DIPLOMA IN OPERATION THEATER TECHNICIAN

DURATION :- 3 YEARS ELIGIBILITY :- 10TH

1ST YEAR

CODE	SUBJECT	MAX MARKS	CREDIT
101	HUMAN ANATOMY	100	4
102	HUMAN PHYSIOLOGY	100	4
103	GENERAL BIOCHEMISTRY	100	4
104	ENGLISH COMMUNICATION & SOFT SKILLS	100	3
105	INTRODUCTION TO ANAESTHESIA AND OT TECHNOLOGY	100	4
106	COMPUTER FUNDAMENTALS	100	3
107	PRACTICAL –I	100	3
108	CLINICAL POSTING	100	2

2ND YEAR

CODE	SUBJECT	MAX MARKS	CREDIT
201	GENERAL MICROBIOLOGY	100	4
202	GENERAL PATHOLOGY	100	4
203	BASIC SURGERY	100	4
204	BASIC ANESTHESIA EQUIPMENT & DRUGS	100	3
205	SURGICAL EQUIPMENT'S & MACHINERY	100	4
206	POST ANESTHESIA CARE UNIT (PACU)	100	3
207	PRACTICAL-II	100	3
208	CLINICAL POSTING	100	2

3RD YEAR

CODE	SUBJECT	MAX MARKS	CREDIT
301	OPERATION THEATER TECHNOLOGY- CLINICAL	100	4
302	OPERATION THEATER TECHNOLOGY- APPLIED	100	4
303	OPERATION THEATER TECHNOLOGY- ADVANCED	100	4
304	ENVIRONMENT SCIENCE AND HEALTH	100	3
305	PATIENT CARE AND BASIC NURSING	100	4
306	PRACTICAL – III	100	3
307	CLINICAL POSTING	100	2

101 HUMAN ANATOMY

Unit -1
Terminology and General Plan of the Body, Body Parts and Areas,
Terms of Location and Position, Body Cavities and Their Membranes, Dorsal cavity, Ventral cavity,
Planes and Sections
Unit –II

Cells: Structure, function and location, Prokaryotic and eukaryotic cells, Cell organelles, Cell division
Tissue, Types, Structure, Location and Function of Epithelial Tissue, Connective Tissue, Muscle Tissue, Nerve Tissue, Membranes, Glandular tissue
The Integumentary System: structure and function of The Skin, Subcutaneous Tissue
Unit-III
Musculoskeletal System: Basic anatomy of important muscles and bones
Unit-IV
Respiratory system: Basic anatomy of nose, larynx, trachea, bronchi and lungs
Unit – V
Digestive system: basic anatomy of oesophagus, stomach, small intestine, large intestine, liver, gall bladder, pancreas

102 HUMAN PHYSIOLOGY

Unit-I
Cell physiology: Structure, membrane, transport across cell membrane, Active, Passive, Organization of the Body, Body Composition, Body Fluid Volumes and its measurement, Diffusion, Osmosis, Tonicity, Homeostasis
Unit-II
Blood-composition, function, cellular component & their function, haemoglobin & anaemia, blood groups and coagulation
Lymphatic system-Composition & function of lymph, lymphatic tissue, Immunity with the role of thymus
Unit-III
Cardiovascular system-general arrange, heart, arteries, veins and capillaries, heart structure and function, cardiac cycle, heart sounds, heart rate, blood pressure, mechanism of circulation, definition of hypertension & shock
Unit-IV
Respiratory system: parts of respiratory system, mechanism of respiration, pulmonary function, pulmonary circulation, lungs volume, Gas transport between lungs and tissues,
Definition of hypoxia, dyspnoea, cyanosis, asphyxia and obstructive airways diseases
Unit- V
Gastrointestinal physiology: Organs of GIT and their structure & function, secretion, digestion, absorption and assimilation, gastrointestinal hormones, physiology of digestion of carbohydrates, proteins & lipids, Structure & function of liver, spleen, gall bladder & pancreas, Jaundice, Cirrhosis & Pancreatitis

103 GENERAL BIOCHEMISTRY

Unit-I
Introduction to Clinical Biochemistry and role of Medical Lab Technologist , ethics, responsibility, safety measure and hazards in clinical biochemistry lab and first aid in laboratory accidents.
Glassware's & plastic ware's used in lab, calibration of volumetric apparatus, cleaning& care and maintenance
Unit II
Principle, working, care & maintenance and calibration of Weighing balance, Hotplate, Magnetic stirrer, Centrifuges, Incubator, Hot air oven, Colorimeter, Spectrophotometer, Water distillation plant, Deionizers Henderson Hassel balch equation, pH paper, pH meter, method of pH measurement,
Unit-III
Preparation of solution and reagents, normal solution, molar solutions, percent solution, buffer solution, dilutions, w/v, v/v, standard solution, aqueous solutions, concepts of acid and base
Units of measurement: SI unit, reference range, conversion factor, units for measurement of bio metabolite, enzymes, protein, drugs, hormones, vitamins
Unit-IV
Specimen collection and processing of blood, urine & CSF, separation of serum and plasma,

deproteinization of sample, Handling of specimens for testing, preservation of specimen, transport of specimen, factors affecting the clinical results, effect of storage on sample

Unit- V

Physical, chemical and microscopic examination of urine, Bence Jones Proteinuria and its clinical significance, qualitative test of urine for reducing sugars, protein, ketone bodies, bile Salt, bile pigments, urobilinogen, occult blood, uric acid, urea and Creatinine, quantitative estimation of 24 hrs urine for protein and their clinical significance.

104 ENGLISH COMMUNICATION & SOFT SKILLS

UNIT-I: Introduction to English language

a) Role and significance of English language in the present scenario

b) English Language: Its relevance for the Indian industry

c) Introduction to Listening, Speaking, Reading, Writing (LSRW) and benchmarking of the class

UNIT-II: Phonetics& Functional Grammar

a) Pronunciation and daily usage correction (speak with differences between p/b, s/sh, f/ph, t/d, v/w sounds)

b) Parts of speech, articles, tenses, verbs and modals

c) Practice of daily use words, numerals and tongue twisters

d) Vocabulary building, Construction of simple sentences: Basic sentence pattern, subject and Predicate

[Note: As part of classroom activity, language games, tongue & jaw exercises, simple passages from the newspapers for oral drills in the classroom and practice tests (written and oral)]

UNIT-III: English Communication- About Myself

a) Let's talk, making conversation, meeting and greeting

b) Introducing myself, my family and my friends

c) My opinions, my likes and dislikes

d) Life at college, hostel and workplace

[Note: As part of classroom activity, use the Workbook for reference for classroom and home assignments, carry out practice tests (written and oral)]

UNIT-IV: Personality Development

a) First impression: Dressing sense, good manners, speaking well and respectably

b) Positive Attitude: Being happy and alert, a good listener and a good friend

c) Consultation among peers: Soliciting advice and giving advice

d) Goal setting, confidence building& handling rejection

[Note: As part of classroom activity, refer Workbook for classroom and home assignments, carry out practice tests (written and oral)]

105 INTRODUCTION TO ANAESTHESIA AND OT TECHNOLOGY

Unit-I Medical gas supply,anaesthesia machine, cockpit drill of the machine

a. Medical Gas supply

* Compressed Gas cylinders
* Colour coding
* Cylinder valves ,Pin index
* Recommendations for piping system
* Alarms and safety devices

b. Anaesthesia Machine

* Boyles machine and work station - basic working principle
* Hanger and yoke system
* Cylinder pressure gauge

* Pressure regulator
* Flow meter assembly
* Vaporizers -types, hazards, filling and draining, maintenance
* Machine : Checking the machine (Cockpit drill), breathing circuits,CO2 absorbants, vaporizers

Unit II Equipments

* O2, N2O, Suction apparatus, suction catheters
* Laryngoscopes, ET tubes, Airways, LMAs, I-gel
* Intravenous cannulation
* Breathing circuits
* Difficult intubation cart - stylets, bougies

Unit-III Breathing systems, face masks, airways and laryngoscopes, monitoring under Anaesthesia

a. Breathing systems

* General considerations; humidity and heat
* Common components -connectors, adapters, reservoir bags
* Methods of humidification
* Classification of breathing system
* Mapleson system -A B C D E F
* Jackson Rees system
* Bain circuit
* Non rebreathing valves -ambu valves
* The components of circle system
* Soda lime, indicators

b. Face Masks and airway, laryngoscopes

* Types,sizes
* Endotracheal tubes -types and sizes
* Cuff system
* Fixing ,deflating and inflating cuff
* Checking tube position
* Types of laryngoscopes- Macintosh, Millers,C-MAC, Fibreoptic bronchoscope

c. Monitoring

* ECG
* SPO2
* NIBP
* Temperature
* IBP
* CVP
* Etco2

Unit-IV Basic Anaesthesia Techniques

History of anesthesia, Preanaesthetic examination, preanaesthetic orders. 10hrs

a.History of anaesthesia-

* First successful clinical demonstration
* Pre-historic (ether)era
* Inhalational anaesthetic era
* Regional anaesthetic era
* Intravenous anaesthetic era
* Modern anaesthetic era
* Minimum standard of anaesthesia
* Who should give anaesthesia?

b. Preanaesthetic examination

Pre - Op preparation

Preanaesthetic assessment -History -Past history-Personal history -Present disease /surgery

Smoking, alcohol

General physical examination-pallor,cyanosis

Systemic examination -CVS-Pulse ,BP, RS-respiratory rate
Airway examination - Mallampatti grading
Spine examination -kyphosis scoliosis, presence of any infection
Investigations-
Routine -Haematological - Haemoglobin,coagulation profile
Urine
ECG
Chest X-ray

Special: Endocrine-Thyroid harmones,blood sugar, glycosylated haemoglobin
Echocardiography
CT, MRI, coronary Angiography
Liver function tests
Renal function tests
Case acceptance -ASA grading
c. Preanaesthetic orders
Pre anaesthetic orders
Patient : Informed consent, NPO, special instructions and drugs if any

106 COMPUTER FUNDAMENTALS

Unit-I
Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages. Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).
Processor and memory: The Central Processing Unit (CPU), main memory. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.
Unit-II
Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).
Unit-III
Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
Unit-IV
Introduction of Operating System: introduction, operating system concepts, types of operating system, Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based, Electronic Payment Systems, Smart Card and Electronic Payment Systems, Credit Card- Based Electronic Payment Systems, Risk and Electronic Payment Systems.
Unit-V
Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

107 PRACTICAL-I

Practical Human Anatomy

1. Demonstration of Major organs through models and permanent slides.
2. Demonstration of parts of circulatory system from models.
3. Demonstration of parts of respiratory system from models.
4. Demonstration of digestive system from models.
5. Demonstration of excretory system from models.
6. Demonstration of nervous system from models.
7. Structure of eye and ear
8. Demonstration of structural differences between skeletal, smooth and cardiac muscles.
9. Demonstration of various bones
10. Demonstration of various joints
11. Demonstration of various parts of male & female reproductive system from models

Practical Human Physiology

1. To measure pulse rate
2. To measure blood pressure
3. Demonstration of ECG
4. To perform Hemoglobin by Sahli's Method
5. To perform Hemoglobin by CMG method.
6. Haemoglobin by CMG method.
7. To perform Total RBC count.
8. To perform total leucocyte count.
9. To perform differential leucocyte count.
10. To perform PCV

Practical introduction to anaesthesia and ot technology

Identification of cylinders, PIN index, mounting of cylinders, checking of cylinder

pressure, mounting and filling of vaporizers, checking of bains/JR circuit, Replacement of soda lime, checking of et tube cuff, checking tube position, working of laryngoscope, checking anaesthesia machine, connecting monitors, ibp/cvp set up mallampatti grading, checking blood pressure.working of suction apparatus, insertion of iv canula, setting of difficult intubation cart, checking of LMA, procedure of intubation, holding the face mask

Spotters:

Black rubber mask NIBP cuff
Rendell baker mask Arterial cuff
Silicon mask Arterial pressure transducer
Cuffed endotracheal tubes Infusion pump
Uncuffed endotracheal tubes Nebulizer
North pole tubes I V canula
South pole tubes Sodalime
Flexometallic tubes O2 clinder
Microlaryngeal tubes N2O cylinder
Reservoir bagsvaporisers
Pulse oximeter Capnogram
Bains circuit Jackson Rees circuit

Practical Fundamentals of Biochemistry

1. To study general laboratory safety rules.
2. To demonstrate glasswares,apparatus and plasticwares used in laboratory.
3. Collection of blood sample
4. To separate serum and plasma.
5. Preparation of different percentage solutions
6. Preparation of normal and molar solutions.(0.1 N NaOH, 0.2N HCl,0.1 M H_2SO_4)

7. Demonstration of photocolorimeter
8. Demonstration of spectrophotometer
9. Demonstration of pH meter
10. Deproteinization of blood sample

Practical: Basics of Computer

Computer fundamental and internet lab

1. Using basic DOS commands.
2. Using external DOS commands
3. Creating a email account
4. Using web browser for searching and surfing.
5. Creating and formatting a document in MS office
6. Using autocorrect, auto text and spell check operation in MS office .
7. Create tables in MS Word.
8. Inserting different kinds of object in MS word.
9. Use main merge options in MS office.
10. Create a Excel work sheet with following options rows and columns alignment..
11. Using excel formulas.
12. Create a graph with available data in MS excel.
13. Create a PPT presentation using auto content wizard.
14. Use Clip art animation effects and word art galleries in presentations.
15. Using transition and setting timings for slide show.
16. Use MS access to create data base and tables.

201 GENERAL MICROBIOLOGY

Unit-I

Development of microbiology as a discipline, Contributions of Anton von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister, Alexander Fleming, Edward Jenner

Introduction to bacterial taxonomy, Classification of Bacteria, Morphology based on size, shape, arrangement, motility, flagella, spores, capsules, cell wall, plasma membrane, pili, ribosomes.

Unit-II

Microscopy: Study of compound microscope – magnification, numerical aperture, resolution and components of microscope. Dark ground illumination, care of microscope and common difficulties micrometry. Bright Field Microscope, Dark Field Microscope, Phase Contrast Microscope, Fluorescence Microscope, Transmission Electron Microscope, Scanning Electron Microscope

Unit-III

Cell size, shape and arrangement, cell-wall, composition and detailed structure of Gram-positive and Gram-negative cell walls, Cell Membrane: Structure, function and chemical composition of bacterial cell membranes. Cytoplasm: Ribosome, mesosomes, inclusion bodies, nucleoid, chromosome and plasmids, Endospore: Structure, formation

Unit-IV

General safety measures used in Microbiology laboratory, Sterilization and disinfection: Various physical methods of sterilization – heat, UV radiation, ionizing radiation, filtration, characters affecting sterilization, auto clave control and sterilization indicators.

Biomedical waste management in a Medical Microbiology laboratory: Types of the waste generated, Segregation, Treatment, Disposal

Unit-V

Antiseptics & Disinfectants: Definition, types and properties, mode of action, use, qualities of good disinfectants

Chemical disinfectants – phenol and its compounds, alcohol, halogen, heavy metals and quaternary ammonium compounds, aldehyde, gaseous compound. use and abuse of disinfectants. precautions while using the disinfectants.

202 GENERAL PATHOLOGY

Unit I
Introduction & History of pathology, Basic definitions and familiarization with the common terms used in pathology, Causes and mechanisms of cell injury, reversible and irreversible injury, Introduction of hyperplasia, hypoplasia, hypertrophy, atrophy, metaplasia, necrosis and apoptosis
Unit II
General features of acute and chronic inflammation: Vascular changes, cellular events, Cells and mediators of inflammation, Phagocytosis and its mechanism
Unit III
Tissue Renewal and Repair, healing and fibrosis, cirrhosis, introduction of oedema, hyperaemia, congestion, haemorrhage, haemostasis, thrombosis, embolism, infarction, shock and hypertension.
Unit IV
Protein energy malnutrition, deficiency diseases of vitamins and minerals, nutritional excess and imbalances. Role and effect of metals (Zinc, Iron and Calcium) and their deficiency diseases, Aetiology and pathophysiology of diabetes, arteriosclerosis, myocardial infarction, respiratory diseases (COPD), Parkinson disease
Infectious Diseases: pathogenesis & overview of modes of infections, prevention and control with suitable examples like Typhoid, Dengue
Unit V
Cancer: Definitions, nomenclature, characteristics of benign and malignant neoplasm, metastasis, Carcinogens and cancer, concept of oncogenes, tumour suppressor genes, DNA repair genes and cancers stem cells.
Learning Outcome: This curriculum will provide an introductory nature and build the concepts of how human system work in altered and diseased stage under the influence of various internal and external stimuli to the students.

203 BASIC SURGERY

UNIT I
Introduction: Introduction of surgery Basic principles of surgery.
UNIT II
Tumors:Benign and Malignant cyst Ulcers Sinuses Fistula Differential diagnosis of cyst and tumor.
UNIT III
Fractures and Dislocation:Classification of fracture management Fixation, Reduction, Immobilization, Principles of closed reduction, Artificial prosthesis.
UNIT IV
Comparative and Surgical Anatomy:Investigating of Breast Benign Disease Carcinoma of Breasts Treatment of Carcinoma of Breast mastectomy.
UNIT V
Head Injury: Common manifestation management of patient surgical interventions.
UNITVI
Basic Surgery: Cleft lip & palate, Acute appendicitis, Urethral strictures.
UNIT VII
Different Surgical Instruments:Instruments used in major surgical operations including Biliary Tract Surgery, Anorectic Surgery, Urological Surgery, Orthopedic Surgery Obstetrics and Gynecological Surgery instruments Plastic Surgery Instruments.

204 BASIC ANESTHESIA EQUIPMENT & DRUGS

UNIT CONTENTS
UNITI
Anesthesia Machine: Boyle Machine & Its functioning.
UNITII
Anesthetic Vaporizer:Boyle Vaporizer
UNIT III

Breathing and Respiration Systems: Magill's breathing circuit Bains breathing circuit Pediatric anaesthesia circuit

UNIT IV

Medical Gas System: Gas cylinder and flow meters, Carbon dioxide absorption contester.

UNIT V

Suction Machines: Suction apparatus-Foot operated, Electrically operated Ambu bag and laryngoscope Hand tracheal tubes ,Catheters ,Face masks, Ventimask, Drugs.

UNIT VI

Anesthetic Drugs: General Principles, Pharmacological classification of drugs ,Route of drug administration Precautions in administration, Principles of drug toxicity, Prevention and treatment of poisoning, Adverse drug reaction.

UNIT VII

Sleep Inducing Drugs: Sedatives & Hypnotics Barbiturates, morphine and others.

UNIT VIII

Groups of Drugs:Important groups of drugs NS and other IV fluids, Ibuprofen, Aspirin, Antimicrobial agents, Anti allergic drugs, Anti diuretics.

UNIT IX

Pre-anesthetic medication: Pre-anesthetic medication.

UNIT X

Anesthetic Agents: Local Anesthetic agents, Spinal Anesthetic agents, General Anesthetic agents.

205 SURGICAL EQUIPMENTS AND MACHINERY

UNIT I

O.T. Maintenance: Storing, Sterilization and disinfections in O.T.

UNIT II

O.T. Introduction: General Surgical Principles and Instruments, The surgical patient operation room technique

UNIT III

Surgical Instruments:Instruments used for preparing Surgical Cheatles forceps, Rampleys sponge holding forceps,

Mayo's towel clip, Esmarch bandage, Simple tourniquet, Pneumatic touriniquet

UNIT IV

Incision making method and instruments:Bard parker knife, Handles, Major abdominal incision, Artery forceps and their types, Instruments used in homeostasis, Kocher's forceps, Electric cautery Retractor: Single hook

retractor, Czerny's retractor's, Nerve hook retractor, Morris retractors and Deaver's retractors.

UNIT V

O.T. Instrument Care: Care, Washing, Sterilization and maintenance of Endoscopic Instruments Orthopedic Power instruments, Advanced OT tables & their attachment.

UNIT VI

O.T. Machines: Types, Setting & Use of Image intensifier Portable X-ray Machine, Cautery Machine Suction machine, Pulse oxymeter & Cardiac monitor

UNIT VII

Wound Management: Scissors and its types, Sucking material and techniques, Disinfectants and irritant, Dressing

procedures, Different types of bandages, Surgical needle & needle holders, Various types of suture material.

206 POST ANESTHESIA CARE UNIT (PACU)

1. Airway integrity and compromise.
2. Arrhythmia.
3. Hypertension.
4. Hypotension.
5. Pain prevention and relief.
6. Nausea and vomiting.
7. Decreased urine output.

8. Emergence delirium.
9. Delayed emergence from anesthesia.
10. Shivering.
11. Post obstructive pulmonary edema.
12. Evaluation to Determine Goal Achievement (End posting summative).

207 PRACTICAL –II

BASICSURGERY (P)
UNIT CONTENTS
1 Practical I Identification & Demonstration of working of the equipment
Fumigation, Cleaning and disinfection of articles Packing articles for sterilization
Sterilization of equipments.
2 Practical II Care Sterilization & lubrication of Orthopedic Power instrument Setting up table for various surgeries& portable X-ray Machine Cautery Machine- Types, Setting & Uses, Positioning for orthopedic patient and other surgeries.
CLINICAL PRACTICAL TRAINING-O.T. (P)
UNIT CONTENTS
1 Practical I Introduction to equipments - Simple usage, Indication and contraindication of use, Repair and maintenance of equipments used in laboratory, colorimeter digital, Centrifuge (different types), Serological water Bath 37oC.
2 Practical II Micropipette,Balances (different type), Distilled water units, Hot air oven, Autoclave, Water bath. (different types), pH Meter, Incubator Microtome (different types), Semi auto and fully automatic analyzer (Biochemistry Analyzer), Fully automatic cells counter, Flame photometer, Automatic tissue processor, Automatic cover slipper. Automatic blood weight machine, Rotary shaker, Microscope, Monocular, Binocular, Dark field immersion.
ADVANCED O.T. INSTRUMENT CARE & MAINTENANCE (P)
UNIT CONTENTS
1. Practical I :Identification & Demonstration of working of the equipment Fumigation, Cleaning and disinfection of articles Packing articles for sterilization Sterilization of equipments Care, Sterilization & lubrication of Orthopedic Power instrument Setting up table for various surgeries Scrubbing, Gloving & Gowning.
2.Practical II: Handling of image intensifier & portable X-ray Machine Cautery Machine- Types, Setting & Uses Positing for orthopedic patient and other surgeries Advanced O.T. Table & their attachments as well as their maintenance Assisting with Anesthesiologist Observing and monitoring the patient in recovery room, Terminal disinfection.

301 OPERATION THEATRE TECHNOLOGY – CLINICAL

Unit-1: Layout Facilities
1.1 Physical Facility,
1.2 Layout of Operation theatres
1.3 Transition
1.4 Peripheral Support areas
1.5 Operating room
1.6 Special procedure rooms
1.7 Potential sources of injury to the caregiver & patient
Unit-2: Sterilization Techniques
2.1 Principles of aspects & sterile technologies
2.2 Astilse, Surgical scrub
2.3 Gowning & gloving decontamination & disinfections
2.4 Sterilization Assembly & packing
2.5 Thermal sterilization
2.6 Chemical sterilization
2.7 Radiation sterilization
Unit-3: Surgical Instrumentation & Handling
3.1 Surgical instrumentation fabrication

3.2 Classification
3.3 Powered surgical instruments
3.4 Handling instruments

Unit-4: Specialized Instruments

4.1 Specialized surgical equipment
4.2 Electro-caretery
4.3 Laser microsurgery
4.4 Ultrasonography

Unit-5: Patient Preparation for Various OT Procedures

5.1 Positioning, prepping and draping the patient
5.2 General surgery
5.3 Breast procedures
5.4 Abdominal surgery
5.5 Liver Procedures
5.6 Splenic procedures
5.7 Pancreatic Procedures
5.8 Esophageal procedures

302 OPERATION THEATRE TECHNOLOGY- APPLIED

Unit-1: Pre-Operative Patient Preparation

1.1 Pre-operative preparation of the patient.

Unit-2: Diagnostic Procedures

2.1Diagnostic procedures
2.2 Pathological examination
2.3 Radiological examination
2.4 MRI
2.5 Nuclear medicine studies
2.6 Ultrasonography
2.7 Endoscopy.

Unit-3 Anesthesia Techniques

3.1 Anaesthesia Techniques
3.2 Introduction and historical background
3.3 Types of anesthesia
3.4 Choice of anesthesia
3.5 General anesthesia
3.6 Indication of general anesthesia
3.7 Endotracheal intubation maintenance
3.8 Monitoring of Anesthetic Patient
3.9 Emergencies in Anesthesia
3.10 Balanced anesthesia

Unit-4: Anesthetic Patient Care

4.1 Care of Anaesthetized patient
4.2 Local & regional anaesthesia, common side effects and preventive care
4.3 Spinal and epidural anaesthesia, common side effects and preventive care
4.4 Intravenous anesthesia agents in aesthetic agents
4.5 Anaesthetic adjuvant drugs.

Unit-5: Anesthesia and Risk Management

5.1 Complication of general anaesthesia
5.2 Complication of local/regional anaesthesia
5.3 Management of complication due to anesthesia

Unit-6: Perfusion Anesthesia

6.1 Blood transfusion
6.2 Anaesthesia machine & central gas supply\
6.3 Difficult intubation.

303 OPERATION THEATRE TECHNOLOGY- ADVANCED

Unit-1: Special OT Conditions
1.1 Operation Theatre Techniques for Specialty Surgery
Unit-2: Preparing for Specialized Surgical Procedures
2.1 Preparation, nursing requirements, equipments including instruments, Sutures etc
2.2 Anaesthesia techniques
2.3 Patient positioning & recovery
Unit-3: Gynecological /obstetric surgery
Unit-4: Urologic surgery, Orthopedic surgery, Neurosurgery & Ophthalmic surgery
Unit-5: Plastic and reconstructive surgery
Unit-6: Oto Rhinolaryngologic and head and neck surgery
Unit-7: Thoracic surgery, Cardiac surgery, Vascular surgery
Unit-8: Organ procurement and transplantation
Unit-9: Thyroid surgery

304 ENVIRONMENT SCIENCE AND HEALTH

Unit I
1. a. Introduction to Environment and Health and Water
Ecological definition of Health, Population perspective of relations, Health & environment perspective of relations, Environmental factors, Environmental Sanitation, Need to study environmental health, Predominant reasons for illhealth in India
1.b. Water
Safe and wholesome water, requirements, uses, sources; sanitary well; Hand pump; water Pollution; Purification of water; large scale & small scale; slow sand filters; rapid sand filters; Purification of Water on a small scale; Household purification, Disinfection of wells; water quality criteria & standards.
Unit II
Air, Light, Noise, Radiation
2 a. Air
Composition, Indices of Thermal Comfort, Air pollutants, Air Pollution - Health Effects, Environmental Effects, Green-house effect, Social & Economic Effects, Monitoring, Prevention & Control.
2. b. Light, Noise, Radiation
Natural and Artificial light; Properties, sources, noise pollution and its control, types, sources, biological effects and protection.
Unit III
Waste and Excreta Disposal
3 a. Disposal of Wastes
Solid Wastes, Health hazards, Methods of Disposal; Dumping, Controlled tipping/ sanitary landfill, Incineration, Composting.
3 b. Excreta Disposal
Public health importance, Health hazards, sanitation barrier, Methods of excreta disposal, unsewered areas and sewered areas, sewage, Modern Sewage Treatment.
Unit IV
Housing and Health and Medical Entomology
4 a. Housing and Health
Human Settlement, Social goals of housing, Criteria for Healthful Housing by Expert Committee of the WHO, Housing standards- Environmental Hygiene Committee, Rural Housing Standards, Overcrowding, Indicators of Housing.
4 b. Medical Entomology
Classification of Arthropods, Routes of Disease transmission, Control measures.

Unit V

Insecticides and Rodents
5 a. Insecticides
Types, mechanism of action, dosage and application for control of insects.
5 b. Rodents
Rodents and its importance in disease, along with anti-rodent measures.

305 PATIENT CARE AND BASIC NURSING

Unit I
Introduction, Communication and Documentation - 12 hours
1. Introduction to Patient Care:
a) Principles of patient care
b) Types of patients (gender, age, diseases, severity of illness, triage)
2. Communication & Documentation:
a) Communication with doctors, colleagues and other staffs.
b) Non-verbal communication, Inter-personnel relationships.
c) patient contact techniques, communication with patients and their relatives
3. Documentation:
a. Importance of documentation,
b. initial and follow up notes;
c. documentation of therapy, procedures and communication
Unit II
Universal Precautions and Infection Control - 10 hours
4. Universal Precautions and Infection Control:
a) Hand washing and hygiene.
b) Injuries and Personal protection, Insulation and safety procedures.
c) Aseptic techniques, sterilization and disinfection.
d) Disinfection and Sterilization of devices and equipment
e) Central sterilization and supply department
f) Biomedical Medical waste management
Unit III
Medication Administration and Transport of patient - 14 hours
5. Medication Administration:
a) Oral / Parenteral route
b) Parenteral medication administration: Intra venous, intra muscular, subcutaneous, intra dermal routes, Intra venous Infusion
c) Aerosol medication administration, Oxygen therapy
d) Intravenous fluids,
e) Blood and blood component transfusion
6. Position and Transport of patient:
a) Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions,

comfort measures, bed making, rest and sleep.
b) Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.
c) Transport of ill patients (inotropes, intubated / ventilated patients)
Unit IV
Bedside care and monitoring - 14 hours
7. Bedside care:
a) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
b) Recording of pulse, blood pressure, respiration, saturation and temperature.
c) Bed side management: giving and taking bed pan, urine container.
d) Observation of stools, urine, sputum, drains
e) Use and care of catheters and rubber goods.
f) Care of immobile/bed ridden patients, bed sore and aspiration prevention
8. Monitoring of Patient:

a) Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure, Respiration
b) Multi parameter monitors, Capnography and End Tidal CO2 (ETCO2)
c) Hydration, intake and output monitoring
d) Monitoring ventilator parameters: Respiratory Rate, Volumes, Pressures, Compliance, Resistance

Unit IV

Wound care and first aid - 10 hours

9. Dressing and wound care:

a) Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
b) Surgical dressing: observation of dressing procedures.
c) Suture materials and suturing techniques
d) Splinting
e) Basic care of patient with burns

10. First Aid and Basic Life Support (BLS)

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Practical:

1. Demonstration of Patient care Procedures:
a) Positioning of patient, transport of the patient, Dressing and Bandaging, Care of inter costal drain tube, Insertion of naso-gastric tube and feeding
b) Phlebotomy and obtaining blood samples, Arterial Blood sampling for ABG
c) Injections: intra muscular, intra venous, sub cutaneous, intra dermal
d) Insertion of intra venous catheter and infusion of medications, blood transfusion
e) Recording of ECG and monitoring of patient

f) Oxygen therapy: oxygen cannula, masks. Aerosol therapy: nebulization, inhalers
g) Suctioning and care of artificial airway
h) Insertion of urinary bladder catheter
2. Uses, principles, advantages and disadvantages of instruments and Devices in patient care
3. First aid and Basic Life Support (BLS)