

**STATE COUNCIL OF ALLIED MEDICAL
SCIENCES ODISHA**



**B.SC. ANESTHESIA TECHNOLOGY
(BAT)**

Preface: B.Sc. Anesthesia technology is a skilled course that will help a student become an anesthesia technician. They play an important role as an allied healthcare professional. Their main role is to assist the doctors or surgeons before/during/after surgery.

They play a vital role in Intensive Care Units (ICU), Emergency wards and Operation Theatres (OT). They are usually required before an operation starts. They provide anesthetic agent to the patient.

B.Sc. in Anesthesia technology course focuses on training of students with respect to anesthesia equipment, techniques, agents and dosage, patient monitoring and supplies. The knowledge and skills help the students choose necessary equipment, determine appropriate dose, operate the equipment and monitor the condition of the patient.

Programme: B.Sc. in Anesthesia Technology

Duration: Three years (Six semesters) full-time programme with 6 months internship in the last semester.

Eligibility: +2 Science with Physics, Chemistry & Biology or equivalent degree

Examination: Examination rules will be as per guideline of Odisha State Allied Board

Internship: A candidate will have to undergo internship for a period of six calendar months in a hospital/Diagnostics Centre equipped with modern pathology laboratory facility or in a fully equipped pathology laboratory, which fulfills the norms decided by the University.

Dissertation will be compulsory to all students. Students will carry out dissertation work individually or in the group of not more than three students. The format for dissertation/Internship report will be similar to the research thesis style; incorporating chapters on: Introduction, Materials and Methods, Results and Discussion and References / Bibliography. The dissertation will be submitted in a typewritten and bound form.

Degree: The degree of B.Sc. Anesthesia technology course of the University shall be conferred on the candidates who have pursued the prescribed course of study for not less than three academic years and have passed examinations as prescribed under the relevant scheme and completed 6 months of compulsory internship in the last semester. On successful completion of three years programme, with a minimum pass mark of 50% candidates will be graduated “**Bachelor of Science in Anaesthesia Technology (BAT)**” respective universities.

Plan of Classes & Examination Pattern for Degree course

- Total duration of each course is 3 years (6 Semesters).
- Each semester is of 6 months duration.
- In each semester the classes will be of 5 months duration & internal assessment will be conducted in the last month of each semester except 3rd & 6th semester .
- University examination will be conducted at the end of 3rd & 6th Semester.
- In each semester, the classes will be of 500 hours including theory and practical/clinical.
- **Distribution of classes:** There will be 5 hours of classes / day for 5 days in a week, 25 hours / week, 100 hours /month and 500 hours in each semester.
- Of the 500 hours of classes, 200 hours will be dedicated for the theory classes; rest 300 hours will be practical / clinical.
- **Attendance in Class:** A Student will be eligible to appear in the semester and university examination if he/she has attended minimum 75% theory classes and 85% practical classes.

EXAMINATION PATTERN

- **Internal assessment:** Internal assessment will be conducted in the last month of each semester except 3rd & 6th semester(where there will be University examination.)
- **Mark Distribution:** 50 marks per each subject (30 Theory and 20 practical/clinical). Minimum qualifying mark: 50 % in each theory and practical/clinical.
- **Question Pattern for Theory (Semester Examination):**
 - i. Short questions of 2 marks each X 5 = 10
 - ii. Multiple choice question 1 mark each X 5 = 5
 - iii. Fill in the blanks 1 mark each X 5 = 5
 - iv. Match the following 1 mark each X 5 = 5
 - v. Long Question (Choice) 1 X 5 = 5
- **University Examination:** Candidate has to pass two university examinations to be conducted at the end of 3rd Semester & 6th Semester, of 100 marks/ subject. A student will be eligible to appear in the university examination if he/she has secured 50% in internal assessment done at the end of 1st, 2nd, 4th & 5th semester.

Degree: On successful completion of three years programme, the candidate will be awarded with “Bachelor of Science in Anesthesia Technology (B.Sc.-AT)” .

BACHELOR OF SCIENCE IN ANAESTHESIA TECHNOLOGY

FIRST YEAR		
Sl. No.	Subject	Subject type (The+Prac+Proj)
1	General Anatomy	3+2+0
2	General Physiology	3+2+0
3	Biochemistry	3+1+0
4	Pathology(Clinical Pathology, Haematology, Blood Banking)	3+0+1
5	Microbiology	3+2+0
6	Basic Computer and Information Science	0+2+0
SECOND YEAR		
1	Medical Law and Ethics	2+0+1
2	Basics of Nursing	3+2+0
3	Basics in Medical Physics & Electronics	3+0+1
4	Applied Pathology and Applied Microbiology	3+2+0
5	Introduction to anesthesia and OT Technology	3+0+1
6	Pharmacology	3+0+1
7	Pharmacology related to Anesthesia Technology	3+0+1
8	Clinical Hospital Practice for AT- I	0+4+0
THIRD YEAR		
1	Concepts of Diseases and Techniques in Regional & General Anesthesia	3+0+1
2	Clinical Hospital Practice for AT- II	0+4+0
3	Anesthesia for Specialty Surgeries	3+0+1
4	Anesthesia for Patients with Medical disorders	3+0+1
5	Clinical Hospital Practice for AT- III	0+4+0
6	Post Anesthesia care Unit	3+0+1
7	Health Care Management	3+0+1
8	Anesthesia Techniques Including Complication	3+0+1
9	Anesthesia for Specialties (Including Critical Care Assistance and Ventilation)- Paper II	3+ 0+1
10	Medical Law and Ethics	2-0-1
11	Clinical Pathology	3-1-0
PROJECT		
INTERNSHIP		

Courses: The- Theory, Prac- Practicals, , Proj -Project

FOUNDATION COURSE

Introduction to Health care Delivery System in India	Basic computers and information Science	Communication and soft skills	Introduction to Quality and Patient safety (including Basic emergency care and life support skills, Infection prevention and control,	Medical Terminology and Record keeping (including anatomical terms)
Biomedical waste management	Disaster management and Antibiotic resistance)	Professionalism and values	Biostatistics & introduction to Research methodology	Medical Law and Ethics Biostatistics Methodology

Core Courses

GENERAL ANATOMY

Subject Name	Type of course
GENERAL ANATOMY	Theory

Description

- General anatomy deals with the entire human anatomy with emphasis on different tissues, blood vessels, glands, nerves and the entire central nervous system in particular.

Learning outcome

At the end of the semester, the student should be able to:

1. Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of various structures in the human body.
2. Identify the microscopic structures of various tissues, and organs in the human body and correlate the structure with the functions.
3. Comprehend the basic structure and connections between the various parts of the central nervous system so as to analyze the integrative and regulative functions on the organs and systems.

Module -1 INTRODUCTION TO ANATOMY AND SKELETON

Introduction to Anatomy: Sub division of anatomy, terms and terminology, systems of the Body.
Skeleton: Bones: function of bones, classification of bones, parts of young bone, development of bone, classification of bones, blood supply bone, cartilage, clinical anatomy

Module –2 MUSCLES & JOINTS

Muscle: types of muscles, structure of striated muscle, naming of muscle, fascicular architecture of muscle, actions of muscle, nerve supply.

Joints: Classification, structures of joints, movements, mechanism of lubrication, biomechanics, levers, blood supply, nerve supply, and applied anatomy.

Practice: - Identification of different joints and bones from Charts and Human Skeleton.

Module -3 CIRCULATORY SYSTEM, LYMPHATIC SYSTEM & SKIN

Circulatory system: Types of circulation of blood, arteries, veins, capillaries, end arteries, applied aspect.

Lymphatic system: components, lymph nodes, clinical anatomy

Skin: structure of skin, superficial fascia, deep fascia, clinical aspects

Module -4 UPPER LIMB & LOWER LIMB

(A) Upper extremity: Bony architecture Joints – structure, range of movement Muscles – origin insertion, actions, nerve supply Major nerves – course, branches and implications of nerve injuries Development of limb bones, muscles and anomalies Radiographic identification of bone and joints Applied anatomy

(B) Lower extremity: Bony architecture Joints – structure, range of movement Muscles – origin, insertion, actions, nerve supply Major nerves – course, branches and implications of nerve injuries Development of limb bones, muscles and anomalies Radiographic identification of bone and joints Applied anatomy

Module -5 THORAX, ABDOMEN & BACK MUSCLES

Thorax: skeleton of thorax, intercostal spaces, pleura, lung, mediastinum, heart: morphology, blood supply, interior of heart, general information about upper respiratory tract (trachea, esophagus, pharynx and larynx) clinical anatomy.

Abdomen: Anterior and posterior abdominal wall, general information about viscera: stomach, liver, pancreas, duodenum, kidney, ureter, urinary bladder, uterus and its adnexa.

Practice: -identification of structure, position, and different parts of Lungs, Heart, Kidney from charts, Models.

Back muscles: Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply. Vertebral column – Structure & Development, Structure & Joints of vertebra Thoracic cage. Radiographic identification of bone and joints Applied anatomy

Practice: - Radiography identification of different architecture joints, structure and position of Bones from Skeleton, Model or PPT.

Module -6 NERVOUS SYSTEM & SPECIAL SENSE ORGANS

Nervous system: parts of nervous system, neurons, peripheral nerves, spinal nerves, summary of cranial nerves, parasympathetic nervous system.

Special sense organs: Structure and function of Visual system, auditory system, gustatory system, olfactory system.

Module -7 HEAD AND NECK & CENTRAL NERVOUS SYSTEM

Head and neck: scalp, facial muscles, cranial skeleton, triangles of neck, parotid region, temporomandibular joint, muscles of mastication, applied.

Central nervous system: General idea about spinal cord, brainstem, cerebrum, cerebellum, ventricular system, diencephalon, blood supply of brain and its applied, meninges and cerebrospinal fluid.

Practice: -Identification of structure and different parts of Central nervous system from chart. Identification of different blood supply in brain from PPT.

Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain).

General Physiology

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
General Physiology	Theory+ Practice	3-2-0	Fundamental Science

Description

- General physiology deals with the entire human anatomy with emphasis on different organ systems, their physiological functions with special emphasis on blood and neuro physiology.

Learning outcome

- At the end of the course the student will be able to: • Explain the normal functioning of various organ systems of the body and their interactions. • Elucidate the physiological aspects of normal growth and development. • Describe the physiological response and adaptations to environmental stresses. • Know the physiological principles underlying pathogenesis of disease.

Course Outline

Module -I

SCOPE OF PHYSIOLOGY. Definition of various terms used in physiology. Structure of cell, the function of its components with special reference to mitochondria and microsomes. Elementary tissues: Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue, and nervous tissue.

Module -II

CARDIOVASCULAR SYSTEM: Composition of the blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of the blood. Heart: myocardium–innervations– transmission of cardiac impulse- Events during the cardiac cycle–cardiac output. Structure and functions of various parts of the heart.

Module-III

CIRCULATION: General principles, Peripheral circulation: peripheral resistances–arterial blood pressure–measurements–factors, Regulation variations–capillary circulation–venous circulation. Special circulation: coronary cerebral–miscellaneous, Arterial and venous system with special reference to the names and positions of main arteries and veins. Brief information about cardiovascular disorders.

Module -IV

RESPIRATORY SYSTEM: Various parts of the respiratory system and their functions, physiology of respiration. Mechanics of respiration–pulmonary function tests–transport of respiratory gases–neural and chemical regulation of respiration–hypoxia, cyanosis, dyspnoea–asphyxia.

Module-V

URINARY SYSTEM: Various parts of the urinary system and their functions, structure, and functions of the kidney, the structure of nephron– mechanism of urine formation, composition of the urine and abnormal constituents, urinary bladder & micturition. Pathophysiology of renal diseases and edema.

Module-VI

DIGESTIVE SYSTEM: names of various parts of the digestive system and their functions. structure and functions of the liver, physiology of digestion- functions, and regulations of Salivary digestion, Gastric pancreatic digestion, Intestinal digestion, and absorption. Lymphatic system: Name and functions of lymph glands, Reticuloendothelial system: Spleen, lymphatic tissue, Thymus

Module-VII

NERVOUS SYSTEM: Neuron–Conduction of impulse– synapse–receptor. Sensory organization–pathways and perception, Reflexes–the cerebral cortex– functions. Thalamus–Basal ganglia Cerebellum, the hypothalamus. Autonomic nervous system– motor control of movements Reproductive system. Structure and function of Male reproductive system–control & regulation, Female reproductive system– uterus–ovaries–menstrual cycle–regulation–pregnancy & delivery– breast–family planning

Practice:

1. Identification of different organs and systems from charts
2. Identification of different blood cells, their normal and abnormal morphology from slides.
3. Examination of pulse, B.P., Respiratory rate.
4. Reflexes
5. Spirometry to measure various lung capacities & volumes, Respiratory rate, Tidal volume, IRV, IC
6. ERV, EC, residual volume on Spirometry.
7. An estimate of Hemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count.
8. Blood indices, Blood grouping, Bleeding & Clotting time

Cell Biology

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Cell Biology	Theory+ Project	3-0-1	Fundamental Science

Objective

- Determine the parts of the cell membrane and the cell wall
- Distinguish the types and mechanism of mutation
- Compare and contrast the events of cell cycle and its regulation
- Understand the dynamic character of cellular organelles

Learning outcome

- Describe the fundamental principles of cellular biology
- Develop a deeper understanding of cell structure and how it relates to cell functions.
- Understand how cells grow, divide, and die and how these important processes are regulated.
- Understand cell signaling and how it regulates cellular functions. Also how its dysregulation leads to cancer and other diseases.

Course Outline

Module –I An Overview of Cells: History, Cell theory, Structure and Function of Cell and its Organelles: Biological membranes - Nucleus - Nuclear envelope, Nucleolus, Mitochondria, Chloroplasts, Lysosomes, Glyoxysomes and Peroxisomes, endoplasmic reticulum, ribosomes, Golgi complex (Structural organization, function, marker enzymes of the above organelles), Cell types: prokaryotes vs. eukaryotes; from single cell to multi-cellular organism; Different molecules of cell- water, salt and mineral ions etc.

Module- II Cell cycle and its regulation, Cellular communication and cell mobility: Cell cycle: G₀/G₁, S, G₂ and M phases (Cell Division: Mitosis, meiosis and cytokinesis); regulation of cell cycle; cell adhesion and roles of different adhesion molecules, gap junctions, Extra- Cellular Matrix (ECM), Cell-cell interaction and cell- ECM interaction, The cytoskeleton, Microtubule-based movement and microfilament -based movement.

Module-III Cell signaling, Programmed Cell Death (Apoptosis) and Cancer: Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors (GPCR), Tyrosine Kinase, signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two-component systems, bacterial chemotaxis, Intrinsic and Extrinsic apop-

otic pathway, Caspase enzyme, Biology and elementary knowledge of development and causes of cancer; Tumor viruses, Oncogenes and tumor suppressor genes.

Basic Computer and Information Science

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Basic Computer and Information Science	Practice	0-2-0	Fundamentals of Computer

Objective

- Identify the function of computer hardware components.
- Identify the factors that go into an individual or organizational decision on how to purchase computer equipment.
- Identify how to maintain computer equipment and solve common problems relating to computer hardware.
- Identify how software and hardware work together to perform computing tasks and how software is developed and upgraded
- Identify different types of software, general concepts relating to software categories, and the tasks to which each type of software is most suited or not suited.

Learning Outcome:

- Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components.
- Understand the difference between an operating system and an application program, and what each is used for in a computer.
- Describe some examples of computers and state the effect that the use of computer technology has had on some common products

Course Outline

Module- I: Introduction to computer: introduction, characteristics of computer, block diagram of computer, generations of computer. Types of Input output devices. Processor and memory: The Central Processing Unit (CPU), main memory. Storage Devices.

Module- II

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.

Module- III

Introduction to MS-DOS: History of DOS, features of MS-DOS, MS-DOS Commands (internal and external). 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.). Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid). 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.

Introduction to anaesthesia and OT Technology

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Introduction to anaesthesia and OT Technology	Theory+ Project	3-0-1	Fundamental Science

Course Outline

Module I:

- **Introduction To Anesthesia: History of Anesthesia:** Prehistoric (Ether) era,,Inhalational anesthetic era,,Regional anesthetic era,Intravenous anesthetic era,Modern anesthetic era
- **Medical Gas Supply:** Compressed gas cylinders, Colour coding, Cylinder valves, Cylinder storage, pin index, Diameter index safety system, Gas piping system, Air compressors, Oxygen Concentrators,Alarms & safety devices.

Module II :

- **Gas physics:** States of matter, Temperature conversion, Humidity, Pressure measurement, Gas flows and diffusion, Gas laws, Miscellaneous concepts such as density and specific gravity
- **Gas Administration Devices:** Simple oxygen administration device, Methods of controlling gas flow, Reducing valves, Flow meters, Regulators, Flow restrictors

Module III: Machine breathing system

- **Anaesthesia Machine:** Hanger and yoke system, Cylinder pressure gauge, Pressure regulator, Flow meter assembly, Vaporizers-types, hazards, maintenance, filling & draining, etc
- General considerations, Classification and breathing system, Mapleson System, Jackson Rees system of Bain circuit, Non breathing valves – Ambu valves, Others

Module IV: Face Masks & Airway Laryngoscopes

- Endotracheal tubes – Types, sizes, (RAE Tube, Flexo metallic). Complications – Use care and maintenance of anaesthesia equipment 2) Laryngoscopes in Anaesthesia
- **Oxygen Therapy:** Definition, Causes and responses to hypoxemia, Clinical signs of hypoxemia, Goals of oxygen therapy, Evaluation of patients receiving oxygen therapy, Hazards of oxygen therapy.

Module V:

- Boyle’s Machine & its functioning. Boyle’s vaporizer. Magill’s breathing circuit, Bains breathing circuit, paediatrics anaesthesia circuit. Gas cylinders and flow meters. Carbon dioxide absorption container. Suction apparatus-foot operated, electrically operated. Ambubag laryngoscope endotracheal tubes. Catheters, face masks, venti-mask.

Module VI**MONITORING**

- ECG
- Temperature
- IBP
- CVP
- PA Pressure
- LA Pressure

Bio Medical engineering of Trouble sorting Management, care of cleaning**Module VII**

CSSD, Instrumentation, store and inventory, Anaesthesia Ventilator and Working principles

Anesthesia for Specialty Surgeries

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Anesthesia for Specialty Surgeries	Theory+ Project	3-0-1	Fundamental Science

Course Outlines

MODULE I

Neuroanaesthesia, orthopaedics, plastic & reconstructive surgeries Neuro Anaesthesia , Premedication , Special investigation - CT, Angiography and MRI , Checklist , Induction of a patient , Reinforced Endotracheal tubes , Positioning in neuro surgery , I.C.P. -normal values, factors increasing icp& methods to reduce icp in the OT , Air embolism , Reversal of the patient , Transferring to I.C.U. / Ward Orthopaedic Surgery , Complications During Orthopaedic procedures-fat embolism ,massive haemorrhage,tourniquet complications , Radiation hazard Plastic And Reconstructive Surgery And Vascular Surgery , Complications during revascularisation and its management , Recognition of compartment syndrome , Burns -types and initial management- anaesthetic challenges , RAE tubes

MODULE-II

Obstetric Anaesthesia, Paediatric Anaesthesia- Obstetric Anaesthesia , Differences between a pregnant and a non pregnant lady , Risks for anaesthesia.-difficult airway, supine hypotension syndrome , Check list , Regional vs general anaesthesia , Induction / maintenance and recovery . , Resuscitation of the new born, apgar score , Reversal and extubation , Emergencies - manual removal of placenta - A.P .H. - P.P.H. - Rupture uterus - Ectopic Pregnancy , Amniotic fluid embolism Paediatric Anaesthesia , Theatre setting , Check list , Premedication - modes , Induction , Intubation - Securing the ETT , Reversal & extubation - Problems and its management , Transferring / ICU management , Pain management

MODULE III

Cardiac Anaesthesia, ENT Surgeries- Cardiac Anaesthesia : , NYHA classification , Arrhythmias -types of arrhythmias and antiarrhythmic drugs , Angina- types , Dyspnoea-causes , Premedication , Setting up of monitoring system , Monitoring - invasive and non - invasive , Getting ready for the case , Induction of cardiac patient, precautions to be taken , Cardiopulmonary bypass -indication and its function , I.C.U management. , Chest tube management ,

MODULE IV

ENT Anaesthesia, Anaesthesia for adenotonsillectomy-challenges, positioning, throat packing and removal of the pack , Anaesthesia for mastoidectomy& FESS-methods to minimize bleeding , Anaesthesia for Bronchoscopy and oesophagoscopy-challenges in anaesthetising for these procedures

MODULE V: Urology, anaesthesia outside OR, day care surgeries, laparoscopic and geriatric anaesthesia-Urology , Different endoscopic procedures in urology , Types of irrigation fluids-glycine, normal saline , Complications of TURP , Lithotomy position and its complications Anaesthesia Outside the O.R. Problems of anaesthetising patients in , Endoscopy , Cath Lab , Radiology -CT, MRI

MODULE VI

Day care Anaesthesia , Special features , Advantages , Disadvantages , Complication Laparoscopic Surgeries , Complications during laparoscopic procedures , Effects of increased intragastric pressure Geriatric Anaesthesia , Physiological changes , Anaesthetic challenges& problems during positioning.

MODULE VII

Trauma Anaesthesia, Thoracic Anaesthesia- Anaesthesia for Trauma & Hypovolemic Shock , Resuscitation -airway, breathing , Preoperative investigations& assessment , Circulatory management , Causes of unconsciousness , Rapid sequence induction , Tension pneumothorax-pathophysiology and management Thoracic Anaesthesia , Pulmonary function tests bed side , Preoperative preparation , Check list , Induction. Intubation Lung isolation- Indications, Techniques, Complications , Double lumen tubes , Monitoring during single lung ventilation , Pain management , Extubation , ICU management

Anesthesia for Patients with Medical disorders

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Anesthesia for Patients with Medical disorders	Theory+ Project	3-0-1	Fundamental Science

Course Outline

MODULE I

Hypertension-Hypertension-commonly used antihypertensives - losartan, amlodipine, telmisartan, atenolol, methods to reduce hypertension intraoperatively, complications of intraoperative hypertension.

MODULE II

Diabetes Mellitus Diabetes -insulin preparations, methods to reduce blood sugar levels, complications of uncontrolled diabetes intraoperatively.

MODULE III

Respiratory diseases, epilepsy, anaemia- Bronchial asthma/COPD-complications and its management intraoperatively, methods to avoid precipitating bronchospasm , Epilepsy-anaesthesia drugs precipitating an epileptic attack, drugs used for treatment , Anaemia-complications under anaesthesia

MODULE IV

Coronary artery diseases, thyroid diseases- Coronary artery disease-risk factors for having an myocardial/infarction under anaesthesia, drugs used in their management, complications of ischaemic heart disease patient undergoing non cardiac surgery

MODULE V

Thyroid disorders-causes of hyper and hypothyroidism, challenges of anaesthetising a thyroid patient, thyroid storm and its management, complications after thyroidectomy

MODULE–VI

Obesity, Renal and Liver Failure-Obesity-challenges of anaesthetising an obese patient.

MODULE VII

Renal failure-anaesthetic challenges in renal failure patient, intraoperative complications in renal failure patients and its management.,important anaesthetic challenges during renal transplant , Jaundice-intraoperative complications in a liver failure patient.

Anesthesia Techniques Including Complication

Subject Name	Type of course	T-P-Pj	Prerequisite
Anesthesia Techniques Including Complication	Theory+ Project	3-0-1	Fundamental Science

Course Outlines

Module I

To setup the required equipments for general anaesthesia, spinal, epidural, nerve block.

Module II

Monitoring during anaesthesia and complications:

Minor Sequelae

Nausea & vomiting, Sore throat, Laryngeal granuloma, Neurological complications, Awareness, Vascular complications, Trauma to teeth, Headache, Backache Ocular complications. ,Auditory complications .

Module III

Monitoring and diagnostic procedures in ICU

Major Catastrophes

Mortality, Causes of death , Cerebral damage, Prevention.

Intensive Care : Central venous access, ECG monitoring, Invasive hemodynamic monitoring

Module IV

General care of patient in ICU-Eye, GI tract, Bladder, skin, Case of mechanically ventilated patient, Tracheostomy, humidification, Vascular lines – arterial, venous line, Radiography, Physiotherapy – chest physiotherapy

Module V

Regional anaesthesia – Introduction, Indication, Contraindication, Check list, Procedure, Complications, Management, Spinal, Epidural, Nerve Block

Module VI

Anaesthetic consideration in

Endocrine disease: Pheochromocytoma b) Renal disease: Urolithiasis, TURP

Module VII

Intra-operative Management

Confirm the identification of the patient. Monitoring – minimum (ISA standards) . Noninvasive & Invasive monitoring. Induction – drugs used. Endotracheal intubation. Maintenance of anaesthesia. Positioning of the patient. Blood/Fluid & electrolyte balance. Reversal from anaesthesia – drugs used. Transferring the patient Recovery room - set up,i. things needed ii. Problems. Post operative complications & management

Anesthesia for specialties (Including Critical Care Assistance and Ventilation) Paper – II

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Anesthesia for specialties (Including Critical Care Assistance and Ventilation) Paper – II	Theory+ Project	3-0-1	Fundamental Science

Course Outline

MODULE I

Cardiac anaesthesia –

NYHA classification, Arrhythmias, Angina, Dyspnoea, Premedication, Setting up of monitoring system, Monitoring – invasive and non-invasive, Getting ready for the case, Induction of cardiac patient, precautions to be taken, Transferring the patient to ICU, Care to be taken, ICU management

MODULE II

Neuro Anaesthesia

Glasgow coma scale, Signs of raised ICT, Premedication, Check list, Induction of a patient Positioning in neuro surgery, I.C.P. monitoring, Air embolism, Transferring to I.C.U.Ward

MODULE III

Anaesthesia for Trauma & Shock

Resuscitation, Preopinvestigation/assessment, Circulatory management, Management of anaesthesia, Rapid sequence induction, Other problems

MODULE IV

Obstetric Anaesthesia

Differences between a pregnant and a normal lady, Risks for anaesthesia, Precautions to be taken Check list, regional vs general anaesthesia, Induction / maintenance. Resuscitation of the new born, APGAR score, Reversal and extubation, Emergencies – Manual removal of placenta, A.P.H,-P.P.H., Ruptured uterus, Ectopic pregnancy, Labour, Epidural analgesia,

MODULE V

Paediatric Anaesthesia

Theatre setting, Check list, Premedication, Induction, Intubations-securing the ETT, Monitoring, Reversal & extubation – problems, Transferring / IC management, Pain management.

MODULE VI

Day Care Anaesthesia

Special features, Set up, Advantages, Disadvantages, Complications, Future

MODULE VII

Anaesthesia Outside the O.R.

Situations, Cath lab, MEDICAL RADIATION Science Technology natural calamities, E.C.T., Features, Shortcomings, Complications

Basics of Nursing

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Basics of Nursing	Theory+ Practice	3-2-0	Fundamental Science

Course Outline

Module I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community.

- Communication Skills
- Relationship with patients, process of communication

Module II: Patient care:

Nursing Processes, Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Module III: First Aid and Emergencies

Definition, basic principles, scope and rules, Wounds, haemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach. Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Module IV: Organization of OT:

a) Technician role and responsibilities b) Safety norms, c) Air exchange and air condition, d) De-fibrillation, e) Crash cart and its contents, f) Cardiac pacing.

Module V: Preparation and Assisting for Various Surgical Procedures; as Circulating

- ✓ Setting up of operation room and table
- ✓ Setting up of trays and trolleys for various surgical procedures
- ✓ Part preparation for surgical procedures
- ✓ Positioning and draping according the surgical procedures
- ✓ Incisions for various surgical procedures
- ✓ Minor surgeries-surgical instruments and suturing materials
- ✓ Major surgeries-surgical instruments and suturing materials

Module VI: Personal Hygiene and Health

- Care of skin, mouth, eyes, nails, hair
- Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene.
- Comfort, Rest and Sleep
- Hospital Housekeeping

Module VII: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Basics of Nursing Practice

1. First Aid for different organ systems,
2. CPR,
3. Nursing Workshops.
4. Bandaging types
5. Practice of various comfort devices, various positions in nursing foundation lab.
6. Health talk, preparation of 3-5 types of A.V. Aids,
7. Ward visit to monitor BMW management.
8. 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, in halers
 - g. Suctioning and care of artificial airway
 - h. Insertion of urinary bladder catheter
9. Uses, principles, advantages and disadvantages of instruments and Devices inpatient care
10. Basic Life Support (BLS)

Basics in Medical Physics & Electronics

Subject Name	Type of course	The+ Prac+ Proj	Prerequisite
Basics in Medical Physics & Electronics	Theory+ Project	3-0-1	Fundamental Science

Course Outline

Module I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon- Iron laser photo coagulator-Photo Thermal-Photochemical Application-Applications of laser in Medicine-Laser hazards and safety measures.

Module II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Module III: Nuclear Physics Radioactivity: Nature of Nuclear radiations- Properties of Alpha, Beta and Gamma rays, Natural and artificial radioactivity, Half-life period- Nuclear Fission and Fusion- Nuclear reactions. Medical applications of radio isotopes.

Module IV: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray Image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan- M-Scan-Ultrasound Diathermy-Phonocardiography – Radio isotopes: Uses of Radio

isotopes – ^{99m}Tc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Module – V: Electricity & Electromagnetism

Electric charge- Conductors and insulators- Coulomb's law- Electric field-Electric lines of force-properties of lines of force- Electric field strength-Capacity- Units of capacity- Potential energy of a charged conductor-Principle of a condenser- Capacity of a parallel plate condenser-Electric current and its units- Potential difference-Electromotive Force- Ohm's law – Electric Power and Electric Energy-Kirchhoff's Law.

Module VI: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Module VII : Biopotential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Biopotential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography– Electroencephalograph –Electromyography.

Biochemistry

Subject Name	Type of course	T-P-Pj	Prerequisite
Biochemistry	Theory+ Practice	3-1-0	Fundamental Science

Objective

- To understand the concept of metabolism of carbohydrates
- To understand the significance of amino acids, proteins
- Use of enzymes in enhancing metabolic reactions
- Role of lipids

Learning outcome

- After completion of the course the student will be developed a very good understanding of various biomolecules which are required for development and functioning of cells.
- Would have understood the significance of carbohydrates in energy generation and as storage food molecules for cells.
- They would have understood the significance of proteins and enzymes in accelerating various metabolic activities.
- The conceptual understanding of the subject provides opportunities for skill enhancement and scopes for higher education.

Course Outline

Module- I

Structure of enzyme: Apoenzyme and cofactors, prosthetic group-TPP, coenzyme NAD, metal cofactors, Classification of enzymes.

Mechanism of action of enzymes: active site, transition state complex and activation energy. Lock and key hypothesis, and Induced Fit hypothesis.

Enzyme inhibition, enzyme kinetics.

Diagnostic value of serum enzymes: Creatinine kinase, Alkaline phosphatase, Acid phosphatase, LDH, SGOT, SGPT, Amylase, Lipase, Carbonic anhydrase etc.

Practice: Study of effect of temperature on enzyme activity
Study of effect of pH on enzyme activity

Module- II

Carbohydrates: Biomedical importance & properties of Carbohydrates, Classification,

Families of monosaccharides: aldoses and ketoses, trioses, tetroses, pentoses, and hexoses. Stereo isomerism of monosaccharides, epimers, Haworth projection formulae for glucose; chair and boat forms of glucose.

Metabolism: Glycogenesis & glycogenolysis, Glycolysis, citric acid cycle & its significance, Components of respiratory chain, energy relationships during cell respiration, types of respiration. HMP shunt & Gluconeogenesis, regulation of blood glucose level.

Practice: Estimation of Glucose in urine
Estimation of Glucose in blood

Module- III

Amino acids: Classification, essential & non-essential amino acids. Chemistry of Proteins & their related metabolism, Classification, biomedical importance.

Metabolism: Ammonia formation & transport, Transamination, Decarboxylation, Urea cycle, metabolic disorders in urea cycle, catabolism of amino acids.

Practice: Estimation of Protein in urine
Estimation of Protein in blood

Module- IV

Chemistry of Lipids & their related metabolism: Classification, biomedical importance, essential fatty acids. Brief outline of metabolism: Beta oxidation of fatty acids, fatty liver,

Ketogenesis, Cholesterol & its clinical significance, Lipoproteins in the blood composition & their functions in brief, Atherosclerosis.

Diabetes mellitus: its types, features, gestation diabetes mellitus, glucose tolerance test, glycosuria, Hypoglycaemia& its causes.

Practice: Estimation of Bile pigment in urine

Estimation of Bile salts in urine

Clinical Practices in Hospital - 2

Name of the Subject	Subject Type (The+ Prac+ Proj)
Clinical Practices in Hospital	0 3 1

5. Drugs for practical:

- | | |
|-------------------|--------------------------------|
| ✓ Thiopentone | Potassium chloride |
| ✓ Propofol | 5% dextrose |
| ✓ Ketamine | Normal saline |
| ✓ Etomidate | Hetastarch |
| ✓ Atropine | Heparin |
| ✓ Glycopyrrolate | Low molecular weight heparin |
| ✓ Ondansetron | Fentanyl |
| ✓ Metaclopramide | Pethidine |
| ✓ Midazolam | Pentazocine |
| ✓ Diazepam | Morphine62 |
| ✓ Succinylcholine | Halothane |
| ✓ Vecuronium | Sevoflurane |
| ✓ Rocuronium | Isoflurane |
| ✓ Atracurium | Desflurane |
| ✓ Dexamethasone | Paracetamol |
| ✓ Hydrocortisone | Tramadol |
| ✓ Ranitidine | Mephentermine |
| ✓ Sodium citrate | Neostigmine |
| ✓ Xylocaine, | bupivacaine (all preparations) |
| ✓ Adrenaline | Noradrenaline |
| ✓ Propranolol | Xylocard |
| ✓ Labetolol | Esmolol |
| ✓ Dopamine | Dobutamine |
| ✓ NTG, SNP, | Aminophylline |
| ✓ Amiadarone | |
| ✓ Adenosine | Furesomide |
| ✓ Mannitol | N acetyl cysteine |
| ✓ Methergin | Oxytocin |

6. ANAESTHETIC consideration in

- a. Cardiac disease – CAD, Valvular heart disease, congenital heart disease, Hypertension
- b. Respiratory disease – COPD, Bronchial Asthma
- c. Endocrine disease – DM, Thyroid dysfunction
- d. Renal disease – CRF
- e. Obesity

7. Emergence, Termination and Recovery

- a. Reversal
- b. Oropharyngeal toilet
- c. E T Suction
- d. Deflation of the cuff
- e. Removal of the tube
- f. Transfer of the patient

Clinical Practices in Hospital - 3

Name of the Subject	Subject Type (The+ Prac+ Proj)
Clinical Practices in Hospital - 3	0 3 1

I. A.Equipments:

- 1. Contents of cvc set,
- 2. IV cannulation technique,
- 3. Dilution of drugs,
- 4. Setting up of infusion and syringe pumps, storage of blood and blood products,
- 5. Storage of drugs,

II. B.Position for spinal/epidural

- Usage of peripheral nerve stimulator and ultrasound,
- Procedure of all the above mentioned blocks,
- Items included in LP set
- Asepsis

Spotters :Types of spinal needles Touhy epidural needle Items included in LP set Epidural catheter set-contents Peripheral nerve stimulator Stimuplex needles Drugs used in regional anaesthesia+adjuvants .Atropine, ephedrine, mephentermine, Lipid emulsion

- Checking blood pressure, checking CBG, process of nebulisation, position for thyroid surgery. Difficult intubation cart, difficult airway management, setting up of IBP/CVP

III. DRUGS:

- Antihypertensive drugs-losartan, amlodipine, telmisartan, atenolol, Insulin preparation Antiepileptic drugs-midazolam, phenytoin. Clopidogrel, aspirin, Nebulizer, inhalers, rotahelers, levosalbutamol, ipratropium bromide, deriphylline Sphygmomanometer Fure-somide, mannitol, methyl prednisolone, albumin
- Discussion on management of Diabetes and hypertension

Clinical Practices in Hospital - 4

Name of the Subject	Subject Type (The+ Prac+ Proj)
Clinical Practices in Hospital -	0 3 1

1. Checking CBG,
2. insertion of IV cannulas,
3. functioning of syringe and infusion pump,
4. Working of laryngoscopes, insertion of oropharyngeal airways,
5. injecting drugs through epidural catheters,
6. checking vital parameters in PACU
7. Setting up for cvp/ibp monitoring Checking of double lumen tubes
8. Defibrillator-charging and method of defibrillation Care of ICD tube Bed side lung function tests
9. Method of insertion of ICD Lithotomy position Insertion of ryles tube
10. Preparation for anaesthesia in MRI
11. Tourniquet application
12. Position for tonsillectomy

Concepts of Diseases and Techniques in Regional & General Anesthesia

Subject Name	Type of course	(The+ Prac+ Proj)	Prerequisite
Concepts of Diseases and Techniques in Regional & General Anesthesia	Theory+ Project	3-0-1	Fundamental Science

Course Outline

Module I: Introduction : First successful clinical demonstration: Balanced anesthesia, Minimum standard of anaesthesia, Who should give anaesthesia?, Ten golden rules of anaesthesia, Assess & prepare, starve, check the drugs and equipment suction, keep the airway clear, be ready to control ventilation have a vein open, monitor pulse & BP, have someone in the room to apply cricoids pressure – if needed.

Module II: Pre-op preparation: Pre anaesthetic assessment, History – HOPI, Past history – disease / surgery / anesth, Personal history – smoking / alcohol, General physical assessment, Systemic examination – CVS, RS, CNS, PA Local examination.

Module III: Investigations and Pre-anaesthetic orders

- 1) Routine – Urine, E.C.G, Chest x-ray
- 2) Patient – Informed consent, NPO
- 3) Premedication – advantages, drugs used, Special instructions – if any, Machine – Checking the machine, o2, N2O, suction apparatus, Laryngoscopes, ET tubes, airways, Things for IV accessibility, Other monitoring systems
- 4) Drugs – Emergency drugs, Anaesthetic drugs

Module IV: Intraoperative management and Postoperative complications & management

1) Confirm the identification of the patient, Monitoring – Non-invasive & invasive monitoring, Induction – drugs used, Endotracheal intubation, Maintenance of anesthesia, Positioning of the Patient, Blood / Fluid & electrolyte balance, Reversal from anaesthesia – drugs used, transferring the patient.

2) Recovery room – Set up, Things needed, Problems

3) Complications, Obesity, Anaemia

Module V: Minor sequelae and Major catastrophes

1) Nausea & vomiting, Sorethroat, Laryngealgranuloma, Neurological complications, Awareness, Vascular

2) Mortality, Causes of death, Cerebral damage, Prevention

ModuleVI: ANAESTHETIC consideration in

a) Cardiac disease – CAD, Valvular heart disease, congenital heart disease, Hypertension

b) Respiratory disease – COPD, Bronchial Asthma

c) Endocrine disease – DM, Thyroid dysfunction

d) Renal disease – CRF

e) Obesity

Module VII:

Water Electrolyte & Acid Base Disturbances Distribution of Body Water, Dehydration Hyperkalemia, Hypokalemia. Sodium, Calcium Acid Base Disturbances – Types and Treatment.

Endocrine Disease: Diabetes Mellitus

Thyroid Dysfunction – Thyrotoxicosis, Hypothyroidism Adrenal Gland Dysfunction Diabetes Insipidus.

Health Care Management

Subject Name	Type of course	(The+ Prac+ Proj)	Prerequisite
Health Care Management	Theory+ Project	3-0-1	Fundamental Science

Course Outline**Module I****Concept of Health Care and Health Policy**

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for HealthPolicy Development.

Module II**Health Organisation**

Historical development of Health Care System in the third world & India, Organization & Structure of Health Administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care Provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health system of Various Countries.

Module III**Health Policy and National Health Programme**

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.), Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

Module IV

Health Economics-Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development. Economics of Health-Population based health services, Economics of Communicable and Non Communicable diseases

Module V

Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods.

Household & Health

Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling

Module VI

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept.

- National Health Policy, Health Insurance, National Health Programmes (Brief Objectives and Scope). Population of India and Family welfare programme in India.
- **Family:** Influence of family on Individuals Health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their Importance to physiotherapy. The family, meaning and definitions. Functions, types of family. Changing family patterns.

Module VII

Culture and Health Disorders, Social Change, Meaning of social changes. Factors of social changes Human adaptation and social change, social change and stress. Social changes. Social changes and health programme. The role of social planning in the Improvement of health and rehabilitation

Microbiology

Subject Name	Type of course	(The+ Prac+ Proj)	Prerequisite
Microbiology	Theory+ Practice	3-2-0	Fundamental Science

Objective

- To know various Culture media and their applications and also understand various physical and chemical means of sterilization
- To know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and virus
- To master aseptic techniques and be able to perform routine culture handling tasks safely and effectively

Learning outcome

- This study demonstrates the theory and practical skills in microscopy and their handling techniques and staining procedures.
- Understanding the details of microbial cell organelles.
- Provides knowledge on growth of microorganism.
- Provides knowledge Culturing microorganism.

Course Outline

Module -1 Microbiology: Definition, history, host- microbe relationship, and safety measures in a microbiology laboratory. Morphology of bacterial cell wall, Bacterial anatomy (Bacterial cell structure: including spores, flagella, pili and capsules). Sporulation. Classification of bacteria according to cell wall and shape (arrangement), Classification of micro-organisms. Growth and Nutrition of Microbes: General nutritional requirements of bacteria, Bacterial growth curve

Practice:

1. Handling of Microscope
2. To learn techniques for Inoculation of bacteria on culture media.
3. To isolate specific bacteria from a mixture of organisms.

Module-2

Sterilization: Definition, sterilization by dry heat, moist heat (below, at & above 100°C), Autoclave, Hot air oven, Radiation and Filtration, preventive measures, controls and sterilization indicators. Use of laminar flow in sterilization.

Antiseptics and Disinfectants: Definition, types, properties, mode of action and use of disinfectants and antiseptics, efficiency testing of disinfectants.

Practice:

1. To demonstrate simple staining (Methylene blue)
2. Bacterial identification: To demonstrate reagent preparation and procedure for Gram stain, Z-N staining, Capsule staining, Demonstration of flagella by staining methods, Spore staining, To demonstrate spirochetes by Fontana staining procedure

Module-3

Staining techniques: Methods of smear preparation, Gram stain, AFB stain, Albert's stain and special staining for spore, capsule and flagella, Culture Media, Liquid and solid media, defined

and synthetic media, routine laboratory media (basal, enriched, selective, enrichment, indicator, and transport media). Different Culture, media their preparation and uses in microbial growth.

Practice:

1. Biochemical tests for identification of bacteria
2. Preservation of stock cultures of bacteria
3. Antibiotic susceptibility test

Medical Law and Ethics

Subject Name	Type of course	(The+ Prac+ Proj)	Prerequisite
Medical Law and Ethics	Theory+ Project	2-0-1	Fundamental Science

Objective

- The course provides an introduction to ethics generally and more specifically to medical ethics, examining in particular the principle of autonomy, which informs much of medical law. The course then considers the general part of medical law governing the legal relationship between medical practitioners and their patients. It considers the legal implications of the provision of medical advice, diagnosis and treatment. Selected medico-legal issues over a human life are also examined. These may include reproductive technologies, foetal rights, research on human subjects, organ donation, the rights of the dying and the legal definition of death.

Learning outcome

- The ethical underpinnings of the law as it relates to medicine,
- The law of negligence in the context of the provision of healthcare,
- Legal and ethical issues surrounding end and beginning of life decisions,
- The maintenance of professional standards in the healthcare profession, and
- The role of policy in the formation of law as it relates to medicine.

Course Outline

Module-I

1. Medical ethics - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality

Module-II

1. Malpractice and negligence - Rational and irrational drug therapy
2. Autonomy and informed consent - Right of patients
3. Care of the terminally ill- Euthanasia
4. Organ transplantation

Module-III

1. Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
2. Professional Indemnity insurance policy
3. Development of standardized protocol to avoid near miss or sentinel events
4. Obtaining an informed consent

Suggested Readings:

1. Reflections on Medical law and Ethics in India by B. Sandeepabhat, publisher Eastern law house.

Pharmacology

Subject Name	Type of course	T-P-Pj	Prerequisite
Pharmacology	Theory+ Project	3-0-1	Fundamental Science

Course objectives:

- To make the students learn about various drugs acting on different body systems

Learning outcomes:

At the end of the course students will be knowledgeable in the following areas:

- Pharmacokinetics and pharmacodynamics of drugs
- Drugs and their actions on different body systems
- Detailed study about different anesthetic drugs

Course Outlines

Module -I: General Pharmacology Part I

Introduction, Routes of Drug Administration, Pharmacokinetics - membrane transport, absorption, bioavailability, metabolism, plasma half life, excretion and distribution of drugs, Routes of drug administration (local and systemic).

Module -II: General Pharmacology Part II

Pharmacodynamics – Mechanisms of drug actions, drug synergism and antagonism. Adverse Drug Reactions, Drug Interactions

Module -III: General Pharmacology Part II

Receptor pharmacology, Drug Nomenclature and Essential Drugs Concept

Module -IV: Drugs for ANS

Autonomic nerves system – sympathetic and parasympathetic nervous system. Basic Anatomy & functional organisation. List of drugs acting on ANS including dose, route of administration, indications, contra indications and adverse effects.

Module -V: Cholinergic System

Cholinergic system – acetyl choline, cholinergic drugs, anticholinesterases, Irreversible Anticholinesterases. Anticholinergic drugs – classification, mechanism of action, uses, adverse effects

Module -VI: Skeletal Muscle Relaxants

Skeletal muscle relaxants – classification, mechanism of action, uses, adverse effects. Adrenergic system – adrenergic receptors, drug classification, mechanism of action, uses, adverse effects

Module VII: Chemotherapy agents and other antibiotics

Chemotherapy of infections, Definition - Classification and mechanism of action of antimicrobial agents. Combination of antimicrobial agents. Chemoprophylaxis. Classification, spectrum of activity, dose, routes of administration and adverse effects of penicillin

Pharmacology Related to Anesthesia Technology

Subject Name	Type of course	(The+ Prac+ Proj)	Prerequisite
Pharmacology Related to Anesthesia Technology	Theory+ Project	3+1+0	Fundamental Science

Course Outline

Module I: Respiratory system

Pharmacotherapy of respiratory disorders – Introduction – Modulators of bronchial smooth muscle tone and pulmonary vascular smooth muscle tone Pharmacotherapy of bronchial asthma. Pharmacotherapy of cough. Mucolytic agents. Corticosteroids – Classification, mechanism of action, adverse effects and complications. Preparation, dose and routes of administration.

Module II: Cardio vascular system

Cardiovascular drugs- Enumerate the mode of action, side effects And therapeutic uses of the following drugs. a. Antihypertensives Beta Adrenergic antagonists. Alpha Adrenergic antagonists. Peripheral Vasodilators. Calcium channel blockers. Antiarrhythmic drugs c. Cardiac glycosides, drugs used in congestive cardiac failure - mechanism of action, uses and adverse effects

Module III: General anaesthetics

Anaesthetic agents. Definition of general and local anaesthetics. Classification of general anaesthetics. Pharmacokinetics and Pharmacodynamics of inhaled anaesthetic agents. Intravenous general anaesthetic agents. Local anaesthetics – classification mechanism of action, duration of action and methods to prolong the duration of action. Preparation, dose and routes of administration.

Module IV: Opioid Analgesics

Analgesics Definition and classification - Routes of administration, dose, frequency of administration, Side effects and management of non opioid and opioid analgesics

Module V: Antihistamines and Antiemetics

Antihistamines and antiemetics - Classification, Mechanism of action, adverse effects, Preparations, dose and routes and administration.

Module VI: Drugs for CNS

CNS stimulants and depressants - Alcohol, Sedatives, hypnotics and narcotics. CNS stimulants - Neuromuscular blocking agents and muscle relaxants.

Module VII: Other Drugs

Miscellaneous. IV fluids (NaCl, RL, DNS, hemacel, heparin) - various preparations and their usage, Drugs used in metabolic and electrolyte imbalance, Mechanism of action, uses and adverse effects of antitubercular drugs

TEXT BOOKS:

1. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

Post Anesthesia care Unit

Subject Name	Type of course	(The+ Prac+ Proj)	Prerequisite
Post Anesthesia care Unit	Theory+ Project	3+1+0	Fundamental Science

Course Outline

MODULE I

Setting up of PACU- , Definition of PACU , Set up , Staff/patient ratio , Monitoring in PACU , Admission and discharge criteria, Criteria for Shifting into PACU , Aldred score , Discharge criteria , Fast tracking

MODULE II

Common complications & its management in PACU, Post Operative Complications And Its Management , Nausea & Vomiting , Sore throat -hoarseness of voice, loss of voice ,

MODULE III

Airway obstruction, desaturation, bronchospasm, laryngospasm, , Unresponsiveness , Neurological complications. - coma, seizures, CVA(stroke), cerebral hypoxia, , Pulmonary edema , Haemorrhage from the surgical site , Vascular complications-. DVT, embolism,(thrombus, air, fat, amniotic)

MODULE IV

Trauma to teeth , Headache , Backache , Ocular complications -loss of vision , Hypotension, hypertension, , Bradycardia, tachycardia, arrhythmia, myocardial infarction , Hypoglycemia, hyperglycemia , Electrolyte imbalance-hyponatremia, hypokalemia, hyperkalemia

MODULE V

Post operative pain relief- , Management of postoperative pain- narcotics, NSAID(im/iv), local anaesthetics through catheters, transdermal patches.

MODULE VI

Causes of mortality in PACU- , Mortality -myocardial infarction, arrhythmias, hypoxia, electrolyte imbalance, massive haemorrhage, embolism.

MODULE VII

Fluid Therapy , Fluid and electrolytes , Blood and blood components , Plasma , Allergies and reactions and its management Legal Responsibilities , Identification of patient , Identification of right part to be operated , Informed consent , Use of body tissue and organ transplant , Care of sponges and instruments , Records in OT and its medico-legal importance.

PROJECT

Subject Name	Type of course	T-P-Pj	Prerequisite
Project	Project	0-0-12	Basic Medical science

INTERNSHIP

Subject Name	Type of course	T-P-Pj	Prerequisite
Internship	Project	0-0-12	Basic Medical science

Internship Thesis Guideline

This Guideline is designed to provide students the knowledge and practice of public health research activity, to enable them to carry out researches and solve research related problems and to help them in writing thesis and defend their work. Upon successful completion of the course, the students shall be able to:

1. Search relevant scientific literature
2. Develop a research proposal
3. Employ appropriate data collection techniques and tools
4. Manage collected data
5. Analyze data with appropriate statistical techniques
6. Write thesis
7. Defend the findings

Proposal Development:

At the ending of third year (Sixth Semester), students individually consultation with designated faculties and extensive literature survey will develop research proposal during the initial 6 months period.

Data Collection/ Thesis Writing:

Students will carry out data collection, data management, data analysis, and thesis writing during the remaining period (Six Semester).

The Dissertation should have following format:

1. Title
2. Introduction
3. Materials and Methods
4. Results
5. Discussion
6. Conclusion
7. Recommendation
8. References
9. Appendix

Internship

1. Case record
2. Lab management and ethics
3. Evaluation -Guide(internal)
 - a. -Industries guide(external)
 - b. -University-project report

Distribution of Clinical posting:

Subject	Duration
GENERAL SURGERY OT	30Days
OBG OT	15Days
ENT AND OPHTHALMOLOGY OT	15Days
MAXILLOFACIAL OT	15Days
ORTHOPAEDICSOT	15Days
UROLOGYOT	15Days
NEUROSURGERYOT	15Days
PAEDIATRIC/PLASTICSURGERY	15Days
CARDIOTHORACICSURGERYOT	15Days
ICU	15Days
EMERGENCYOT	15Days

DRAFT