

CURRICULUM AND SYLLABUS
FOR
TWO YEAR DIPLOMA COURSE
FOR
ANAESTHESIA TECHNICIANS

Offered by
DR. B. BOROOAH CANCER INSTITUTE
GUWAHATI - 781 016

Affiliated under
SRIMANTA SANKARDEVA UNIVERSITY OF HEALTH SCIENCES, ASSAM

TWO YEARS DIPLOMA COURSE FOR ANAESTHESIA TECHNICIANS

Course Title and Description

The course shall be called as "TWO YEARS DIPLOMA COURSE FOR ANAESTHESIA TECHNICIANS". The course is designed to prepare technicians with specialized knowledge, skill and attitude in basics Anaesthesia Technology.

The programme will be conducted at Dr. B. Borooah Cancer Institute (Regional Cancer Centre), Guwahati. The course comprises of four semesters. The Diploma after successful completion of the course will be offered by Srimanta Sankardeva University of Health Sciences, Assam. Candidates shall abide by the stipulated timings, discipline, rules and regulations of the hospital to which they will be assigned for the entire course.

REGULATIONS

1. (A) Admission Eligibility:

- i) 10+2 Science standard
- ii) Both male and female
- iii) B.Sc. Graduates also can apply

(B) Total Number of seats : 10 (ten)

2) Duration of the Course:

The duration shall be 24 months Full Time. The candidates admitted to this course would spend at least six hours a day and 30 hours per week at Dr. B. Borooah Cancer Institute. The students will be posted for a reasonable period of training in other recognized hospital/s in the city of Guwahati.

3) Medium of Instruction:

English shall be the medium of instruction

4) Courses & Scheme of Examination:

| Semester | Subject | Marks | |
|--------------------------|---|-------|------|
| | | Max | Pass |
| 1 st Semester | Paper 1 : Basics of Anatomy and Physiology | 100 | 50 |
| | Paper 2 : Principles and practice of sterilization & disinfection | 100 | 50 |
| | Paper - 3 : General Pharmacology | 100 | 50 |
| | Paper - 4 : Anaesthesiology | 100 | 50 |
| | Practical : | 75 | 50 |
| | Internal Assessment | 25 | |
| 2 nd Semester | Paper 1 : Anaesthesiology | 100 | 50 |
| | Paper 2 : Pharmacology | 100 | 50 |
| | Practical | 75 | 50 |
| | Internal Assessment | 25 | |
| 3 rd Semester | Paper 1 : Medical Disorders | 100 | 50 |
| | Paper 2 : Pharmacology | 100 | 50 |
| | Paper 3 : Anaesthesiology | 100 | 50 |
| | Practical | 75 | 50 |
| | Internal Assessment | 25 | |
| 4 th Semester | Paper 1 : Critical Care | 100 | 50 |
| | Paper 2 : Anaesthesiology | 100 | 50 |
| | Practical | 75 | 50 |
| | Internal Assessment | 25 | |

5. Practical Training:

Being practical oriented programme the focus will be more for practical training. The candidate shall undergo a practical training in the various departments of Dr. B. Borooah Cancer Institute, Guwahati and nominated hospital/s in the city of Guwahati.

6. Requirement to appear for examination:

Candidate should put in a minimum of 80% attendance to be eligible to appear for the examinations.

7. Passing minimum:

To pass a candidate shall secure a minimum of 50%marks individually in the semester practical and Theory Examinations. A candidate failing in any one component will have to reappear for that particular component only in the supplementary examination.

8. Conferment of Certificate:

A candidate, who has passed all the semester examinations as prescribed, shall be eligible to receive the "TWO YEARS DIPLOMA COURSE FOR ANAESTHESIA TECHNICIANS" from Dr. B. Borooah Cancer Institute. The Diploma after successful completion of the course will be offered by Srimanta Sankardeva University of Health Sciences, Assam

9. Revision of regulations and syllabus:

The syllabus and regulations of the course are subject to modification by the concerned Institute once in three years.

10. Question paper pattern:

The examination shall be conducted for 500 marks. The pattern of question paper for all the subjects shall be follows:

- Multiple choice / one word answers
- Short notes (100 words/ one paragraph)
- Elaborate (300 words or 1½ paper)

11. Award of Internal Assessment Marks

The internal assessment marks for practical will be awarded based on the candidate's regular performance in the practical area (wards / ICU or Operation Theater).

Syllabus for the 1st Semester Course for Anaesthesia Technicians

Paper – 1

BASICS OF ANATOMY & PHYSIOLOGY

OVERALL OBJECTIVE: At the end of the programme the students will be able to understand the basic concepts of Anatomy and Physiology and develop desirable attitude and skill in application of this knowledge while providing care to the patients.

SPECIFIC OBJECTIVES:

The students will be able to

1. Explain the organization of Human body.
2. Describe the location, features and parts of systems of the body
3. Understand the function of various systems of the body

Unit: 1

Organization of Human Body: Definition & subdivisions of anatomy, anatomical position and terminology, regions and system of the body, cavities of the body and their contents. Size and shape of cells. Parts of cells, cell division. Tissues of the body, characteristics and function of different types of tissues, types of glands.

Unit: 2

The Skeletal System: Skeleton – Definition axial and Appendicular skeleton with names and location of bones Joints – Types of joints & kinds of movement possible Muscles – Definition, types of muscles, difference between striated & smooth muscle Functions of the muscles, bone and joints.

Unit: 3

The Nervous System: Subdivisions of nervous system, brain - location, external features and functions of brain & spinal cord, location, features, functions of the sense organs.

Unit: 4

Cardio Vascular and Respiratory System: The types & structure of blood vessels. Shape, structure of heart, blood supply to heart and functions of cardio vascular system. The name, location of organs of respiration and Physiology of respiration.

UNIT: 5

Other System of the Body: Name, parts and functions of alimentary canal and accessory organs Names of endocrine gland – location & features and function of the endocrine glands. Parts and functions of Kidney, Ureter, Bladder and Urethra.

Reference:

1. Anatomy & Physiology - Ross & Wilson
2. Anatomy by B.D. Chaurasia, Vol. I, II & III.
3. Human Physiology by C.C. Chatterjee
4. Anatomy & Physiology for Nurses – Gupta
5. Atlas of Anatomy – Gilroy
6. Sears's Anatomy & Physiology for Nurses – Smith

PRINCIPLES AND PRACTICE OF STERILIZATION AND DISINFECTION

OVERALL OBJECTIVE: At the end of the course the students will be able to acquire knowledge on the basic concepts of Microbiology and Microbes and develop desirable skill and attitude in sterilization and disinfection and other methods of prevention of infection.

SPECIFIC OBJECTIVE:

The students will be able to

- 1) Describe the Morphological features, sources and mode of transmission of various Organisms.
- 2) Explain concurrent and terminal disinfection methods.
- 3) Demonstrate skill in disinfection and sterilization of equipments, rubber goods and Glassware's.
- 4) Follow the standard precautions to prevent Blood borne infections.
- 5) Segregate biomedical waste materials and dispose it appropriately.

Unit: 1

Introduction: Definition & importance of microbiology for operation room technician. Classification of micro organisms. Brief morphological features of microbes. General properties of bacteria, viruses & fungus.

Unit: 2

Chain of Infection: Definition of infection Chain of infection – Sources of Microbes, routes of infection, and mode of spread Hospital acquired infection & Prevention of Hospital acquired infection Immunity & its types.

Unit: 3

Sterilization and Disinfection: Sterilization – Definition & Classification physical methods of sterilization, use of autoclave, preparation & sterilization of surgical packs. Disinfection - Definition & Classification, methods of disinfection. Principles of cleaning & disinfecting the rubber, goods, glassware's, packs, linens, equipments.

Unit: 4

Standard Precaution and Biomedical Waste Management: Collection and transport of specimen, standard precaution for prevention of blood borne infection - Collection of culture sources from theatre - Biomedical waste segregation & waste management.

Organization of Hospital and Functions of various departments - Organization of central sterile supply department – Functions of CSSD – Relationship of CSSD with the operation room, ICU, Emergency room and other wards – Role and responsibilities of CSSD technician.

Unit: 5

Environmental Hygiene: Maintenance of Ward Hygiene, Terminal and Concurrent Disinfection - Role of OR Technician in the maintaining Cleanliness of the Operation Room and Environmental Hygiene.

REFERENCE BOOKS:

- | | |
|--|-------------------------------------|
| 1. Hospital Acquired Infections | - V. Muralidhar, Sumathi Muralidhar |
| 2. Microbiology for Nurses | - Bhatia |
| 3. Manual of Pract Microbiology & Parasitology | - Chakraborty |
| 4. Hand Book of Microbiology | - Bisen.P.S |

Paper – 3

GENERAL PHARMACOLOGY

OVERALL OBJECTIVE: At the end of the course the students will be able to acquire knowledge on the basic concepts of classifications of various drugs use in anaesthesia practice, mechanism of action, doses schedule and adverse affects.

Unit: 1

1. Introduction to general pharmacology
2. Classification of anaesthetic drugs
3. Mechanism of actions of anaesthetic drugs

Unit: 2

1. Metabolism and excretion of anaesthetic drugs
2. Doses schedule of various anaesthetic drugs
3. Mode of administration of anaesthetic drugs
4. Adverse reactions to anaesthetic drugs

Unit: 3

1. Monitoring of patients after administration of anaesthetic drugs
2. Drug interaction

REFERENCE BOOKS:

1. Pharmacology and Pharmaco-therapeutics by Satoskar
2. Drugs and equipment by Arun Paul
3. Drugs in Anaesthetic Practice by Vickers

ANAESTHESIOLOGY

OVERALL OBJECTIVE: At the end of the course the students will be able to acquire knowledge on the basic concepts of applications of anaesthesia in clinical practice.

Unit: 1

1. Introduction to anaesthesia and historical perspective
2. Various types of anaesthesia
3. Introduction to intensive care unit services

Unit: 2

1. Equipments for general anaesthesia – anaesthetic machine & other instrument preparation and arrangement
2. Basic functions of anaesthetic equipments
3. Uses and maintenance of anaesthetic and monitoring equipments

Unit: 3

1. Drug used for pre-operative, intra operative and post-operative medication
2. Arrangement of drugs and other equipments in Operation Theatre
3. Anaesthetic gases and volatile anaesthetic agent
4. Conduct of general anaesthesia

REFERENCE BOOKS:

1. Synopsis of Anaesthesia by Lee
2. Understanding of anaesthesia equipment by Dorsch & Dorsch
3. Lecture notes on anaesthesia by John N. Lunn.
4. Text book of anaesthesia by Miller (Vol. I & II)
5. Anaesthesia and Co-existing diseases by Stockling

PRACTICAL

OVERALL OBJECTIVE: At the end of the course the students will be assessed to ascertain the practical knowledge acquired during the period.

Syllabus for 2nd Semester Course for Anaesthesia Technicians

Paper – 1

ANAESTHESIOLOGY

Unit – I

1. Medical gas supply and pipeline system
2. Anaesthesia machines
3. Breathing system
4. Circle absorber

Unit – II

1. Equipments : Endotracheal tubes, laryngoscope, facemask, airways, stylets & bougies
2. Equipments : LMA, special tubes, double lumen tube, fiberoptic bronchoscope
3. Difficult airway and gadgets
4. Diseases: diabetes, Hypertension, Hypotension, shock, cardiac failure, physiology of pregnancy and related disorder.

Unit – III

1. Pre-operative check-up and preparation of patient for anaesthesia
2. Post-operative observation and care of patient
3. Monitoring in anaesthesia and critical care
4. Positioning during anaesthesia
5. Care during transfer of the patient.

Paper – 1

PHARMACOLOGY

Unit – I

1. Pharmacology of drugs used in Anaesthesia
 - IV agents, inhalational agents, skeletal
 - Muscle relaxant, local anaesthetic & anticholinesterase drugs
2. Pharmacology of emergency drugs

Unit – II

1. IV fluids – types and requirement
2. Fluid and Electrolyte Balance
3. Requirement of blood and blood product
4. Blood transfusion and its hazards

Unit – III

1. Various haematological parameters in normal and disease status
2. Various bio-chemical parameters in normal and disease status

Syllabus for 3rd Semester Course for Anaesthesia Technicians

Paper - 1

MEDICAL DISORDERS

Unit - I

1. Introduction to various diseases
 - Diabetes
 - Hypertension
 - Hypotension
2. Patho-physiology of the above diseases
3. Signs and symptoms of above diseases
4. Standard principles of management of the above diseases

Unit - II

1. Introduction to shock
2. Clinical observation and identification of sign and symptoms of shock, allergic reactions, respiratory distress and assistance in other emergency conditions.
3. Cardiac failure
4. Renal failure
5. Physiology of pregnancy and related disorder.

Paper - 2

PHARMACOLOGY

Unit - I

1. Classification of Inotropic drugs with mechanism of action, metabolism, excretion and adverse affects. Doses and mode of administration and drug interaction.
2. Classification of Vasopressors with mechanism of action, metabolism, excretion and adverse affects. Doses and mode of administration and drug interaction.
3. Classification of vasodilators with mechanism of action, metabolism, excretion and adverse affects. Doses and mode of administration and drug interaction
4. Classification of Adjuvant drugs with mechanism of action, metabolism, excretion and adverse affects. Doses and mode of administration and drug interaction

Paper – 3

ANAESTHESIOLOGY

Unit – I

1. Procedures in anaesthesia and critical care
2. Anaesthesia vaporizers
3. Basics of artificial ventilation
4. Ventilators

Unit - II

1. Modes of ventilation
2. Setting up of a ventilator
3. Humidification

Unit - III

1. Regional Anaesthesia – Spinal anaesthesia, Epidural anaesthesia and different types of nerve and plexus blocks
2. Preparation and arrangement for regional anaesthesia
3. Record keeping and maintenance of records of drugs and patient anaesthesia record

Practical

OVERALL OBJECTIVE: At the end of the course the students will be assessed to ascertain the practical knowledge acquired during the period.

Syllabus for 4th Semester Course for Anaesthesia Technicians

Paper – 1

CRITICAL CARE

Unit – I

1. Care of the critically ill patient
2. Basic Life support
3. Preparations of adult and neonatal resuscitation trolley
4. Infections in ICU and preventive measures
5. Requirements and assistance in conduct of anaesthesia intensive therapy unit and resuscitation

Paper – 2

ANAESTHESIOLOGY

Unit – I

1. Oxygen Therapy
2. Anaesthesia for various specialties -
 - (i) L.S.C.S.
 - (ii) Principle of paediatrics anaesthesia
 - (iii) Neuroanaesthesia
 - (iv) Cardiac anaesthesia
 - (v) Anaesthesia in remote places

Unit – II

1. Safety measure in laser surgery
2. Safety measures in minimally invasive surgery
3. Post anaesthesia care unit

Unit – III

1. Electrical safety in Operating Room and ICU
2. Record keeping in anaesthesia
3. Ethics and legal aspects of anaesthesia

Practical

OVERALL OBJECTIVE: At the end of the course the students will be assessed to ascertain the practical knowledge acquired during the period.

LIST OF FACULTIES

Internal Faculties:

1. Dr. Rousanara Begum (M.D. Anaesthesiology)
Chief Consultant & Head, Dept. of Anaesthesiology
2. Dr. Dhurbajyoti Das (DA, MD - Anaesthesiology)
3. Dr. Arun Deka , (M.D. Anaesthesiology)
4. Dr. Anupam Das, ((M.D. Anaesthesiology)
5. Dr. Rashmi Barman Talukdar (M.D. Microbiology)
6. Dr. Debanjana Guha, M.D. (Physiology)
7. Dr. Jayanta Das, M.D. (Biochemistry)
8. Dr. Anupam Sarma, M.D. (Pathology)

Visiting Faculties:

1. Dr. Akhil Ch Baruah (M.D. , D.A. Anaesthesiology
Ex- Professor and Head of the Department
Department of Anaesthesiology
Silchar Medical College & Hospital.

LIST OF OT EQUIPMENTS

1. Boyle's Anaesthesia delivery machine
2. Drager Anaesthesia work station
3. Various types of breathing circuits
4. defibrillator
5. Infusion pumps
6. Hi-tech operation table.
7. Various airway devices, viz.
 - a. Different types of Oropharyngeal and Nasopharyngeal airways
 - b. Laryngeal mask airways
 - c. Combitube
 - d. Double lumen tubes
 - e. Endotracheal tubes
 - f. Laryngoscopes
 - g. Fibre optic bronchoscope
8. Multiparameter monitor
9. Equipments for performing various types of regional blocks eg
 - a. Nerve locator
 - b. Epidural needle
 - c. Spinal needle
10. Students will be trained in dealing with various types of OT equipments like
 - a. Laser Machine
 - b. Electro cautery machine
 - c. Laparoscopic equipments
 - d. Suction apparatus
 - e. C- Arm

LIST OF CSSD EQUIPMENTS:

1. Ultrasonic cleaner
2. Steam sterilizer
3. Dry heat sterilizer
4. Dry heat cabinet
5. Washer Disinfector
6. Sterrad Nx Gas plasma sterilizer

LIST OF BOOKS AND JOURNALS

1. Human anatomy –vol-I, II, III by B.D. Chourasia
2. Text book of physiology by Guyton
3. Human physiology by C.C. Chatterjee.
4. Text book of pharmacology – By K. D. tripathi
5. Pharmacology and pharmaco- Therapeutics by Satoskar

6. Anatomy and physiology for nurses – Gupta
7. Atlas of anatomy- Gilroy
8. Hospital acquired infections – U. Muralidhar
9. Microbiology for nurses- Bhatia
10. Text book of Microbiology- Chakraborty
11. Drugs and equipments – By Arun Paul
12. Anaesthesia equipments - By Dorsch & Dorsch
13. Synopsis of Anaesthesia – By Lee
14. Anaesthesia and Co- Existing diseases – By Stoelting
15. Fundamentals of operation theatre service – By T.K. Datta
16. Obstetric Anaesthesiology – By Schneider

JOURNALS

1. Indian journal of Anaesthesia
2. Recent advances in Anaesthesia and Analgesia
3. Anaesthesiology
4. Asian archives of Anaesthesiology and Resuscitation
5. British journal of Anaesthesiology
6. Canadian journal of Anaesthesiology: