Syllabus for

DIPLoma IN ANESTHESIA 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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<tr>
<th>DIPLOMA IN ANESTHESIA TECHNICIAN COURSE (TWO YEARS COURSE)</th>
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<td>Syllabus for First Year</td>
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<th>Paper-I</th>
<th>BASIC HUMAN SCIENCES</th>
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<td>A) Basics of Anatomy</td>
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<tr>
<td>B) Basics of Physiology</td>
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<td>C) Basics of Biochemistry</td>
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<td>D) Basics of Bio-statistics</td>
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<th>Paper-II</th>
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<td>A) Basics of Pathology</td>
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<td>B) Basics of Blood Banking</td>
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<td>C) Basics of Microbiology</td>
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<td>D) Basics of Central Sterilization Services.</td>
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<th>Paper-III</th>
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<tr>
<td>A) Hospital Awareness.</td>
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<tr>
<td>B) Familiarization of different tables/tubes in surgical department, Surgical Awareness, preparation of patient for surgery.</td>
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<tr>
<td>C) Patient related services.</td>
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</table>
| Paper-I              | A) Anesthesiology, Types of Anesthesia  
|                     | B) Pre-operative preparation, Anesthesia Record keeping  
|                     | C) Initiate start up Routine, Introduction to Operation Theatre, Operation Theatre Procedures,  
|                     | D) Cannulization and Blood Transfusion Procedure  |
| Paper-II            | A) Pharmacology & Equipment, Management, Essential Equipment in use, Cardiac Drugs.  
|                     | B) Management of Equipment Essential Equipment in use  
|                     | C) Bronchodilators  
|                     | D) Diuretics & Fluids (all types)  |
|                     | B) ICU Management, Mechanical Ventilation, Monitoring during surgery, Critical Care Monitoring, Reception of Patient,  
|                     | C) Special Monitoring Methods, Electrolyte and Fluid Balance, Other procedures.  
1st YEAR

PAPER-I

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.


15. Vitamins and Minerals
   a. Vitamins:  
      Water Soluble vitamins, Fat Soluble vitamins, Sources, Daily requirements, Deficiency diseases.
   b. Minerals:  
      Sources, Daily requirements, Deficiency diseases.
Basics of Pathology
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.


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.
b) Principle of Fluorescent microscope, Electron Microscope, Dark
Ground Microscope.

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

(e) Electron Microscope: a). Transmission, b) Scanning, Principles of
operational mechanisms of various types of Microscopes.

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.

PAPER-III

A. Hospital Awareness

A brief idea of hospital as on 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
   a. As scrubnurse
   b. 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
SECOND YEAR

PAPER – I

ANESTHESIALOGY

Pre Anesthetic checkup,
Patient Consent & High Risk Consent Pre Medication,
IV Cannulation IV Fluids & Blood Transfusion
Conduct of Anesthesia General / Regional / Local Anesthesia Setting up of Monitoring NIBP, SPO2, ECG, ETCO2, NM junction (Peripheral Nerve Stimulator) Invasive Monitoring Techniques Recovery & Post Op Management.

TYPES OF ANESTHESIA

General
Regional
Local
Spinal

PRE-OPERATIVE PREPARATION

Records and forms used in Operation Theatre
Scrutinize checklist of the patient
Right patient, Right site, Right operation
Check Vital Signs

ANESTHESIA RECORD KEEPING

Pre Anesthetic Evaluation Record
Intra Operative Monitoring Record
Post Operative Record for 24 hours
Chronological Preservation of these Records, Statistics, Computerization & Research Orientation.

RECEPTION OF PATIENT

Check name, band and record
View X-Ray chest
View Blood Parameters
Check Skin Preparation at anesthesia site

INITIATE START UP ROUTINE

Check physical condition
Check whether NBO
Give Pre Medication
Transfer to operation table
CANNULIZATION AND BLOOD TRANSFUSION PROCESS

Select appropriate site – prepare site
IV Cannulization Procedure
IV Fluids and their composition
Blood transfusion Procedure

INTRODUCTION TO OPERATION THEATRE

Designing of Operation Theatres, Fumigation of Operation Theatre, Inflow & Outflow of Patients, Placement of Equipment, Care & Sterilization of Equipment, Drugs, Placement & Dilutions, Dosage, Labelling Linen Management (Operation Theatre & Doctors & Nurses)

OPERATION THEATRE PROCEDURES

Surgical Hand Wash
Gowning Gloving Masking, wearing cap, shoes
Pre Anesthetic tray preparation
Time In Time Out

OPERATION THEATRE (DESIGNATION AREAS)

Physical set up of operation theatre
Placement of sterile, unsterile articles and equipment, disinfection of equipments and surfaces.
Fumigation & Sterilization
Linen Management
## PHARMACOLOGY

Pre Medicants, Intravenous Agents, Inhalational Agents, Cardiac Drugs, Diuretics, Bronchodilators, IV Fluids (all types)

- Introduction to pharmacology pre medicants, Intravenous agents, Inhalational Agents.
- Classification of drugs, Drugs in Anesthesiology
- Drug collection – Amount to be infused pediatric drug calculation
- Flow rate / drops per min

## EQUIPMENT

Central Gas Pipeline System, Boyle’s Apparatus, Cylinders, Vapourisers, Intubation Equipment, Monitoring Equipment, Mechanical Ventilators.

## CARDIAC DRUGS

<table>
<thead>
<tr>
<th>Classification</th>
<th>Dose and Route</th>
<th>Action</th>
<th>Side effects &amp; contra indication</th>
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## BRONCHODILATORS

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## DIURETICS & FLUIDS (all types)

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<th>Dose and Route</th>
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## EQUIPMENT AND ITS HANDLING

- Central gas pipeline system
- Boyle’s / Anesthesia Apparatus
- Intubation Equipment
- Monitors (invasive & non-invasive) Equipment, Mechanical Ventilators

## ESSENTIAL EQUIPMENT IN USE

- C- arm
- Ventilator
- Cardiac Monitors and its accessories
- Infusion Pumps, knowledge of drugs used, action, reactions and contradictions.
### CARDIOPULMONARY RESUSCITATION

<table>
<thead>
<tr>
<th>CARDIOPULMONARY</th>
<th>Simultaneous mouth to mouth breathing (artificial ventilation) and external / closed chest cardiac massage.</th>
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<tbody>
<tr>
<td></td>
<td>Cardio Pulmonary Resuscitation,(CPR) Basic Life Support</td>
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<td>Advanced Cardiac Life Support, Neonatal Resuscitation.</td>
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<thead>
<tr>
<th>RESUSCITATION</th>
<th>Restoring life in the apparently dead, as in drowning, electric shock, respiratory arrest.</th>
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<td>ABC Protocol</td>
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<td>Initial assessment</td>
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<td>Call for help Resuscitation</td>
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<tr>
<th>BASIC LIFE SUPPORT</th>
<th>Assessment</th>
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<tr>
<td></td>
<td>ABC procedure</td>
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<td></td>
<td>Drugs</td>
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<td>First Aid</td>
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<tr>
<th>ADVANCED CARDIC LIFE SUPPORT – ADULT</th>
<th>ABC protocol for adult</th>
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<tbody>
<tr>
<td></td>
<td>Drugs</td>
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<td></td>
<td>Defibrillation</td>
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<td>O2 Support</td>
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<th>CPR FOR CHILD</th>
<th>ABC Protocol for a Neonate</th>
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<td>Drugs</td>
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<td>After care</td>
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### ICU MANAGEMENT

#### MECHANICAL VENTILATION
- Definition, Types, setting of Ventilator Adult / Child
- Inotropes
- Endotracheal Intubation / suctioning
- Monitoring / weaning

#### MONITORING DURING SURGERY
- NIBP
- SPO2
- ECG
- ETCO2

#### CRITICAL CARE MONITORING
- Preoperative complications and their management
- Post operative immunization
- Cardiac Intensive care
- Shock

#### SPECIAL MONITORING METHODS
- Invasive monitoring techniques
- Types – CVP,
- Procedure
- Peripheral Nerve Stimulation (NM Junction)

#### ELECTROLYTE AND FLUID BALANCE
- Normal fluid & electrolyte mechanism
- Monitoring fluid volume deficit and excess
- Management
- Chart maintenance

#### OTHER PROCEDURES
- Pace maker (Temporary / Permanent)
- Extubation
- Water seal drainage
- Removal of drains
1. Assists the Anesthetist
2. Monitoring of vital signs, Spo2
3. Conducts ABG analysis
4. Has knowledge of types of Anesthesia required for different types of surgeries
5. Does a regular check of cannula and drains
6. Maintain records and reports
7. Transportation of patient to SICU
8. Suctioning of Endotracheal tube / Tracheostomy tube
9. After care of equipment
10. Mechanical ventilation – Settings and modes