesthesia Care and Conscious Sedation (m) Airway Management including Airway Emergencies – incl Difficult Airway Cart (n) Record Keeping during Anaesthesia – incl Noseworthy Charts and OT Registers (o) Mask Ventilation and Endotracheal Intubation for airway management		
	SECOND YEAR PAPER II		
18.	**Infection control in operation theatre, Role of the Theatre Assistant**	60	
	Operation Theatre Work and OT Nursing. Must be conversant with: - (a) The operation theatre unit and its functioning (b) Cleanliness and sterilization of operation theatre and annexes (c) Lighting in an operation theatre, emergency lighting sets, trailer generator and lighting sets (d) Scrubbing Protocols (e) Helping surgeon and others to wash up and drape for operations, holding out cap mask, gown and gloves for surgeons and others and handling sterile articles (f) Washing, cleansing, testing,sorting and packing of gloves for sterilization (g) Preparation of dressings, gauze, swabs and packs and arranging and packing of drums for sterilization (h) Use, care, maintenance and sterilization of the commoner types of instruments, needles, sutures and ligatures used in the operating theatre (j) Use, care and maintenance of various types of surgical diathermy units, suction apparatus, endoscopes, laparoscopic instruments, surgical microscopes, headlamps, image intensifiers metallic implants. (k) Identification of instruments and methods of laying out trolley for common operations, examinations and procedures (l) Components, parts and methods of sterilization of tracheostomy sets (m) Components, parts and working of the standard operating, neurosurgical and orthopaedic tables	60	45 Hrs
19	**Surgical procedures and monitoring Operation Theatre Ethics, safety for Operation room , Operation Theatre Techniques, surgical procedures (disinfection on sterilization), care of patient in Emergencies**	250	
	Surgical Skills: Must be trained to develop skill connected	250	187.5 Hrs

	with common resuscitative procedure, general surgical operation such as: (a) General Skills (i) Causation, signs and symptoms of hemorrhage and shock. (ii) Management of hemorrhagic Shock (iii) Broad principles of intravenous Fluids and blood administration and the commonly available IV Fluids. (b) Operation Procedures: Must be able to perform independently, if reqd. (i) Drainage of small, superficial abscesses. (ii) Cleaning and suturing of small, superficial cuts, clean lacerated wound (iii) Dressing of dirty, contaminated wound (iv) Arrest of hemorrhage (v) Small, minor surgical procedures like excision of sebaceous cyst, corns, warts, small lipomas, ingrowing toenails (vi) Application of POP slabs and casts (vii) Urinary bladder catheterization and irrigation and emergency percutaneous suprapubic cystostomy (viii) Dressing of burns and scalds. (ix) Operative and nursing procedures for common disease of ear nose and throat viz examination of ear, nose, ear syringing, wax removal, removal of easily accessible foreign bodies in ear & nose, epistaxis control. (x) Common ophthalmologic procedures like eye padding and dressing, removal of corneal foreign bodies, lachrymal sac syringing. <u>Operative Procedures</u>: Must be conversant with the theory & practical aspect of operative procedures in various fields & disciplines of surgery. (a) General Surgery: Procedures like varicocoele, circumcision, hernia, hydrocoele, anorectrol surgery, varicose veins, amputation, surgery of breast and thyroid, abdominal incision, common operation on stomach & gall bladder, intestinal procedures, hepato-biliary surgery, head & neck surgery (b) Orthopaedics: Special features of orthopaedic surgery, extremity fractures,		

		joint reconstruction & replacement (c) Ophthalmology: Introduction of eye surgery, ocular trauma, cataract surgery, operative procedures of eye lid and adnexae. (d) Otorhinolaryngology (ENT): Introduction to ENT surgery, common surgeries on ear, nose and throat like surgery for otitis media, epistaxis, tonsillectomy, foreign body removal etc. (e) Plastic And Reconstructive Surgery: Special features of plastic surgery, skin grafting techniques, burns, cosmetic surgery, various flaps, hand surgery, microsurgical flaps. (f) Paediatric Surgery: Introduction to paediatric surgery, paediatric anesthesia, and other related common procedures. (g) Cardiothoracic And Vascular Surgery: Introduction to cardiothoracic and vascular Surgery, closed & open heart surgeries, CABG, Cardiac Catheterization and angioplasty, bronchoscopy. (h) Oncosurgery: Introduction to cancer treatment surgical principles in oncology, common surgical procedures in oncology like neck dissections, mastectomies etc (j) Urology: Diagnostic procedures in urology, endo-urological techniques, common open urological surgery for calculus, hydronephrosis, nephrectomy and renal transplant. (k) Neurosurgery: Introduction to basics, burr holes, VP shunt, Spinal surgery, craniotomies special neurosurgical techniques. (l) Laparoscopic Surgery: Introduction, equipment, various basic and advanced laparoscopic surgical procedures. (m) Transplantation: Introduction, types of transplants, various organ transplantation, introduction to post transplant management.		

	(n) Peripheral Vascular Surgery: Introduction, types of vascular grafts, various peripheral vascular surgical procedures. <u>Resuscitation & Life Support</u> (a) Basic Life Support (BLS) and Resuscitation (b) Advanced Cardiac Life Support (ACLS) (c) Advanced Trauma Life Support (ATLS) (d) Paediatric Advanced Life Support (PALS) (e) Neonatal Advanced Life Support (NALS) (f) Special Situations in Resuscitation – Pregnancy, children, Choking, Drowning and Hanging (g) Equipment used in Basic and Advanced Life Support – incl Masks, Ambu Bag, ET Tubes, Laryngoscopes, Defibrillators and Automated External Defibrillators (AED) <u>Critical Care and ICU Training</u> (a) Principles of Critical Care (b) Asepsis and hand washing (c) Basics of Mechanical Ventilation and Care of patient on Ventilator (d) Endotracheal Suction and long-term airway management (e) Central Venous Access and Arterial Cannulation (f) Resuscitation and maintenance of crash carts (g) Cylinder and Pipeline Gas supply – running and maintenance (h) Use, Care and maintenance of ICU equipment incl Infusion pumps and ventilator <u>OT Procedure and Patient Flow in OT</u> (a) OPD, PA Clinic and Pain Clinic Management (b) OT List preparation and dispatch (c) Reception of patients in OT (i) Identification procedure (ii) Consent confirmation (iii) Documentation check (iv) PAC and Lab and other investigation reports (v) Premedication (vi) Pre-anaesthesia counseling (vii) Communication with Patient and families (viii) Placement into OT according to list (d) Post-operative reception and monitoring (e) Post Anaesthesia Care Unit (PACU) protocols (f) Assessment of patient recovery (Aldrete scoring) (g) Preparation and Packing of OT linen and disposables (h) Maintenance and functioning of Instrument Rooms		

	OT Design and Medico legal Aspects (a) OT Illumination (b) Electrical safety (c) Medical Attendance to female patients (d) Consent (e) Death in OT (f) Organ transplantation – medico legal aspects		
2.	**PRACTICAL**	600 Hrs	
	General duties : - Manage a ward independently - Supervise and assign duties - Maintain discipline of the staff under him and the patients - Maintain all the records and submit reports and return - Must know the maintenance of accounts, diets, drugs, clothing and equipment	100 Hrs	
	Essential Critical Care and Nursing skills (Advanced procedure) : - Critical care & ICU training : BLS, ACLS, ATLS - CPR - Emergency recognition and response- Procedure of Adv Nsg - Combat Med Care – Role in war - Anaphylaxis - Dressing - OT procedure and patient flow in OT - Eqpt, Stretcher - Patient Triage & Casuality Evacuation - OT design and medico legal aspects in OT Emergency Recognition and Response: Must be conversant with (a) Causation, sign and symptoms of hemorrhage and shock. (b) Cardiac and Respiratory Emergencies (c) Major Trauma Management (d) Broad principles of intravenous therapy and transfusions. (e) Transfusion fluids in common use, methods of transfusion, reconstitution of plasma for intravenous use. Basic and Advanced Life Support: (a) BLS, ACLS and ATLS (b) Neonatal and Paediatric Advanced Life Support (c) Life Support Equipment – Defibrillators/AED, Ambu Bag, Respiratory Circuits, Transport and ICU Ventilators, advanced monitoring systems	500 Hrs	

	Operating Theatre work. Must be conversant with: - (a) Assembly and dismantling of various common surgical appliances, cleaning and sterilization. (b) Must be conversant with the operative techniques, anaesthesia, intensive care and resuscitation and be able to assist in all common and advanced operations carried out in military hospital surgical units including eye, ENT, and all sub-specialties in surgery and anaesthesiology. Exposure and extended work in specialties of interest namely, Cardiothoracic surgery, Neurosurgery, Urosurgery, Oncosurgery, Ophthalmology, Otorhinolaryngology, Reproductive and infertility surgery, Gastrointestinal Surgery, Transplantation surgery, laparoscopic surgery and paediatric surgery. (c) Application of Plaster of Paris casts, Plaster of Paris Jackets and Spicas.	

TEXT BOOKS RECOMMENDED:

(i)	Sr. Nancy- Principles and Practice of Nursing, N.R Brothers, M.Y. Road. Indore
(ii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-1, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-2, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iv)	Patricia A, Potter, RN, MSN, PhD, CMAC, FAAN, Anne Griffin Perry, RN, MSN, EdD, FAAN- Fundamentals of Nursing, Printed and bound at International Print-O-Pac-Limited C/4-11, Phase-II Extn, NOIDA-201201 (U.P)
(v)	L.C Gupta, MD,MNAMS, Abhitabh Gupta- Manual of Fist Aid, Jaypee Borthers Medical Publishers (PVT) LTD, B-# EMCA House, 23/23B Ansari Road, Daryaganj,, Post Box 7193,New Delhi-11002
(vi)	Virendra N Shgal, Govind Srivastava- Diagnosis and Treatment of Common Skin Diseases, Jaypee Brothers Medical Publishers (P) LTD New Delhi
(vii)	Lippincott Williams & Wilkins - Pharmacology, A Wolters Kluwer Company Philadelphia
(viii)	Annamma Jacob, Rekha R, Jadhav Sonali Tarachand- Pharmacology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(ix)	Virendra N Sehgal- Textbook of Clinical Dermatology, Jaypee Brother Medical Publishers (P) LTD New Delhi
(x)	S Nambi- Psychiatry for Nurses, Jaypee Brother Medical Publishers (P) LTD , B-3, EMCA House, 23/23B Ansari Road. Daryaganj Post Box 7193,New Delhi
(xi)	BT Basavanthappa- Psychiatric Mental Health Nursing, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xii)	Harsh Mohan - Textbook of Pathology, Jaypee Brother Medical Publishers (P) LTD New DelhiT K Indrani- Nursing Manual of Nutrition and Therapeutic Diet, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xiii)	K Park- Preventive and Social Medicine, M/s Banarsidas Bhanot, Publishers, 1167, Prem Nagar, Jabalpur -482001 (India)
(xiv)	Rattn Lal Ichhpujani, Rajesh Bhatia- Microbiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xv)	Ross and Wilson- Anatomy and Physiology, Edinburgh
(xvi)	PR Ashalatha- Text book of Anatomy and Physiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN CARDIOLOGY TECHNICIAN

COURSE DURATION :-

It is 2 year DIPLOMA COURSE.

ELIGIBITY:-

Interested candidate must have passed 12th with Physics, Chemistry, Biology or Physics, Chemistry, Maths with 40% marks by state board or any recognized board/university .
Candidate must have completed age of 17 years as on 31st December of that year.

SCHEDULE OF COURSE :-

Whole schedule of course is divided into followings point:-

Six hours of theoretical & practical training per day must be given; that means 36 hours per week.
Total teaching classes (Theory +Practical) in one academic year are about 1500 hours (250 Days x 6 Hours)

List of holidays should be as below :-

Sunday	52 Days
Annual Holidays	20 Days
Gazetted Holidays	20 Days
Other holidays	13 Days
Preparatory holidays	10 Days
TOTAL	**115 DAYS HOLIDAYS**

DETAIL OF SUBJECT & ITS TEACHING HOURS

FIRST YEAR :-

SUBJECTS	TEACHING HOURS
HUMAN ANATOMY	**350 Hrs**
HUMAN PHYSIOLOGY	**350 Hrs**
GENERAL MICROBIOLOGY	**80 Hrs**
GENERAL PATHOLOGY	**80 Hrs**
GENERAL PHARMACOLOGY	**80 Hrs**
PHYSICS	**80 Hrs**
PRACTICAL CLASSES	**480 Hrs**
TOTAL	**1500 Hrs**

SECOND YEAR

SUBJECTS	TEACHING HOURS
GENERAL MEDICINE &GENERAL SURGERY	**250 Hrs**
CLINICAL CARDIOLOGY & PREVENTIVE MEDICINE	**200 Hrs**
DIAGNOSTIC TECHNIQUES	**250 Hrs**
CARDIOLOGY OPD, LAB & ICU	**300 Hrs**
PRACTICAL	**500 Hrs**
TOTAL	1500 Hrs

SYLLABUS

FIRST YEAR

HUMAN ANATOMY
HUMAN PHYSIOLOGY
GENERAL MICROBIOLOGY
GENERAL PATHOLOGY
GENERAL PHARMACOLOGY
PHYSICS
PRACTICAL CLASSES

SECOND YEAR

SUBJECTS

GENERAL MEDICINE & GENERAL SURGERY
CLINICAL CARDIOLOGY & PREVENTIVE MEDICINE
DIAGNOSTIC TECHNIQUES, CARDIOLOGY OPD, LAB & ICU
PRACTICAL

SCHEME OF EXAMINATION :

- FIRST YEAR -

PAPER	SUBJECTS	MARK	INTERNAL ASSESSMENT	TOTAL MARKS	PASS MARKS	DURATION OF EXAMINATION
FIRST	**HUMAN ANATOMY & PHYSIOLOGY, MICROBIOLOGY**	**75**	**25**	**100**	**50**	**3 HOURS**
SECOND	**PHYSICS,PATHOLOGY & PHARMACOLOGY**	**75**	**25**	**100**	**50**	**3 HOURS**

- SECOND YEAR -

PAPER	SUBJECTS	MARK	INTERNAL ASSESSMENT	TOTAL MARKS	PASS MARKS	DURATION OF EXAMINATION
FIRST	**GENERAL MEDICINE & SURGERY**	**75**	**25**	**100**	**50**	**3 HOURS**
SECOND	**CLINICAL CARDIOLOGY & PREVENTIVE MEDICINE DIAGNOSTIC TECHNIQUES, CARDIOLOGY OPD, LAB & ICU**	**75**	**25**	**100**	**50**	**3 HOURS**

FIRST YEAR

PAPER - 1

SL. NO.	COURSE CONTENT OF FIRST YEAR	NO. OF PERIODS	NO. OF HOURS
		45 MIN. EACH	
HUMAN ANATOMY , PHYSIOLOGY & MICROBIOLOGY			
1	**Introduction to cardiology technician**	**1**	
	Orientation to work , duty	**1**	**2**
	Details of the Diploma Programme	**1**	
2	ANATOMY		
	UNIT :- 1		
	Definition & branches of Anatomy	**2**	
	Introduction of anatomical terms	**2**	**5**
	Concept of cell, tissue, organ & system.	**2**	
	UNIT :- 2		
	Skeletal system :-		
	Bones :- Definition, structure	**3**	
	function & types	**3**	**46**
	Detail study of structure of regional bone	**32**	
	Joint :- Definition ,classification,	**4**	
	Structure ,movements	**4**	
	UNIT :-3		
	Muscular System :- Definition, structure	**5**	
	function & types	**7**	**20**
	Different muscular position & action.	**8**	
	UNIT :-4		
	Cardiovascular System :- Introduction	**2**	
	Heart & blood vessels ,its position	**6**	
	Structure ,Conduction system	**3**	
	Nerve supply & Blood supply.	**6**	**33**
	Blood Vessels :- Structure, differences	**4**	
	Position of chief vessels ,function	**4**	
	Circulation of blood :- Systemic	**4**	
	Pulmonary & portal circulation	**4**	
	UNIT :- 5		
	Respiratory System:- Structure , Position	**7**	**14**
	Function of respiratory organs	**7**	
	UNIT :-6		
	Digestive System :- Structure , Position	**7**	**11**
	Function of digestive organs	**4**	
	UNIT: - 7		
	Urinary System :- Position , structure	**4**	**8**
	Function of organs of Urinary system	**4**	

	UNIT :-8		
	Nervous System:- Introduction & Part	**8**	
	Structure of nervous system	**10**	**28**
	Function of nervous system.	**10**	
	UNIT :- 9		**10**
	Sense Organs :-		
	Structure & function of :-		
	Ear	**2**	
	Eye	**2**	
	Nose	**2**	**10**
	Skin	**2**	
	Tongue	**2**	
	UNIT :- 10		
	FEMALE REPRODUCTIVE SYSTEM		
	External & Internal organs	**8**	
	MALE REPRODUCTIVE SYSTEM		
	External & Internal organs	**6**	
3	PHYSIOLOGY		**5**
	UNIT :-1		
	Definition & introduction of Physiology	**2**	
	Concept of cell, tissue, organ & system.	**2**	
	UNIT :- 2		
	Connective Tissues ,:- its type ,function	**8**	**8**
	UNIT :-3		
	Muscular System :-		
	Definition, structure	**6**	
	Function & types	**6**	**12**
	UNIT :-4		
	CARDIOVASCULAR SYSTEM:- ,		
	Heart ,its position structure	**5**	
	Conduction system ,	**3**	
	nerve supply & blood supply.	**4**	
	Blood Vessels :- Structure, differences ,	**6**	
	position of chief vessels ,function.	**6**	
	Lymphatic system	**6**	
	Circulation of blood :- systemic circulation	**6**	**64**
	Pulmonary & portal circulation	**4**	
	Cardiac output ,Stroke Volume	**4**	
	Blood Pressure, Pulse Rate ,Cardiac cycle .	**5**	
	Detail description of blood ,Blood group	**8**	
	B.P. measurement, temperature	**4**	
	Pulse & respiratory rate measurement .	**4**	
	UNIT :- 5		
	Respiratory System:-		
	Respiration ,Physiology	**6**	**12**
	Lung volume & lung capacity	**6**	

	UNIT :-6		
	Digestive System: -		
	Process of Mastication, Deglutition,.	**8**	
	Digestion & absorption	**10**	**26**
	Metabolism of food constituents	**8**	
	UNIT: - 7		
	Urinary System: - ,		
	Physiology of blood filtration&micturition.	**7**	
	Regulation of body temperature.	**3**	**18**
	Fluid & electrolyte balance .	**5**	
	UNIT :-8		
	Nervous System:- Introduction .	**4**	
	Classification, structure & function	**20**	**24**
	UNIT :- 9		
	Sense Organs :-		
	Structure & function of :-		
	Eye	**2**	
	Ear	**2**	
	Nose	**2**	
	Skin	**2**	**10**
	Tongue	**2**	
	UNIT :- 10		
	FEMALE REPRODUCTIVE SYSTEM:-		
	Menstrual cycle ,function of each organ	**10**	
	MALE REPRODUCTIVE SYSTEM :-		**20**
	External & Internal organs	**10**	
	UNIT :- 11		
	Endocrine System :- ,		
	Structure & function of :-		
	Pituitary Gland	**8**	
	Thyroid ,Parathyroid Gland	**8**	**24**
	Pancreas , ,Thymus & Suprarenal Gland.	**8**	
4	GENERAL MICROBIOLOGY		
	Definition & Role	**3**	
	Scope & branches	**2**	
	Bacteriology :-		
	Shape ,Size & structure of bacteria	**3**	
	Infection:-		
	Definition ,Types of infection	**3**	**50 HRS**
	Source of infection	**2**	
	Mode of transmission of infection	**3**	
	Immunity: -		
	Definition &Types in detail,	**8**	
	Immunization schedule.	**2**	
	Sterilization & Disinfectant	**10**	

PAPER-2			
PHYSICS,PATHOLOGY & PHARMACOLOGY			
SL. NO.	COURSE CONTENT OF FIRST YEAR	NO. OF PERIODS	NO. OF HOURS
		45 MIN. EACH	
1	PHYSICS		
	Principles Of AC / DC.	**3**	
	Types Of Batteries.	**3**	
	Power supply.	**2**	**20**
	Ohm's law .	**2**	
	Electro medical instruments ,	**5**	
2	GENERAL PATHOLOGY		
	Definition, Role, Scope of Pathology.	**6**	
	Inflammation-its stage & sign.	**8**	
	Shock.	**4**	**40**
	Introduction of Hemorrhage,	**2**	
	Thrombosis, Embolism.	**4**	
3	GENERAL PHARMACOLOGY		
	Definition, Role, Scope of Pharmacology.	**6**	
	General Pharmacokinetics	**4**	
	General Pharmacodynamics	**4**	
	Drugs acting on Cardio-vascular system.	**6**	**50**
	Drugs acting on Respiratory system	**4**	
	Drugs acting on Nervous system	**10**	
	Antibiotics .	**10**	

SECOND YEAR

PAPER - 1

GENERAL MEDICINE & GENERAL SURGERY			
SL. NO.	COURSE CONTENT	NO. OF PERIODS	NO. OF HOURS
1	UNIT-1		
	INFECTIOUS & COMMUNICABLE DISEASES :-		
	Typhoid fever, Malaria, Tetanus, Diphtheria, Leprosy	**12**	
	Mumps, Measles,Cholera, Rubella	**8**	**35**
	Gonorrhea, Syphilis, AIDS , .	**10**	
	Rheumatic fever	**5**	
2	UNIT-2		
	METABOLIC DISORDER :-		
	Diabetes, Obesity, Gout.	**7**	**7**
3	UNIT :-3		
	· DISEASES OF ENDOCRINE SYSTEM :-		
	Hyper & Hypo -secretion of Thyroid ,Parathyroid Gland	**3**	**7**
	Hypo & hypersecretion of Pituitary & Adrenal Gland.	**4**	
4	UNIT :-4		
	·DISEASES OF NERVOUS SYSTEM :-		
	Headache, Meningitis, Encephalitis, Poliomyelitis, Parkinsonism, Epilepsy	**11**	**11**
	CVA ,Tumor.	**5**	**5**
5	UNIT :-5		
	· DISEASES OF GIT :-		
	Gastric ulcer ,Peptic Ulcer , Gastritis .Hiatus Hernia , ,	**5**	
	Hepatitis , Cirrhosis of liver , Hepatic coma	**6**	**22**
	Pancreatitis , Enteritis , Colitis , Spleenomegaly	**7**	
	Cholecystitis ,Cholelithiasis .	**4**	
6	UNIT :-6		
	· DISEASES OF BLOOD :-		
	Anemia , Leukaemia , Haemophillia .	**5**	**8**
	Agranulocytosis, Hodgkin's disease	**3**	
7	UNIT :-7		
	DISEASES OF CARDIOVASCULAR SYSTEM :-		
	Pericarditis,Myocarditis ,endocarditis	**4**	
	IHD , Valvular disorders ,	**8**	
	Cardiac arrhythmia ,Heart block ,	**5**	**22**
	Cardiac arrest , Cardiac failure	**5**	
8	UNIT :-8		
	· DISEASES OF EAR NOSE & THROAT :-		

	Oetitis , Otosclerosis , Furunculosis , Fungal infections ,	**8**	
	Injury , Wax, Mastoiditis , Otosclerosis.	**10**	
	Menier's disease , Deafness.	**4**	**35**
	Laryngitis , Pharyngitis , Tonsilits Allergic rhinitis.	**6**	
	Rhinitis , Defleted nasal septum , Sinusitis , Adenoids ,	**7**	
9	UNIT :-9		
	· **DISEASES OF RESPIRATORY SYSTEM :-**		
	Tuberculosis ,Pneumonia ,	**6**	
	Pleural effusion , Pleurisy , Empyaema,	**6**	**22**
	COPD.	**10**	
10	UNIT :-10		
	· **DISEASES OF EYE:-**		
	Conjuctivitis , Dacrocystitis , Glaucoma ,	**6**	
	Cataract , Retinal detachment.	**4**	**10**
2	GENERAL SURGERY		
1	· **WOUND**	**4**	**4**
2	· **ULCER**	**4**	**4**
3	· **BURN**	**9**	**9**
4	· **SKIN GRAFT**	**4**	**4**
5	· **ORTHOPAEDIC CONDITIONS :- ,**		
	Sprain, Dislocation,	**2**	
	Fracture ,Amputation	**18**	
	Arthritis, Osteomyelitis , Ankylosing spondylitis	**7**	**51**
	Congeital deformities , Bone graft	**20**	
	Cervical spondylosis , Lumbar spondylosis ,.	**4**	
6	· **Gyanecological & obstretic conditions .**	**30**	**30**
7	· **Other surgical conditions : -**		
	Pnuemenectomy ,Lobectomy	**4**	
	Hysterectomy ,Mastectomy	**4**	**10**
	Cholelithetectomy etc	**2**	

PAPER - 2

CLINICAL CARDIOLOGY & DIAGNOSTIC PROCEDURE

SL. NO.	COURSE CONTENT	NO. OF PERIODS	NO. OF HOURS
	CLINICAL CARDIOLOGY		
	Cardiac Arrhythmia	**6**	
	Congenital heart disease	**30**	
	Infective Endocarditis	**4**	
	Valvular diseases.	**20**	
	Ischemic heart disease.	**8**	
	Cardiac arrest.	**4**	
	Heart Failure.	**4**	
	Hypertension	**4**	
	Pericarditis.	**3**	
	Myocarditis.	**3**	
	Peripheral vascular diseases.	**32**	**127**
	Shock.	**4**	
	Health & heart diseases ,Epidemiology of heart disease.	**3**	
	Early detection ,Prevention & treatment of heart disease	**3**	
	Common warning signs of heart diseases	**3**	
	Obesity	**3**	
	DIAGNOSTIC PROCEDURE OPD LAB		
	Investigations done in heart diseases .	**7**	
	Instruments used in cardiology- stethoscope Halter	**8**	
	Sphygmomanometer ,Thermometer,ECG Machine	**8**	
	Cardiac monitors , control monitor system,	**8**	
	External Pacemaker ,Paediatric ECG Recording ,	**8**	
	,Reading of normal & abnormal ECG .	**10**	
	stress ECG recording..	**6**	
	Introduction to cardiac catheterization	**4**	
	control oxygen & section unit ,TMT,	**4**	
	Echo ,Ultrasound dropper ,	**4**	
	Demonstration of working of all instruments & using it.	**8**	
	PHYSICAL SET UP OF CARDIOLOGY OPD :-		
	Introduction, Emergency tray ,,Drugs used in emergency ,	**6**	
	Cardiopulmonary resuscitation	**4**	
	Respiratory distress ,	**5**	
	IV Infusion & precaution ,OPD Record keeping	**10**	
	ICU :- Introduction ,structure ,Furniture .	**8**	

	Utensils used ,	**2**	
	,assessment of patient condition,treatment protocol	**4**	
	medicines used in ICU & ITS role	**5**	
	Repair ,stand by power arrangement of beds	**4**	
	Trays & trollys & attendants space	**4**	
	Infections & disinfectant procedures ,	**7**	
	Sterilization of ICU articles & Room	**4**	
	Imporatnce of Disinfectant & sterilization ,	**4**	
	Detail of Types mode & Source of infections in ICU. ,	**4**	
	Use of antiseptic technique .	**2**	
	Diet & nutrition of patient .	**2**	
	Duty record ,division of work ,disposal of materials ,	**2**	**187**
	collection & transportation of body sample	**2**	
	minor routine & emergency procedures like RT ,,	**1**	
	Catheterisation ,enema ,	**4**	
	oxygen application	**2**	
	laryngoscope & tracheotomy	**4**	
	Routine cleaning of ICU ,	**2**	
	Precaution during patient transfer.	**2**	
	Admission protocol.	**1**	
	Record keeping	**1**	
	Operative preparation.	**2**	
	Electric & fire hazards .	**1**	
	Recovery room .	**2**	
	Stock maintanance of the department .	**2**	
	Emergency disaster & death .	**4**	
	Mobile ICU	**1**	
	Medico legal aspect .	**2**	

3	PRACTICAL		450 HRS

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN DAILYSIS TECHNICIAN

ABOUT COURSE :-

It is the best implicated method of management in RENAL FAILURE patient.

COURSE DURATION :-

It is 2year DIPLOMA COURSE .

ELIGIBITY:-

- Interested candidate must have passed 12th with Physics, Chemistry, Biology Or Physics, Chemistry, Maths with 40% marks by state board or any recognised board/university .
- Candidate must have completed age of 17 years as on 31st December of that year .

SCHEDULE OF COURSE :-

Whole schedule of course is divided into followings point :-

- Six hours of theoretical & practical training per day must be given ; that means 36 hours per week.
- Total teaching classes (Theory +Practical)in one academic year are about 1500 hours (250 Days x 6 Hours)
- List of holidays should be as below :-

1.	Sunday	52 Days
2.	Annual Holidays	20 Days
3.	Gazetted Holidays	20 Days
4.	Other holidays	13 Days
5.	Preparatory holidays	10 Days
	TOTAL	**115 DAYS HOLIDAYS**

- **DETAIL OF SUBJECT & ITS TEACHING HOURS**

FIRST YEAR :-

SUBJECTS	TEACHING HOURS
1. HUMAN ANATOMY	240 Hrs
2. HUMAN PHYSIOLOGY	240 Hrs
3. GENERAL MICROBIOLOGY	80 Hrs
4. GENERAL PATHOLOGY	80 Hrs
5. GENERAL PHARMACOLOGY	80 Hrs
6. BASICS OF DAILYSIS TECHNIQUE	80 Hrs
7. PRACTICAL CLASSES	300 Hrs
TOTAL	**1100 Hrs**

SECOND YEAR :-

SUBJECTS	TEACHING HOURS
1. GENERAL MEDICINE	250 Hrs
2. GENERAL SURGERY	250 Hrs
3. CLINICAL NEPHROLOGY	200 Hrs
4. DAILYSIS MANAGEMENT	300 Hrs
5. PRACTICAL	500 Hrs
TOTAL	**1500 Hrs**

SCHEME OF EXAMINATION :

FIRST YEAR :-

PAPER	SUBJECTS	MARK	INTERNAL ASSESSMENT MARKS	TOTAL MARKS	PASS MARKS	DURATION OF EXAMINATION
FIRST	HUMAN ANATOMY &PHYSIOLOGY, MICROBIOLOGY	75	25	100	50	3 HOURS
SECOND	PATHOLOGY, PHARMACOLOGY & BASICS OF DAILYSIS	75	25	100	50	3 HOURS
THIRD	ORAL & PRACTICAL	75	25	100	50	----------

SECOND YEAR -

PAPER	SUBJECTS	MARK	INTERNAL ASSESSMENT	TOTAL MARKS	PASS MARKS	DURATION OF EXAMINATION
FIRST	GENERAL MEDICINE & SURGERY	75	25	100	50	3 HOURS
SECOND	CLINICAL NEPHROLOGY & DAILYSIS MANAGEMENT	75	25	100	50	3 HOURS
THIRD	ORAL & PRACTICAL	75	25	100	50	----------

UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN DAILYSIS TECHNICIAN

DURATION:- 2 YEAR

SYLLABUS

FIRST YEAR

1. HUMAN ANATOMY
2. HUMAN PHYSIOLOGY
3. GENERAL MICROBIOLOGY
4. GENERAL PATHOLOGY
5. GENERAL PHARMACOLOGY
6. BASICS OF DAILYSIS TECHNIQUE
7. PRACTICAL CLASSES

SECOND YEAR

SUBJECTS

1. GENERAL MEDICINE
2. GENERAL SURGERY
3. CLINICAL NEPHROLOGY
4. DAILYSIS MANAGEMENT
5. PRACTICAL

FIRST YEAR

PAPER - 1

HUMAN ANATOMY,PHYSIOLOGY & MICROBIOLOGY

SL NO.	COURSE CONTENT OF FIRST YEAR	NO. OF PERIODS	NO. OF HRS
		45 min. each	
	HUMAN ANATOMY		
1	**UNIT :-1**		
	• Definition & branches of Anatomy	2	
	• Introduction of anatomical terms	2	5
	•Organization of cell, tissue, organ & system.	2	
2	**UNIT :- 2**		
	• Skeletal system :-		
	Bones :- Definition, structure ,function & types	3	
	· Detail study of structure of regional bone	32	43
	· Joint :- Definition ,classification, structure, movements	8	
3	**UNIT :-3**		
	· Muscular System :-		
	Definition, structure ,function & types	5	12
	· Different muscular position & action.	7	
4	**UNIT :-4**		
	· CARDIOVASCULAR SYSTEM:- .		
	Heart ,its position ,structure	6	
	Conduction system ,nerve supply & blood supply	5	
	· Blood Vessels :- Structure, differences ,	6	27
	Position of chief vessels ,function	3	
	· Circulation of blood :- systemic, pulmonary ,portal	6	
5	**UNIT :- 5**		
	· Respiratory System:-		
	Structure , Position & function of respiratory organs	12	12
6	**UNIT :-6**		
	· Digestive System :-		
	Structure , Position & function of digestive organs	20	20
7	**UNIT: - 7**		
	· Urinary System :-.		
	Position , structure of organs of urinary system	7	6
8	**UNIT :-8**		
	Nervous System:-		
	· Introduction, classification, structure of nervous system	28	28
9	**UNIT :- 9**		
	. Sense Organs :-		
	Structure of :-		
	Ear	3	
	Eye	2	

	Nose	2	10
	Tongue	2	
	Skin	2	
10	**UNIT :- 10**		
	· FEMALE REPRODUCTIVE SYSTEM:-		
	External & Internal organs	10	10
	· MALE REPRODUCTIVE SYSTEM :-		
	External & Internal organs	10	10
11	**PRACTICAL**	70	60
	HUMAN PHYSIOLOGY		
1	**UNIT :-1**	2	
	· Definition & introduction of Physiology	2	5
	· Organization of cell, tissue, organ & system.	2	
2	**UNIT :- 2**		
3	· Connective Tissues ,:- its type ,function	8	8
	UNIT :-3		
	· Muscular System :-		
	Definition, structure ,function & types	40	40
4	**UNIT :-4**		
	· CARDIOVASCULAR SYSTEM:- ,.		
	Heart ,its position ,structure	6	
	Conduction system ,nerve supply & blood supply	5	
	· Blood Vessels :- Structure, differences ,	6	27
	Position of chief vessels ,function.	3	
	· Lymphatic system	6	
	· Circulation of blood :- systemic, pulmonary ,portal	6	46
	· Cardiac output ,Stroke Volume ,Blood Pressure .	8	
	Pulse Rate ,Cardiac cycle	6	
	· Blood :- Detail description ,Blood Group & Rh Factor	10	
5	**UNIT :- 5**		
	· Respiratory System:-		
	Respiration ,physiology	5	9
	Lung volume & lung capacity	4	
6	**UNIT :-6**		
	· Digestive System: -		
	Process of Mastication, Deglutition,	4	
	Digestion & absorption.	6	20
	· Metabolism of food constituents	10	
7	**UNIT: - 7**		
	· Urinary System: -		
	Physiology of blood filtration, micturition.	8	
	· Regulation of body temperature.	8	30
	· Fluid & electrolyte balance .	14	
8	**UNIT :-8**		

	· Nervous System:-		
	Introduction, classification,	7	
	Structure & function of nervous system	21	28
9	**UNIT :- 9**		
	· Sense Organs :- Ear ,Eye ,Nose ,Skin Tongue :-		
	Structure & function of		
	Ear	3	
	Eye	2	
	Nose	2	10
	Skin	2	
	Tongue	2	
10	**UNIT :- 10**		
	· FEMALE REPRODUCTIVE SYSTEM:-		
	Menstrual cycle ,function	8	
	· MALE REPRODUCTIVE SYSTEM :-		15
	External & Internal organs	7	
11	**UNIT :- 11**		
	· Endocrine System :- .		
	Structure & function of Pituitary, Pancreas gland	10	
	Thyroid ,Parathyroid Gland	5	23
	Thymus & Suprarenal Gland	8	
	GENERAL MICROBIOLOGY		
1	· Definition, Role , Scope & branch of Microbiology .	8	8
2	· Bacteriology :- Shape ,Size & structure of bacteria	8	8
3	· Infection:-		
	Definition ,source & mode of transmission of infection	12	12
4	· Immunity: - Types in detail, Immunization schedule.	18	18
5	· Sterilization & Disinfectant	18	18

PAPER -2			
GENERAL PATHOLOGY , PHRMACOLOGY & DIALYSIS MANAGEMENT			
	GENERAL PATHOLOGY		
1	· Definition, Role , Scope & branch of Pathology .	6	6
2	· Inflammation-its stage & sign.	14	14
3	· Derangement of body fluid .	12	12
4	· Shock.	8	8
5	· Introduction of Hemorrhage, Thrombosis, Embolism.	6	6
	GENERAL PHARMACOLOGY		
1	· Definition, Role, Scope of Pharmacology.	6	6
2	· General Pharmacokinetics & Pharmacodynamics	4	4
3	· Diuretics	6	6
4	· Antidiuretics	3	3
5	· Antibiotics	8	8
	BASICS OF DAILYSIS MANAGEMENT		
1	• Function of Kidney, Nephron, glomerulus tubules.		
	GFR, Urinary bladder, urethra		
2	• **BASIC CHEMISTRY OF BODY FLUID & ELECTROLYTES :-**		
	Metric system **,** Atom ,Compound, Molecules .	2	2
	Atomic Weight& Number ,Molecular Weight	3	3
	Ion, ionic bonding,solution,concentration of solution	2	2
	electrolyte, conductivity, moles (S.I. Unit), Molarity	3	3
	Normality, osmolality, molality, Hydrogen ion- conc.	2	2
	pH ,acids ,buffer	2	2
3	Body fluid, Homeostasis, fluid balance.	4	4
4	• Types of Dailysis	4	4
5	• Basic principles of haemodailysis, indication .	3	3
6	Osmosis, Diffusion, Ultra filtration	4	4
7	• Dialysate :-		
8	Composition of dailysate-for haemodailysis	3	3
9	Composition of peritoneal dailysis	3	3
10	• Dailyzers :- function ,dialyser membrane :-	8	8
	how they work		
11	• Principle of Peritoneal Dailysis: - indication , .	6	6
12	Dailysate		
13	Types of PD & their individual indication	8	8
14	Instruments required for hemodailysis	2	2
	Instruments required for Peritonial dailysis	2	2
15	• Cannulas,Shunts,AV fistula	3	3
16	• Role of Dailysis technician.	3	3
17	• Normal values of Plasma Constituent	3	3
	PRACTICAL IN DAILYSIS UNIT ,ANATOMY LAB	300 HRS	300 HRS

SECOND YEAR

PAPER - 1

GENERAL MEDICINE & GENERAL SURGERY			
SL. NO.	**COURSE CONTENT**	**NO. OF PERIODS**	**NO. OF HOURS**
1	**UNIT-1**		
	INFECTIOUS & COMMUNICABLE DISEASES :-		
	Typhoid fever, Malaria, Tetanus, Diphtheria, Leprosy	12	
	Mumps, Measles,Cholera, Rubella	8	35
	Gonorrhea, Syphilis, AIDS , .	10	
	Rheumatic fever	5	
2	**UNIT-2**		
	METABOLIC DISORDER :-		
	Diabetes, Obesity, Gout.	7	7
3	**UNIT :-3**		
	• DISEASES OF ENDOCRINE SYSTEM :-		
	Hyper & Hypo -secretion of Thyroid ,Parathyroid Gland	3	7
	Hypo & hypersecretion of Pituitary & Adrenal Gland.	4	
4	**UNIT :-4**		
	• DISEASES OF NERVOUS SYSTEM :-		
	Headache, Meningitis, Encephalitis, Poliomyelitis, Parkinsonism, Epilepsy	11	11
	CVA ,Tumor.	5	5
5	**UNIT :-5**		
	• DISEASES OF GIT :-		
	Gastric ulcer ,Peptic Ulcer , Gastritis .Hiatus Hernia , ,	5	
	Hepatitis , Cirrhosis of liver , Hepatic coma	6	22
	Pancreatitis , Enteritis , Colitis , Spleenomegaly	7	
	Cholecystitis ,Cholelithiasis .	4	
6	**UNIT :-6**		
	• DISEASES OF BLOOD :-		
	Anemia , Leukaemia , Haemophillia .	5	8
	Agranulocytosis, Hodgkin's disease	3	
7	**UNIT :-7**		
	• DISEASES OF CARDIOVASCULAR SYSTEM :-		
	Pericarditis,Myocarditis ,endocarditis	4	
	IHD , Valvular disorders ,	8	
	Cardiac arrhythmia ,Heart block ,	5	22
	Cardiac arrest , Cardiac failure	5	
8	**UNIT :-8**		
	• DISEASES OF EAR NOSE & THROAT :-		
	Oetitis , Otosclerosis , Furunculosis , Fungal infections ,	8	
	Injury , Wax, Mastoiditis , Otosclerosis.	10	
	Menier's disease , Deafness.	4	35

	Laryngitis , Pharyngitis , Tonsilits Allergic rhinitis.	6	
	Rhinitis , Defleted nasal septum , Sinusitis , Adenoids ,	7	
9	**UNIT :-9**		
	• DISEASES OF RESPIRATORY SYSTEM :-		
	Tuberculosis ,Pneumonia ,	6	
	Pleural effusion , Pleurisy , Empyaema,	6	22
	COPD.	10	
10	**UNIT :-10**		
	• DISEASES OF EYE:-		
	Conjuctivitis , Dacrocystitis , Glaucoma ,	6	
	Cataract , Retinal detachment.	4	10
2	**GENERAL SURGERY**		
1	• WOUND	4	4
2	• ULCER	4	4
3	• BURN	9	9
4	• SKIN GRAFT	4	4
5	• ORTHOPAEDIC CONDITIONS :- ,		
	Sprain, Dislocation,	2	
	Fracture ,Amputation	18	
	Arthritis, Osteomyelitis , Ankylosing spondylitis	7	51
	Congeital deformities , Bone graft	20	
	Cervical spondylosis , Lumbar spondylosis ,.	4	
6	• Gyanecological & obstretic conditions .	30	30
7	• Other surgical conditions : -		
	Pnuemenectomy, Lobectomy	4	
	Hysterectomy ,Mastectomy	4	10
	Cholelithetectomy etc	2	

	PAPER :-2		
	CLINICAL NEPHROLOGY & DAILYSIS MANAGEMENT		
1	**CLINICAL NEPHROLOGY**		
1	• Various diagnostic procedure of renal diseases.	4	4
2	• Manifestation of renal diseases.	3	3
3	• Renal vascular disease.	4	4
4	• Glomerular disease.	3	3
5	• Tubulo-interstitial disease.	3	3
6	• Congenital abnormalities of kidneys.	10	10
7	• Renal involvement in systemic diseases.	4	4
8	• Infectious conditions of Kidney & urinary tract.	16	16
9	• Obstruction of urinary tract .	8	8
10	• Effects of the drugs on the kidney.	3	3
11	• Tumuors of Kidney & urinary tract.	8	8
12	• Hard water syndrome.	3	3
13	• Water ,fluid & electrolyte imbalance.	20	20

2	**DAILYSIS MANAGEMENT**		
1	• CONCEPT OF DAILYSIS:-		
	Meaning of Dailysis, Semi permeable membrane , types,	6	
	Selective diffusion dialysis, Artificial kidney & its use,	6	18
	Type of Dailysis, Dialyzers, Substituted membrane	6	
2	• HAEMODAILYSIS		
	function of semi permeable membrane in haemodailysis	2	
	Waste product removed by haemodailysis transport	2	
	Rate of mass transfer-Solute flux.	2	12
	Diffusive transport & its importance,	2	
	Clearance, Ultra filtration & hydrostatic gradient, TMP	4	
3	• Water for Dailysis procedure ,	2	2
4	Filtration ,Decantation ,Distillation	2	2
5	Softener, Deionizer	2	2
6	Reverse osmosis, Different impurities .	2	2
7	Role of charcoal, RO Plant.	2	2
8	Water used in Dailysis, Compare RO with DI.	5	5
9	• DIFFERENT TYPES OF DIALYZER –		
	Description, reuse, indication, care,	6	
	Factors improving performance,	6	
	Choosing Dialyzer, Priming Sterility, Washing	5	25
	Formalin-Use, hemofiltration,	4	
	haemoperfusion, aphresis,CAVH,CRRT.	4	
10	• DAILYSIS EQUIPMENT :-		
	Accessory equipments & functions, ,	4	
	Blood pump, Monitors of Temp., Flow ,Pressure	8	18
	Monitors of Dailysate concentration pH	4	
11	Chemicals used in dailysate-advantages & disadvantages	8	8
12	delivery system	6	6
13	• CARE ,ASSESSMENT PREPARATION :-		
	Pre- Dailysis assessment, preparation & care	3	
	Procedure & care for HD & PD	3	8
	Post Dailysis care.	2	
15	• COMPLICATION :-		
	Complications during & after dialysis, its management.	2	
	Potential problems during Dailysis, Prevention,	3	8
	Hypovolaemia& its management.	3	
18	• PERITONIAL DAILYSIS		
	Indication, Dailysate preparation, Procedure, Types	5	
	Care, complication-management,	3	
	Toxic substances added.	3	11
19	• RE-DAILYSIS ASSESSMENT	2	2
20	• Cannulas ,shunt, AV fistulas ,internal graft	6	6

21	Catheter-subclavian ,Jugular, Femoral ,Blood line etc.	6	6
22	Temporary vascular access	6	6
23	• Goal of Dailysis	4	4
24	• Anticoagulant ,Drug added in PD.	9	9
25	• Emergency drugs & injections	4	4
26	• Disinfection procedure of machines & instrument	4	4
27	• Clinical basics of IV Fluid , creatinin clearance.	4	4
28	• Role of dialysis technician	4	4

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN C.T SCAN TECHNICIAN

DURATION: 02 YEARS

SYLLABUS:

FIRST YEAR

TOPICS

1. Anatomy
2. Radiological Anatomy
3. Physics of X-Ray
4. Radiography, Radiographic Positioning
5. Radiation Hazards, Radiation Protection
6. Dark Room.
7. Contrast-Media

SECOND YEAR

TOPICS

1. Anatomy
2. Radiological Anatomy
3. Pathologies as seen on C.T
4. C.T Physics
5. Non Ionic & Ionic Contrast
6. Contrast Reaction and its Management.
7. C.T Positioning & Preparation
8. C.T Procedures
9. Radiation Hazards, Radiation Protection
10. PET C.T / Recent Advances.

Diploma C.T. Scan Technician

FIRST YEAR (1st PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
I	**300 hours**		**3 hrs.**	**100 marks**
		Anatomy		
	225 hours	Introduction to Anatomy, Physiology, Human body, Anatomical Posture, Descriptive Terms in Anatomy, Planes of body, Cells, Tissues, System, Membranes, Glands, Body fluid. Cartilages, Bones muscles, Skeletal System, Function of Skeleton, Classification of bones, Descriptive terms used in osteology, Joints of Skeleton / mycology/orbit/pns/face/ neck Bones of Appendicular Skeleton. Bone of limb. Vertebra, Sacrum, Coccyx. Sternum, Ribs.Bones of skull, sutures of skull, Paranasal sinuses, Facial bones. Abdominal Regions, Solid organs of abdomen/ Excretory organs, G.I.T. The urinary system, Mediastinum, Heart, Aorta. Respiratory System. Reproductive System. Nervous System . hepatobiliary/ lymphatic /vascular system		50 marks
	75 hrs	Radiological Anatomy -CT slices—axial, coronal and sagittal sections of human body		25 marks
		Internal assesment		25 marks

FIRST YEAR (2nd PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
II	**300 hours**		**3 hrs**	**100 marks**
	120 hrs	**Physics:** Introduction to Physics, Radiologic Physics, Atom, Neil's Bohr Atomic model, Atomic number, Mass number, Isotopes, Valency, Ionization,.X-Ray Physics, Discovery of X-Ray, Roentgenology, Fluroscopy, Nature of X-Ray, wave length, Frequency, Sources of X-Ray, X-Ray Tube, Necessary Conditions for the production of X-Ray, Efficiency of X-Ray Production properties of X-Ray, Quality and Quantity of X-Ray,**.** X-Ray Circuit, X-Ray control panel, protection, CT PHYSICS/MDCT		25 marks
	75 hrs	**Radiation**: Radiation Dose. Radiation Hazards Protection, Dark Room**.**		20 marks
	75 hrs	**Radiography**: Positioning, Scaphoid PA & Olique, Elbow & shoulder joint, Foot AP & oblique, Knee joint AP, Pelvis AP, ChestAP, PA & Lat, Sub Mento vertical PNS , skull and townes. Abdomen Erect. BARIUM STUDIES/IVP/SINOGRAM		20 marks
	30 hrs	**Filming**: Contrast-Media, Contrast, Density, Detail, Types of film, Cassette, Intensifying Screen, Safe Light, Developer, Fixer, Manual Processing, Causes of film fog, Factors of X-Ray.		10 marks
		Internal Assessment		25 marks

PRACTICAL

	600 hrs		**3 hrs**	**100 marks**
		Patient prerequisites, Patient positioning, Patient consent		25 marks
		CT filming , Dark Room Indication & contraindication of CT		15 marks
		Contrast REACTION management with		10 marks
		IV fluid ; O2 STEROIDS etc. PERFORMING HEAD C.T. SCAN		50 marks

SECOND YEAR (1ST PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
I	**300 hours**		**3 hrs**	**100 marks**
		ANATOMY		
	150 hours	Nervous System (C.N.S., P.N.S., A.N.S.) Brain, Cerebrum, Basal Ganglia, Thalamus. Hypothalamus, Ventricles, CerebroSpinal Fluid and pathway, Brain Stem, Cerebellum, Spinal Cord. GIT Digestive System, Alimentary Tract,, Pharynx, Mesentery Oesophagus. Stomach, Small Intestine, Large Intestine, Salivary Glands FACE/ORBIT/PNS COURSE OF MAJOR VESSELS AND LYMPHATICS MAJOR NODES Neck and Larynx, Hepatobiliary Bones and muscles of limbs Circulatory System, Heart, Pulmonary Circulation, Systemic Circulation, Aorta. Respiratory System, Nose, Pharynx, Trachea, Bronchus, Lungs. Urinary System, Kidneys, Ureters, Urinary Bladder, Urethra.Orbit, Occipital Bone, Parietal Bone, Temporal Bone, Frontal Bone Frontal Bone, Sphenoid Bone, Ethmoid Bone,Vertebral Column,		35 marks
	90 hours	Slice Anatomy-Brain, Neck Thorax, Abdomen, Pituitary, Orbit, P.N.S., Limbs, Vertebra in C.T. Scan. Axial, Coronal & Saggital. Anatomy of Body---Radiological Anatomy.		20 marks
	30 hours	Non Ionic & Ionic Contrast NEGATIVE & POSITIVE CONTRAST Contrast Reaction and its Management. ROUTES OF CONTRAST		10 marks
	30 hours	Radiation Hazards and protection		10 marks
		Internal Assessment.		25 marks

SECOND YEAR (2ND PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
II	**300 hours**		**3 hrs**	**100 marks**
	75 hours	**Patient Preparation & Positioning** of C.T Brain, C.T. Neck, C.T.P.N.S., C.T. Thorax, C.T. Abdomen, C.T. Scan of Spine, C.T. limbs, C.T. Orbit, HRCT.		15 marks
	75 Hours	**Pathologies-**Cranio Cerebral & body **Trauma**, Epidural/Subdural, Haematoma, Subarachnoid Haemorrage, Intracerebral Haematoma, Hydrocephalus, **Stroke,** Cerebral Infarction. Brain & body **Tumours.** Pneumonia, Pneumothorax, Pleural Effusion, **Tuberculosis,**. Hepatocellular carcinoma, Renal Cyst, Renal cell carcinoma, Polycystic Disease. Abdominal & Pelvic masses (inflammatory and malignant) Angio of Brain, Abdomen, NCC /TUBERCULOMA /RING LESIONS OF BRAIN VASCULAR LESIONS		20 marks
	30 Hours	C.T. Myelogram**,** CT Guided FNAC & Other Special C.T. Procedures. C.T Enteroclysis, CT IVP		10 marks
	30 Hours	**PET C.T / Recent Advances/perfusion CT/ MDCT**		10 marks
II	90 Hours	**Physics** Basic Principles of C.T Scan, Discovery of C.T Scan, Scanner Geometry:-1st Generation, IInd Generation, III Generation, Vth Generation, Collimators, Artifacts, C.T Number, Attenuation values, Image Reconstruction Algorithm. System Components of Helical or spiral C.T. Scan, Gray Scale, MIP, MPR, VRT, Angiography. MDCT Cardiac C.T /64/128 Slice C.T Pitch / 3DCT Reconstruction / SSD/ PET CT		20 marks
		Internal Assessment.		25 marks

PRACTICAL				
	600 hours		**3 hours**	**100 marks**
		PERFORMING Head C.T		25 marks
		Peadiatric C.T/ 3D CT/ANGIO		25 marks
		Case of Trauma/HRCT		25 marks
		Performing contrast body C.T		25 marks

COURSE CONTENT OF Diploma in C.T. Scan Technician

(First year)

Paper-1st

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
I	**ANATOMY**	**300**	225
	Introduction to Anatomy	07	
	Introduction to Physiology	03	
	Human body	07	
	Anatomical Posture	02	
	Descriptive Terms in Anatomy	05	
	Planes of body	03	
	Cells, Tissues, System, Membranes	03	
	Glands- incl endocrine, salivary	10	
	Body fluids –csf, lymph, blood etc	05	
	Myology – muscles of face,thorax,abdomen, limbs	10	
	Bones and muscles of body-	20	
	Lymphatic system	05	
	Skeletal system with Function of Skeleton	05	
	Classification of bones	02	
	Descriptive terms used in osteology	02	**225**
	Joints of Skeleton	05	
	Bones of Appendicular Skeleton/ limbs	05	
	Vertebrae	04	
	Sacrum and coccyx	03	
	Pelvic bones and muscles	05	
	Sternum and ribs	02	
	Bones of orbit	04	
	Temporal bone	05	
	Bones of skull	04	
	sutures of skull	02	
	Paranasal sinuses & face	09	
	Abdominal regions	03	
	Solid and visceral organs of abdomen	20	
	Hepatobiliary system	10	

	Excretory organs	03	
	Digestive system	03	
	Mesentery and bowel	10	
	The urinary system-KUB	15	
	Mediastinum	04	
	Heart and aorta	05	
	Neck and larynx	10	
	Respiratory System incl pleura, brochioles lung lobes & segment	20	
	Reproductive System	10	
	Nervous System with focus on brain, cord Meninges, ventricles, gray/white matter	30	
	Organs of special senses—tongue, nose, eye, ear	20	
2	**RADIOLOGICAL ANATOMY**	**100**	
	CT slices—axial coronal and sagittal sections of BRAIN and SPINE	20	**75**
	CT slices—axial coronal and sagittal sections Of ORBIT	05	
	CT slices—axial coronal and sagittal sections Of PNS	05	
	CT slices—axial coronal and sagittal sections Of NECK	10	
	CT slices—axial coronal and sagittal sections Of THORAX	10	
	CT slices—axial coronal and sagittal sections Of ABDOMEN	10	
	CT slices—axial coronal and sagittal sections Of PELVIS	10	
	CT slices—axial coronal and sagittal sections Of LIMBS	10	
	CT slices—axial coronal and sagittal sections Of HEPATOBILIARY SYSTEM	10	
	CT slices—axial coronal and sagittal sections Of KUB	10	

COURSE CONTENT OF Diploma in C.T. Scan Technician

(First year)

Paper- 2nd

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
I	**PHYSICS**	**160**	120
	INTRODUCTION TO Physics	5	
	Radiologic Physics	5	
	Electromagnetic radiation	10	
	Neil's Bohr Atomic model	2	
	Atomic number	2	
	Mass number	2	
	Isotopes	2	
	Valency	2	
	Ionization	2	
	X-Ray Physics	5	
	Discovery of X-Ray	3	
	Roentgenology	5	120
	Fluroscopy	3	
	Nature of X-Ray	3	
	Wave length and Frequency	3	
	Sources of X-Ray	3	
	X-Ray Tube & x ray control pane X ray circuit	20	
	Necessary Conditions for the production of X-Ray	3	
	Efficiency of X-Ray Production properties of X-Ray	05 10	
	Quality and Quantity of X-Ray	5	
	Basics of CT PHYSICS	30	
	Basics of multislice C.T. physics	20	
2	**RADIATION**	**100**	
	Radiation Dose	25	
	Radiation Hazards	25	
	Radiation Protection	30	
	Dark Room	20	**75**

3	**RADIOGRAPHY**	**100**	
	Concepts of Radiographic Positioning	25	
	Scaphoid & hand	02	
	Elbow & shoulder joint.	02	
	Foot AP & oblique	02	
	Knee joint AP	02	
	Pelvis AP	02	
	ChestAP, PA & Lat	10	**75**
	Sub Mento vertical & PNS	05	
	Skull and townes	10	
	Abdomen Erect	05	
	BARIUM Studies	15	
	IVP	05	
	MCU/RGU/ T tube cholangiogram/ HSG	10	
	Sinogram	05	
4	**FILMING**	**40**	
	Contrast-Media	10	
	Radiographic Contrast	03	
	Density, Detail,	02	
	Types of film, Cassette	05	
	Intensifying Screen	03	
	Safe Light	02	
	Developer and Fixer	05	**30**
	Manual Processing	03	
	Causes of film fog	02	
	Factors of X-Ray	05	

PRACTICAL

S.NO.	PRACTICAL	NO. OF HOURS 600 HRS
	Patient prerequisites	50
	Patient positioning	100
	Patient consent	25
	CT filming	50
	Dark Room	25
	Indication & contraindication of CT	75
	Contrast reaction management with IV fluid, O2, steroids etc	75
	Performing head CT scan	200

COURSE CONTENT Of Diploma in C.T. Scan Technician

(Second year)

Paper-1st

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
I	**ANATOMY**	**200**	150
	Introduction to Nervous System (C.N.S., P.N.S., A.N.S.)	05	
	Brain	10	
	Cerebrum	05	
	Basal Ganglia	03	
	Thalamus	02	
	Hypothalamus	02	
	Ventricles	03	
	Cerebro Spinal Fluid and pathway	02	
	Brain Stem	03	
	Cerebellum	02	
	Spinal Cord	10	
	Digestive System & GIT	05	
	Visceral & solid organs of abdomen	10	
	Nasopharynx, oropharynx & pharyngeal spaces	05	
	Mesentery & peritoneum	03	
	Oesophagus	02	
	Stomach	03	
	Small Intestine	02	
	Large Intestine	02	**150**
	Salivary Glands	03	
	Diaphragm	02	
	Hepatobiliary	10	
	Bones and muscles of limbs	08	
	Introduction to Circulatory System	05	
	Heart	05	

	Pulmonary Circulation	02	
	Systemic Circulation	03	
	Aorta ,IVC with branches	02	
	Review of Respiratory System	02	
	Nose	03	
	Pharynx	02	
	Trachea	02	
	Bronchus & bronchioles	02	
	Lungs	03	
	Details of Genito Urinary System	03	
	Kidneys	05	
	Ureters	02	
	Urinary Bladder	03	
	Urethra	03	
	Orbit	05	
	FACE & PNS	05	
	ENT	05	
	Temporal Bone	03	
	Neck and larynx	05	
	Major nodes of body with classification	03	
	Basic course of major nerves, arteries,veins And lymphatic channels	20	
2	**RADIOLOGICAL ANATOMY**	**120**	
	CT slices—axial coronal and sagittal sections of BRAIN & SPINE	40	
	CT slices—axial coronal and sagittal sections Of ORBIT	05	
	CT slices—axial coronal and sagittal sections Of PNS	05	
	CT slices—axial coronal and sagittal sections Of NECK	10	
	CT slices—axial coronal and sagittal sections Of THORAX	10	
	CT slices—axial coronal and sagittal sections Of ABDOMEN	20	**90**

	CT slices—axial coronal and sagittal sections Of PELVIS	05	
	CT slices—axial coronal and sagittal sections Of LIMBS	10	
	CT slices—axial coronal and sagittal sections Of HEPATOBILIARY SYSTEM	10	
	CT slices—axial coronal and sagittal sections Of KUB	05	
3	**CONTRAST MEDIA**	**40**	
	Ionic and non ionic contrast	10	**30**
	Negative and positive contrast	10	
	Routes of contrast (IV, oral, rectal, vaginal)	10	
	Contrast reaction and its management	10	
4	**RADIATION**	40	
	Radiation Dose	05	
	Radiation Hazards	15	**30**
	Radiation Protection	15	
	Dark Room	05	

COURSE CONTENT Of Diploma in C.T. Scan Technician

(Second year)

Paper-2nd

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
I	**PATIENT PREPARATION AND POSITIONING**	**100**	
	C.T Brain	15	75
	C.T. Neck	05	
	C.T. P.N.S	05	
	C.T. Thorax	05	
	C.T. Abdomen	10	
	C.T. Scan of Spine.	03	
	C.T. limbs	05	
	C.T. Orbit	02	
	HRCT-----Temporal bone/ lungs 3D RECON WITH MPR ANGIOGRAPHY CARDIAC& MULTISLICE CT	10 10 10 20	
2.	**PATHOLOGIES**	**100**	**75**
	Cranio Cerebral & body **Trauma**	15	
	Epidural / Subdural Haematoma	02	
	Subarachnoid Haemorrhage	03	
	Congenital brain lesions	05	
	Hydrocephalus	03	
	Stroke, Cerebral Infarction.	02	
	OVERVIEW OF Brain **Tumours**	05	
	COMMON Body **Tumours----BENIGN & MALIGNANT**	10	
	Pneumonia/pneumothorax/ pleural effusion	05	
	ASCITIS/ peritoneal collection	02	
	Liver abscess/ parietal abscess	03	
	Tuberculosis—lung / bone /genito urinary/	10	

	Brain/ pleura /GIT		
	Carcinomas----------Hepatocellular carcinoma/,renal cell / bronhogenic, Gall bladder/ pancreatic head/ ub mass	10	
	Renal Cyst , Polycystic Disease.	05	
	Ring lesions in brain	05	
	COMMON Abdominal & Pelvic masses (inflammatory and malignant)	10	
	COMMON Vascular lesions	05	
3	**CT PROCEDURES**	**40**	
	C.T. Myelogram /cisternogram	05	**30**
	CT Guided FNAC / biopsy	10	
	Other Special C.T. Procedures & common interventions.	10	
	C.T Enteroclysis/ CT IVP/ dual phase CT	10	
	CT ANGIOGRAPHY----mainly brain	05	
4	**RECENT ADVANCES**	**40**	**30**
	PET CT	10	
	PERFUSION CT	05	
	MULTISLICE CT/ MDCT	15	
	CARDIAC CT	10	
5	**CT PHYSICS**	**120**	**90**
	Basic Principles of C.T Scan, Discovery of C.T Scan	30	
	Scanner Geometry:-1st Generation, IInd Generation, III Generation, Vth Generation	15	
	Collimators, Artifacts, C.T Number, Attenuation values, (H. U) Image Reconstruction Algorithm.	15	
	System Components of Helical or spiral C.T. Scan, Gray Scale, MIP, MPR, VRT, Angiography.	20	
	Cardiac C.T /64/128 Slice C.T/ MDCT	20	
	Pitch / 3DCT Reconstruction / SSD/ PET CT	20	

PRACTICAL

S.NO.	PRACTICAL	NO. OF HOURS 600 HRS
	Performing head CT scan	200
	Performing Pediatric CT scan	25
	MANAGING A Case of trauma	25
	Performing contrast body CT scan	200
	Performing 3D reconstruction/MPR	50
	Performing head CT angiography scan	25
	Contrast reaction management with IV fluid, O2, steroids etc	25
	HRCT doing with proper algorithm	50

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN M.R.I. TECHNICIAN

DURATION: 02 YEARS

SYLLABUS:

FIRST YEAR

TOPICS

1. Anatomy
2. Radiological Anatomy
3. Physics of MRI
4. Indication and Contraindication of MRI
5. Radiation Hazards, Radiation Protection
6. Contrast-Media

SECOND YEAR

1. Anatomy
2. Radiological Anatomy
3. Indication and Contraindication of MRI
4. Pathologies as seen on MRI
5. MRI Physics
6. Non Ionic & Ionic Contrast
7. Contrast Reaction and its Management.
8. MRI Patient Positioning & Preparation
9. MRI Procedures
10. Radiation Hazards, Radiation Protection, Contrast-Media
11. 3T MRI, MR angio, MRCP
12. Recent Advances.

Diploma in M.R.I. Technician

FIRST YEAR (FIRST PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
I	**300 hours**		**3 hrs.**	**100 marks**
		Anatomy		
	225 hours	Introduction to Anatomy, Physiology, Human body, Anatomical Posture, Descriptive Terms in Anatomy, Planes of body, Cells, Tissues, System, Membranes, Glands, Body fluid. Cartilages, Bones muscles, Skeletal System, Function of Skeleton, Classification of bones, Descriptive terms used in osteology, Joints of Skeleton / myology/orbit/pns/face/ neck Bones of Appendicular Skeleton. Bone of limb. Vertebra, Sacrum, Coccyx. Sternum, Ribs.Bones of skull, sutures of skull, Paranasal sinuses, Facial bones. Abdominal Regions, Solid organs of abdomen/ Excretory organs, G.I.T. The urinary system, Mediastinum, Heart, Aorta. Respiratory System. Reproductive System. Nervous System . hepatobiliary/ lymphatic /vascular system		50 marks
	75 hrs.	**Radiological Anatomy** MRI slices—axial coronal and sagittal sections of human body		25 marks
		Internal assessment		25 marks

Diploma in M.R.I. Technician

FIRST YEAR (2nd PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
II	**300 hours**		**3 hrs**	**100 marks**
	30 hrs	Basic Concepts- What is matter, anatomic structure, isotopes, ions specific gravity, temperature scales, electro, magnetic radiation. Electricity & Magnetism- What is electrostatics, inverse square law, types of bonds, electrical field and electrical potential, electrificion possible, conductors and insulators, electrostatics, static discharge. HISTORY AND DISCOVERY OF MRI/ NMR		10 marks
	195 hrs	PHYSICS OF MRI- • General overview • The concept of longitudinal magnetization • Larmour equation • The concept of transverse magnetization • Radio frequency pulses • The concept of t1 and t2 weighted images • Contrast enhanced MRI • MR Sequences • Fast imaging sequencesGradient fields and gradient coils • Summary of MR processMajor components of an MRI • Magnets HELIUM SUPERCONDUCTION 1.5TESLA/3TESLA/8TESLA Self test		40 marks
	75 hrs	Indications and Contraindication of MRI (Do's & Don't of MRI)		25 marks
		Internal assessment		25 marks

PRACTICAL

	Duration of Study	Topics	Duration of Paper	Marks
II	**600 hours**		**3 hrs**	**100 marks**
		Patient Prerequisites, Patient Postitioning, Patient Consent M.R.I Filming, Dark Room		25 marks
		Indication & Contraindication of MRI Contrast reaction management with IV Fluid: 02 /steroids etc.		25 marks
		Performing head and spine MRI		25 marks
		ASSIST in performing body and Musculoskeletal scans		25 marks

Diploma in M.R.I. Technician

SECOND YEAR (1ST PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
I	**300 hours**		**3 hrs**	**100 marks**
		ANATOMY		
	150 hrs	Nervous System (C.N.S., P.N.S., A.N.S.) Brain, Cerebrum, Basal Ganglia, Thalamus. Hypothalamus, Ventricles, CerebroSpinal Fluid and pathway, Brain Stem, Cerebellum, Spinal Cord. GIT Digestive System, Alimentary Tract, , Pharynx, Mesentery Oesophagus. Stomach, Small Intestine, Large Intestine, Salivary Glands FACE/ORBIT/PNS COURSE OF MAJOR VESSELS AND LYMPHATICS MAJOR NODES Neck and Larynx, Hepatobiliary Bones and muscles of limbs Circulatory System, Heart, Pulmonary Circulation, Systemic Circulation, Aorta. Respiratory System, Nose, Pharynx, Trachea, Bronchus, Lungs. Urinary System, Kidneys, Ureters, Urinary Bladder, Urethra.Orbit, Occipital Bone, Parietal Bone, Temporal Bone, Frontal Bone Frontal Bone, Sphenoid Bone, Ethmoid Bone,Vertebral Column,		35 marks
	90 hours	Slice Anatomy-Brain, Neck Thorax, Abdomen, Pituitary, Orbit, P.N.S., Limbs, Vertebra in C.T. Scan. Axial, Coronal & Saggital. Anatomy of Body---Radiological Anatomy.		20 marks
	30 hours	MRI safety, Do's and don't's of MRI Indication and contraindication of MRI Non Ionic & Ionic Contrast NEGATIVE & POSITIVE CONTRAST Contrast Reaction and its Management**.** ROUTES OF CONTRAST		10 marks
	30 hours	Radiation Hazards and protection		10 marks
		Internal Assessment.		25 marks

Diploma in M.R.I. Technician

SECOND YEAR (2nd PAPER)

Paper	Duration of Study	Topics	Duration of Paper	Marks
II	**300 hours**		**3 hrs**	**100 marks**
	120 hrs	BASICS AND PHYSICS Magnetisation Properties, Types of Magnetic characteristics of the Nucleus, Nuclear Magnetic properties of the elements, Larmor Equation, Geometric Orientation. Resonance and excitation, Free induction decay: T2 Relaxation, Return of Equilibrium : T1 Relaxation, Comparison of T1 and T2. Angiography and magnetization transfer contrast, Time of flight (TOF) CONCEPTS Spin echo, Fast spin echo, Parts of MRI, Artifacts, Machine dependent artifacts, Motion artifacts, Motion artifacts, Chemical shift artifacts, Magnet, Resistive magnet, Superconductive magnet, Permanent Magnet, Safety and Bio-effects. Pulse sequences, Time of repetition and partial saturation- (i) T1 Weighting (ii) Spin (proton density) weighting (iii) T2 weighting (iv) Inversion recovery (v) Short tau inversion recovery (STIR) (vi) Fluid attenuated Inversion recovery (FLAIR). Gradient recall echo (GRE), Perfusion weighted MRI, Diffusion weighted MRI, Magnetization transfer contrast. MRS, Tractography, DTI		30 marks
	60 hrs	Patient preparation and positioning		15 marks
	75 hrs	Pathologies as seen on MRI		15 marks
	45 hrs	Recent Advances – 3T MRI, MR angio, MRCP, MRS, Tractography, DTI		15 marks
		Internal assessment		25 marks

PRACTICAL

	Duration of Study	Topics	Duration of Paper	Marks
	600 hours		**3 hrs**	**100 marks**
		Pediatric MRI		10 marks
		Performing Contrast Head and spine MR		25 marks
		MRCP, MR angiography.		5 marks
		Performing body MR		25 marks
		Performing musculoskeletal MR		25 marks
		Assisting MRS		10 marks

COURSE CONTENT OF Diploma in M.R.I. Technician

(First year)

Paper-1st

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
I	**ANATOMY**	**300**	
	Introduction to Anatomy	07	
	Introduction to Physiology	03	
	Human body	07	
	Anatomical Posture	02	
	Descriptive Terms in Anatomy	05	
	Planes of body	03	
	Cells, Tissues, System, Membranes	03	
	Glands- incl endocrine, salivary	10	
	Body fluids –csf, lymph, blood etc	05	
	Myology – muscles of face,thorax,abdomen, limbs	10	
	Bones and muscles of body-	20	
	Lymphatic system	05	
	Skeletal system with Function of Skeleton	05	
	Classification of bones	02	**225**
	Descriptive terms used in osteology	02	
	Joints of Skeleton	05	
	Bones of Appendicular Skeleton/ limbs	05	
	Vertebrae	04	
	Sacrum and coccyx	03	
	Pelvic bones and muscles	05	
	Sternum and ribs	02	
	Bones of orbit	04	
	Temporal bone	05	
	Bones of skull	04	
	sutures of skull	02	
	Paranasal sinuses & face	09	
	Abdominal regions	03	
	Solid and visceral organs of abdomen	20	

	Hepatobiliary system	10	
	Excretory organs	03	
	Digestive system	03	
	Mesentery and bowel	10	
	The urinary system-KUB	15	
	Mediastinum	04	
	Heart and aorta	05	
	Neck and larynx	10	
	Respiratory System incl pleura, brochioles lung lobes & segment	20	
	Reproductive System	10	
	Nervous System with focus on brain, cord Meninges,ventricles,gray/white matter	30	
	Organs of special senses—tongue, nose, eye, ear	20	
2	**RADIOLOGICAL ANATOMY**	**100**	
	MRI slices—axial coronal and sagittal sections of BRAIN	20	**75**
	MRI slices—axial coronal and sagittal sections Of ORBIT	05	
	MRI slices—axial coronal and sagittal sections Of PNS	05	
	MRI slices—axial coronal and sagittal sections Of NECK	10	
	MRI slices—axial coronal and sagittal sections Of THORAX	10	
	MRI slices—axial coronal and sagittal sections Of ABDOMEN	10	
	MRI slices—axial coronal and sagittal sections Of PELVIS	10	
	MRI slices—axial coronal and sagittal sections Of LIMBS	10	
	MRI slices—axial coronal and sagittal sections Of HEPATOBILIARY SYSTEM	10	
	MRI slices—axial coronal and sagittal sections Of KUB	10	

COURSE CONTENT OF Diploma in M.R.I. Technician

(First year)

Paper - 2nd

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
1	**BASIC CONCEPTS, ELECTRICITY AND MAGNETISM**	**40**	
A	**BASIC CONCEPTS**		**30**
	What is matter.	02	
	anatomic structure	**02**	
	Isotopes, ions	**02**	
	specific gravity, temperature scales	**02**	
	heat, electro magnetic radiation.	**02**	
B	**ELECTRICITY AND MAGNETISM**		
	What is electrostatics, inverse square law, types of bonds,	**08**	
	electrical field and electrical potential, electrificion possible,	**02**	
	conductors and insulators	**02**	
	electrostatics, electroscop, static discharge	**02**	
	Basic principles of MRI	**08**	
	DISCOVERY OF NMR/MRI	**08**	
2	**PHYSICS OF MRI**	**260**	
	General overview of MR PHYSICS	20	
	The concept of longitudinal magnetization	05	
	Larmour equation	10	
	The concept of transverse magnetization	05	
	Radio frequency pulses	10	
	The concept of t1 and t2 weighted images	20	
	Contrast enhanced MRI & GADOLINIUM	20	

	MR Sequences	35	
	Fast imaging sequences	10	
	Gradient fields and gradient coils	10	
	Summary of MR process	10	
	Major components of an MRI	20	
	Magnets	10	**195**
	self test	05	
	HELIUM / SUPERCONDUCTION & 1.5TESLA,3TESLA 8TESLA MRI	20	
	SPIN ECHO	10	
	FAST SPIN ECHO	10	
	INVERSION RECOVERY	10	
	INSTALLATION OF MR MACHINE----DO' & DONT'S	20	
3.	**Indications and Contraindication of MRI (Do's & Don't of MRI)----MRI SAFETY**	100	75 hrs

PRACTICAL

S.NO.	PRACTICAL	NO. OF HOURS
		600 HRS
	Patient prerequisites	20
	Patient positioning	100
	Patient consent	20
	MRI filming	50
	Dark Room	10
	Indication & contraindication of MRI	50
	Contrast reaction management with IV fluid, O2, steroids etc	50
	Performing head MRI scan	200
	ASSIST IN PERFORMING BODY AND MUSCULOSKELETAL SCANS	100

COURSE CONTENT Of Diploma in M.R.I. Technician

(Second year)

Paper - 1st

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
I	**ANATOMY**	**200**	
	Introduction to Nervous System (C.N.S., P.N.S., A.N.S.)	05	**150**
	Brain	10	
	Cerebrum	05	
	Basal Ganglia	03	
	Thalamus	02	
	Hypothalamus	02	
	Ventricles	03	
	Cerebro Spinal Fluid and pathway	02	
	Brain Stem	03	
	Cerebellum	02	
	Spinal Cord	10	
	Digestive System & GIT	05	
	Visceral & solid organs of abdomen	10	
	Nasopharynx, oropharynx & pharyngeal spaces	05	
	Mesentery & peritoneum	03	
	Oesophagus	02	
	Stomach	03	
	Small Intestine	02	
	Large Intestine	02	
	Salivary Glands	03	
	diaphragm	02	
	Hepatobiliary	10	
	Bones and muscles of limbs	08	
	Introduction to Circulatory System	05	
	Heart	05	
	Pulmonary Circulation	02	
	Systemic Circulation	03	
	Aorta ,IVC with branches	02	
	Review of Respiratory System	02	
	Nose	03	
	Pharynx	02	
	Trachea	02	
	Bronchus & bronchioles	02	
	Lungs	03	
	Details of Genito Urinary System	03	
	Kidneys	05	
	Ureters	02	

	Urinary Bladder	03	
	Urethra	03	
	Orbit	05	
	FACE & PNS	05	
	ENT	05	
	Temporal Bone	03	
	Neck and larynx	05	
	Major nodes of body with classification	03	
	Basic course of major nerves, arteries,veins And lymphatic channels	20	
2	**RADIOLOGICAL ANATOMY**	**120**	
	MRI slices—axial coronal and sagittal sections of BRAIN & SPINE	40	
	MRI slices—axial coronal and sagittal sections Of ORBIT	05	
	MRI slices—axial coronal and sagittal sections Of PNS	05	**90**
	MRI slices—axial coronal and sagittal sections Of NECK	10	
	MRI slices—axial coronal and sagittal sections Of THORAX	10	
	MRI slices—axial coronal and sagittal sections Of ABDOMEN	20	
	MRI slices—axial coronal and sagittal sections Of PELVIS	05	
	MRI slices—axial coronal and sagittal sections Of LIMBS	10	
	MRI slices—axial coronal and sagittal sections Of HEPATOBILIARY SYSTEM	10	
	MRI slices—axial coronal and sagittal sections Of KUB	05	
3	**MRI SAFETY**	**40**	
	Do's & Don't of MRI	10	**30**
	Indications and Contraindication of MRI	10	
	Ionic and non ionic contrast	05	
	Negative and positive contrast	05	
	Routes of contrast (IV, oral, rectal, vaginal)	05	
	Contrast reaction and its management	05	
4	**RADIATION**	**40**	
	Radiation Hazards	20	
	Radiation Protection	20	**30**

COURSE CONTENT Of Diploma in M.R.I. Technician

(Second year)

Paper - 2nd

S.NO.	COURSE CONTENT	NO. OF PERIODS (45 MINS EACH)	NO. OF HOURS
1	**BASICS, PHYSICS AND CONCEPTS OF MR**	**160**	**120**
A	**BASICS AND PHYSICS**		
	Magnetisation Properties	**05**	
	Types of Magnetic characteristics of the Nucleus	**05**	
	Nuclear Magnetic properties of the elements	**05**	
	Larmor Equation, Geometric Orientation	**10**	
	Resonance and excitation	**05**	
	Free induction decay: T2 Relaxation	**05**	
	Return of Equilibrium : T1 Relaxation	**05**	
	Comparison of T1 and T2.	**05**	
	Angiography and magnetization transfer contrast	**05**	
	Time of flight (TOF)	**05**	
B	**CONCEPTS:**		
	SPIN ECHO.	**05**	
	FAST SPIN ECHO	**05**	
	PARTS OF MRI MACHINE	**05**	
	Artifacts, Machine dependent artifacts, Motion artifacts, Motion artifacts, Chemical shift artifacts,	**10**	
	Magnet, Resistive magnet, Superconductive magnet, Permanent Magnet	**10**	
	Safety and Bio-effects. Pulse sequences	**15**	
	Time of repetition and partial saturation- (i) T1 Weighting (ii) Spin (proton density) weighting (iii) T2 weighting (iv) Inversion recovery (v) Short tau inversion recovery (STIR) (vi) Fluid attenuated Inversion recovery (FLAIR)	**20**	

	Gradient recall echo (GRE)	**05**	
	Perfusion weighted MRI	**05**	
	Diffusion weighted MRI	**05**	
	MR SPECTROSCOPY	**10**	
	MR TRACTOGRAPHY / DIFFUSION TENSOR IMAGING	**10**	
2	**PATIENT PREPARATION AND POSITIONING**	**80**	
	MRI Brain	15	
	MRI Neck	02	
	MRI P.N.S	02	
	MRI Thorax	03	
	MRI Abdomen & MRCP	10	
	MRI of Spine.	10	
	MRI limbs	15	60
	MRI Orbit	03	
	MRI JOINTS & MUSCULOSKELETAL	20	
3.	**PATHOLOGIES**	**100**	
	Cranio Cerebral & body including musculoskeletal Trauma	10	
	Epidural / Subdural Haematoma	02	
	Subarachnoid Haemorrhage	03	
	Congenital brain lesions	05	
	Hydrocephalus	03	
	Stroke, Cerebral Infarction.	02	
	OVERVIEW OF Brain Tumours	05	
	COMMON Body Tumours----BENIGN & MALIGNANT	10	
	Pneumonia/pneumothorax/ pleural effusion	05	**75**
	Spine- disc herniations, congenital lesions and spinal tumors	10	
	Tuberculosis—lung / bone /genito urinary/ Brain/ pleura /GIT	10	
	Carcinomas----------Hepatocellular carcinoma/,renal cell / bronhogenic, Gall bladder/ pancreatic head/ ub mass	5	
	Bone, Musculoskeletal tumors and avascular necrosis	10	
	Ring lesions in brain	05	
	COMMON Abdominal & Pelvic masses (inflammatory and malignant)	10	
	COMMON Vascular lesions	05	
4	**RECENT ADVANCES**	**60**	
	1.5 TESLA/ 3TESLA / 8 TESLA MRI	20	
	MR ANGIO / M R C P /DIFFUSION/PERFUSION	20	**45**
	MR SPECTROSCOPY	15	
	MR TRACTOGRAPHY	05	

PRACTICAL

S.NO.	PRACTICAL	NO. OF HOURS
		600 HRS
	Pediatric MRI	20
	Performing Contrast HEAD MRI	150
	Performing Contrast SPINE MRI	150
	MRCP	20
	MR angiography	10
	Performing contrast body MRI	100
	Performing musculoskeletal MRI	100
	Assisting MR spectroscopy	50

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN BLOOD TRANSFUSION TECHNICIAN

DURATION: 02 YEARS

SYLLABUS:

FIRST YEAR

TOPICS

1. Anatomy & Physiology
2. Microbiology, Elementary Pathology
3. Hygiene, Nutrition, Nutritional Disease
4. Biomedical Waste Mgt
5. First Aid
6. Disaster Mgt
7. Elementary Nsg
8. General Pharmacology
9. Human relations
10. Community Health Nsg& Communicable diseases:
11. Hygiene chemicals and its use
12. Equipment management

SECOND YEAR

TOPICS

1. Blood Transfusion/ Resuscitation
2. Gen laboratory Method / Eqpt
3. Microbiology & Serology
   - -Virology
   - -Bacteriology
4. Haematology
   - -Elementary haematology
   - -Clinical pathology

FIRST YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	105	Anatomy & Physiology	03 HRS	30	**100**
	15	Microbiology, Elementary Pathology		15	
	41.25	Hygiene, Hygiene chemicals and its usesNutrition ,Nutritional Disease		10	
	8.25	Biomedical Waste Mgt		5	
	120	First Aid		10	
	7.5	Disaster Mgt		5	
		INTERNAL ASSESMENT		**25**	
PAPER II	206.25	Elementary Nsg,	03 HRS	40	**100**
	37.5	General Pharmacology		10	
	11.25	Human relations		5	
	37.5	Community Health Nsg&Communicable diseases:		10	
	7.5	Equipment management		10	
		INTERNAL ASSESMENT		**25**	
Practical	600	Fundamental Nsg - Bed making & Tray setting	03 HRS	40	**100**
		Medical Equipment		10	
		First Aid - Bandaging, Casualty Carriage Thomas splint		25	
		Ward Marks		**25**	
SECOND YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	225	Blood Transfusion/ Resuscitation	03 HRS	55	100
	75	Gen laboratory Method / Eqpt		20	
		INTERNAL ASSESMENT		**25**	
PAPER II	187.5	Microbiology & Serology -Virology -Bacteriology	03 HRS	25	100
	112.5	Haematology -Elementary haematology -Clinical pathology		50	
		INTERNAL ASSESMENT		**25**	
Practical	600	Clinical Haematology & ward Work	03 HRS	75	100
		INTERNAL ASSESMENT		**25**	

S NO	COURSE CONTENT OF FIRST YEAR	NO OF PERIODS (45 MINS EACH)	NO OF HOURS
	FIRST YEAR PAPER I		
1	**HISTORY OF NURSING** :	04	03 Hrs
(i)	Pre-Nightingale reforms. St. Vincent De Paul and Mile Le Gras, John Howard, Elizabeth Fry, the work of the Fleidners at Kaisersworth.	01	
(ii)	Florence Nightingale – Her life, her work in the Crimean war, the founding of Nursing School at St. Thomas Hospital. Her interest in India, in Military hospital and sanitation.	01	
(iii)	Contemporary developments – Discoveries of Pasteur, Lister and Koch. The relationship of nursing to hospital reform.	01	
(iv)	Nursing in India in modern days, the introduction and growth of Nursing in India, developments of schools, examination and registration, a brief review of organization in India to-day.	01	
2	**ANATOMY**	80	60 Hrs
(i)	Introduction -Tissues of the body	02	
(ii)	Skeletal System -The skull, the thorax, the vertebral column, the pelvic girdle, the upper limb, the lower limb	08	
(iii)	Arthrology - Types characteristics, varieties and movements. - Special joints -Sternoclavicular, acromioclavicular, shoulder, elbow, radioulnar, wrist, hip, knee, tibiofibular, ankle and joints of thehand and foot.	08	
(iv)	Myology - Muscles of head and face, chest, abdomen, back, upper and lower extremities. - Anatomical spaces.	08	
(v)	Circulatory System - Heart and blood vessels	10	
(vi)	Lymphatic system	03	
(vii)	Alimentary system -Alimentary canal and accessory organs.	05	

(viii)	Respiratory system - Respiratory passage, lungs and pleura.	05	
(ix)	Endocrine glands	05	
(x)	Urinary system - Kidney, Ureter and Urinary bladder.	05	
(xi)	Nervous system - Meninges, brain, spinal cord, nerves and their plexuses.	08	
(xii)	Organs of special senses - Tongue, nose, eye, ear and skin.	08	
(xiii)	Reproductive system - Male and female.	05	
3.	**PHYSIOLOGY**	60	
(i)	Circulatory system - Blood - Cardiac cycle and circulation of the blood - Blood pressure and pulse	10	
(ii)	Digestive system - Food - Digestion of food	04	
(iii)	Physiology of respiration	06	45 Hrs
(iv)	Metabolism	06	
(v)	Function of endocrine glands	10	
(vi)	Renal function	08	
(vii)	Nervous system and cerebrospinal fluid.	08	
(viii)	Taste, sight, smell and hearing.	08	
4	**ELEMENTARY PATHOLOGY AND MICROBIOLOGY**	20	
(i)	Characteristics of bacteria, virus , fungus	02	
(ii)	Sources of infection.	02	
(iii)	Mode of spread.	02	15 Hrs
(iv)	Destruction of bacteria.	02	
(v)	Control of infection.	01	
(vi)	Inflammation, healing and repair.	01	

(vii)	Infection, wounds, ulcers, blisters, boils, fractures, burns, scalds, gangrene and haemorrhage.	05	
(viii)	Urine - Characteristics of normal urine, variations in diseases, collection of samples and routine tests.	02	
(ix)	Faeces - Characteristics of normal faeces, variation in diseases, collection of samples and routine tests.	02	
(x)	Sputum and vomit - Characteristics in different diseases, collection of samples.	01	
5.	**HYGIENE, SANITATION AND USES OF HYGIENE CHEMICALS–**	30	22.5 Hrs
(i)	Definition and historical background.	01	
(ii)	Personal hygiene -Sleep, washing, eating and drinking, exercises, skin disease and their prevention.	02	
(iii)	Water Sources - Rain, surface, underground. Purification - Reasons, principles and methods. Sterilization - Physical and chemical methods, individual water sterilizing outfit and its use. Storage - Water bottle, chagul, pakhal, canvas and iron cisterns, water truck. Water point.Water borne disease.	12	
(iv)	Water supply	05	
(v)	Spray techniques	05	
(vi)	Various hygeine chemical, their dosage & usage	05	
6.	**NUTRITION AND DIETETICS**	25	18.75 Hrs
(i)	Food and nutrition - Composition of food. - Common articles of diet.	02	
(ii)	Principles of Nutrition and dietetics.	02	
(iii)	Food requirements.	03	
(iv)	Cookery - Reasons for cooking and dietetics. - Effects of different methods on cooking. - Storage of food in ward.	05	

(v)	Preparation of tray and serving of food-Basic Knowledge	02	
(vi)	Preparation of - Tea, coffee, cocoa, imperial drink, barley water, lemon squash, fruit juices. - Lockey, junket curds, buttermilk, jelly ice cream.Eggs flip, albumin water.	03	
(vii)	Calories, BMR and caloric requirements.	02	
(viii)	Common articles of diet.	01	
(ix)	Special diets.	02	
(x)	Sick room recipes.	01	
(xi)	Nutritional diseases	02	
7.	**BIO MEDICAL WASTE MANAGEMENT**	11	
(i)	- Definition, Hazards and infection control - Principles - Categories of BMW - Color coding - Waste management in hospital - Present scenario, System, Steps - Waste treatment and disposal - Bio safety & Bio safety measures	11	8.25 Hrs
8.	**FIRST AID AND BANDAGING**	160	
(i)	Definition of first aid, scope, principles and essentials, methods of approach and qualifications of a first Aid Provider.	10	
(ii)	First field dressing and shell dressing, routine dressing, bandaging including use of triangular bandage.	08	
(iii)	Fracture - Varieties, general signs and symptoms, general rules for treatment, padding of splints, individual fractures and treatment. Thomas splint.	15	120 Hrs
(iv)	Injuries to joints and muscles, sprains and strains.	07	
(v)	Wounds – Types, first aid and treatment.	12	
(vi)	Snake bite, bite by rabid animal, and stings of insects.	12	
(vii)	Haemorrhage - Varieties, arrest of external haemorrhage, arrest of haemorrhage from special regions, mouth, nose and ear.	15	

(viii)	Artificial respiration.	10	
(ix)	Asphyxia - Definition and causes.	07	
(x)	Poisons - classification, general rules for the treatment of poisoning.	20	
(xi)	Burn injury	08	
(xii)	Shock	08	
(xiii)	Effects of heat and cold.	08	
(xiv)	BLS, ATLS, ACLS	20	
9.	**DISASTER MANAGEMENT**	10	7.5 Hrs
(i)	Introduction, Principle, Outline plan and disaster cycle	01	
(ii)	Basics of NBC/CBRN (Chemical Biological Radiation & Nuclear) warfare	02	
(iii)	Pre hospital phase, Hospital phase, Triage	02	
(iv)	Supportive services and misc- Response of various organization, Disaster management protocol	02	
(v)	Effects and their management, Prevention and mitigation	01	
(vi)	Preparedness and response	01	
(vii)	Present setup	01	
	FIRST YEAR PAPER II		
10.	**ELEMENTARY NURSING**	275	206.25 Hrs
(i)	Bed making -Materials used for hospital beds and bedding. Bed making Special types of beds. Positions in bed. Moving and lifting of patients. Additional appliances used for beds	60	
(ii)	Observation of patient's conditions- Importance of habit of observation, positions, expressions, delirium, appetite, sleep, cough, expectoration, vomit, tongue, mouth and skin, fluid intake and output.	60	

	-Pulse :Definition, character, how to take pulse, abnormal pulses. -Respiration :Mechanism of normal respiration, measure rate of respiration. Temperature :Recording of temperature, pulse and respiration on charts.		
(iii)	Caring of sick. - Daily toilet of the patient, bathing in the bed and the bathroom. - Care of hair and the mouth. - Bed sores and trophic ulcers and their prevention. - Giving of bedpans and urinals, spittoons. - Feeding of the bed-ridden cases.	50	
(iv)	Aspiration and continuous drainage of stomach and duodenum.	10	
(v)	Artificial feeding	05	
(vi)	Administration of oxygen.	05	
(vii)	Inhalations.	05	
(viii)	Preparation of patient for examination.	20	
(ix)	Dressings and instruments commonly used in the wards.	30	
(x)	Prepare nursing trays and trolleys.	30	
11.	**PHARMACOLOGY**	50	
(i)	Weights and measures.	05	
(ii)	Forms of medicament – powder, pills, lotions.	05	37.5 Hrs
(iii)	Mode of administration.	20	
(iv)	Common drugs used in OPDs and wards.	20	
12	**HUMAN RELATIONS**	15	
(i)	Hospital Public relation management - Introduction, Human behaviour, PR - Operation methods - Communication skills - Care of dying, & dead	07	11.25 Hrs
(ii)	Doctors patient relationship - Right & duties of patient - Right & duties of doctors - Consent	08	

	- CPA - MLC - Medical ethics - The female patient		
13	**COMMUNITY HEALTH NSG & COMMUNICABLE DISEASES**	50	37.5 Hrs
(i)	Health Determinants	01	
(ii)	Indicators of Health	01	
(iii)	Levels of Health Care	01	
(iv)	Primary Health Care	01	
(v)	National Health Policy, National Population Policy	01	
(vi)	National Health Programmes (i) NAMP (ii) RCH (iii) RNTCP (iv) NACP (v) Pulse Polio	08	
(vii)	Immunization schedule.	05	
(viii)	Preventable diseases - Classification and mode of spread. - Common disease and their prevention - diarrhoea and dysentery, malaria, rabies, round worm, small pox, tuberculosis, typhoid, typhus, veneral diseases.	15	
(ix)	Life history and prevention against housefly and mosquito.	02	
(x)	Effects of heat and cold and their prevention.	01	
(xi)	Hygiene and sanitation of ward and ancilliaries.	02	
(xii)	Infection, Isolation, Disinfection methods.	02	
(xiii)	Communicable diseases: Nursing care -general management, Specific diseases : Diphtheria, measles, whooping cough, chicken pox, mumps, influenza, typhoid and paratyphoid, typhus, dysentery, food poisoning, cholera, plague, tetanus, malaria, dengue, HIV/AIDS.	10	
14.	**EQUIPMENT MANAGEMENT**	10	7.5 Hrs
	- Pulse oximeter - Nebulizer	10	

	- Glucometer - ECG machine - Cardiac monitor - Defibrillator - Total patient bed side monitor - SWD - Oxygen concentrator		
15.	**PRACTICAL**	600 Hrs	
(i)	General duties- - Tour of hospital and various departments - Personal discipline. - Ward discipline and discipline of the patients - Standing orders. - Admission procedure in MI Rooms and wards. - Cleanliness of the ward, pantry and the sanitary block including materials used for cleaning. - Sick parades. - Care of the dying and the dead.	100 Hrs	
(ii)	Must be able to - Clean ward and ancilliaries. - Write reports - Take care of convalescent patients	30 Hrs	
(iii)	Must be able to maintain correctly – - Charts. - Case sheets. - Other documents.	30 Hrs	
(iv)	Must be conversant with - - Admission and discharge procedure. - Standing orders. - Storage, care and maintenance of linen, - utensils, crockery and furniture.	100 Hrs	
(v)	Local applications - Hot application - Application of cold. - Poultices and plasters. - Liniments, ointments, pastes and paints.	50 Hrs	
(vi)	General procedure - General treatment for reducing temperature, methods of reducing temperature, sponging, cold packing, Brand's bath, ice cradling. - Application of heat, hot baths, hot sponging, radiant heat, hot wet pack, hot	100 Hrs	

	dry pack, vapour bath, hot air bath, and medicated bath.		
(vii)	Enema and lavage - Enema :Varieties, how to administer enema. - Flatus tube. - Lavage :Rectum, colon and gastric lavage.	40 Hrs	
(viii)	Principles of sepsis and antisepsis - General principles, definition and methodsused. - Preparations of hands and use of gloves. - Sterilization of instruments, dressings, rubber goods, utensils, ligatures and sutures, sponges, mackintosh, towels, trays, syringes. - Care and maintenance of the above.	100 Hrs	
(ix)	Disposal of waste products - Faeces :Methods of disposal in permanent, semi permanent and temporary camps, deep and shallow trench latrines. - Urine : Methods of disposal.	50 Hrs	
	SECOND YEAR PAPER I		
16.	**BLOOD TRANSFUSION/RESUSCITATION - :** Must be conversant with –	300	225 Hrs
(i)	Blood groups in general and their importance ABO Blood group system & subgroups ABO Blood grouping by various techniques Rh Blood group system Rh Blood grouping phenotype & genotype Detection of D antigen Compatibility test Preparation of serum, cells suspension (various percentages) and washing of RBC's Antiglobulin Test (DAT & IAT) Detection of Immune antibodies including Rh antibodies, Titration of Anti A, Anti B & Anti D anti sera Detection & Titration of Immune antibodies Anti A, Anti B Compatibility test in AIHA Compatibility test in major cardiopulmonary surgery Group specific substances including lectins and their preparation Blood donor motivation propaganda	300	

	Selection & bleeding of donors Adverse reactions in blood donors & their management Preservation & storage of blood for transfusion and storage effects Hazards of blood transfusion Investigation of transfusion reactions Blood component therapy Preparation of various blood components & their Quality control Composition and fractions of plasma Indications of blood & blood component transfusion Shock & resuscitation Transfusion transmitted diseases Autologous transfusion Organization of blood bank services & FDA Licensing of Blood Bank Disposal of infected blood units and other infected material Crystalloid and colloid solutions Principles and various methods of sterilization Glassware & rubber items used in Transfusion medicine-cleaning and maintenance Disposable blood and fluid administration sets – components and Quality control Elisa Reader- functions, operation and maintenance Introduction to cell separator- functions, operation and maintenance Introduction to Stem cells, sources, collection and Cryopreservation		
17.	**GENERAL LABORATORY METHOD/EQPT:** Must be conversant with –	100	
	- Refrigerator - Centrifuges - Water bath - Electrophoresis apparatus - Bio safety measures	100	75 Hrs
	SECOND YEAR PAPER II		
18.	**Microbiology & Serology** **-Virology** **-Bacteriology** **:** Must be conversant with –	250	
	Classification of Bacteria, sources of infection, Prevention of contamination Differentiation of bacteria, fungi and viruses Structure of bacteria- capsules, flagella, spores & their importance	250	187.5 Hrs

	Gram's staining Acid – Fast bacilli &ZiehlNeelson staining Fungi- general & staining Staining for blood borne parasites Hepatitis B & C viruses HIV Viruses I & II Antigen & Antibody Antigen Antibody reactions and factors affecting them HIV antibody test (HIV- I & II) Test for HBsAg, HCV, CMV & Toxoplasma VDRL/ RPR Test		
19	**Haematology** **-Elementary haematology** **-Clinical pathology :** Must be conversant with –	60	37.5 Hrs
(i)	**Elementary haematology :** Collection of capillary & venous blood and anticoagulants Estimation of haemoglobin by copper sulphate. Sahlis and CyanmethHb method Estimation of packed cell volume and ESR Estimation of total leucocyte count Preparation and staining of peripheral blood smear Examination of peripheral smear for parasites Estimation of differential leucocyte count Estimation of platelet count Estimation of glucose six phosphate dehydrogenase (G6P Detection of foetal cells in maternal circulation **Haemoglobinopathies** a Abnormal haemoglobins, thalassaemia and sickle cell anaemia b Alkali denaturation test c Test for sickling d Haemoglobin electrophoresis e Estimation of plasma haemoglobin Mechanism of coagulation of blood Collection & handling of blood samples for Coagulation studies Bleeding & clotting time Prothrombin time Activated partial thromboplastin time FDP importance & tests in serum and urine Principle of factor VIII Assay	50	
(ii)	**Clinical pathology :** Routine examination of urine for sugar Examination of urine for Protein, Sp.gravity Urobilinogen Examination of urine for bile salt & bile pigment Microscopic examination of urine Examination of faeces including test for occult blood	10	7.5 Hrs

20.	**PRACTICAL**	600 Hrs
	General duties - Manage a ward independently - Supervise and assign duties - Maintain discipline of the staff under him and the patients - Maintain all the records and submit reports and return - Must know the maintenance of accounts, diets, drugs, clothing and equipment	300 Hrs
	CLINICAL HAEMATOLOGY (Advanced procedure) Circulatory System Pulse, heart rate, blood pressure, temperature, respiratory rate Respiratory System Venepuncture Catheterisation Insertion of CVP line and Femoral catheter Thrombosis Clotting and Coagulation mechanism Cell injury and ischaemia Shock and resuscitation Anaphylaxis Vasovagal reaction Intubation and Resuscitation in the ward Handling of nursing station and maintenance of registers I V Fluids I V infusion Anemias Thrombocytopenia Leukemias Lymphomas Neoplasia Basic pharmacology in Onco Haematology Role of Chemotherapy and radiotherapy in Onco Haematology	300 Hrs

TEXT BOOKS RECOMMENDED:	
(i)	Sr. Nancy- Principles and Practice of Nursing, N.R Brothers, M.Y. Road. Indore
(ii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-1, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-2, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iv)	Patricia A, Potter, RN, MSN, PhD, CMAC, FAAN, Anne Griffin Perry, RN, MSN, EdD, FAAN- Fundamentals of Nursing, Printed and bound at International Print-O-Pac-Limited C/4-11, Phase-II Extn, NOIDA-201201 (U.P)
(v)	L.C Gupta, MD,MNAMS, Abhitabh Gupta- Manual of Fist Aid, JaypeeBorthers Medical Publishers (PVT) LTD, B-# EMCA House, 23/23B Ansari Road, Daryaganj,, Post Box 7193,New Delhi-11002

(vi)	Virendra N Shgal, GovindSrivastava- Diagnosis and Treatment of Common Skin Diseases, Jaypee Brothers Medical Publishers (P) LTD New Delhi
(vii)	Lippincott Williams & Wilkins - Pharmacology, A Wolters Kluwer Company Philadelphia
(viii)	Annamma Jacob, Rekha R, JadhavSonaliTarachand- Pharmacology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(ix)	Virendra N Sehgal- Textbook of Clinical Dermatology, Jaypee Brother Medical Publishers (P) LTD New Delhi
(x)	S Nambi- Psychiatry for Nurses, Jaypee Brother Medical Publishers (P) LTD , B-3, EMCA House, 23/23B Ansari Road. Daryaganj Post Box 7193,New Delhi
(xi)	BT Basavanthappa- Psychiatric Mental Health Nursing,Jaypee Brother Medical Publishers (P) LTD New Delhi
(xii)	Harsh Mohan - Textbook of Pathology, Jaypee Brother Medical Publishers (P) LTD New DelhiT K Indrani- Nursing Manual of Nutrition and Therapeutic Diet, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xiii)	K Park- Preventive and Social Medicine, M/s BanarsidasBhanot, Publishers, 1167, Prem Nagar, Jabalpur -482001 (India)
(xiv)	RattnLalIchhpujani, Rajesh Bhatia- Microbiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xv)	Ross and Wilson- Anatomy and Physiology, Edinburgh
(xvi)	PR Ashalatha- Text book of Anatomy and Physiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xvii)	Blood transfusion clinical medicine. PL Mollison CP Engelfriet and Marcela Contreras. 10th ed. Blackwell Science, London, 1997.
(xviii)	Procedures in blood banking and immunohaematology. HM Bhatia, BGRC, ICMR Publication, Bombay, 1977.
(xix)	AABB Technical Manual, 12th ed, AABB, USA, 1996.
(xxx)	Modern Blood Banking and Transfusion practices. Denise M Harmening, First Indian Edition, FA Davis Company, 1998.
(xxxi)	Transfusion Medicine technical manual. Director General of Health Services, Ministry of Health and Family Welfare, Govt. of India, Second edition, 2003.
(xxxii)	Recent trends in transfusion medicine. Snehalata C. Gupte, PK Desai, SRKRC Publication, 2002.
(xxxiii)	Compendium of transfusion medicine, RN Makroo, Alps printer, 1999.
(xxxiv)	Hematology today. M. B. Agrawal, Ashirwadhaematologycentre, Mumbai, 2007.
(xxxv)	Practicle Hematology, J A Decie and S M Lewis, The ELBS, 8th Edition.
(xxxvi)	Modern Hematology: Biology and Clinical Management. R. Munker, E Hiller and R Paquette, Humana Press, 2000
(xxxvii)	Dailey's notes on blood. J F Dailey 3rd ed. Jaypee Brothers, New Delhi, 1996

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN EMERGENCY AND TRAUMA CARE TECHNICIAN

DURATION: 02 YEARS

SYLLABUS:

FIRST YEAR

TOPICS

1. Anatomy & Physiology
2. Microbiology, Elementary Pathology
3. Hygiene, Nutrition, Nutritional Disease
4. Biomedical Waste Mgt
5. First Aid
6. Disaster Mgt
7. Elementary Nsg
8. General Pharmacology
9. Human relations
10. Community Health Nsg& Communicable diseases:
11. Hygiene chemicals and its use
12. Equipment management

SECOND YEAR

1. Med-Sur Nsg
2. Pharmacology
3. Med- Surg Nsg
4. Specialities
    - Eye
    - ENT
    - Skin
    - Mental Health &Psychiatric Nursing
    - Radiology
    - Physiotherapy, Occupational therapy and Rehabilitation

FIRST YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	105	Anatomy & Physiology	03 HRS	30	**100**
	15	Microbiology, Elementary Pathology		15	
	41.25	Hygiene, Hygiene chemicals and its usesNutrition ,Nutritional Disease		10	
	8.25	Biomedical Waste Mgt		5	
	120	First Aid		10	
	7.5	Disaster Mgt		5	
		INTERNAL ASSESMENT		**25**	
PAPER II	206.25	Elementary Nsg,	03 HRS	40	**100**
	37.5	General Pharmacology		10	
	11.25	Human relations		5	
	37.5	Community Health Nsg&Communicable diseases:		10	
	7.5	Equipment management		10	
		INTERNAL ASSESMENT		**25**	
Practical	600	Fundamental Nsg - Bed making & Tray setting	03 HRS	40	**100**
		Medical Equipment		10	
		First Aid - Bandaging, Casualty Carriage Thomas splint		25	
		Ward Marks		**25**	
SECOND YEAR					
PAPER	**DURATION OF STUDY**	**SUBJECTS**	**DURATION OF PAPER**	**MARKS**	
PAPER I	225	Med-Sur Nsg	03 HRS	55	100
	75	Pharmacology		20	
		INTERNAL ASSESMENT		**25**	
PAPER II	187.5	Med- SurgNsg	03 HRS	25	100
	112.5	Specialities - Eye, ENT, Skin , Mental Health & Psychiatric Nursing, Radiology, Physiotherapy, Occupational therapy and Rehabilitation, Obstetrics		50	
		INTERNAL ASSESMENT		**25**	
Practical	600	Med-SurgNsg (Advanced procedure	03 HRS	75	100
		INTERNAL ASSESMENT		**25**	

S NO	COURSE CONTENT OF FIRST YEAR	NO OF PERIODS (45 MINS EACH)	NO OF HOURS
	FIRST YEAR PAPER I		
1	**HISTORY OF NURSING** :	04	03 Hrs
(i)	Pre-Nightingale reforms. St. Vincent De Paul and Mile Le Gras, John Howard, Elizabeth Fry, the work of the Fleidners at Kaisersworth.	01	
(ii)	Florence Nightingale – Her life, her work in the Crimean war, the founding of Nursing School at St. Thomas Hospital. Her interest in India, in Military hospital and sanitation.	01	
(iii)	Contemporary developments – Discoveries of Pasteur, Lister and Koch. The relationship of nursing to hospital reform.	01	
(iv)	Nursing in India in modern days, the introduction and growth of Nursing in India, developments of schools, examination and registration, a brief review of organization in India to-day.	01	
2	**ANATOMY**	80	60 Hrs
(i)	Introduction -Tissues of the body	02	
(ii)	Skeletal System -The skull, the thorax, the vertebral column, the pelvic girdle, the upper limb, the lower limb	08	
(iii)	Arthrology - Types characteristics, varieties and movements. - Special joints -Sternoclavicular, acromioclavicular, shoulder, elbow, radioulnar, wrist, hip, knee, tibiofibular, ankle and joints of the hand and foot.	08	
(iv)	Myology - Muscles of head and face, chest, abdomen, back, upper and lower extremities. - Anatomical spaces.	08	
(v)	Circulatory System - Heart and blood vessels	10	
(vi)	Lymphatic system	03	
(vii)	Alimentary system - Alimentary canal and accessory organs.	05	

(viii)	Respiratory system - Respiratory passage, lungs and pleura.	05	
(ix)	Endocrine glands	05	
(x)	Urinary system - Kidney, Ureter and Urinary bladder.	05	
(xi)	Nervous system - Meninges, brain, spinal cord, nerves and their plexuses.	08	
(xii)	Organs of special senses - Tongue, nose, eye, ear and skin.	08	
(xiii)	Reproductive system - Male and female.	05	
3.	**PHYSIOLOGY**	60	45 Hrs
(i)	Circulatory system - Blood - Cardiac cycle and circulation of the blood - Blood pressure and pulse	10	
(ii)	Digestive system - Food - Digestion of food	04	
(iii)	Physiology of respiration	06	
(iv)	Metabolism	06	
(v)	Function of endocrine glands	10	
(vi)	Renal function	08	
(vii)	Nervous system and cerebrospinal fluid.	08	
(viii)	Taste, sight, smell and hearing.	08	
4	**ELEMENTARY PATHOLOGY AND MICROBIOLOGY**	20	15 Hrs
(i)	Characteristics of bacteria, virus , fungus	02	
(ii)	Sources of infection.	02	
(iii)	Mode of spread.	02	
(iv)	Destruction of bacteria.	02	
(v)	Control of infection.	01	
(vi)	Inflammation, healing and repair.	01	
(vii)	Infection, wounds, ulcers, blisters, boils, fractures, burns,	05	

	scalds, gangrene and haemorrhage.		
(viii)	Urine - Characteristics of normal urine, variations in diseases, collection of samples and routine tests.	02	
(ix)	Faeces - Characteristics of normal faeces, variation in diseases, collection of samples and routine tests.	02	
(x)	Sputum and vomit - Characteristics in different diseases, collection of samples.	01	
5.	**HYGIENE, SANITATION AND USES OF HYGIENE CHEMICALS–**	30	22.5 Hrs
(i)	Definition and historical background.	01	
(ii)	Personal hygiene - Sleep, washing, eating and drinking, exercises, skin disease and their prevention.	02	
(iii)	Water Sources - Rain, surface, underground. Purification - Reasons, principles and methods. Sterilization - Physical and chemical methods, individual water sterilizing outfit and its use. Storage - Water bottle, chagul, pakhal, canvas and iron cisterns, water truck. Water point. Water borne disease.	12	
(iv)	Water supply	05	
(v)	Spray techniques	05	
(vi)	Various hygeine, chemical, their dosage & usage	05	
6.	**NUTRITION AND DIETETICS**	25	18.75 Hrs
(i)	Food and nutrition - Composition of food. - Common articles of diet.	02	
(ii)	Principles of Nutrition and dietetics.	02	
(iii)	Food requirements.	03	
(iv)	Cookery - Reasons for cooking and dietetics. - Effects of different methods on cooking. - Storage of food in ward.	05	

(v)	Preparation of tray and serving of food-Basic Knowledge	02	
(vi)	Preparation of - Tea, coffee, cocoa, imperial drink, barley water, lemon squash, fruit juices. - Lockey, junket curds, buttermilk, jelly ice cream, Eggs flip, albumin water.	03	
(vii)	Calories, BMR and caloric requirements.	02	
(viii)	Common articles of diet.	01	
(ix)	Special diets.	02	
(x)	Sick room recipes.	01	
(xi)	Nutritional diseases	02	
7.	**BIO MEDICAL WASTE MANAGEMENT**	11	8.25 Hrs
(i)	- Definition, Hazards and infection control - Principles - Categories of BMW - Color coding - Waste management in hospital - Present scenario, System, Steps - Waste treatment and disposal - Bio safety & Bio Safety measures	11	
8.	**FIRST AID AND BANDAGING**	160	120 Hrs
(i)	Definition of first aid, scope, principles and essentials, methods of approach and qualifications of a first Aid Provider.	10	
(ii)	First field dressing and shell dressing, routine dressing, bandaging including use of triangular bandage.	08	
(iii)	Fractures - Varieties, general signs and symptoms, general rules for treatment, padding of splints, individual fractures and treatment. Thomas splint.	15	
(iv)	Injuries to joints and muscles, sprains and strains.	07	
(v)	Wounds – Types, first aid and treatment.	12	
(vi)	Snake bite, bite by rabid animal, and stings of insects.	12	
(vii)	Haemorrhage - Varieties, arrest of external haemorrhage, arrest of haemorrhage from special regions, mouth, nose and ear.	15	

(viii)	Artificial respiration.	10	
(ix)	Asphyxia - Definition and causes.	07	
(x)	Poisons, classification, general rules for the treatment of poisoning.	20	
(xi)	Burn injury	08	
(xii)	Shock	08	
(xiii)	Effects of heat and cold.	08	
(xiv)	BLS, ATLS, ACLS	20	
9.	**DISASTER MANAGEMENT**	10	7.5 Hrs
(i)	Introduction, Principle, Outline plan and disaster cycle	01	
(ii)	Basics of NBC/CBRN (Chemical Biological Radiation & Nuclear) warfare	02	
(iii)	Pre hospital phase, Hospital phase, Triage	02	
(iv)	Supportive services and misc- Response of various organization, Disaster management protocol	02	
(v)	Effects and their management, Prevention and mitigation	01	
(vi)	Preparedness and response	01	
(vii)	Present setup	01	
	FIRST YEAR PAPER II		
10.	**ELEMENTARY NURSING**	275	206.25 Hrs
(i)	Bed making - Materials used for hospital beds and bedding. - Bed making - Special types of beds. - Positions in bed. - Moving and lifting of patients. - Additional appliances used for beds	60	
(ii)	Observation of patient's conditions - Importance of habit of observation, positions, expressions, delirium, appetite, sleep, cough, expectoration, vomit, tongue, mouth and skin, fluid intake and output.	60	

	- Pulse : Definition, character, how to take pulse, abnormal pulse. - Respiration :Mechanism of normal respiration, measure rate of respiration. - Recording of temperature, pulse and - respiration on charts.		
(iii)	Caring of sick. - Daily toilet of the patient, bathing in the bed and the bathroom. - Care of hair and the mouth. - Bed sores and trophic ulcers and their prevention. - Giving of bedpans and urinals, spittoons. - Feeding of the bed-ridden cases.	50	
(iv)	Aspiration and continuous drainage of stomach and duodenum.	10	
(v)	Artificial feeding	05	
(vi)	Administration of oxygen.	05	
(vii)	Inhalations.	05	
(viii)	Preparation of patient for examination.	20	
(ix)	Dressings and instruments commonly used in the wards.	30	
(x)	Prepare nursing trays and trolleys.	30	
11.	**PHARMACOLOGY**	50	
(i)	Weights and measures.	05	
(ii)	Forms of medicament – powder, pills, lotions.	05	37.5 Hrs
(iii)	Mode of administration.	20	
(iv)	Common drugs used in OPDs and wards.	20	
12	**HUMAN RELATIONS**	15	
(i)	Hospital Public relation management - Introduction, Human behavior, PR - Operation methods - Communication skills - Care of dying, & dead	07	11.25 Hrs
(ii)	Doctors patient relationship - Right & duties of patient - Right & duties of doctors - Consent - CPA	08	

	- MLC - Medical ethics - The female patient		
13	**COMMUNITY HEALTH NSG & COMMUNICABLE DISEASES**	50	37.5 Hrs
(i)	Health Determinants	01	
(ii)	Indicators of Health	01	
(iii)	Levels of Health Care	01	
(iv)	Primary Health Care	01	
(v)	National Health Policy, National Population Policy	01	
(vi)	National Health Programmes (i) NAMP (ii) RCH (iii) RNTCP (iv) NACP (v) Pulse Polio	08	
(vii)	Immunization schedule.	05	
(viii)	Preventable diseases - Classification and mode of spread. - Common disease and their prevention - diarrhoe and dysentery, malaria, rabies, round worm, small pox, tuberculosis, typhoid, typhus, veneral diseases.	15	
(ix)	Life history and prevention against housefly and mosquito.	02	
(x)	Effects of heat and cold and their prevention.	01	
(xi)	Hygiene and sanitation of ward and ancilliaries.	02	
(xii)	Infection, Isolation, Disinfection methods.	02	
(xiii)	Communicable diseases: Nursing care -general management, Specific diseases : Diphtheria, measles, whooping cough, chicken pox, mumps, influenza, typhoid and paratyphoid, typhus, dysentery, food poisoning, cholera, plague, tetanus, malaria, dengue, HIV/AIDS.	10	
14.	**EQUIPMENT MANAGEMENT**	10	7.5 Hrs
	- Pulse oximeter - Nebulizer - Glucometer - ECG machine - Cardiac monitor	10	

	- Defibrillator - Total patient bed side monitor - SWD - Oxygen concentrator		
15.	**PRACTICAL**	600 Hrs	
(i)	General duties- - Tour of hospital and various departments - Personal discipline. - Ward discipline and discipline of the patients - Standing orders. - Admission procedure in MI Rooms and wards. - Cleanliness of the ward, pantry and the sanitary block including materials used for cleaning. - Sick parades. - Care of the dying and the dead.	100 Hrs	
(ii)	Must be able to - Clean ward and ancilliaries. - Write reports - Take care of convalescent patients	30 Hrs	
(iii)	Must be able to maintain correctly – - Charts. - Case sheets. - Other documents.	30 Hrs	
(iv)	Must be conversant with - - Admission and discharge procedure. - Standing orders. - Storage, care and maintenance of linen, - utensils, crockery and furniture.	100 Hrs	
(v)	Local applications - Hot application - Application of cold. - Poultices and plasters. - Liniments, ointments, pastes and paints.	50 Hrs	
(vi)	General procedure - General treatment for reducing temperature, methods of reducing temperature, sponging, cold packing, Brand's bath, ice cradling. - Application of heat, hot baths, hot sponging, radiant heat, hot wet pack, hot dry pack, vapour bath, hot air bath, and medicated bath.	100 Hrs	

(vii)	Enema and lavage - Enema :Varieties, how to administer enema. - Flatus tube. - Lavage :Rectum, colon and gastric lavage.		40 Hrs
(viii)	Principles of sepsis and antisepsis - General principles, definition and methods used. - Preparations of hands and use of gloves. - Sterilization of instruments, dressings, rubber goods, utensils, ligatures and sutures, sponges, mackintosh, towels, trays, syringes. - Care and maintenance of the above.		100 Hrs
(ix)	Disposal of waste products - Faeces :Methods of disposal in permanent, semi permanent and temporary camps, deep and shallow trench latrines. - Urine : Methods of disposal.		50 Hrs
	SECOND YEAR PAPER I		
16.	**MEDICAL NURSING**	300	
(i)	- History taking and observation of symptoms. - Physical examination including newborn examination - Disease of the respiratory organs – Catarrhal conditions, emphysema, bronchiectasis, asthma, pneumonias, pleurisy, empyema, haemoptysis, lung abscess, pulmonary tuberculosis &RTI in children. - Disease of heart and organs of circulations: Pericarditis, endocarditis, heart failure, cardiac asthma, angina pectoris and coronary thrombosis, arteriosclerosis, phlebitis, high and low BP. - Disease of the blood. - Acute rheumatism - Disease of the alimentary system - Dyspepsia, peptic ulcer, haematemesis, gastritis, enteritis, colitis, diarrhoea, constipation. - Disease of liver and gallbladder – Jaundice, cholecystitis, cholelithiasis.	120	225 Hrs

	- Disease of the urinary organs – Nephritis, uraemia, pyelitis, cystitis, disorders of micturation,Nephrotic syndrome ,ARF &CRF. - Deficiency diseases – Rickets, scurvy, pellagra and beri-beri, PEM.		
(ii)	Must be able to aid for: - - Common poisons and the treatment of poisoning. - Heat stroke and heat exhaustion. - Asphyxia, drowning, strangulation, artificial respiration. - Snake bite and dog bite, stings and bites of insects.	30	
(iii)	Disease and disorders of the nervous system: - - Hemiplegia and paraplegia - Infantile paralysis - Bells palsy, neuritis and sciatica. - Meningitis. - Epilepsy. Seizures in children Hysteria and chorea. Scizophrenia. - Coma.	30	
(iv)	Disease of the skin: - - Nursing of disease of the skin. - Urticaria - Eczema - Scabies - Ring worm - Impetigo and psoriasis - Herpes zoster and simplex	10	
(v)	Disease and disorders of metabolism: - - Vitamin deficiencies – rickets, scurvy, beriberi, pellagra - Diabetes - Gout	30	
(vi)	Disease and disorders of endocrine glands: - - Thyroid and parathyroid - Suprarenal - Pituitary - Diabetes Mellitus	30	
(vii)	- Pregnancy &Antenatal care - High risk pregnancy, Complications of Pregnancy and management	50	

	- The new born - The healthy child - Common health problems in children		
17.	**PHARMACOLOGY :** Must be conversant with –	100	75 Hrs
(i)	- Vaccine and sera - Action of drugs on various symptoms - Chemotherapy and antibiotics - Dosage of common drugs used in the wards including psychiatric drugs - Symptoms of over dosage or intolerance - Dangerous Drugs Act, common poisons and their treatment	100	
	SECOND YEAR PAPER II		
18.	**SURGICAL NURSING**	250	187.5 Hrs
(i)	Injuries to soft tissues: - - Burns and scalds – Degree of burns, complications, treatment and nursing management. - Wounds – Varieties of wounds, healing of wounds, infected wound, complications and treatment including technique of ward dressing and the various types of bandages. - Ulcers, gangrene – Frostbite, chill-blains and trench foot. - Tumors and cysts – Classification, complications and nursing management. - Injuries to tendon, muscle and nerves, and foreign body in the tissues.	30	
(ii)	Injuries to bones and joints: - - Fractures – Causes, varieties, sign and symptoms, healing and repair, complications. Special fractures, observation, nursing and treatment including use of splints. - Injuries to joints, sprains and dislocation, sign and symptoms, complication and treatment. - Head injuries – Observation, nursing management. - Spinal injuries – Observation, immobilization, nursing management.	40	
(iii)	Haemorrhage: - - Varieties and symptoms, arrest of haemorrhage, pressure points, treatment including use of tourniquet. - Traumatic haemorrhage. - Concealed haemorrhage. - Special forms of haemorrhage. - Abortions, APH&PPH	45	

(iv)	Preparation of patient for operation and anaesthesia: - - General preparation including premeditation. - Preparation of the skin. - Preparations of special cases including - emergency operations &Obstetric & gynaecological operations - Preparations of a patient for anaesthesia – spinal, local and general.	25	
(v)	Post-operative treatment and nursing care including management of surgical dressings: - - Reception of a patient from operation theatre and immediate post-operative nursing. - Later treatment – Position of the patient, post anaesthetic vomiting, pain, diet, fluid, urine, bowels, abdominal distension and hiccup. - Nurses report – Written and verbal. - Complications – Wounds, rupture of stitches, haemorrhage, cardiac and respiratory failure, paralytic ileus, pulmonary complications, uraemia, thrombosis, delirium tremens, postoperative mania. - Surgical shock, cause and symptoms including prevention and treatment. - Care of the wound and management of special surgical dressings. - Post operative management of gynaecological & Obstetric surgeries.	30	
(vi)	Special surgical nursing procedures: - - Irrigation, lavage, catheterization. - Intravenous administration of fluids, hypodermic, intramuscular and intravenous injections, venesection, blood transfusion and resuscitation. - Aspiration and tapping - Lumbar puncture.	20	
(vii)	General surgical condition of the abdomen: - - Stomach – gastrotomy, gastrostomy, gastrectomy, gastroenterostomy. - Small and large intestines, ecterotomy, enterostomy, enterotomy, colostomy. - Biliary passages. - Appendix – Appendectomy, appendicitis. - Hernia - Rectum – Haemorrhoids fistula in ano.	20	

(viii)	Surgery of the neck - Tracheostomy and intubation.	10	
(ix)	Operation on the chest: - - Thoractomy. - Lobectomy and pneumonectomy. - Thoracoplasty.	12	
(x)	General surgical condition of the genitourinary system:- - Kidney – Nephrotomy, nephrectomy. - Bladder – Cystotomy, cystectomy. - Penis and scrotum – Phimosis and paraphimosis, hydrocele.	10	
(xi)	Amputation and operations on joints.	02	
(xii)	Surgery of the brain: - - Unconscious patient and his nursing. - Operations on the scalp. - Operations on the skull and brain.	06	
19	**DISEASE OF EYE, EAR, NOSE AND THROAT**	60	45 Hrs
(i)	Eye – Must have the practical knowledge of the following:- - Affections of the eye and how to assist in the examination of the eye - Local treatment of the eye - Preparation & post operative management of eye surgeries	18	
(ii)	Ear - Affections of the ear, how to assist in the examination - Treatment of disease of the ear-local - cleansing, syringing, insertion of drops. - Preparation & post operative management of ear surgeries	18	
(iii)	Nose - Local treatment of the nose-nose snuffs, nasal drops and nasal douche - Preparation & post operative management of nose surgeries	18	
(iv)	Affections of the throat: - - How to assist in the examination of the patient - Local treatment – Paints, gargles, spray and insufflations	06	

	- Preparation & post operative management of throat surgery		
20.	**MENTAL HEALTH & PSYCHIATRIC NURSING**.–	30	
(i)	- Introduction – History & Personality Development - Mental Health assessment - Control of the agitated patient - Recognition and management of suicidal and ADS - Psychiatric Nursing management - Care of a patient before and after ECT	30	22.5 Hrs
21.	**RADIOLOGY, PHYSIOTHERAPY, OCCUPATIONAL THERAPY AND REHABILITATION**	60	
	- General knowledge including drugs used in radiology - Preparation of the patient for radiographic examination - Special radiological examination, alimentary tract, kidney, gall bladder - Physiotherapy, occupational therapy and rehabilitation	60	45 Hrs
22.	**PRACTICAL**	600 Hrs	
	General duties - Manage a ward independently - Supervise and assign duties - Maintain discipline of the staff under him and the patients - Maintain all the records and submit reports and return - Must know the maintenance of accounts, diets, drugs, clothing and equipment	300 Hrs	
	Med-SurgNsg (Advanced procedure) - Unit Setting - Procedure of AdvNsg - Combat Med Care - Emergency - Dressing - CPR - Eqpt, Stretcher - Casuality Evacuation	300 Hrs	
TEXT BOOKS RECOMENDED:			
(i)	Sr. Nancy- Principles and Practice of Nursing, N.R Brothers, M.Y. Road. Indore		
(ii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook og Medical- Surgical Nursing Vulume-1, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019		
(iii)	Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever- Textbook		

	og Medical- Surgical Nursing Vulume-2, Wolters Kluwer India Pvt. Ltd, 501-A, Devika Tower, 6, Nehru Place New Delhi-110019
(iv)	Patricia A, Potter, RN, MSN, PhD, CMAC, FAAN, Anne Griffin Perry, RN, MSN, EdD, FAAN- Fundamentals of Nursing, Printed and bound at International Print-O-Pac-Limited C/4-11, Phase-II Extn, NOIDA-201201 (U.P)
(v)	L.C Gupta, MD,MNAMS, Abhitabh Gupta- Manual of Fist Aid, JaypeeBorthers Medical Publishers (PVT) LTD, B-# EMCA House, 23/23B Ansari Road, Daryaganj,, Post Box 7193,New Delhi-11002
(vi)	Virendra N Shgal, GovindSrivastava- Diagnosis and Treatment of Common Skin Diseases, Jaypee Brothers Medical Publishers (P) LTD New Delhi
(vii)	Lippincott Williams & Wilkins - Pharmacology, A Wolters Kluwer Company Philadelphia
(viii)	Annamma Jacob, Rekha R, JadhavSonaliTarachand- Pharmacology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(ix)	Virendra N Sehgal- Textbook of Clinical Dermatology, Jaypee Brother Medical Publishers (P) LTD New Delhi
(x)	S Nambi- Psychiatry for Nurses, Jaypee Brother Medical Publishers (P) LTD , B-3, EMCA House, 23/23B Ansari Road. Daryaganj Post Box 7193,New Delhi
(xi)	BT Basavanthappa- Psychiatric Mental Health Nursing,Jaypee Brother Medical Publishers (P) LTD New Delhi
(xii)	Harsh Mohan - Textbook of Pathology, Jaypee Brother Medical Publishers (P) LTD New DelhiT K Indrani- Nursing Manual of Nutrition and Therapeutic Diet, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xiii)	K Park- Preventive and Social Medicine, M/s BanarsidasBhanot, Publishers, 1167, Prem Nagar, Jabalpur -482001 (India)
(xiv)	RattnLalIchhpujani, Rajesh Bhatia- Microbiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi
(xv)	Ross and Wilson- Anatomy and Physiology, Edinburgh
(xvi)	PR Ashalatha- Text book of Anatomy and Physiology for Nurses, Jaypee Brother Medical Publishers (P) LTD New Delhi

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UTTAR PRADESH STATE MEDICAL FACULTY

DIPLOMA IN SANITATION

DURATION: 01 YEAR

SYLLABUS:

1. Anatomy and Physiology

2. General Sanitation
   - Climatology
   - Nutrition
   - Entomology
   - Disinfection and disinfestations
   - Hygiene inspection
   - Hygiene of movement
   - Personal hygiene and snake bite and its first aid

3. Minor Sanitary Engineering
   - Water supply
   - Disposal of waste products
   - Disposal of non-excremental refuse
   - Ventilation, lighting and heating

4. Preventive Medicine & Public Health Administration
   - Communicable diseases
   - Non-communicable diseases and conditions
   - Contact diseases
   - Mental health
   - Occupational health
   - Insect borne diseases and animal borne diseases
   - Immunology
   - Health education
   - Vital statistics
   - Elementary bacteriology
   - Family planning
   - Rural or village sanitation, fair & festivals

PAPER	DURATION OF STUDY	SUBJECTS	DURATION OF PAPER	MARKS
PAPER I Anatomy and Physiology	50	Anatomy	03 HRS	25
	25	Physiology		25
			TOTAL	**50**
		INTERNAL ASSESMENT		**50**
PAPER II General Sanitation	10	Climatology	03 HRS	05
	25	Nutrition		15
	50	Entomology		25
	25	Disinfection and disinfestations		15
	50	Hygiene inspection		25
	05	Hygiene of movement		05
	10	Personal hygiene and snake bite and its first aid		10
			TOTAL	**100**
		INTERNAL ASSESMENT		**100**
PAPER III Minor Sanitary Engineering	60	Water supply	03 HRS	30
	40	Disposal of waste products		30
	40	Disposal of non-excremental refuse		20
	35	Ventilation, lighting and heating		20
			TOTAL	**100**
		INTERNAL ASSESMENT		**100**
PAPER IV Preventive Medicine & Public Health Administration	30	Communicable diseases	03 HRS	20
	20	Non-communicable diseases and conditions		10
	10	Contact diseases		05
	05	Mental health		05
	15	Occupational health		10
	25	Insect borne diseases and animal borne diseases		10
	10	Immunology		05
	15	Health education		10
	15	Vital statistics		10
	10	Elementary bacteriology		05
	10	Family planning		05
	10	Rural or village sanitation, fair & festivals		05
			TOTAL	**100**
		INTERNAL ASSESMENT		**100**
PRACTICAL	60	Anatomy and Physiology	03 HRS	100
	180	General Sanitation		
	180	Minor Sanitary Engineering		
	180	Preventive Medicine & Public Health Administration		

S NO	COURSE CONTENT OF FIRST YEAR	NO OF HOURS	
		THEORY	PRACTICAL
1.	**ANATOMY**	50	50
(i)	Introduction - Tissues of the body	02	
(ii)	Skeletal System - The skull, the thorax, the vertebral column, the pelvic girdle, the upper limb, the lower limb	04	
(iii)	Arthrology - Types, characteristics, varieties and movements. - Special joints - Sternoclavicular, acromioclavicular, shoulder, elbow, radioulnar, wrist, hip, knee, tibiofibular, ankle and joints of the hand and foot.	04	
(iv)	Myology - Muscles of head and face, chest, abdomen, back, upper and lower extremities. - Anatomical spaces.	04	
(v)	Circulatory System - Heart and blood vessels	05	
(vi)	Lymphatic system	04	
(vii)	Alimentary system - Alimentary canal and accessory organs.	04	
(viii)	Respiratory system - Respiratory passage, lungs and pleura.	04	
(ix)	Endocrine glands	04	
(x)	Urinary system - Kidney, Ureter and Urinary bladder.	04	
(xi)	Nervous system - Meninges, brain, spinal cord, nerves and their plexuses.	04	
(xii)	Organs of special senses - Tongue, nose, eye, ear and skin.	04	
(xiii)	Reproductive system - Male and female.	04	

2.	**PHYSIOLOGY**	25	
(i)	Circulatory system - Blood - Cardiac cycle and circulation of the blood - Blood pressure and pulse	04	
(ii)	Digestive system - Food - Digestion of food	03	
(iii)	Physiology of respiration	04	25
(iv)	Metabolism	04	
(v)	Function of Endocrine Glands	04	
(vi)	Renal function	02	
(vii)	Nervous system and cerebrospinal fluid.	02	
(viii)	Taste, sight, smell and hearing.	02	
	PAPER – II (GENERAL SANITATION)		
2.	**CLIMATOLOGY**	10	
(i)	Causes of environmental Diseases & effect of climate on health	02	
(ii)	Effects of Heat & Prevention	02	
(iii)	Effects of cold , High Altitude & Prevention	02	10
(iv)	Museum – climate section	02	
(v)	Meteorological instruments and their uses	02	
3.	**NUTRITION**	25	
(i)	Elementary physiology of the digestive system	02	
(ii)	Food constituents, function and requirements	02	
(iii)	Balanced diet	02	
(iv)	Museum- Food section	-	25
(v)	Vitamins and deficiency diseases	02	
(vi)	Malnutrition and its prevention	02	
(vii)	Food adulteration and food adulteration act.	02	
(viii)	Inspection of food stuff, dry, fresh and tinned.	02	

(ix)	Storage, transportation and cooking of food.	02	
(x)	Food poisoning- Investigation and control	02	
(xi)	Hygiene inspection of Bakery	02	
(xii)	Hygiene inspection of Butchery	01	
(xiii)	Milk supplies and pasteurization of milk	01	
(xiv)	Hygiene inspection of dairy farm	01	
(xv)	Visit to Dairy Farm,	-	
(xvi)	Taking of milk sample and analysis of milk	02	
(xvii)	Museum – Milk and food section	-	
4.	**ENTOMOLOGY**	50	50
(i)	House fly life history ,habits and its relation to the spread of diseases	02	
(ii)	Antifly measures – fly survey	02	
(iii)	Museum study –fly section	02	
(iv)	Ticks – Biomics , morphology ,diseases transmitted and control	02	
(v)	Rat flea– Biomics , morphology ,diseases transmitted and control	02	
(vi)	Louse – Biomics , morphology ,diseases transmitted and control	02	
(vii)	Sand fly – Biomics , morphology ,diseases transmitted and control	02	
(viii)	Dimdam fly – Biomics , morphology ,diseases transmitted and control	02	
(ix)	Trombicula mite ticks – Biomics , morphology ,diseases transmitted and control	02	
(x)	Bed bugs – Biomics , morphology ,diseases transmitted and control	02	
(xi)	Leeches- life history and control	02	
(xii)	Museum – Insect section	-	
(xiii)	Field work – Sand fly survey	-	
(xiv)	Delousing – (Lecture/Demonstration)	01	
(xv)	De-bugging	01	
(xvi)	Importance of Malaria	02	
(xvii)	Life cycle of Anopheline and Culicine mosquitoes	01	

(xviii)	Differentiation of Anopheline and Culicine mosquitoes in all stages	02	
(xix)	Habits of mosquitoes	01	
(xx)	Museum mosquito section	-	
(xxi)	Malaria parasites –life cycle , species and characteristics (Lecture/Demonstration)	01	
(xxii)	Museum malaria parasites section	-	
(xxiii)	Dissection of adult mosquitoes	-	
(xxiv)	Field work- Adult mosquitoes collection	-	
(xxv)	Preservation of collected specimens	01	
(xxvi)	Vectors of major importance in India	01	
(xxvii)	Malaria survey and spot map making	01	
(xxviii)	Field work - Malaria survey and spot map making	-	
(xxix)	Malaria control in general	01	
(xxx)	Suppressive treatment and anti malaria drugs	01	
(xxxi)	Personal protective measures , camp siting and malaria curfew	01	
(xxxii)	Anti malarial discipline and orders regarding stores and equipment	01	
(xxxiii)	Anti adult measures	01	
(xxxiv)	DDT , BHC as insecticides and their formulation	01	
(xxxv)	Preparation of DDT solution /suspension	01	
(xxxvi)	Spraying equipments , their working and maintenance	-	
(xxxvii)	Preparation of DDT solution (practical)	-	
(xxxviii)	Techniques of DDT spraying	01	
(xxxix)	DDT spraying	01	
(xxxx)	Pyrethrum formulation and use	01	
(xxxxi)	Anti larval measures	01	
(xxxxii)	Chemical larvicide	01	
(xxxxiii)	Oiling and DDT spraying for anti larval measures	01	
(xxxxiv)	Anti malaria drainage and dry day	01	

(xxxxv)	Anti Malaria drainage and dry day	01	
(xxxxvi)	Field work – mosquito larval collection	-	
(xxxxvii)	Museum- Insecticides section	-	
(xxxxviii)	NMEP	01	
5.	**DISINFECTION AND DISINFESTATION**	25	25
(i)	Object of disinfection and disinfestations	02	
(ii)	Physical methods of disinfection	02	
(iii)	TOT disinfector –Demo area	03	
(iv)	Field portable disinfector MIL III	03	
(v)	Practical work of TOT disinfector by trainees	-	
(vi)	Various methods of improvised disinfectors	03	
(vii)	Chemical and gaseous disinfectants	03	
(viii)	Methods of disinfecting virus infected articles	03	
(ix)	Methods of carrying local and complete disinfection	03	
(x)	Practice in conducting local and complete disinfection	03	
6.	**HYGIENE INSPECTION**	50	50
(i)	General principles of carrying out hygiene inspection and method of writing hygiene report on sanitary inspection	07	
(ii)	Hygiene inspections of living accommodation ,recreation and information room, cook houses , dining hall ,messes , ration stores ,canteen	08	
(iii)	Hygiene inspection of latrines , urinals ,bathrooms & barber shops	07	
(iv)	Hygiene inspection of married quarters and unit institutions	07	
(v)	Hygiene inspection of mineral water and ice factory	07	
(vi)	Hygiene inspection of restaurant	07	
(vii)	Hygiene inspection of school	07	
(viii)	Sanitary inspection and submission of report (practical)	-	

7.	**HYGIENE OF MOVEMENT**	05	
(i)	Hygiene of movement	02	05
(ii)	Hygiene of the movement by Rail ,Ship & Air	03	
8.	**PERSONAL HYGIENE AND SNAKE BITE AND ITS FIRST AID**	10	
(i)	Personal hygiene /museum / film-personal hygiene	05	
(ii)	The important poisonous snakes of India and how to distinguish a poisonous from non-poisonous snakes	03	10
(iii)	First aid of snake bite	02	
	PAPER – III (MINOR SANITARY ENGINEERING)		
9.	**WATER SUPPLY**	60	
(i)	Sources and protection of water supply	04	
(ii)	Requirement and distribution	04	
(iii)	Purification of water	04	
(iv)	Sedimentation of water (Lecture/Demonstration)	04	
(v)	Filtration of water	04	
(vi)	Horrock's test	04	
(vii)	Sterilization of water by chlorine	04	
(viii)	Water purification in the field (Two tank method)	04	
(ix)	Sterilization of water in containers	04	
(x)	Museum- Water section	-	60
(xi)	Water Tank/ Trucks and filters	04	
(xii)	Establishment of water point	04	
(xiii)	Demo area- water point	-	
(xiv)	Estimation of Chlorine in bleaching powder	04	
(xv)	Preparation of cadmium iodide and starch solution	04	
(xvi)	Individual water sterilizing out fit	04	
(xvii)	Sampling of water for chemical and bacteriological examination	04	
(xviii)	Visit- Civil water works	-	

10.	**DISPOSAL OF WASTE PRODUCTS**	40	40
(i)	Disposal of waste products, General principles and methods employed	04	
(ii)	Disposal of human feaces	02	
(iii)	Water carriage system, house drainage, various sanitary appliances used.	04	
(iv)	Testing of house drains	02	
(v)	Disposal of sewage (Sewage works)	02	
(vi)	Visit to sewage disposal plant	-	
(vii)	Septic tanks, designs, construction and disposal of effluent	02	
(viii)	Aqua privy	02	
(ix)	Removal system, pan type, collection and disposal by trenching composting and incineration.	02	
(x)	Visit trenching ground	-	
(xi)	Nitrogen cycle	02	
(xii)	Disposal of human feaces in semi permanent camp	02	
(xiii)	Deep trench latrine- construction, maintenance	02	
(xiv)	Bore hole and built up deep trench latrine	02	
(xv)	Disposal of human urine in semi permanent camp, funnel urinal, urinal through urinal	02	
(xvi)	Disposal of human excreta in camp	02	
(xvii)	Shallow trench latrine, incinerator latrine	02	
(xviii)	Demo area- excreta disposal section	-	
(xix)	Rural latrine	02	
(xx)	Improvised sanitary appliances used in the field (Demo area)	02	
(xxi)	Disposal of animal excreta, tight pack	02	
11.	**DISPOSAL OF NON-EXCREMENTAL REFUSE**	40	40
(i)	Disposal of solid refuse-collection, removal and disposal	05	
(ii)	Various incineration used in the field construction maintenance	05	
(iii)	Beehive incinerator	05	

(iv)	Demo area- Incinerator section	-	
(v)	Disposal of liquid waste	05	
(vi)	Cold water grease trap and working principle construction and maintenance	05	
(vii)	Soakage pit- construction and maintenance	05	
(viii)	Demo area liquid waste collection	-	
(ix)	Improvised grease trap	05	
(x)	Museum- disposal of refuse section	-	
(xi)	Disposal of dead bodies and carcasses	05	
12.	**VENTILATION , LIGHTING AND HEATING**	35	35
(i)	Air composition , pollution of air and their effects on health , temperature	15	
(ii)	The principles of ventilation , type of ventilation and simple methods of warming ,lighting and ventilation	20	
PAPER – IV (PREVENTIVE MEDICINE & PUBLIC HEALTH ADMINISTRATION)			
13.	**COMMUNICABLE DISEASES**	30	30
(i)	Epidemiology	02	
(ii)	Classification of diseases – chain of infection	02	
(iii)	Definitions –patients ,missed cases ,carriers ,contacts , incubation period, isolation, quarantine ad surveillance, epidemics ,endemics, pandemics	03	
(iv)	Excremental diseases and general control measures	02	
(v)	Cholera –prevention and control	02	
(vi)	Dysentery and diarrhea–prevention and control	02	
(vii)	Infectious hepatitis–prevention and control	02	
(viii)	Poliomyelitis –prevention and control	02	
(ix)	Intestinal worm diseases(Helmenthiasis) –prevention and control	02	
(x)	Air borne diseases and general control measures	02	
(xi)	Tuberculosis –prevention and control	01	

(xii)	B C G	01	
(xiii)	Small pox –prevention and control	01	
(xiv)	Chicken pox –prevention and control	01	
(xv)	Measles –prevention and control	01	
(xvi)	Mumps –prevention and control	01	
(xvii)	Influenza –prevention and control	01	
(xviii)	Whooping cough –prevention and control	01	
(xix)	Diphtheria –prevention and control	01	
14.	**NON-COMMUNICABLE DISEASES AND CONDITIONS**	20	20
(i)	Cancer –prevention and control	04	
(ii)	Cardiovascular diseases	04	
(iii)	Diabetes	04	
(iv)	Blindness	04	
(v)	Accidents	04	
15.	**CONTACT DISEASES**	10	10
(i)	STD –prevention and control	03	
(ii)	Scabies –prevention and control	03	
(iii)	Other skin diseases	02	
(iv)	Leprosy	02	
16.	**MENTAL HEALTH**	05	05
(i)	Warning signals of poor mental health and causes of mental health	02	
(ii)	Mental health services , alcoholism and drug dependency	03	
17.	**OCCUPATIONAL HEALTH**	15	15
(i)	Occupational health and diseases	05	
(ii)	Measures for the general health protection of workers ,prevention of occupational diseases	10	

18.	**INSECT BORNE DISEASES AND ANIMAL BORNE DISEASES**	25	
(i)	Filariasis –prevention and control	02	
(ii)	Dengue –prevention and control	02	
(iii)	Yellow fever –prevention and control	02	
(iv)	Other viral diseases –prevention and control	02	
(v)	Relapsing fever –prevention and control	02	
(vi)	Sand fly fever –prevention and control	02	
(vii)	Plague –prevention and control	02	
(viii)	Scrub typhus –prevention and control	02	
(ix)	Louse borne diseases	01	
(x)	Murine typhus	01	25
(xi)	DBP application drill(demo/pract)	-	
(xii)	Rabies –prevention and control	01	
(xiii)	Tetanus –prevention and control	01	
(xiv)	Anthrax –prevention and control	01	
(xv)	Undulant fever –prevention and control	01	
(xvi)	Leishmaniasis –prevention and control	01	
(xvii)	Rat bite fever –prevention and control	01	
(xviii)	Rodent control	01	
(xix)	Laboratory work	-	
(xx)	Museum/ film- Scrub typhus	-	
19.	**IMMUNOLOGY**	10	
(i)	Elementary immunology	02	
(ii)	Innoculation and vaccination	04	10
(ii)	Techniques of vaccination	04	
20.	**HEALTH EDUCATION**	15	
(i)	Importance of health education in relation to environmental sanitation	03	15

(ii)	Tools and techniques in health education	04	
(iii)	Preparing charts, demonstration of audiovisual aids, posters and film etc	04	
(iv)	Organization meetings and how to deliver on health	04	
21.	**VITAL STATISTICS**	15	15
(i)	Importance and use of vital statistics collection, complication and presentation	03	
(ii)	Calculation of rates	03	
(iii)	Other statistic related to health	03	
(iv)	Population statistics	03	
(v)	Charts and diagrams	03	
22.	**ELEMENTARY BACTERIOLOGY**	10	10
(i)	Micro-Organisms, their structure	03	
(ii)	Disease producing organisms, Pathogenicity, Virulence and growth in culture media	07	
23.	**FAMILY PLANNING**	10	10
(i)	Family planning and necessity	03	
(ii)	General out lines of the methods:- Non surgical methods-use of contraception and safe period etc Surgical methods and MTP	07	
24.	**RURAL OR VILLAGE SANITATION, FAIR & PESTIBLES**	10	10
(i)	Rural or village sanitation	05	
(ii)	Fair and Festivals	05	

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U.P. STATE MEDICAL FACULTY

DIPLOMA IN LAB TECHNICIAN
DURATION : 2 YEARS

Distribution of Papers & Marks in Various Years

First Year

PAPER	SUBJECT	Ext. Marks	Int. Marks	Max. Marks	Passing Marks
First Theory	Anaotomy, Physiology, Clinical Pathology, Genral Pathology	**80**	**20**	**100**	**50**
Second Theory	Hematology, Biochemistry-I, Microbiology-I	**80**	**20**	**100**	**50**
Oral & Practical		**-**	**-**	**100**	**50**

Second Year

PAPER	SUBJECT	Ext. Marks	Int. Marks	Max. Marks	Passing Marks
First Theory	Histopathology, Cytopathology, Microbiology-II	**80**	**20**	**100**	**50**
Second Theory	Blood Banking, Biochemistry-II	**80**	**20**	**100**	**50**
Oral & Practical		**-**	**-**	**100**	**50**

DIPLOMA IN LAB TECHNICIAN
DURATION : 2 YEARS

DMLT First Year Course- Pathology
Lecture schedule
HAEMATOLOGY & CLINICAL PATHOLOGY

S.No.	Topics	No. of Lectures
1.	Introduction to pathology.	1
2.	Composition of blood -1.(RBC,WBC,Platelet)	1
3.	Composition of blood -2. (Plasma & Plasma Protein)	1
4.	Routine Instruments in haematology	1
5.	Collection and Preservation of Blood.	1
6.	Use of autoanalyser in haematology.	1
7.	Making of stains in haematology.	1
8.	Preparation of thick & thin smears.	1
9.	Leishman stain (PPreparation & method of staining)	1
10.	Other stains in haematology (Preparation & Method of staining).	1
11.	Anti coagulant vials-their preparation and use.	1
12.	Erythocytes & abnormal erythrocytes	1
13.	Reticulocyte count.	1
14.	Platelet count.	1
15.	Absolute Values.	1
16.	Hemoparasites	1
17.	ESR,PCV	1
18.	Osmotic fragility Test.	1
19.	LE Cell 1	
20.	Coagulation Disorders.	1
21.	Lab Diagnosis of Bleeding Disorders.	1
22.	Formation & Composition of Urine	1
23.	Collection & Preservation of Urine.	1
24.	Abnormal constituents of urine.	1
25.	Urinometer & Esbach's Albuminometer	1
26.	Physical & Chemical examination of urine.	1
27.	Microscopic examination of urine.	1
28.	Liver function test.	1
29.	Renal Function Test.	1
30.	Examination of body fluids -1. (Pleural,Peritoneal & Synovial.)	1
31.	Examination of body fluids -2.CSF	1
32.	Semen Examination.	1
33.	Investigations for Aneamia.	1
34.	Hemolytic Aneamia, Foetal Hb.	1
35.	Bone Marrow indications,contra indications & aspiration.	1
36.	Introduction to leukemia	1
37.	Chronic leukemia & acute leukemia.	1
38.	Use of auto analyser in Haematology.	1

NOTE : Total Lectures= 38, Revision Turns=2, Class Tests=2.

DMLT FIRST YEAR COURSE- PATHOLOGY
PRACTICAL SCHEDULE
HAEMATOLOGY & CLINICAL PATHOLOGY

S.No.	Topics	No. of Practicals
1.	Making of slide and staining.	1
2.	Asessing hemoglobin with different methods.	1
3.	Loading of Neubauer's chamber.	1
4.	TLC	1
5.	DLC	1
6.	ESR & PCV	1
7.	Reticulocyte count	1
8.	RBC Count	1
9.	Platelet Count	1
10.	Buffy coat preparation	1
11.	Coomb's Test - Direct & Indirect	1
12.	LE Cell	1
13.	Osmotic fragility Test	1
14.	PT/PC	1
15.	Blood grouping methods	1
16.	Uses of anti-coagulants	1
17.	Bone Marrow Aspirations	1
18.	Cell Count in Acute Leukemia	1
19.	Cell Count in Chronic Leukemia	1
20.	Examination of Malarial Parasite.	1
21.	Examination of Microfillaria.	1
22.	Fetal Hemoglobin	1
23.	Urine collection and preservation	1
24.	24 hrs. Urine protein estimation	1
25.	Urine examination – Physical / Chemical	1
26.	Urine examination – Microscopy	1
27.	CSF examination.	1
28.	Semen examination	1
29.	Other body fluid examination	1
30.	Rh antibody titre	1
31.	Automation in haematology	1

Note: Total Practicals=31, Revision Class=2, Test=2

DMLT 2ND YEAR COURSE-PATHOLOGY
LECTURE SCHEDULE
HISTOPATHOLOGY & CYTOLOGY+BLOOD BANKING

S.No.	Topics	No. of Lectures
1.	Instruments in Histopathology lab – 1. For grossing & for procesing.	1
2.	Instruments in Histopathology lab – 2. For section cutting & staining.	1
3.	Receiving of sample in Histopathology	1
4.	Registration of samples and record keeping	1
5.	Preservation of samples in Histopathology.	1
6.	Grossing of general pathology specimens.	1
7.	Grossing of respiratory system	1
8.	Grossing of GIT	1
9.	Grossing of Hepatobiliary system	1
10.	Grossing of male gential system	1
11.	Grossing of female genital system	1
12.	Grossing of breast tissue.	1
13.	Grossing of Urinary system	1
14.	Grossing of Bones	1
15.	Grossing of thyroid and and endocrine glands	1
16.	Grossing of Brain tissue	1
17.	Tissue Blocking and section cutting.	1
18.	Reagents in Histopathology.	1
19.	Staining of slides in Histopathology I (H & E).	1
20.	Staining of slides in Histopathology II (Retic/PAS/VG/Amyloid).	1
21.	Paraffin blocks filing.	1
22.	Slide filing in Histopathology	1
23.	Specimen mounting & Labeling.	1
24.	Cataloguing for museum	1
25.	Instruments in Cytopathology laboratory.	1
26.	Receiving of samples in Cytopathology	1
27.	Preservatives used in Cytopathology	1
28.	Staining of slides in cytopathology-1: H & E.	1
29.	Staining of slides in cytopathology -2:Pap / gimsa	1
30.	Slide Filing of slides in Cytopathology.	1

Note:- Total Lecture=30, Revision Turns=2,Class Test=2

BLOOD BANKING

S.No.	Topics	No. of Lectures
1.	Blood Banking - an introduction.	1
2.	Blood Bank setup and Functioning, sterlization & sancity.	1
3.	Common Blood groups.	1
4.	Rare blood groups.	1
5.	Genetics & Blood grouping methods.	1
6.	Cross matching.	1
7.	Preparation of grouping sera.	1
8.	Storage of Blood.	1
9.	Labeling & Maintenance of blood bags.	1
10.	Transportation of Blood bags.	1
11.	Preparation of different components of Blood-I	1
12.	Preparation of different components of Blood-II	1
13.	Immune sera – Types , production & uses	1
14.	Screening tests done in blood bank – Diseases & methods- I	1
15.	Screening tests done in blood bank – Diseases & methods- II	1
16.	Rh antibody titre.	1
17.	Coombs test- Direct & Indirect.	1
18.	Blood transfusion reactions.	1
19.	Issuing the blood, madico-legal implications.	1
20.	Disposal of expired blood.	1

Note:- Total Lectures=20, Revision Turns=2,Class Test=2

DMLT 2nd YEAR COURSE - PATHOLOGY

Practical Schedule

HISTOPATHOLOGY, CYTOPATHOLOGY & BLOOD BANKING

S.No. Topics

1. Grossing in General pathology
2. Grossing of GIT
3. Grossing of Hepatobiliary system
4. Grossing of Female genital system
5. Grossing of Breast tissue.
6. Grossing of Urinary system
7. Grossing of Bones
8. Grossing of Thyroid and endocrine glands
9. Staining of slides in Histopathology - H & E
10. Staining of slides in Histopathology - PAS
11. Staining of slides in Histopathology - AFB
12. Staining of slides in Histopathology - GIEMSA
13. Processing in Histopathology I
14. Processing in Histopathology II
15. Processing in Histopathology III
16. Processing in Histopathology IV
17. Blocking in Histopathology I
18. Blocking in Histopathology II
19. Section Cutting in Histopathology I
20. Section Cutting in Histopathology II
21. Section Cutting in Histopathology III
22. Section Cutting in Histopathology IV
23. Making Stain in Cytopathology I
24. Making Stain in Cytopathology II
25. Making Stain in Cytopathology III
26. Making Stain in Cytopathology IV
27. Making Stain in Cytopathology V
28. Staining of slides in Cytopathology- H& E
29. Staining of slides in Cytopathology - PAP
30. Staining of slides in Cytopathology - AFB
31. Staining of slides in Cytopathology - GIEMSA
32. Blood Grouping And Cross Matching I
33. Blood Grouping And Cross Matching II
34. Blood Grouping And Cross Matching III
35. Rh Antibody I
36. Rh Antibody II
37. Coomb's Test I
38. Coomb's Test II
39. Component Preparation I
40. Component Preparation II

NOTE:- Total Practicals = 40, Revision Turns = 4, Class Tests= 2

DMLT 1ST YEAR COURSE - ANATOMY

THEORY LECTURES

S.No.	Topics	No. of Lectures
1.	Definitions of relevant organ/system.	1
2.	Cell structure and function.	1
3.	Cellular activities and reproduction.	1
4.	Surface anatomy & Surface marking of major arteries And veins and related bony structures	2
5.	Outline of Endocrine system.	1
6.	Outline of Skeletal system.	1
7.	Outline of Cardio-vascular system.	1
8.	Outline of lymphatic system.	1
9.	Outline of Respiratory system.	1
10.	Outline of Gastrointestinal system.	2
11.	Special attention towards liver and pancreas.	2
12.	Outline of urogenital system.	2
13.	Outline of central nervous system.	2

NOTE: - Lectures = 18, Revision Turns=02, Class Tests=02, Total=22 Turns

DMLT 1ST YEAR COURSE - ANATOMY

PRACTICAL SCHEDULE

S.No.	Topics	No. of Practicals
1.	To study the gross anatomy of upper extremities.	1
2.	To study the gross anatomy of upper extremities.	1
3.	To study the gross anatomy of Lower extremities.	1
4.	To study the gross anatomy of Lower extremities.	1
5.	To study the gross anatomy of head- neck region.	1
6.	To study the gross anatomy of vertebral column.	1
7.	To study the gross anatomy of cardio vascular system.	1
8.	To study the gross anatomy of cardio vascular system.	1
9.	To study the gross anatomy of spleen & lymph nodes.	1
10.	To study the gross anatomy of Respiratory system.	1
11.	To study the gross anatomy of Digestive system.	1
12.	To study the gross anatomy of Endocrine system.	1
13.	To study the gross anatomy of Urinary system.	1
14.	To study the gross anatomy of Genital system.	1
15.	Micro anatomical studies	1
16.	Micro anatomical studies with the help of Models,	1
17.	Micro anatomical studies Charts & Slides.	1

NOTE: Practicals = 17 Revision Turns= 02, Total=19 Turns

DMLT 1ST YEAR COURSE LECTURES SCHEDULE OF PHYSIOLOGY

S.No.	Topics	No. of Lectures
1.	Introduction to Physiology.	1
2.	Physiology of body cells, tissues, organs system.	1
3.	Blood, its components and functions.	1
4.	Blood groups, blood clotting factors, clotting time bleeding time P.T. /P.C.	1
5.	Blood pressure & Pulse-Definition, measurement techniques, and factors controlling blood pressure.	1
6.	Functions of respiratory system.	1
7.	Functions of Digestive organs.	1
8.	Functions of excretory organs.	1
9.	Fluid and electrolyte balance.	1
10.	Functions of pancreas, Thyroid & parathyroid glands.	1
11.	Introduction to male and female reproductive system.	1
12.	Female and Male reproductive system-Hormonal action.	1
13.	Plasma proteins-Total plasma protein, Albumin, Globulin and Fibrinogen normal values and functions of plasma protein.	1
14.	Hemoglobin-normal values in male, female and children & function of Hemoglobin.	1
15.	Red Blood Cell, normal value, Anemia and Polycythemia.	1
16.	Platelets-Normal value and functions of platelets.	1

NOTE: Total Lectures=16, Revision Turns=02, Class Tests=02
Total=20 Turns

SCHEDULE OF PRACTICALS IN PHYSIOLOGY

S.No.	Topics	No. of Practicals
1.	Study of compound microscope.	1
2.	Collection of Blood sample & commonly used anticoagulants.	1
3.	Preparation of peripheral blood smear.	1
4.	Determination of total leucocyte Count (TLC).	1
5.	Determination of differential leucocyte count (DLC).	1
6.	Determination of total erythrocyte count (RBC).	1
7.	Estimation of Hemoglobin (Sahli's and other methods)	1
8.	Determination of bleeding time and clotting time.	1
9.	Determination of Blood groups (A, B, O and Rh system)	1
10.	Determination of Platelets count.	1
11.	Determination of Arneth count.	1
12.	Measurement of Blood pressure.	1
13.	Examination of respiratory system (Respiratory Rate)	1
14.	Measurement of Heart rate.	1
15.	General Examination.	1

NOTE: Total Practicals=15, Revision Turns= 02, Test=02, Total=19 Turns

DMLT 1ST YEAR COURSE-BIOCHEMISTRY
LECTURE SCHEDULE
THEORY

S.No.	Topics	Number of Class
1.	Introduction of Biochemistry	1
2.	Biochemistry Use in Medicine	1
3.	Units of Measurement	1
4.	Measurement of Volumetric Apparatus (Pipettes, Flasks & Cylinders)	1
5.	Laboratory Hazards	1
6.	Laboratory Safety	1
7.	Laboratory Design & Administration	1
8.	Sample Collection	1
9.	Universal Precautions	1
10.	Waste Disposal & Management	1
11.	Concept and Calculations Molecular Weight	1
12.	Concept and Calculations Equivalent Weight	1
13.	Basic Principles of Centrifugation	1
14.	Mole, Molar, Buffer & Normal Solution	1
15.	Definitions of Acid Base	1
16.	Calorimeter	1
17.	Preparation of Anticoagulants	1
18.	Preservation of Anticoagulants	1
19.	pH & Buffer	1
20.	Water Purification	1
21.	Sterilization	1

Note: - Total Lectures= 21, Revision Turns=02, Class Tests=2
Total=25 Turns

DMLT 1ST YEAR COURSE-BIOCHEMISTRY
PRACTICAL SCHEDULE

Preparation of Various Types of Solutions -	Number of Practicals
Molar, Normal Percentage etc.	
1. Normal & Molar	1
2. Percentage	1
3. Buffers	1
General Reactions of Carbohydrate	
4. Glucose	1
General Reactions of Protein	
5. Albumin	1
Examination of Normal Urine	
6. Physical Examination	1
7. Chemical Examination (Chloride, Sulphate, Urea, Ammonia, Phosphate)	1
Examination of Abnormal Urine	
8. Physical Examination	1
9. Chemical Examination (Protein, Glucose, Ketone Bodies, Bile Salt, Bile Pigment, Blood, Urobilinogen, Chyle, Phenyl Ketonuria, Alkeptonuria)	1
Estimation of Blood Sugar	
10. Normal Value	1
11. Hyper Value & Hypo Value	1
Glucose Tolerance Test	
12. Normal Value	1
13. Hyper Value	1
Estimation of Blood Urea	
14. Normal Value	1
15. Hyper Value & Hypo Value	1
Demonstration of Fully Automatic Analyzer	
16. Programming of Different Analytes	1
17. Standardization	1

Note: Total Practicals = 17, Revisions=03, Tests=02
Total =22 Turns

DMLT 2ND YEAR COURSE-BIOCHEMISTRY
LECTURE SCHEDULE
THEORY

S.No.	Topics	Number of Class
1.	Chemistry of Carbohydrate	1
2.	Chemistry of Protein	1
3.	Chemistry of Lipid	1
4.	Radioisotopes & Their Use in Biochemistry	1
5.	Principles of Electrophoresis	1
6.	Liver Function Test	1
7.	Renal Function Test	1
8.	Thyroid Function Test	1
9.	Body Fluid	1
10.	Quality Control	1
11.	Standardization	1
12.	Ultraviolet and Visible Light Spectroscopy	1
13.	Elisa	1
14.	Radioimmunoassay	1
15.	Polymerase Chain Reaction (PCR)	1
16.	Chromatography	1
17.	Spectrometry	1
18.	Point of Care Testing	1
19.	Introduction of Electrolyte & Water Balance	1
20.	Clinical Approach of Electrolyte & Water Balance	1
21.	Immunochemistry	1
22.	Automation in Clinical Biochemistry	1

Note: - Total Lectures= 22, Revisions=02 Turns, Tests=02
Total=26 Turn

DMLT 2ND YEAR COURSE-BIOCHEMISTRY PRACTICAL SCHEDULE

Estimation of Serum Cholesterol

1. Normal Value 1
2. Hyper Value & Hypo Value 1

Estimation of Serum Creatinine

3. Normal Value 1
4. Hyper Value & Hypo Value 1

Estimation of Serum Protein

5. Normal Value 1
6. Hyper Value & Hypo Value 1

Estimation of Serum Bilirubin

7. Normal Value 1
8. Hyper Value & Hypo Value 1

Estimation of Serum Calcium

9. Normal Value 1
10. Hyper Value & Hypo Value 1

Estimation of Serum Alkaline Phospatase

11. Normal Value 1
12. Hyper Value & Hypo Value 1

Demonstration of ELISA

13. T3 & T4 1
14. TSH 1
15. PRL 1

Demonstration

16. Centrifuge 1
17. pH Meter 1
18. Electrophoresis 1
19. PCR 1
20. Thin Layer Chromatography (TLC) 1

NOTE: Total Practicals=20, Revisions=02 Turns, Tests=2
Total=24 Turns

DEPARTMENT OF MICROBIOLOGY
(DMLT) TEACHING SCHEDULE

GENERAL MICROBIOLOGY 1ST YEAR

THEORY-LECTURES SCHEDULE

1.	General introduction & terms used in Microbiology	1
2.	Safety measures in Microbiology	1
3.	Universal precautions	1
4.	Bio-Waste Disposal	1
5.	Growth & nutrition of Bacteria	1
6.	Care and Handling of Microscopes	1
7.	Use, Care and maintenance of common Lab equipments like centrifuges-I	1
8.	Use, Care and maintenance of common Lab equipments like centrifuges-II	1
9.	Principles & methods of sterilization	1
10.	Antiseptics and disinfectants	1
11.	PH, Buffer & reagents-I	1
12.	PH, Buffer & reagents-II	1
13.	Routine bacteria Culture media-I	1
14.	Routine bacteria Culture media-II	1
15.	Media for bacterial identification-I	1
16.	Media for bacterial identification-II	1
17.	Media for Drug Sensitivity Testing	1
18.	General characteristics & Classification of Bacteria	1
19.	Classification of staining methods smear preparation	1
20.	Gram stains and other routine stains in Microbiology	1
21.	Z.N. Stains and other stains for Mycobacterium	1
22.	Leishman staining	1
23.	Gram positive and negative Cocci	1
24.	Gram negative bacilli	1
25.	Gram positive bacilli	1
26.	Anaerobic bacteria	1
27.	Mechanism of drug resistance in bacteria .	1
28.	Anti bacterial sensitivity testing-I	1
29.	Anti bacterial sensitivity testing-II	1

NOTE: - Lectures = 29, Revision Turns=02, Class Tests=02
Total= 33 Turns

GENERAL MICROBIOLOGY 1ST YEAR

PRACTICAL SCHEDULE

1.	Microscopy	1
2.	Preparation of load for autoclaving & hot air sterilization	1
3.	Autoclaving	1
4.	Use of hot air oven	1
5.	Disinfection	1
6.	Preparation of Buffer & reagents	1
7.	Preparation of Culture media (Selective medias)	1
8.	Preparation of Culture media (Special medias)	1
9.	Smear preparation	1
10.	Use of centrifuges	1
11.	Preparation of stains	1
12.	Gram's staining	1
13.	Zeihl Neelsen staining	1
14.	Leishman / romanowsky staining	1
15.	Albert's & other special staining	1
16.	Inoculation of culture media-I	1
17.	Inoculation of culture media-II	1
18.	Drug Sensitivity Testing-I	1
19.	Drug Sensitivity Testing-II	1

NOTE: - **Practicals = 19, Revision Turns=02, Class Tests=01**
Total= 22 Turns

DEPARTMENT OF MICROBIOLOGY (DMLT) TEACHING SCHEDULE

2ND YEAR SCHEDULE

Bacteriology Lectures

1.	Collection of specimens	1
2.	Identification methods for various bacterias	1
3.	Methods to prepare Identification medias	1
4.	Lab diagnosis of diarrhoea	1
5.	Lab diagnosis of UTI	1
6.	Lab diagnosis of respiratory tract infection	1
7.	Lab diagnosis of meningitis	1
8.	Lab Diagnosis of Tuberculosis	1
9.	Lab diagnosis of wound infection	1
10.	Bacteriological examination of water & air	1
11.	Care and handling of lab animals	1
12.	Preservation of bacteria	1

Practical
COLLECTION, TRANSPORT, PROCESSING & INOCULATION OF

1.	Urine Sample	1
2.	Sputum	1
3.	Wourd swab	1
4.	CSF	1
5.	Stool	1
6.	Animal inoculation	1
7.	Bleeding of mice & rabbit	1
8.	Collection of sheep blood aseptically	1
9.	Care and handling of lab animals	1

Parasitology Lectures

1.	Introduction and classification of parasites	1
2.	Medically important parasites -I	1
3.	Medically important parasites -II	1
4.	Procedure/Method of stool examination	1
5.	Preparation & staining of blood films for haemoparasite	1

Practical

1.	Preparation of blood film for Parasites	1
2.	Staining (Leishman, Geimsa) & Blood smear examination	1
3.	Demonstration of P.vivax, P. falciparum & filarial worms	1
4.	Preparation of stool smears (i) Saline (ii) Concentrated	1
5. Stool examination		1

Immunity Lectures

1.	Antigens and Antibodies	1
2.	Antigen-Antibody reaction	1

Practical

1.	VDRL test	1
2.	WIDAL test	1
3.	Latex agglutination	1
4.	ELISA Test	1

Virology Lecture

1.	Introduction and classification of viruses	1
2.	Lab diagnosis of virus including cultivation of viruses	1
3.	Medically important DNA viruses including HBV	1
4.	Medically important RNA viruses including HIV	1

Mycology Lectures

1.	Introduction & classification of fungi	1
2.	Lab diagnosis of fungi	1
3.	Medically important fungi-I	1
4.	Medically important fungi-II	1
5.	Preparation of smears for fungus examination	1
6.	Media for fungal culture of Fungi	1

Practical

1.	Staining methods for fungus	1
2.	Preparation of smears for fungus examination-I	1
3.	Preparation of smears for fungus examination-II	1
4.	Preparation of media for culture of fungi	1

Note: Lectures=29, Revisions=02, Test=02
Total= 33 Turns
Practical=21 Turns

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U.P. STATE MEDICAL FACULTY

DIPLOMA IN X-RAY TECHINCIAN

DURATION: 02 YEARS

DISTRIBUTION OF PAPERS & MARKS IN VARIOUS YEARS

1ST YEAR

	Subject	Duration Of Study	Duration of Examination	Maximum marks	Passing marks
First Year Theory papers	General aspects		3 hrs	100	
	Human anatomy and Human Physiology				
	Protection against radiological hazards				
	Basic & radiation physics				
	Basics orientation of radiotherapy				
	Radiological procedures and Dark room procedure				
First Year Practical	Practical will be based on theory		3 hrs	100	

2ND YEAR

	Subject	Duration Of Study	Duration of Examination	Maximum marks	Passing marks
Second Year Theory papers	Basic Radiographic techniques		3 hrs	100	
	Regional Radiography & radiological Procedure				
	Equipments for Radio diagnosis				
	Ultrasonography and technique of Ultra sound				
	Latest developments				
Second Year Practical	Practical will be based on theory		3 hrs	100	

First Year

PAPER	SUBJECT	MAX. MARKS	PASSING MARKS
First Theory	Human Anatomy, Physiology, Basic Pathology, Microbiology & Pharmacology	**50**	**25**
First Practical	Human Anatomy, Physiology, Basic Pathology, Microbiology & Pharmacology	**100**	**50**
Second Theory	Radiation Physics, Community Medicine & Radiation Hazards, Basic Medicine, Surgery, Orthopedics, Obstetrics & Gynecology	**50**	**25**
Second Practical	Radiation Physics, Community Medicine & Radiation Hazards, Basic Medicine, Surgery, Orthopedics, Obstetrics & Gynecology	**100**	**50**

Second Year

PAPER	SUBJECT	MAX. MARKS	PASSING MARKS
First Theory	Radiography & Radiographic Techniques	50	25
First Practical	Radiography & Radiographic Techniques	100	50
Second Theory	Radiotherapy & Radiographic Techniques	50	25
Second Practical	Radiotherapy & Radiographic Techniques	100	50

Detailed curriculum

Note-For theory subjects Students are expected to receive knowledge which is important for them to correlate practical teaching.

Year of study and paper	SUBJECT	
FIRST YEAR THEORY PAPER	**1-GENERAL ASPECTS** A-GENERAL FUNCTIONING OF DIFFERENT TYPES OF HOSPITALS B-HOSPITAL ADMINISTRATION. C-GENERAL PATTERN OF THE STAFF. D-HOSPITAL RECORD KEEPING. E-FUNCTIONING OF GENERAL WARDS. F-FUNCTIONING OF SPECIAL WARDS. G-INTER DEPARTMENTAL RELATIONS AND WORK CULTURE H-RELATIONS WITH SENIOR AND OTHER STAFF I-CARE AND ATTENTION OF OPD AND INDOOR PATIENTS. J-CARE AND ATTENTION OF CRITICAL AND INJURED PATIENTS. K-LESSONS ON PREPARATION OF THE PATIENTS FOR GENERAL AND SPECIAL INVESTIGATIONS. L-PROFESSIONAL ETIQUETTE AND ETHICS	
	2-HUMAN ANATOMY AND HUMAN PHYSIOLOGY A-ORGANS AND SYSTEMS. B-ANATOMICAL POSITION OF THE BODY. C-AXIS AND PLANES. D-BONES- CLASSIFICATION - DEVELOPMENT - PARTS OF LONG BONES - BLOOD SUPPLY OF BONES - DIFFERENT BONES OF THE BODY INCLUDING STERNUM AND VERTEBRAE & RIBS E-JOINTS - DEFINITION, CLASSIFICATION, MOVEMENTS OF DIFFERENT JOINTS. - DIFFERENT JOINTS OF THE BODY F-OUTLINE OF VARIOUS PARTS OF THE THORACIC CAGE G-OUTLINE OF VARIOUS VISCRA OF THE ABDOMEN. H-SURFACE MEASURING AND RADIOLOGICAL PROCEDURES USED IN THE STUDY OF THRACIC AND ABDOMINAL ORGANS. I-OUTLINE OF BRAIN AND ITS PARTS PHYSIOLOGY A-OUTLINE OF FUNCTIONING OF VARIOUS SYSTEMS OF	

	THE BODY B-COMPOSITION OF BLOOD. C-E.C.G. D-GENERAL PRINCIPLES OF ENDOCRINOLOGY E-PHYSIOLOGY OF KIDNEY AND URINE FORMATION. F-PHYSIOLOGY OF MALE AND FEMALE REPRODUCTIVE SYSTEM.	
	3-PROTECTION AGAINST RADIOLOGICAL HAZARDS- A-LIKELY HAZARDS FACED WHILE WORKING IN X RAY DEPARTMENT. B-HAZARDOUS MATERIALS C-METHODS TO PROTECT THESE HAZARDS.	
	BASIC & RADIATION PHYSICS- 1-FUNDAMENTAL OF PHYSICS 2-MEASUREMENTS UNITS OF CGS AND MRS SYSTEM 3-ELECTRIC CHARGE. 4-CURRENT AND RESISTANCE. 5-ELECTROMAGNETIC INDUCTION SELF AND MUTUAL PRODUCTION OF A.C. CURRENT. 6-TRANSFORMERS LOSSES CONSTRUCTION, REGULATIONS AND TYPES USED IN X RAY APPARATUS. 7-THERMIONIC EMISSION VACUUM DIODE. 8-THE DIODE AS RECTIFIER AND AS AN X RAY TUBE. 9-TYPES OF RECTIFICATION AND METHODS USED IN DIAGNOSTIC AND THERAPY UNITS. 10-RT CABLES. 11-MATTER & ENERGY. 12-RADIATION & SPECTRA. 13-ATOMS & NUCLEI. 14-RADIOACTIVITY. 15-PRODUCTION. 16-MEASUREMENT. 17-CONTROL & INDICATING DEVICES. 18-ROENTGEN & ITS MEASUREMENTS. 19-GEIGER MOLLER & SCINTILLATION COUNTERS & DOSIMETER 20-ABSORBED DOSES & RAD 21-FILTERS & FILTRATION	
	BASICS ORIENTATION OF RADIOTHERAPY- TECHNICAL ASPECTS OF X AND GAMMA RAYS THERAPY. TUMOR LOCALIZATION AND VERIFICATION, FIELD COMBINATION TREATMENT PLANNING, USE OF STIMULATORS. TECHNICAL ASPECTS OF THE USE OF RADIOACTIVE SUBSTANCES IN THERAPY, CONSTRUCTION OF RADIUM NEEDLES AND TUBES. DOSE CALCULATION USING INVERSE SQUARE LAW, PRINCIPLES OF MOULDS AND IMPLANTS.	

	APPLICATION OF BETA-RAYS THERAPY, PRINCIPLES OF CLINICAL USES OF UNSEALED RADIOACTIVE SOURCES PROTECTION, PROTECTIVE MATTERIALS IN COMMON USE. ROOM AND MACHINE PROTECTION. INSTALLATION OF X AND GAMMA RAYS UNITS, CARE AND CUSTODY OF SOURCES OF IONIZING RADIATION, PERSONAL MONITORING SYSTEMS, TYPES OF APPARATUS OF X RAY THERAPY APPARATUS FOR SUPER VOLTAGE SOURCES. APPARATUS FOR SEALED SOURCES. COBALT-CHI AND CAESIUM 137 SHORT AND LONG DISTANCE TECHNIQUES. BIOLOGICAL EFFECTS OF IONIZING RADIATION. GENETIC EFFECTS. SOMATIC EFFECTS ON BLOOD AND TISSUE. CARE OF THE THERAPY PATIENT. REPORTING IN CHANGES OF CONDITION DUE TO TREATMENT. GENERAL WELFARE OF PATIENTS. KEEPING OF INDIVIDUAL RECORD. NEED FOR ACCURACY IN DOSAGE. POSITIONING AND RECORDING OF DOSAGES.	
	RADIOLOGICAL PROCEDURES CONTRAST MEDIA- TYPES, PROPERTIES, REACTION & TREATMENT. GENITOURINARY SYSTEM-IVU, MCU, RCU, HSG. GI TRACT-BA SWALLOW, BA MEAL, BA FOLLOW THROUGH, BA ENEMA, SMALL BOWEL. ENEMA, DOUBLE CONTRAST ENEMA, SIALOGRAPHY. BILARY TRACT-OCG, IVP EPCP, PTHC, T TUBE & OPERATIVE CHOLANGIORAPHY. **DARK ROOM PROCEDURE** SITTING LAY OUT & FITTINGS CASSETTE & FILM HANDLING-LOADING & UNLOADING, SAGE LIGHT. MANUAL & AUTOMATIC PROCESSING-PRACTICAL ASPECT	
	PRACTICAL WILL BE BASED ON THEORY	

	2ND YEAR	
SECOND YEAR THEORY PAPER	**BASIC RADIOGRAPHIC TECHNIQUES** **SKULL** : RADIOGRAPHY OF CRANIAL BONES, CRANIUM, SELLA TURCICA, ORBIT OPTICFORMINA, SUPERIOR ORBITAL FISSURE AND INFERIOR ORBITAL FISSURE. **FACIAL BONES**: PARANASAL SINUSES. TEMPORAL BONE. DENTAL RADIOGRAPHY. RADIOGRAPHY OF TEETH INTRA ORAL, EXTRA ORAL AND OCCULUSAL VIEW. **ABDOMEN:** PREPARATION OF PATIENT, GENERAL, ACUTE POSITIONING FOR FLUID AND AIR LEAVES. PLAIN FILM EXAMINATION. RADIOGRAPHY OF FEMALE ABDOMEN TO LOOK FOR PRGNANCY. MACRO RADIOGRAPHY, PRINCIPAL, ADVANTAGE, TECHNIQUE AND APPLICATIONS. STEREOGRAPHY: PROCEDURE-PRESENTATION, FOR VIEWING, STEREOSCOPES, STEREMETY. HIGH KV TECHNIQUE PRINCIPLE AND ITS APPLICATIONS. SOFT TISSUE TECHNIQUES-MAMMOGRAPHY, LOCALIZATION OF BODIES. WARD MOBILE RADIOGRAPHY: GENERAL PRECAUTIONS, ASPESIS IN TECHNIQUES. CHECKING OF MAINS SUPPLY AND FUNCTIONS OF EQUIPMENT, SELECTION OF EXPOSURE FACTORS, EXPLOSION RISKS. RADIATION PROTECTION AND RAPID PROCESSING TECHNIQUES.	
	REGIONAL RADIOGRAPHY & RADIOLOGICAL PROCEDURES COMMON TERMINOLOGY RADIOGRAPHY OF EACH PART POSITIONING PATIENT HANDLING & PREPARATION DRUGS IN X RAYS DEPT. CLINICAL, ETHICAL & LEGAL RESPONSIBILITY,(INCLUDING MEDICO, LEGAL/ACCIDENT CASES	
	EQUIPMENTS FOR RADIO DIAGNOSIS **EQUIPMENTS FOR RADIOTHERAPY INCLUDING NEWER DEVELOPMENTS** ORTHO VOLTAGE EQUIPMENT WITH SPECIAL REFERENCE TO PHYSICAL DESIGN REQUIREMENT OF TUBE AND ITS ACCESSORIES AND INTERLOCKS, GAMMA RAY SOURCES USED IN RADIOTHERAPY ESPECIALLY COBALT 60 SOURCE ITS CONSTRUCTION AND SOURCE HOUSING AND HANDLING MECHANISM. PRINCIPLES OF ISOCENTRIC. TELE-ISOTOPE MACHINES MEGA VOLTAGE X RAYS AND ELECTRON BEAM ACCELERATORS AND BELATRON. SALIENT FEATURES OF COMPONENTS OF LINEAR ACCELERATOR LIKE TUBE DESIGN, WAKE GUIDE, TARGET DESIGN BEAM BENDING SYSTEM. RADIO-FREQUENCY GENERATORS KILE MAGNETRON AND	

	LIESTRON. BASIC PRINCIPLE OF REMOTE AFTER-LOADING SYSTEM/MACHINES FOR MAKING CASTS. STEROFOAM TEMPLATE CUTTING SYSTEM INTRODUCTION TO RADIO-SURGERY EQUIPMENT AND DOSIMETRY EQUIPMENT. **PRACTICAL BASED ON THEORY**	
	ULTRASONOGRAPHY AND TECHNIQUE OF ULTRA SOUND RADIOLOGICAL PROCEDURES PERTAINING TO SALIVARY GLANDS, LACRIMAL SYSTEM, BROCHOGRAPHY ARTHROGRAPHY AND HYSTEROSALPANGLOGRAPHY VARIOUS REQUIREMENT TROLLEY SET UP, INDICATIONS AND CONTRA INDICATIONS, CONTRAST MEDIA USED. VENTRICULOGRAPHY AND ENCEPHALOGRAPHY-TECHNIQUE, CONTRAST MEDIA USED, FILM SEQUENCE, INDICATION CONTRA INDICATIONS. MYELOGRAPHY, TECHNIQUE, CONTRAST MEDIA USED, INJECTION OF CONTRAST MEDIA, INDICATIONS AND CONTRA INDICATIONS. I.V.P. AND CYSTOGRAPHY ETC. INTRA-VENOUS CHOLANGIOGRAPHY T.TUBE: CHOLANGIOGRAPHY PREOPERATIVE CHOLANGIOGRAPHY PROCEDURE CONTRAST MEDIA INDICATION & CONTRA INDICATIONS. DOUBLE CONTRAST BARIUM STUDIES (SMALL BOWEL ENEMA BA ENEMA ETC.) PRE-OPERATIVE CHOLANGIOGRAPHY PROCEDURE CONTRAST MEDIA INDICATIONS AS CONTRAST MEDIA USED. ANGIOGRAPHY: CEREBRAL CARDIAC ABDOMINAL AORTOGRAPHY GENERAL ANAL AND SELECTIVE RENAL. SPLENOPORTOVENOGRAPHY PERIPHERAL ARTERIAL AND VENOUS ANGIOGRAPHY PRECATUTIONS RADIATION PROTECTION FILM CHARGE MANUAL AUTOMATIC BIPLANE FILM TYPES LARGE MINIATURE CINE CONTRAST MEDIA INJECTION PROCEDURE AND TECHNIQUE. INTERVENTIONAL RADIOLOGICAL PROCEDURES. PTC. PTBD, ERCP, FINE NEEDLE ASPIRATION CYTOLOGY PERCUTANEOUS NEPHOROSTOMY. CARDIAC CATHERIZATION IMMOBILIZATIONS DILATION ETC.	
	LATEST DEVELOPMENTS SPECIAL RADIOLOGY	

	EQUIPMENT -IMAGE INTENSIFIER & TV MONITOR -MAMMOGRAPHY -DIGITAL RADIOGRAPHY -PICTORIAL ARCHIVING & COMMUNICATION SYSTEM (PACS) -COMPUTERS IN RADIOLOGY COMPUTED TOPOGRAPHY: HISTORICAL DEVELOPMENTS, ITS PRINCIPLE AND APPLICATIONS, VARIOUS GENERATORS AND DEFINITION OF TERMS AND CROSS SECTIONAL ANATOMY. RECENT DEVELOPMENTS IN CT- SPECIAL CT (TRIPLE PHASE CT STUDY FOR HEPATIC & PANCREATIC TUMOR, MULTISLICE CT, PRINCIPLES OF CT ANGIO, CT GUIDED BIOPSIES & DRAINAGE. MRI RECENT DEVELOPMENTS IN US – 3D USG, COLOUR DOPPER, 4D USG, GUIDED BIOPSIES & DRAINAGE. DIAGNOSTIC ULTRASOUND: ITS PRINCIPLE APPLICATIONS AND ROLE IN MEDICINE. VARIOUS TYPES OF TRANSDUCERS AND DEFINITION TERMS AND CROSS SECTIONAL ANATOMY. DIGITAL RADIOGRAPHY: PRINCIPLE SCANNED PROJECTION RADIOGRAPHY DIGITAL SUBTRACTION ANGIOGRAPHY APPLICATION AND DEFINITIONS OF TERMS.	
	PRACTICAL WILL BE BASED ON THEORY	

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SYLLABUS FOR

EMERGENCY & TRAUMA CARE ASSISTANT

Duration of training: **24 wks**

Total No of periods available for training: **1152 pds**

S.No.	CODE	SUBJECT	PHASE-I	PHASE-II	PHASE-III	TOTAL
			12 WKS	06WKS	07WKS	24WKS
1.	EN	Elementary Nursing	25			25
2.	AP	Anatomy & Physiology	17			17
3.	ME	Medical Equipment	25			25
4.	FA	First Aid	35			35
5.	ADM	Administration	14	18		32
6.	OE	Organization & Employment		12		12
7.	NBC	NBC Warfare	08			08
8.	DM	Disaster Management			14	14
9.	IT	IT Training	10		10	20
10	CC	Carriage of casualty	72	36	42	150
11	CM	Community Medicine			18	18
12	DR	Drill	72	36	42	150
13	PRACTICAL			636		636
14	DEMO		05		05	10

- 1 WK TERM BREAK AFTER COMPLETION OF PHASE-I
- Evening classes for ADM &OE FROM 1600hrs to 1700hrs during hospital phase.

SYLLABUS FOR E.T.C.A.

Duration of training - 24 WKS
No of Periods per Week - 48pds
Total No of periods Available for Training - 1152 pds

S No	LESSON CODE	SUBJECT	PHASE I (12 WKS)	PHASE II (6 WKS)	PHASE III (7 WKS)	Total
1.	DR	Drill	72	36	42	150
2.	CC	Carriage of Casualties	72	36	42	159
3.	EN	Elementary Nursing	25	-	-	25
4.	AP	Anatomy and Physiology	17	-	-	17
5.	ME	Medical equipment	25	-	-	25
6.	FA	First Aid	35	-	-	35
7.	ADM	Administration	14	18	-	32
8.	OE	Organisation & Employment	-	12	-	12
9.	NBC	NBC Warfare	08	-	-	08
10	DM	Disaster Management	-	-	14	14
11	IT	IT Training	10	-	-	10
12	CM	Community Medicine	-	-	18	18
13	DEMO	NBC Warfare	01	-	01	02
14	DEMO	Man Pack ADS	01	-	01	02
15	DEMO	Cas Evac	01	-	-	01
16	PRACTICAL		-	636	-	636
		Total Periods				1152

CARRIAGE OF CASUALTIES

S. No.	Lesson code	Lesson	Lecture	Practical	Demo
1.	CC-1	Introduction to carriage of casualties	01		
2.	CC-2	Principles of evacuation of casualties	01		
3.	CC-2	Different methods of carriage of casualties	01		
4.	CC-3	Carriage of casualties by one bearer		01	
5.	CC-4	Carriage of casualties by back to back position		01	
6.	CC-5	Carriage of casualties by human crutch and neck draw		01	
7.	CC-6	Carriage of casualties by fireman lift and carry position		01	
8.	CC-7	Carriage of casualties by two bearers		01	
9.	CC-8	Carriage of casualties by three hand seat		01	
10	CC-9	Carriage of casualties by four hand seat position		01	
11	CC -10	Carriage of casualties by four and half lift carry &human stretcher position		01	
12	CC -11	Introduction to stretcher		01	
13	CC -12	Sizing & Forming of stretcher Squad		01	
14				01	
15	CC -13	Collection pilling and Carriage of stretcher and Blanket		01	
16	CC -14	Use of one Blanket for wrapping the Injured/ casualties		01	
17	CC -15	Use of Two Blanket for wrapping the casualties.		01	
18	CC -16	Use of three Blanket for wrapping the casualties.		01	
19	CC -17	Introduction to Improvisation of stretchers		01	
20	CC -18	Improvisation of stretcher by two poles an one blanket		01	
21	CC -19	Improvisation of stretcher by two pole and one ground sheet.		01	
22	CC -20	Improvisation of stretcher by two pole and shirts		01	
23	CC -21	Improvisation of stretcher by two pole and shirts.		01	
24	CC -22	Improvisation of stretcher by two pole and two empty sacks.		01	
25	CC -23	Improvisation of stretcher by two pole and		01	

		two line beddings/ ropes			
26	CC -24	Improvisation of stretcher by two poles and five web belts/nine web Anklets.		01	
27	CC -25	Improvisation of stretcher by two poles and split Bamboo pieces.		01	
28	CC -26	Loading stretcher and shoulder Carriage.		01	
29	CC -27	Changing bearers to shoulder carriage.		01	
30	CC -28	Loading stretcher and hand carriage.		01	
31	CC -29	Changing bearers to hand carriage.		01	
32	CC -30	Introduction to Mechanical transport used in Indian Army		01	
33	CC -31	Loading and unloading of casualties in Tata sumo Light Ambulance		01	
34	CC -32	Loading and unloading casualties in Mahindra light Ambulance		01	
35	CC -33	Loading and unloading of casualties in Swaraj Mazda 2.5 ton Ambulance.		01	
36	CC -34	Loading and unloading of casualties in TATA 2.5 ton Ambulance		01	
37	CC -35	Loading and unloading of casualties in 2 in ton G S (Truck)		01	
38	CC -36	Loading and unloading of casualties in 7.5 ton ALS (Truck)		01	
39	CC -37	Loading and unloading of casualties in Air Craft		01	
40	CC -38	Loading and unloading of casualties in ship		01	
41	CC-39	Evacuation of casualties from tank		01	
42	CC -40	Evacuation of casualties by Rail/Air/Sea.		01	
43	CC -41	Uses of stretcher sling		01	
44	CC -42	Introduction to Animal Transports		01	
45	CC -43	Introduction to Animal Carriage.		01	
46	CC -44	Care of Animals, Common Injuries and their prevention.		01	
47	CC -45	Loading and unloading drill on mules GS		01	
48	CC -46	Method of packing for Blanket pack		01	
49	CC -47	Loading of Oxygen(O_2) Cylinder and PTG Boxes		01	
50	CC -48	Loading of Pakhal, Cooking utensils and oil cooker		01	
51	CC -49	Loading of Dry ration		01	
52	CC -50	Loading of Med store		01	
53	CC -51	Loading of regular and Irregular Sized Items		01	
54	CC -52	Loading of Thomas Splint		01	

55	CC -53	Loading of Day and Night Sign post.		01	
56	CC -54	Collection of wounded by squad of four bearers		01	
57	CC -55	Collection of wounded by squad of Two bearers		01	
58	CC -56	Collection of wounded by one bearers		01	
59	CC -57	Carriage of the wounded over wall or fence obstacles		01	
60	CC -58	Crossing a ditch with casualties		01	
61	CC -59	Evacuation of casualties over snow		01	
62	CC -60	Use of Basket stretcher		01	
63	CC -61	Uses of Orthopaedic/scoop stretcher		01	
64	CC -62	Carriage of cervical spine injury Casualties		01	
65	CC -63	Carriage of Abdominal Wound casualties		01	
66	CC-64	Carriage of chest injury casualties		01	
67	CC -65	Carriage of face wound casualties		01	
68	Cc -66	Carriage of Head injury casualties		01	
69	CC -67	Carriage of Femur bone fracture casualties		01	
70	CC -68	Use of Thomas Splint		01	
71	CC -69	Improvised Splint		01	
72	CC -70	Introduction to Improvised Raft		01	
73	CC -71	Improvisation of raft by eight stretcher and one Tarpaulin size16’X 16’		01	
74	CC -72	Improvisation of raft by three empty Bard and two Bamboos.		01	
75	CC -73	Improvisation of raft by eight jurricane and two Bamboos.		01	
76	CC -74	Crossing a water obstacle by Burma Bridge		01	
77	CC -75	Crossing a water obstacle by Flying Fox		01	
78	CC -76	Crossing a small River /Canal with casualties by basket stretcher		01	
79	CC -77	Carriage of casualties over a steep slope		01	
80	CC – 78	Carriage of casualties through a narrow mountain Path.		01	
81	CC -79	Carriage of casualties from FDL to RAP		01	
82	CC -80	Carriage of casualties from RAP to ADS		01	
83	CC -81	Carriage of casualties from ADS to FSC		01	
84	CC -82	Carriage of casualties from FSC to MH		01	
85	CC -83	Carriage of casualties from MH to Specialised centre		01	

ELEMENTARY NURSING

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	EN-1	Introduction to Nursing	01		
2.	EN-2	Hospital Admission, Discharge and Transfer Procedure	01		
3.	EN-3	Hospital Diets	01		
4.	EN-4	Hospital diets	01		
5.	EN-5	Feeding of Bed Patients	01	01	01
6.	EN-6	Bed Making : Summer bed		01	01
7.	EN-7	Bed Making : Winter bed		01	01
8.	EN-8	Bed Making : Post-operative		01	01
9.	EN- 9	Bed Making : Occupied		01	01
10.	EN-10	Positions		01	01
11.	EN-11	Recording of Temperature, Pulse, Respiration		01	01
12.	EN-12	Recording of Blood Pressure		01	01
13.	EN-13	Personal, Hygiene : Sponge bath & Oral Care		01	01
14.	EN-14	Sterilization & Disinfection	01		
15.	EN-15	Nursing care of a Febrile Patient		01	
16.	EN-16	Medical and Surgical Hand washing		01	01
17.	EN-17	Ward Administration		01	
18.	EN-18	Nursing care of an Unconscious Patient		01	
19.	EN-19	Aseptic Procedure & Precaution	01		
20.	EN-20	Universal Safety Precaution	01		
21.	EN-23	Handling of Psychiatric/Disoriented Patient	01		
22.	EN-24	Nursing care of pediatric case		01	
23.	EN-25	Nursing care of geriatric case		01	
		Tests	03	03	

ANATOMY AND PHYSIOLOGY

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	AP-1	Introduction to anatomy	01		
2.	AP-2	Special sensory organs	01		
3.	AP-3	Skin: composition and function	01		
4.	AP-4	Water and electrolyte balance	01		
5.	AP-5	Visit to museum	01		01
6.	AP-6	Musculoskeletal System : Anatomy	01		
7.	AP-7	Musculoskeletal System : Applied Physiology	01		
8.	AP-8	Respiratory System : Anatomy	01		
9.	AP-9	Respiratory System : Applied Physiology	01		
10.	AP-10	Cardiovascular System : Anatomy	01		
11.	AP-11	Cardiovascular System : Applied Physiology	01		
12.	AP-12	Central Nervous System : Anatomy	01		
13.	AP-13	Central Nervous System : Applied Physiology	01		
14.	AP-14	Digestive System : Anatomy	01		
15.	AP-15	Digestive System : Applied Physiology	01		
16.	AP-16	Genitourinary System : Anatomy	01		
17.	AP-17	Genitourinary System : Applied Physiology	01		
18.		Test	01		

MEDICAL EQUIPMENT

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	ME-01	Introduction to Hospital Equipment	01		
2.	ME-02	Care and maintenance of equipment	01		

3.	ME-03	Introduction to Equipment Management	01		
4.	ME-04	Types of Equipments : Diagnostic and Therapeutic	01		
5.	ME-05	Diagnostic Equipment : ECG Machine	01		
6.	ME-06	Diagnostic Equipment : Thermometer	01		
7.	ME-07	Diagnostic Equipment : BP Apparatus	01		
8.	ME-08	Therapeutic Equipment : Oxygen Cylinder and Crash Cart	01		
9.	ME-09	Therapeutic Equipment : Nebulizer	01		
10.	ME-10	Hospital beds for patients	01		
11.	ME-11	Stores : Ordinance and Medical	01		
12.	ME-12	Repair of Equipments	01		
13.		Test	01		

FIRST AID

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	FA-01	Introduction to First Aid	01		
2.	FA-02	Definition and principles of first aid	01		
3.	FA-03	Golden rules of first aid	01		
4.	FA-04	Qualities of a first aider	01		
5.	FA-05	First aid kit contents and its uses	01		
6.	FA-06	First Field dressing and its application	01		
7.	FA-07	Shell dressing and its application	01		
8.	FA-08	Basic principles of emergency care and first aid	01		
9.	FA-09	Introduction to bandages and splints	01		
10.	FA-10	Bandaging fingers.		01	
11.	FA-11	Bandaging arm, forearm, hand		01	
12.	FA-12	Bandaging thigh, leg		01	
13.	FA-13	Bandaging jaws		01	
14.	FA-14	Bandaging head: Capelin bandage		01	
15.	FA-15	Bandaging of joints (Figure of 8 bandages)		01	
16.	FA-16	Triangular Bandages: uses		01	

17.	FA-17	Shock	01		
18.	FA-18	CPR		06	
19.	FA-19	Wounds and their Classification	01		
20.	FA-20	Chest wound and their first aid	01		
21.	FA-21	Abdominal wounds and their first aid.	01		
22.	FA-22	Sepsis and its control	01		
23.	FA-23	Hemorrhage: Causes, Effects and arrest of Hemorrhage	01	01	
24.	FA-24	First Aid During Emergency : Asphyxia, Electrocution, Drowning	01		
25.	FA-25	Smoke inhalation and carbon-monoxide poisoning	01		
26.	FA-26	Blast and Crush injuries	01		
27.	FA-27	Poisoning and its first aid.	01		
28.	FA-28	Fractures : Classification, First Aid	01		
29.	FA-29	First Aid of Dog bite, insects bite	01		
30.	FA-30	First Aid for common skin problems	01		
31.	FA-31	Burns and Scalds: Classification, First Aid	01		
32.	FA-32	Foreign Bodies	01	01	
33.	FA-33	Effects of Heat and Preventive measures	01		
34.	FA-34	Effects of Cold and Preventive measures	01		
35.	FA-35	Effects of High Altitude : First Aid and Preventive measures	01		
36.		Tests	03		

COMMUNITY MEDICINE

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	CM-1	Introduction to Community Medicine	01		
2.	CM-2	Personal Hygiene : Body bath	01		
3.	CM-3	Personal Hygiene : Oral Hygiene	01		
4.	CM-4	Personal Hygiene : Nails, Hair & Foot	01		
5.	CM-5	Hygiene & Sanitation of personnel line	01		
6.	CM-6	Hygiene & Sanitation of cook house	01		
7.	CM-7	Hygiene & Sanitation of Camp area	01		
8.	CM-8	Waste Disposal	01		
9.	CM-9	Water Sanitation	01		
10.	CM-10	Safe Water Supply	01		
11.	CM-11	Water Borne Diseases	01		
12.	CM-12	Air Borne Diseases	01		
13.	CM-13	Food Borne Diseases	01		
14.	CM-14	Fly Borne Diseases	01		
15.	CM-15	Malaria : Causes, Effects & Prevention	01		
16.	CM-16	Introduction to Communicable Diseases	01		
17.	CM-17	Measles & Mumps: Causes, Effects & Prevention	01		
18.	CM-18	Diphtheria: Causes, Effects & Prevention	01		
19.	CM-19	Tetanus: Causes, Effects & Prevention	01		
20.	CM-20	Tuberculosis: Causes, Effects, Prevention & Treatment	01		
21.	CM-21	Immunization	01		
22.	CM-22	STD : Causes, Effects & Prevention	01		
23.	CM-23	AIDS : Causes, Effects & Prevention	01		
24.	CM-24	Hepatitis : Causes, Effects & Prevention	01		
25.	CM-25	Maternal & Child Health	01		
26.	CM-26	WHO	01		
27.	CM-27	Geneva Convention	01		

28.	CM-28	Sanitation in Unit Lines Camp Demo Area	01		
29.	CM-29	Disinfection of Common Items in Hospital Use	01		
30.	CM-30	Composition of Food and Balance Diet	01		
31.	CM-31	Hygiene and Sanitation at High Altitude	01		
32.	CM-32	Demography of Population Explosion in India and Its Effects	01		
33.		Test	01		

ADMINISTRATION

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	ADM-1	Introduction to Administrative Duties	01		
2.	ADM-2	Red Cross	01		
3.	ADM-3	Red Cross	01		
4.	ADM-4	Office Administration	01		
5.	ADM-5	Office Administration	01		
6.	ADM-6	Types of Ration : Ors and JCOs	01		
7.	ADM-7	Types of Ration : Ors and JCOs	01		
8.	ADM-8	Duties of Night Sentries	01		
9.	ADM-9	Duties of Night Sentries	01		
10.	ADM-10	Duties of Office Runners	01		
11.	ADM-11	Fire Fighting	01		
12.	ADM-12	Fire Fighting	01		
13.	ADM-13	Pay and Allowances	01		
14.	ADM-14	Pay and Allowances	01		
15.	ADM-15	Hospital Staff-Patient relationship	01		
16.	ADM-16	Part - II Orders	01		
17.	ADM-17	FRW & CV	01		
18.	ADM-18	Clothing and entitlements	01		
19.	ADM-19	Clothing and entitlements	01		
20.	ADM-20	Free Orderly Room Procedure	01		
21.	ADM-21	Types of Court Martial	01		
22.	ADM-22	Types of Court Martial	01		
23.	ADM-23	Prospectus in Army	01		
24.	ADM-24	Grants (ATG, I&M and, Amenity)	01		
25.	ADM-25	Grants (ATG, I&M and, Amenity)	01		
26.	ADM-26	Introduction to Security	01		
27.	ADM-27	Security of Personnel	01		
28.	ADM-28	Security of Material	01		
29.	ADM-29	Security of Information	01		
30.	ADM-30	Cyber Security	01		
31.	ADM-31	Telephone Security	01		
32.		Test	01		

ORGANISATION AND EMPLOYMENT

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	OE-1	History, Organization & Functions of Medical Units	01		
2.	OE-2	History, Organization & Functions of Medical Units	01		
3.	OE-3	Medical Units in PE	01		
4.	OE-4	Medical Units in PE	01		
5.	OE-5	Medical Units in WE	01		
6.	OE-6	Medical Units in WE	01		
7.	OE-7	Field Hospitals	01		
8.	OE-8	Para Field Hospitals	01		
9.	OE-9	Standard Field Hospitals	01		
10.	OE-10	Corps Field Hospitals	01		
11.	OE-11	Military Hospital, General Hospital, Base Hospitals	01		
12.	OE-12	RAP Sitting and Layout	01		
13.	OE-13	ADS Sitting and Layout	01		
14.	OE-14	FSC Sitting and Layout	01		
15.	OE-15	Chain of Evacuation of Casualties]	01		
16.	OE-16	Combat Stress Management	01		
17.	OE-17	Motivation and Team Work	01		
18.	OE-18	Human Rights and aid to civil (IS duties)	01		
19.	OE-19	Hospital Waste management	01		
20.	OE-20	Carrier Prospects in Army Medical Corps	01		
21.	OE-21	ECHS	01		
22.	OE-22	Resettlement Courses	01		
23.	OE-23	Entitlements of Pensioners	01		
24.		Test	01		

NBC

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	NBC-1	Introduction to NBC	01		
2.	NBC-2	Phenomenon of Nuclear	01		

		Explosion			
3.	NBC-3	Types of Bursts and Its Effects	01		
4.	NBC-4	Thermal and Radiation effects	01		
5.	NBC-5	Different agents in Biological Warfare	01		
6.	NBC-6	Med Aspects Of Biological Warfare	01		
7.	NBC-7	Detection, Sample and identification	01		
8.	NBC-8	Chemical agents classification	01		
9.	NBC-9	Effects of Different Chemical agents	01		
10.	NBC-10	NBC Presentation			01
11.		Test	01		

DISASTER MANAGEMENT

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	DM-1	Introduction to Disaster Management	01		
2.	DM-2	Principles of Emergency Management of Casualties	01		
3.	DM-3	Health Care at Disaster site	01		
4.	DM-4	Principles of transportation and evacuation of casualties	01		
5.	DM-5	Documentation	01		
6.	DM-6	Concept of Triage	01		
7.	DM-7	Disaster aftermath and rehabilitation	01		
8.	DM-8	Universal precautions	01		
9.	DM-9	Role of other agencies in disaster	01		
10.	DM-10	Role specific to trade	01		
11.	DM-11	Communication and public relations	01		
12.	DM-12	Security aspects	01		
13.	DM-13	NBC Component of Disaster Management	01		
14.	DM-14	NBC Component of Disaster Management	01		
15.		Test	01		

IT TRG.

S No	Lesson code	Lesson	Lecture	Practical	Demo
1.	IT-1	Introduction to Computer	01		
2.	IT-2	Types of Computers	01		
3.	IT-3	Protection of Computers : Virus & Anti-Virus	01		
4.	IT-4	Software & Hardware	01		
5.	IT-5	Input & Output Devices	01		
6.	IT-6	Keyboard Shortcuts & its Applications	01		
7.	IT-7	MS Office : Introduction	01		
8.	IT-8	MS Word	01	01	
9.	IT-9	MS Excel	01	01	
10.	IT-10	MS PowerPoint	01	01	
11.	IT-11	Installation of Printers & Printing of Documents	01		01
12.	IT-12	Storage devices	01		
13.	IT-13	Networking : Introduction	01		
14.	IT-14	Networking : Types and Functions	01		
15.	IT-15	Common Trouble shooting of Computer	01		
16.		Test	01		

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