Syllabus for

DIPLOMA IN MEDICAL STERILIZATION MANAGEMENT & OPERATION THEATRE TECHNICIAN COURSE (TWO YEARS COURSE)

B.N.S. Kumar
Secretary
In view of representation from the Faculty the Syllabus for the 1st year in all Para medical courses is modified accordingly and kept on website.

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<td>C) Patient related services.</td>
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C) Carbolization of OT, Introduction to OT, Operation Theatre Techniques, Major Investigations in OT. Sterilization of equipment & Instruments gowns & Droupes, Sterile techniques and their application.  
D) Patient Related services, preparation of patient for surgery. |
|---|---|
| Paper-II | A) Pharmacology,  
B) Respiration, Sources of infection  
C) Intravenous Therapy, Oxygen Therapy.  
D) Anesthesiology Assistance, Prevention of Pressure Sore, Parasitology. |
| Paper-III | A) Bio-Medical Sciences, Physical Examination & Cardiac Procedures.  
B) Digestive, Neurological, Urinary, Special Area Learning.  
C) Biomedical Waste disposal.  
Basics of Anatomy & Physiology

Basics of Anatomy

1. Introduction to Human Anatomy
2. Cell- Tissues Properties, Different Tissues
3. Digestive System & Hepatobiliary System
4. Respiratory System
5. Cardio Vascular System
6. Lymphatic System
7. Bones and Joints
8. Nervous System
9. Endocrine System
10. Sense Organs
11. Excretory System
12. Reproductive System

Basics of Physiology

1. Introduction to Human Physiology
2. Blood
3. Cardio Vascular System
4. Lymphoid System
5. Digestive System
6. Respiratory System
7. Nervous System
8. Endocrine System
9. Excretory System
10. Reproductive System
11. Sense Organs
Basics of Bio – Chemistry

1. Introduction to Basics of Bio-chemistry including code of ethics for Medical Lab Technicians and Medical Lab Organization.

2. Reception, Registration and bio-chemical parameters investigated.

3. Glassware and plastic ware used in a bio-chemical laboratory.
   a. **Glassware:**
      1) Types of glass and composition.
      2) Types of glassware used, their identification, application & uses.
      3) Cleaning, drying, maintenance and storage of glassware.
   b. **Plastic ware: Brief outline**

4. Instrumental methods of Bio-chemical analysis.
   a. **Colorimetry**:
      Visual and photoelectric methods, instrumentation, principle & laws involved construction, operation, care and maintenance, applications.
   b. **Spectrophotometry**
      Principle and theory, types, construction, & applications

5. Basic lab operations like
   a. **Separation of solids from liquids**
      1. Centrifugation: Principle, Different types of centrifuges care and maintenance, applications.
      2. Filtration using funnel.
      3. Weighing : Different types of balances used, care and maintenance.
      4. Evaporation
      5. Distillation
      6. Refluxing
      7. Drying different salts and dessication.
6. Water Chemicals and related substances
   a. Purity of chemicals
   b. Corrosives
   c. Hygroscopic Substance

7. Prevention, Safety and first aid in lab accidents.

8. Collection of Specimens
   a. **Blood**: Types of Specimens, Collection, Precautions during collection, processing and preservation.
   b. **Urine**: Types of Specimens, Collection, Precautions during collection, Processing and Preservation.


10. Units of measurements

11. **Solutions**: Types based on solute and solvent, Types based on method of expressing concentration, calculations.

12. **Carbohydrates**: Definitions, Biological importance, Acid value, iodine value, saponification value.

13. Amino acids and Proteins Definition, Biological importance, Classification, Qualitative tests.

14. **Diagnosistic tests**: Blood sugar, Glucose tolerance test, Blood urea, Serumuric acid, Serum creatinine.

15. **Vitamins and Minerals**
   a. **Vitamins**: Water Soluble vitamins, Fat Soluble vitamins, Sources, Daily requirements, Deficiency diseases.
   b. **Minerals**: Sources, Daily requirements, Deficiency diseases.
Introduction to Pathology in brief

1. Urine – Analysis – Physical Examination – specific gravity PH, reaction, colour.
   Chemical Examination – Sugar Albumin, bile salts, bile Pigments etc.
   Microscopic, Sediment for RBC, WBC, Epithelial cells, casts, crystals, parasites.

   Preparation of Reagents, procedure and principle of tests.

2. **Sputum Analysis** – Physical Examination, Preparation and staining smear for Microscopic Examination.

3. **Semen Analysis** – Physical Examination Microscopy – counting, motility, staining, Morphology, abnormal and normal forms.

4. **Body Fluids** – Differential count of Peritoneal, pericardial, pleural fluids and CSF, charging chamber, Identifying and counting the cells.
Basics of Microbiology

I. Introduction to Microbiology in brief

- Definition
- History

II. Microscopy

a) Principle working and maintenance of compound Microscope.

History

Types of Microscope: (a) Light Microscope, (b) DGI, (c) Fluroscent, (d) Phase contrast.


III. Sterilization and disinfection – classification and Methods of sterilization.

Sterilization: Definition, types and principles of sterilization methods:

(a) Heat (dry heat, moist heat with special reference to autoclave, (b) Radiation, (c) Filtration, efficiency testing to various sterilizers.

Antiseptics and Disinfectants:

Definition, types and properties, mode of action, uses of various disinfectants, precautions while using the disinfectants, qualities of a good disinfectants, testing efficiency of various disinfectants.
1) Principle and Methods of sterilization by heat
   a) By Dry Heat, flaming, Red Heat, Hot air oven, incineration.
   b) By Merit Heat-pasteurization, Inspissation, tyndalisation, autoclave.

2) Filtration Methods

3) Ionising Radiation – Disinfection, Mode of action and uses of important chemical disinfections – Phenol and Phenolic compounds, alcohols, halogens, dyes and acids and alkalies.

4) Gaseous Methods of sterilization.

IV. Cleaning, drying & Sterilization of Glassware disposal of contaminated material i.e. clinical infective material inoculated culture media. Handling and Disposal of Biomedical waste.

V. Biomedical waste management in a Microbiology Laboratory : types of the waste generated, segregation, treatment, disposal.

VI. Morphology and classification of Bacteria Sp. of cell, capsule, flagella, spore, Anaerobic Methods of cultivation of Bacteria.
A. Hospital Awareness

A brief idea of hospital as an organization management different units of a hospital effective communication skills, communication channel

- Maintenance of records
- Effective leadership
- General patient care
- Medical terminologies
- Vital signs
- Unit preparation
- Transporting & Transferring patients
- Sterilization Techniques
- Control of infection
- Medication – Oral & parenteral
- Admission – Discharge procedure
- Bandages

Practicals: Posted in ward & taught clinically

A. Surgical Department

Familiarization of different tubes

1. Drainage tube
2. Post Operative Exercises
3. Post OP Management of Patient
4. Shock of Management
5. Changing Surgical Dressing.

1. Preoperative preparation of patient
2. Preanesthetic preparation
3. Assisting in operation
4. Anaesthesia
5. CSSD
1. Recovery room
2. Movement of papers
3. Scheduling of theaters
4. Supplying of articles
5. Specific area practices
   - As scrub nurse
   - As circulating nurse
## Communication and Computer Skills, Audio & Visual Aids.

### Communication
- Process
- Types of communication
- Strategies for effective Communication
- Barriers of communication

### Soft Skills
- Presentation with the use of visual aids such as power point
- Conversation
- Extempore speech, usage of effective language for communication of health work.
- Case studies and situational analysis
- Survey and Reporting

### Computer
- Computer basic
- MS – Office
- MS – Word
- MS – Excel
- MS – Power Point

### Internet Concepts
- Browsing
- Down- Loading
- Use of Slide Projector
2nd Year

Paper-I

A. Skeletal system

(a) Bones – Types
(b) Joints

Muscular System
Names of different muscles and its location

Cardio Vascular System
Structure of heart & position
Blood – Composition, clotting & grouping
Blood Vessels – structure & position
Blood pressure & pulse rate

Digestive System
Digestive organs – junctions, location
Physiology of digestion
Exocrine glands.

Respiratory System
Organs of respiration – location; function
External & Internal Respiration.

Anatomy & physiology (part II)

Excretory system
Structure & function of excretory organs
Nervous system
Structure of PNS, CNS, ANS
Structure of Neuron & physiology
Endocrine system
Site, function of pituitary, thyroid parathyroid, adrenal
Feed back mechanism
Hormones of each glands & their function

Sense Organs
Structure & function of Eye, Ear, Nose & skin
Reproductive system
Male reproductive Organs, Structure & function
Female reproductive Organs, structure function
B. **Sources of infection** → ingestion
   → Inhalation
   → Contact
   → Mucus membrane
   → Congenital

   **Transmission of factors** → Throat, nose, urine wounds, discharges.

Practicals ----------------- Skeletal System------------- Identification of bones.

The Basic structure of active micro – organism size, reproduction, factor influencing growth pathogenic and non – pathogenic organism common diseases caused by different types of Micro – Organism.

**Control and destruction of Mico – organism**
Principles and methods of microbial control  
Sterilization – dry heat, moist heat and chemicals  
Disinfections  
Medical / surgical asepsis  
Cross – infection  
Control of spread of infection
Paper-II

Pharmacology

Drugs: classifications
Action: Side effect of each drug in each system
Emergency Drugs
Antidote

Pathology

Different pathological condition of each system

A. Intravenous Therapy

1. S/S of water excess or deficient
2. Types of Fluids
   a. Isotonic
   b. Hypotonic
   c. Hypertonic
3. Blood Transfusion
4. Criteria for selecting a vein suitable for vein puncture
5. Central Venous Pressure
6. Technique of CVP
7. Familiarization of
   a. Needle or Catheter
   b. Solution Container
   c. Infusion tubing
   d. Adjusting rate of flow of fluid in infusion therapy
   e. Intravenous push
   f. Electronic flow – Rate Regulators
   g. Complication of Intravenous Therapy
   h. Venipuncture
   i. Setting up infusion pump

D. Prevention of Pressure Sore

Managing Pressure Sore
Transfer Activities
Crutch Walking
E. Respiration

Respiration – Variation
Investigation Procedures
Pulmonary Function Test
Arterial Blood gas Studies Technique
Postural Drainage
Percussion Vibration
Breathing Exercise
Transtracheal Aspiration
Nasotracheal Suctioning
Sterile Tracheobronchial Suction
Pt C Water Seal Drainage

Oxygen Therapy -
  Canuula
  Mask
  Tent
  Ambubag
  Ventilators
  IPPB
  Endotracheal Tube

Assisting with ventilators / Weaning the patient Nebulizer therapy incentive spirometer
Endotracheal – tray setting / Assisting / Procedure
Tracheostomy – tray setting / Assisting / Procedure
Tray setting for major investigative procedure - Pericardiocentesis
  - Sternal puncture
  - Abdominal paracentesis
  - Thoracentesis
  - Lumbar puncture
  - Venesection

Parasitology:

Paper-III

1) Bio Medical

Basic Electricity – Voltage, Current
Power, Ohms law definition Resistance
Capacitance, Inductance, Electronic Emission
Resistors
Capacitors
Inductor, Diode
Transistor
Semi conductor – types
Amplifiers
Fuses – types, selections.

B. Physical Examination

Vital Signs
General Inspection
Eye Examination
ENT Examination
Neck
   Cervical Nodes
      - External Jugular Vein
      - Thyroid
      - Axillary Node
      - Breast
      - Thorax Lungs
      - Heart Sound
      - Abdomen
      - Neurologic Exam

F. Cardiac Procedures

   Cardio pulmonary resuscitation – Cardiac pacing
   ECG monitoring / Bed side monitor

G. Digestive

   Administration of naso gastric tube feeding
   Total parental nutrition – Hyper Alimentat
   Diabetes – Insulin injection, Glucometer
H. Neurological

1. Assisting a patient with Paraplegia Hemiplegia/Positioning Exercises.

2. Assisting a patient with increasing intracranial pressure/Observation

I. Urinary

Technique for obtaining clean – catch midstream voided specimen Male & Female – Catheterization.
Intake / Output charting. Recording & Reporting.

Specialty

Special areas learning:

1. Hand washing Techniques
2. Gown techniques
3. Sterilization of Operation theater
4. Setting up of OT
5. Supplying of articles

Introduction to Immunology
a. Brief outline of immunity
b. What are antigens
c. What are antibodies
d. Different types of antigen and antibody reaction their application in the diagnosis – agglutination precipitation complement fixation, neutralization, RIA.
e. Principle and method of ELISA test.
PRACTICALS

1. Monitoring of vital signs, Spo2
2. ABG analysis
3. Types of Anesthesia required for different types of surgeries
4. A regular check of cannula and drains
5. Maintain records and reports
6. Transportation of patient to SICU
7. Suctioning of Endotracheal tube / Tracheostomy tube
8. After care of equipment
9. Mechanical ventilation – Settings and modes