STATECOUNCIL OFALLIEDMEDICAL SCIENCES ODISHA

B.SC.ANESTHESIA TECHNOLOGY(BAT)

Preface: B.Sc. Anesthesia technology is a skilled course that will help a student become anaesthsia 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 6months internship in the last semester.

Eligibility:+2Sciencewith 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 Anaesthsia Technology(BAT)"**respective universities.

Plan of Classes &Examination Pattern for Degree course

- Total duration of each course is 3years (6Semesters).
- Each semester is of 6months duration.
- In each semester the classes will be of 5months duration & internal assessment will be conducted in the last month of each semester except 3rd&6thsemester.
- University examination will be conducted at the end of3rd&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 and500 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 minimum75% theory classes and85%practicalclasses.

EXAMINATIONPATTERN

- **Internal assessment:** Internal assessment will be conducted in the last month of each semester except 3rd& 6th semester (where there will be University examination.)
- **MarkDistribution:**50 marks per each subject (30Theory and 20 practical/ clinical).Minimum qualifyingmark:50%ineachtheoryandpractical/clinical.
- **Question Pattern for Theory (Semester Examination):**
  i. Short questions of 2markseach X5 =10
  ii. Multiple choice question1mark eachX5 =5
  iii. Fill in the blanks 1mark eachX5 =5
  iv. Match the following 1 mark eachX5 =5
  v. Long Question (Choice) 1 X5 =5
- **University Examination:** Candidate has to pass two university examinations to be conducted at the end of 3rd Semester & 6th Semester, of 100 marks/Paper. A student will be eligible to appear in the university examination if he/she has secured 50% in internal assessment done at the end of1st, 2nd, 4th& 5thsemester.
- **University Examination.** A student will be eligible to appear in the university examination
- if he/she has secured 50% in each internal assessment (both Theory and Practical) done at the
- end of semester.
- Each Paper is of 100 marks (Theory -50, Practical-30, Internal Assessment-20). The duration
- of the examination is 2hours.
- **Question Pattern for Theory (University Examination):**
- i. Short questions of 2 marks each X 5 = 10
- ii. Multiple choice question1 mark each X 5 = 5
- iii. Fill in the blanks 1mark each X 5 = 5
- iv. Match the following 1 mark each X 5 = 5
- v. Long Question (Choice) 1 X 5 = 5

Degree: On successful completion of three years programme, the candidate will be awarded with **"Bachelor of Science in Anesthesia Technology (BAT)"**.

BACHELOR OF SCIENCE IN ANAESTHESIA TECHNOLOGY

	FIRST SEMESTER		
	Sl. No.	**Subject**	**Teaching hrs(Th+Pr+Clinical)**
	1	Foundation Course	50
PAPER I	2	General Anatomy	60+40
	3	General Physiology	60+40
	4	Biochemistry	60+40
	SECOND SEMESTER		
PAPER II	5	Pathology(Clinical Pathology ,Haematology,Blood Banking)	60+50
	6	Microbiology	60+50
	7	Pharmacology	60+50
	8	Basic Computer and Information Science	30
	THIRD SEMESTER		
PAPER III	9	Medical Law and Ethics	20
	10	Basics of Nursing	60+200
	11	Basics in Medical Physics &Electronics	60+40
	12	Applied Pathology and Applied Microbiology	100+50
	FOURTH SEMESTER		
PAPER IV	13	Introduction to anesthesia and OT Technology	60+40
	14	Pharmacology related to Anesthesia Technology	60+100
	15	Clinical Hospital Practice for AT- I	100
	16	Concepts of Diseases and Techniques in Regional &General Anesthesia	60+100
	FIFTH SEMESTER		
PAPER V	17	Anesthesia for Patients with Medical disorders	60+100
	18	Anesthesia for Specialty Surgeries	60+100
	19	Post Anesthesia care Unit	60+100
	20	Clinical Hospital Practice for AT- II	200
	SIXTH SEMESTER		
PAPER VI	21	Anesthesia Techniques Including Complication	60+100
	22	Health Care Management	30
	23	Clinical Hospital Practice for AT- III	100
	24	Anesthesia for Specialties(Including Critical Care Assistance and Ventilation)-	60+100
	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	Biostatics Medical Law & Ethics

Core Courses

GENERALANATOMY

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 TOANATOMYANDSKELETON

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
MUSCLE S& amp; 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
CIRCULATOTY SYSTEM, LYMPHATIC SYSTEM &amp ; 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
UPPERLIMB & LOWERLIMB

(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 & BACKMUSCLES

Thorax: skeleton of thorax, intercostals 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 joins, structure and position of Bones from Skeleton, Model or PPT.

Module-6

NERVOUS SYSTEM & SPECIALSENSE 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 amp; abdominal viscera, face and brain).

General Physiology

Description

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

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

Biochemistry

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: Creatininekinase, Alkalinephosphatase,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 out line of metabolism :Beta oxidation of fattyacids,fattyliver, Ketogenesis, Cholesterol & it's clinical significance, Lipoproteins in the blood composition &their functions in brief, Atherosclerosis.

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

Practice: Estimation of Bile pigment in urine
Estimation of Bile salts in urine

Microbiology

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&above100^{0}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. Biochemicaltests foridentificationofbacteria
2. Preservationofstockculturesofbacteria
3. Antibioticsusceptibilitytest

Pharmacology

Courseobjectives:

- Tomakethe students learnabout variousdrugsactingon differentbodysystems

Learningoutcomes:

Attheendofthecoursestudents will bebeknowledgeable inthefollowing areas:

- Pharmacokineticsandpharmacodynamicsofdrugs
- Drugsandtheiractionsondifferentbodysystems
- Detailedstudyaboutdifferentanesthetic drugs

CourseOutlines

Module-I:General PharmacologyPartI

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

Module-II:GeneralPharmacologyPartII

Pharmacodynamics–Mechanismsofdrugactions,drugsynergismandantagonism. AdverseDrugReactions, DrugInteractions

Module-III:GeneralPharmacologyPartII

Receptorpharmacology,DrugNomenclatureand EssentialDrugsConcept

Module-IV:DrugsforANS

Autonomic nerves system – sympathetic and parasympathetic nervous system.Basic Anatomy& functional organisation.List of drugs acting an ANS including dose, route of administration,indications,contraindicationsand adverseeffects.

Module-V:CholinergicSystem

Cholinergic system – acetyl choline, cholinergic drugs, anticholinesterases, Irreversible Anticholinesterases.Anticholinergicdrugs– classification,mechanism ofaction,uses,adverseeffects

Module-VI:Skeletal MuscleRelaxants

Skeletal muscle relaxants – classification, mechanism of action, uses, adverse effects. Adrenergicsystem–adrenergicreceptors, drugclassification,mechanism

ofaction,uses,adverseeffects

ModuleVII:Chemotherapy agentsand otherantibiotics

Chemotherapy of infections, Definition - Classification and mechanism of action of antimicrobial agents. Combination of antimicrobial agents. Chemoprophylaxis. Classification, spectrum ofactivity,dose,routes ofadministration and adverseeffectsofpenicillin

Pathology Theory

Basic Haematology

- Introduction to Haematology: (a) Definition (b) Importance (c) Important equipment used.
- Laboratory organization and safety measures in haemotology Laboratory
- Introduction to blood, its composition, function and normal cellular components.
- Preparation of blood Films- Types. Methods of preparation (Thick and thin smear/film).
- Definition, principles & procedure, Normal values, Clinical significance, errors involved,
- means to minimize errors for the following:

Basic Haematology Practicals

1. Hb Estimation-Sahli's method & Cyanmethhaemoglobin method
2. RBC Count
3. Retic Count
4. Preparation of blood smears and staining with Leishman stain
5. WBC Count
6. WBC -Differential Count
7. Platelet Count
8. Absolute Eosinophil Count
9. ESR- Westergreens & Wintrobe's method,
10. PCV.
11. Sickling test-Demonstration
12. Bone Marrow Smear preparation & staining procedure- Demonstration
13. Demonstration of Malarial Parasite.

Haematology & Clinical Pathology

Hematology:

1. Bone marrow
    a) Techniques of aspiration, preparation and staining of films
    b) Bone marrow biopsy
2. Preparation of buffy coat smears
3. Laboratory tests used in the investigation of anemia's
    a) B 12 and folate assay Normal values, derangements and interpretation of results.
    b) Schilling test - Method and interpretation
    c) Serum iron and iron binding capacity and other tests for Iron deficiency anemia-Normal values, derangements and interpretation of results

4.Laboratory test used in investigation of hemolytic anemia's
    a) Osmotic fragility
    b) Investigation of G-6 PD deficiency
    c) Test for sickling
    d) Estimation on of Hb-F, Hb-A2
    e) Plasma haemoglobin and Haptoglobin, demonstration of haemosiderin in urine
    f) Haemoglobin electrophoresis

g) Coomb's test (Direct & Indirect) - Test for auto immune hemolytic Anaemias.

Clinical Pathology

1. Urine examination
2. Physical, Chemical & Microscopic
3. Semen analysis

BLOOD BANKING

(Blood transfusion and Immunohaematology).

1. Collection & processing of Blood –Donor selection, Registration, Medical history, Physical examination.
2. Collection of Blood
3. Processing of Donor Blood
4. Storage & preservation of Blood.
5. ABO Blood group System
6. R.h typing and weaker variants in R.h system
7. Subgroup and weaker various of A and B and Bombay Phenotype
8. Preparations and standardization of Anti Human globulin reagent
9. Coomb's test.
10. Blood grouping and cross-matching in blood bank.
11. Diseases transmitted by Blood and their screening - Australia Antigen and Hepatitis C.Virus (HCV), HIV, Syphilis, CMV & Malaria in Blood transfusion
12. Investigation of transfusion reaction.
13. HLA Antigens and their significance in blood transfusion.
14. Blood Components- its preparation and their use in clinical practice.
15. Haemapheresis- Apheresis using cell separators Leucapheresis, plateletpheresis, plasmapheresis Adverse effects on donors.
16. Blood Bank Administration.
17. Record keeping

BasicComputerandInformationScience

Objective

- Identifythefunctionofcomputerhardware components.
- Identifythefactorsthatgointoanindividualororganizationaldecisiononhowtopurchase computer equipment.
- Identifyhowtomaintaincomputerequipmentandsolvecommonproblemsrelatingtocom puterhardware.
- Identifyhowsoftwareandhardwareworktogethertoperformcomputingtasksandhowsoft ware is developed and upgraded
- Identify different types of software, general concepts relating to software categories,andthetasks to which each typeofsoftwareis mostsuited ornotsuited.

LearningOutcome:

- Understandthefundamentalhardwarecomponentsthatmakeupacomputer'shardwarean d theroleofeach ofthesecomponents.
- Understandthedifferencebetweenanoperatingsystemandanapplicationprogram,andwh at each is usedforin acomputer.
- Describesomeexamplesofcomputersandstatetheeffectthattheuseofcomputertechnolog yhashad on somecommon products

CourseOutline

Module- I: Introduction to computer: introduction, characteristics of computer, block diagram ofcomputer, generations of computer. Types of Input output devices. Processor and memory: TheCentralProcessingUnit(CPU), mainmemory. Storage Devices.

Module-II

Introduction to MS-Word: introduction, components of a word window, creating, opening andinserting 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. Introductionto Excel: introduction, about worksheet, entering information, saving workbooks and formatting,printing the worksheet, creating graphs. Introduction to power-point: introduction, creating andmanipulatingpresentation,views, formattingandenhancingtext, slidewithgraphs.

Module-III

Introduction to MS-DOS: History of DOS, features of MS-DOS, MS-DOS Commands

(internaland external).Introduction of windows: History, features, desktop, taskbar, icons on the desk-top, 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 Pro-tocol,telnet, theWorld Wide Web (WWW)),wwwbrowsers,useoftheinternet.

MedicalLawandEthics

Objective

- The course provides an introduction to ethics generally and more specifically to medi-cal ethics, examining in particular the principle of autonomy, which informs much ofmedical law. The course then considers the general part of medical law governing thelegal relationship between medical practitioners and their patients. It considers the le-gal implications of the provision of medical advice, diagnosis and treatment. Selectedmedico-legal issues over a human life are also examined. These may include reproduc-tive technologies, foetal rights, research on human subjects, organ donation, the rightsofthedying and thelegaldefinition ofdeath.

Learningoutcome

- Theethicalunderpinningsofthelawasit relatesto medicine,
- Thelawofnegligenceinthecontextoftheprovision ofhealthcare,
- Legalandethical issuessurroundingendandbeginningoflifedecisions,
- Themaintenanceofprofessional standards inthe healthcareprofession, and
- Theroleofpolicyin theformationoflawas it relates to medicine.

CourseOutline

Module-I

1. Medicalethics-Definition -Goal-Scope
2. IntroductiontoCodeofconduct
3. Basicprinciplesofmedical ethics–Confidentiality

Module-II

1. Malpracticeandnegligence-Rational and irrational drugtherapy
2. Autonomyand informedconsent -Right ofpatients
3. Careoftheterminallyill-Euthanasia
4. Organtransplantation

Module-III

1. Medico legal aspects of medical records – Medico legal case and type- Records and documentrelatedtoMLC-ownershipofmedicalrecords-ConfidentialityPrivilegecommunication - Release of medical information - Unauthorized disclosure - retention ofmedicalrecords-othervarious aspects.
2. ProfessionalIndemnityinsurancepolicy
3. Developmentofstandardizedprotocoltoavoidnearmissorsentinel events
4. Obtaininganinformedconsent

SuggestedReadings:
ReflectionsonMedicallawandEthicsinIndiabyB.Sandeepabhat,publisherEasternlawhouse

BasicsofNursing

CourseOutline
ModuleI:Introductionof 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 careworkers in the health care delivery system, impact of illness of the individual family and com-munity.
• CommunicationSkills
• Relationshipwithpatients, processofcommunication
ModuleII:Patientcare:
Nursing Processes, Problems solving approach, assessment, diagnosis, planning, implementationandevaluation.
ModuleIII:FirstAidandEmergencies
Definition, basic principles, scope and rules, Wounds, haemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneousconditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach. Frostbite,effects ofheart cramps,bitesand stings.Poisoning, Transportinginjuredpersons.
ModuleIV:Organizationof OT:
a)Technician role and responsibilities b) Safety norms, c)Air exchange and air condition, d) Defibrillation,e)Crash cartand itscontents, f)Cardiac pacing.
ModuleV: Preparation andAssisstingforVarious SurgicalProcedures;asCirculating

- ✓ Settingup ofoperation room and table
- ✓ Settingupoftrays andtrolleys forvarioussurgicalprocedures
- ✓ Partpreparationforsurgicalprocedures
- ✓ Positioninganddrapingaccordingthesurgical procedures
- ✓ Incisionsforvarioussurgicalprocedures
- ✓ Minorsurgeries-surgical instrumentsandsuturingmaterials
- ✓ Majorsurgeries-surgicalinstrumentsandsuturingmaterials

ModuleVI:PersonalHygieneandHealth
• Careofskin, mouth,eyes,nails,hair
• Menstrualhygiene,clothing,mentalhealth,commonhealthproblemsofpoorpersonalhygiene.
• Comfort,Rest andSleep

• HospitalHousekeeping

ModuleVII:HealthEducation

Introduction to principles and methods of health education. Use of audio visual aids, masseducation,roleofnursein health education.

Basics ofNursingPractice

1. FirstAidfordifferent organsystems,
2. CPR,
3. NursingWorkshops.
4. Bandagingtypes
5. Practiceofvarious comfortdevices, variouspositions innursingfoundation lab.
6. Healthtalk,preparation of3-5typesofA.V.Aids,
7. WardvisittomonitorBMW management.
8. DemonstrationofPatientcareProcedures:
    a. Positioning of patient, transport of the patient, Dressing and Bandaging, Care ofintercostal drain tube,Insertionofnaso-gastrictubeandfeeding
    b. Phlebotomyand obtainingbloodsamples, ArterialBloodsamplingforABG
    c. Injections: intramuscular,intravenous,subcutaneous,intradermal
    d. Insertion ofintravenouscatheter andinfusionof medications, bloodtransfusion
    e. RecordingofECGand monitoringofpatient
    f. Oxygentherapy:oxygen cannula,masks.Aerosol therapy:nebulization,in halers
    g. Suctioningand careofartificial airway
    h. Insertion ofurinarybladdercatheter
9. Uses,principles,advantagesanddisadvantagesof instrumentsandDevicesinpatientcare
10. Basic LifeSupport (BLS)

BasicsinMedicalPhysics&Electronics

Course

OutlineModuleI

:Laser

Natureoflight-Reflection-Refraction-Totalinternalreflection-Opticalfibers-ApplicationsinMedicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Applica-tion–Argon-Ironlaserphotocoagulator-PhotoThermal-PhotochemicalApplication-ApplicationsoflaserinMedicine-Laserhazardsand safetymeasures.

ModuleII:Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production ofx-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in mat-ter, Radiation protection principles, radiation detection and measurement – Ultrasound and gen-erationofultrasound.

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 andFusion-Nuclearreactions.Medical applications ofradio isotopes.

ModuleIV:Introduction toImagingTechnique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Makingand X-ray Image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-UltrasoundDiathermy-Phonocardiography–Radioisotopes:UsesofRadio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – GammaCamera– 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 energyof a charged conductor-Principle of a condenser- Capacity of a parallel plate condenser- Electriccurrent and its units- Potential difference-Electromotive Force- Ohm's law – Electric Power andElectricEnergy-Kirchhoff`sLaw.

ModuleVI:Semiconductordevices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration andtypes – differential and operational amplifiers – Waveform generators – Timer – A/D and D/Aconverters– Activefilters–Transducers– Basic configurationandtypes.

ModuleVII:BiopotentialRecordingSystems

Introduction to bioelectric potential – Electrodes and surfaces – Biopotential amplifier – Fre-quency ranges of various biopotential signals – Working principles of bio potential recordingsystems– Electroca

Applied Pathology

Module I

* Atherosclerosis - definition, risk factors, pathogenesis, morphology and complications
* Ischemic heart disease: Myocardial infarction - definition, pathogenesis, morphology and complications
* Hypertension - Benign and malignant hypertension: pathogenesis, pathology and complications

Module II

* Heart failure-Right and left heart failure: causes, pathophysiology and morphology
* Rheumatic heart disease and infectious endocarditis- definition, etiopathogenesis, morphology and complications
* Congenital heart disease- Types and atrial septal defect; aneurysms- types and morphology; cardiomyopathies in brief

Module III

* Atelectasis - types, Adult respiratory distress syndrome - causes , pathogenesis and morphology; pulmonary edema- classification, causes and morphology
* Chronic obstructive pulmonary disease- Chronic bronchitis, emphysema, asthma, bronchiectasis: Definition, etiopathogenesis and morphology
* Restrictive pulmonary diseases - Definition, categories, pathogenesis and morphology

Module IV

* Pneumoconiosis-types, asbestosis, coal workers pneumoconiosis - etiopathogenesis and morphology
* Pulmonary embolism, infarction, pulmonary hypertension-Definition, etiopathogenesis and morphology
* Pneumonia-Classification of pneumonias; Lobar pneumonia and

bronchopneumonia - etiology, pathology and complications

Module V

* Clinical manifestations of renal diseases
* Glomerular lesions in systemic diseases- diabetes, amyloidosis and systemic lupus erythematosus
* Pericardial and pleural effusions- causes and microscopy

Practicals:

1. Urine examination: physical, chemical, microscopy
2. Blood grouping & Rh typing
3. Hemoglobin estimation, packed cell volume (PCV), erythrocyte sedimentationrate (ESR).
4. Charts
5. Specimens
   * Atherosclerosis
   * Pneumonia
   * Tuberculosis
   * Infarct - lung
   * Contracted kidney
   * Hydronephrosis

Reference Books (latest edition)

1. Basic Pathology Robbins Saunders an imprint of Elsevier Inc., Philadelphia, USA
2. Text book of Pathology Harsh Mohan Jaypee Brothers, New Delhi
3. Practical Pathology P. Chakraborty, Gargi Chakraborty New Central Book Agency,Kolkata.
4. Text Book of Haematology Dr. Tejinder Singh Arya Publications, Sirmour (H.P)
5. Text Book of Medical Laboratory Technology Praful Godkar, Bhalani PublicationHouse, Mumbai
6. Text Book of Medical Laboratory Technology RamanikSood
7. Practical Haematology Sir John Dacie Churchill Livingstone, London.
8. Todd & Sanford, Clinical Diagnosis & Management by Laboratory Methods JohnBernard Henry All India Travellar Booksellar.
9. Histopathology Techniques. Culling
10. Histopathology Techniques Bancroft
11. Diagnostic Cytopathology Koss
12. Diagnostic Cytopathology Winifred grey
13. Hand-Book of Medical Laboratory Technology CMC Vellore
14. Basic Haematological Techniques Manipal Manual

Applied Microbiology

Theory

Model I

Sterilization and disinfection

- Sterilization and disinfection - classification, principle, methods
- Central sterile supply department

Model II

Importance of sterilization and disinfection

- Disinfection of instruments used in patient care
- Disinfection of patient care unit
- Infection control measures for ICUs

Model III

Health care associated infections

- Surgical site infections
- Urinary tract infections
- Ventilator associated pneumonia
- Catheter associated blood stream infections
- Antibiotic associated diarrhea

Model IV

Drug resistant bacteria

-MRSA

-VRE

-Drug resistant Gram negative bacteria

Unit V

Occupationally acquired infections and its prevention

a) Respiratory route - Tuberculosis, Varicella zoster virus, Influenza, RSV
b) Blood borne route - HIV, HBV, HCV, CMV, Ebola
c) Orofecal route - Salmonella, Hepatitis A
d) Direct contact - Herpes virus

Practicals

1. Sterilization and disinfection practices in tertiary care hospital
2. Quality control of sterilization and Interpretation of results of sterility testing
3. Collection of specimen from outpatient units, inpatient units, minor operationtheatre and major operation theatre for sterility testing.
4. Preparation of materials for autoclaving - packing of materials, loading, holdingtime and unloading.
5. Disinfection of wards, operation theatres and laboratory and air sampling methods

Practical Examination Pattern

1. Sterilization and disinfection practices in tertiary care hospital and qualitycontrol of sterilization and Interpretation of results of sterility testing.
2. Preparation of materials for autoclaving - packing of materials, loading, holding time and unloading.
3. Disinfection of wards, operation theatres, dialysis units and laboratory and airsampling methods. Collection of specimen from outpatient units, inpatientunits, minor operation theatre and major operation theatre for sterility testing.

Recommended Books:

1. Textbook of Microbiology by Ananthnarayan and paniker
2. Textbook of hospital infection control by Purvamathur
3. Textbook of Microbiology by Baveja
4. Hospital infection control by Mayhall

rdiography–Electroencephalograph–Electromyography.

IntroductiontoanaesthesiaandOTTechnology

Course OutlineModule I:

- **IntroductionToAnesthesia:HistoryofAnesthesia:**Prehistoric(Ether)era,,Inhalationalanestheticera,,Regionalanestheticera,Intravenousanestheticera,Modernanesthetic 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&safetydevices.

ModuleII :

- **Gasphysics:**Statesof matter, Temperatureconversion, Humidity,Pressuremeasurement,Gas flows and diffusion,Gas laws,Miscellaneous concepts such as density and specificgravity
- **Gas Administration Devices:**Simple oxygen administration device,Methods of controllinggas flow,Reducingvalves,Flowmeters,Regulators,Flowrestrictors

ModuleIII:Machinebreathingsystem

- **Anaesthesia Machine:**Hanger and yoke system, Cylinder pressure gauge, Pressure regulator, Flow meter assembly, Vaporizers-types, hazards, maintenance, filling & draining,etc
- Generalconsiderations,Classificationandbreathingsystem,MaplesonSystem,JacksonReessystem ofBain circuit,Non breathingvalves– Ambu valves,Others

ModuleIV:Face Masks &AirwayLaryngoscopes

- Endotrachealtubes–Types,sizes,(RAETube,Flexometallic).Complications– Usecareandmaintenanceof anaesthesiaequipment 2)Laryngoscopes inAnaesthesia
- **Oxygen Therapy:** Definition,Causes and responses to hypoxemia,Clinical signs of hypoxemia,Goalsofoxygentherapy,Evaluationofpatientsreceivingoxygentherapy,Hazardsofoxygen therapy.

ModuleV:

- Boyle's Machine & its functioning. Boyle's vaporizer. Magill's breathing circuit, Bainsbreathing circuit, paediatrics anaesthesia circuit. Gas cylinders and flow meters. Carbondioxide absorption contester. Suction apparatus-foot operated, electrically operated. Am-bubaglaryngoscopeendotracheatubes. Catheters,facemasks,venti-mask.

ModuleVI

MONITORING

- ECG
- Temperature
- IBP
- CVP
- PAPressure
- LAPressure

BioMedicalengineeringofTroublesortingManagement,careofcleaning

ModuleVII

CSSD,Instrumentation, storeandinventory**,**AnaesthesiaVentilatorandWorkingprinciples

PharmacologyRelated toAnesthesiaTechnology

CourseOutline

ModuleI:Respiratorysystem

Pharmacotherapyof respiratory disorders – Introduction – Modulators of bronchial smoothmuscle tone and pulmonary vascular smooth muscle tone Pharmacotherapy of bronchial asthma.Pharmacotherapyof cough. Mucolytic agents. Corticosteroids – Classification, mechanism ofaction,adverseeffectsandcomplications. Preparation, doseandroutesofadministration.

ModuleII:Cardio vascularsystem

Cardiovasculardrugs-
Enumeratethemodeofaction,sideeffectsAndtherapeuticusesofthefollowingdrugs.a.AntihypertensivesBetaAdrenergicantagonists.AlphaAdrenergicantagonists.PeripheralVasodilators.Calciumchannelblockers.Antiarrhythmicdrugsc.Cardiacglyco-sides, drugs used in congestive cardiac failure - mechanism of action, uses and adverse effects**ModuleIII:General anaesthetics**

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

ModuleIV:Opioid Analgesics

AnalgesicsDefinitionandclassification-Routesofadministration,dose,frequencyofadministration,Sideeffectsandmanagementofnon opioidandopioid analgesics
ModuleV:Antihistamines andAntiemetics
Antihistaminesandantiemetics-Classification,Mechanismofaction,adverseeffects,Preparations,doseand routes and administration.

ModuleVI:DrugsforCNS

CNS stimulants and depressants - Alcohol, Sedatives, hypnotics and narcotics. CNS stimulants - Neuromuscularblocking agents and musclerelaxants.

ModuleVII:OtherDrugs

Miscellaneous.IV fluids (Nacl, RL, DNS, hemacel, heparin) - various preparations and theirusage, Drugs used in metabolic and electrolyte imbalance, Mechanism of action, uses and ad-verseeffectsofantitubercular drugs

Conceptsof Diseasesand TechniquesinRegional&GeneralAnesthesia

CourseOutline

Module I: Introduction : First successful clinical demonstration: Balanced anesthesia,Minimumstandardofanaesthesia,Whoshouldgiveanaesthesia?,Tengoldenrulesofanaesthesia,Assess& prepare, starve, check the drugs and equipment suction, keep the airway clear, be ready to con-trol ventilation have a vein open, monitor pulse & BP, have someone in the room to apply crico-idspressure– ifneeded.

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

ModuleIII:InvestigationsandPre-anaesthetic orders

1) Routine– Urine,E.C.G,Chestx-ray
2) Patient–Informed consent,NPO
3) Premedication – advantages, drugs used, Special instructions – if any,Machine – Checkingthe machine, o2, N2O, suction apparatus, Laryngoscopes, ET tubes, airways, Things for IV accessibility,Othermonitoringsystems
4) Drugs–Emergencydrugs, Anaestheticdrugs

ModuleIV:IntraoperativemanagementandPostoperativecomplications&management

1) Confirmtheidentification ofthepatient, Monitoring– Non-invasive &invasivemonitoring, Induction – drugs used, Endotracheal intubation, Maintenance of anesthesia, Positioning ofthe Patient, Blood / Fluid & electrolyte balance, Reversal from anaesthesia – drugs used,transferringthepatient.
2) Recoveryroom– Set up,Things needed,Problems
3) Complications,Obesity, Anaemia

V:Minorsequelaeand Majorcatastrophes

2) Nausea & vomiting, Sorethroat, Laryngealgranuloma, Neurological complications,Awareness,Vascular
3) Mortality,Causesofdeath, Cerebral damage,Prevention

ModuleVI:ANAESTHETICconsiderationin

a) Cardiacdisease–CAD,Valvularheartdisease,congenitalheartdisease,Hypertension
b) Respiratorydisease–COPD, Bronchial Asthma
c) Endocrinedisease–DM, Thyroiddysfunction
d) Renaldisease–CRF
e) Obesity

ModuleVII:

WaterElectrolyte&AcidBaseDisturbancesDistributionofBodyWater,DehydrationHyperkalemia,Hypokalemia.Sodium,CalciumAcid BaseDisturbances –Typesand Treatment.

EndocrineDisease:DiabetesMellitus
ThyroidDysfunction–
Thyrotoxicosis,HypothyroidismAdrenalGlandDysfunctionDiabetesInsipidus.

AnesthesiaforPatients with Medicaldisorders

Course

OutlineMODU

LEI
Hypertension-Hypertension-commonly used antihypertensives - losartan, amlodepine, telmisartan, atenolol, methods to reduce hypertension intraoperatively, complications of intraoperativehypertension.

MODULEII
Diabetes MellitusDiabetes -insulin preperations, methods to reduce blood sugar levels, complicationsofuncontrolleddiabetesintraoperatively.

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

MODULEIV
Coronary artery diseases, thyroid diseases-Coronary artery disease-risk factors for having anmyocardial/infarctionunderanaesthesia,drugsusedintheirmanagement,complicationsofischaemi cheart disease patientundergoingnon cardiacsurgery

MODULEV
Thyroid disorders-causes of hyper and hypothyroidism, challenges of anaesthetising a thyroidpatient,thyroid storm andits management, complications afterthyroidectomy

MODULE–VI
Obesity,Renaland LiverFailure-Obesity-challengesofanaesthetisingan obesepatient.

MODULEVII
Renal failure-anaesthetic challenges in renal failure patient, intraoperative complications in renalfailure patients and its management.,important anaesthetic challenges during renal transplant ,Jaundice-intraoperativecomplicationsin aliverfailure patient.

AnesthesiaforSpecialtySurgeries

CourseOutlines

MODULEI
Neuroanaesthesia, orthopaedics, plastic &reconstructive surgeries Neuro Anaesthesia, Premedication , Special investigation - CT, Angiography and MRI , Checklist , Induction of a patient ,Reinforced Endotracheal tubes , Postioning 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-

fatembolism ,massive haemorrhage,tourniquet complications , Radiation hazard Plastic And Recon-structive Surgery And Vascular Surgery , Complications during revascularisation and its man-agement,Recognitionofcompartmentsyndrome,Burns-typesandinitialmanagement-anaesthetic challenges ,RAEtubes

MODULE-II

Obstetric Anaesthesia, Paediatric Anaesthesia-Obstetric Anaesthesia , Differences between apregnant and a non pregnant lady , Risks for anaesthesia.-difficult airway, supine hypotensionsyndrome,Checklist,Regionalvsgeneralanaesthesia,Induction/maintenanceandrecovery.

, Resuscitation of the new born, apgar score , Reversal and extubation , Emergencies - manualremoval of placenta - A.P .H. - P.P.H. - Rupture uterus - Ectopic Pregnancy , Amniotic fluid em-bolism PaediatricAnaesthesia , Theatresetting, Check list

, Premedication - modes , Induction , Intubation - Securing the ETT , Reversal &extubation - Problemsand itsmanagement ,Transferring/ICUmanagement ,Pain management

MODULEIII

Cardiac Anaesthesia, ENT Surgeries-Cardiac Anaesthesia : , NYHA classification , Arr-hythmias -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 , Cardiopulmonarybypass -indication and itsfunction ,I.C.Umanagement. ,Chesttubemanagement,

MODULEIV

ENT Anaesthesia, Anaesthesia for adenotonsillectomy-challenges, positioning, throat packingandremovalofthepack,Anaesthesiaformastoidectomy&FESS-methodstominimizebleeding , Anaesthesia for Bronchoscopy and oesophagoscopy-challenges in anaesthetising for these procedures

MODULEV: Urology,anaesthesiaoutsideOR,daycaresurgeries,laparoscopicandgeriatricanaesthesia-Urology,Differentendoscopicproceduresinurology,Typesofirrigationfluids-glycine,normal saline , Complications of TURP , Lithotomy position and its complicationsAnaesthesiaOutsidetheO.R.Problemsofanaesthetisingpatientsin,Endoscopy,CathLab,Radiology-CT,MRI

MODULEVI

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

MODULEVII

Trauma Anaesthesia, Thoracic Anaesthesia-Anaesthesia for Trauma & Hypovolemic Shock ,Resuscitation -airway, breathing , Preooperative investigations& assessment , Circulatory management,Causesof unconsciousness,Rapidsequence induction,Tensionpneumothorax-pathophysiology and management Thoracic Anaesthesia , Pulmonary function testsbed side ,Preoperative preparation, Check list , Induction. Intubation Lung isolation- Indications, Techniques, Complications , Double lumen tubes , Monitoring during single lung ventilation , Painmanagement, Extubation,ICUmanagement.

Post Anesthesia Care Unit

ModuleI

Setting up of PACU-

* Definition of PACU
* Set up
* Staff/patient ratio
* Monitoring in PACU

ModuleII

Admission and discharge criteria-

* Criteria for Shifting into PACU
* Aldred score
* Discharge criteria
* Fast tracking

ModuleIII

Common complications & its management in PACU

Post Operative Complications And Its Management

* Nausea & Vomiting
* Sore throat -hoarseness of voice, loss of voice
* 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)
* Trauma to teeth
* Headache
* Backache
* Ocular complications -loss of vision
* Hypotension, hypertension,
* Bradycardia, tachycardia, arrhythmia, myocardial infarction
* Hypoglycemia, hyperglycemia
* Electrolyte imbance-hyponatremia, hypokalemia, hyperkalemia

ModuleIV

Post operative pain relief-

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

ModuleV

Causes of mortality in PACU

* Mortality -myocardial infarction, arrhythmias, hypoxia, electrolyte imbalance, massive haemorrhage, embolism.

Practicals

Checking CBG, insertion of IV cannulas, functioning ofsyringe and infusion pump, Working of laryngoscopes, insertion of oropharyngeal airways, injecting drugs through epidural catheters, checking vital parameters in PACU

ClinicalPractices inHospital -2

I. A.Equipments:

1. Contentsofcvcset,
2. IVcannulationtechnique,
3. Dilutionofdrugs,
4. Settingup ofinfusionandsyringepumps,storageofblood andbloodproducts,
5. Storageofdrugs,

II. B.Positionforspinal/epidural

- Usageofperipheral nervestimulatorandultrasound,
- Procedureofalltheabovementionedblocks,
- ItemsincludedinLPset
- Asepsis

Spotters :Types of spinal needles Touhy epidural needle Items included in LP set Epidural cathe-terset-
contentsPeripheralnervestimulatorStimuplexneedlesDrugsusedinregionalanaesthesia+adjuvants. Atropine, ephedrine,mephentermine,Lipid emulsion

- Checking blood pressure, checking CBG, process of nebulisation, position for thyroidsurgery.Difficultintubationcart,difficult airwaymanagement,settingupof IBP/CVP

III. DRUGS:

- Antihypertensive drugs-losartan, amlodepine, telmisartan, atenolol, Insulin preparationAntiepileptic drugs-midazolam, phenytoin. Clopidogrel, aspirin, Nebulizer, inhalers, ro-tahelers, levosalbutamol, ipratropium bromide, deriphylline Sphygmomanometer Fure-somide,mannitol, methylprednisolone,albumin
- Discussiononmanagement ofDiabetesandhypertension

AnesthesiaTechniquesIncludingComplication

Course

OutlinesModule

I

Tosetuptherequired equipments forgeneralanaesthesia, spinal,epidural,nerveblock.

ModuleII

Monitoringduringanaesthesiaandcomplications:

MinorSequelae

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

ModuleIII
MonitoringanddiagnosticproceduresinICU
MajorCatastrophes
Mortality,Causesofdeath ,Cerebraldamage,Prevention.
IntensiveCare: Centralvenousaccess,ECGmonitoring,Invasivehemodynamicmonitoring

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

ModuleV
Regional anaesthesia – Introduction, Indication, Contraindication, Check list, Procedure,Complications, Management, Spinal, Epidural, Nerve Block
ModuleVI
Anaestheticconsideration in
Endocrinedisease:Pheochromocytomab)Renaldisease: Urolithiasis,TURP

ModuleVII
Intra-operativeManagement
Confirm the identification of the patient. Monitoring – minimum (ISA standards) . Noninvasive& Invasive monitoring.Induction – drugs used. Endotracheal intubation.Maintenance of anaesthesia.Positioningofthepatient.Blood/Fluid&electrolytebalance.Reversalfromanaesthesia – drugs used.Transferring the patient Recovery room - set up,i. things needed ii. Problems. Postoperativecomplications&management

HealthCareManagement

Course
OutlineModule
I
Conceptof HealthCareandHealthPolicy
Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework forHealthPolicyDevelopment.
ModuleII
HealthOrganisation
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,HealthCareSystem inPublic SectorOrganization, Health system ofVariousCountries.
ModuleIII
HealthPolicyandNationalHealthProgramme
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 ManpowerDevelopment.

ModuleIV

HealthEconomics-FundamentalsofEconomics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health ofEconomic Development. Economics of Health-Population based health services, Economics ofCommunicableand NonCommunicable diseases

ModuleV

Methods&Techniques of EconomicEvaluationofHealthProgram

Cost Benefit&Cost EffectiveMethods.

Household &Health

Health Expenditure & Outcome, Rationale for Government action, Household capacity, incomeandschooling

ModuleVI

Definition of Health, Determinants of Health, Health Indicators of India, Health TeamConcept.

- National Health Policy,Health Insurance, National Health Programmers (Brief ObjectivesandScope).PopulationofIndia andFamily welfareprogrammeinIndia.
- **Family:** Influence of family on Individuals Health, family and nutrition, the effects ofsickness in the family and psychosomatic disease and their Importance to physiotherapy.The family, meaning and definitions.Functions, types of family. Changing family pat-terns.

ModuleVII

Culture and Health Disorders ,Social Change, Meaning of social changes. Factors of social chan-gesHumanadaptationandsocialchange,socialchangeandstress.Socialchanges.Socialchanges and health programme. The role of social planning in the Improvement of health andrehabilitation

Anesthesiaforspecialties (IncludingCriticalCareAssistanceand Ventilation)

Course

OutlineMODU

LEI

Cardiacanaesthesia–

NYHAclassification,Arrhythmias,Angina,Dyspnoea,Premedication,Settingupofmonitoringsyste m,Monitoring– invasive and non-invasive,

GettingreadyforthecASE,InductionofcardiacpATIENT,precautionstobetaken,TransferringthepatienttoI CU,Careto betaken,ICUmanagement

MODULEII

NeuroAnaesthesia

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

AnaesthesiaforTrauma &Shock

Resusciation, Preopinvestigation/assessment, Circulatory management, Management ofanaesthesia,Rapid sequence induction, Otherproblems

MODULEIV

ObstetricAnaesthesia

Differences between a pregnant and a normal lady, Risks for anaesthesia, Precautions to be takenCheck list, regional vs general anaesthesia, Induction / maintenance. Resuscitation of the newborn, APGAR score, Reversaland extubation,Emergencies– Manualremoval of

placenta,A.P.H,-P.P.H.,Ruptureduterus, Ectopicpregnancy,Labour,Epiduralanalgesia,

MODULEV

PaediatricAnaesthesia

Theatresetting,Checklist,Premedication,Induction,Intubations-securingtheETT,Monitoring,Reversal&extubation– problems,Transferring/IC management,Pain management.

MODULEVI

DayCareAnaesthesia

Specialfeatures,Setup,Advantages,Disadvantages,Complications, Future

MODULEVII

AnaesthesiaOutsidetheO.R.

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

ClinicalPracticesinHospital -2

5. **Drugsforpractical:**

✓ Thiopentone	Potassium chloride
✓ Propofol	5%dextrose
✓ Ketamine	Normalsaline
✓ Etomidate	Hetastarch
✓ Atropine	Heparin
✓ Glycopyrrolate	Lowmolecularweightheparin
✓ 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
✓ Propanolol	Xylocard
✓ Labetolol	Esmolol
✓ Dopamine	Dobutamine
✓ NTG,SNP,	Aminophylline
✓ Amiadarone	
✓ Adenosine	Furesomide
✓ Mannitol	Nacetylcysteine
✓ Methergin	Oxytocin

6. **ANAESTHETICconsideration in**

a. Cardiacdisease–CAD, Valvularheartdisease,congenital heartdisease,Hypertension
b. Respiratorydisease –COPD,Bronchial Asthma
c. Endocrinedisease–DM,Thyroiddysfunction
d. Renaldisease–CRF
e. Obesity

7. **Emergence,TerminationandRecovery**
   a. Reversal
   b. Oropharyngealtoilet
   c. ETSuction
   d. Deflationofthecuff
   e. Removalofthetube
   f. Transferofthepatient

ClinicalPractices inHospital-3

1. CheckingCBG,
2. insertionof IVcannulas,
3. functioningofsyringe and infusion pump,
4. Workingoflaryngoscopes, insertionoforopharyngeal airways,
5. injectingdrugsthroughepiduralcatheters,
6. checkingvitalparametersinPACU
7. Settingup forcvp/ibp monitoringCheckingofdoublelumen tubes
8. Defibrillator-chargingandmethodofdefibrillationCareofICDtubeBedsidelungfunctiontests
9. MethodofinsertionofICD LithotomypositionInsertion ofrylestube
10. Preparationforanaesthesia in MRI
11. Tourniquetapplication
12. Positionfortonsillectomy

INTERNSHIP

InternshipThesisGuideline

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 andto helpthem in writingthesisand defendtheirwork. Upon successfulcompletionof thecourse,thestudents shallbeableto:

1. Searchrelevantscientific literature
2. Developaresearch proposal
3. Employappropriatedata collection techniquesandtools
4. Managecollecteddata
5. Analyzedatawith appropriatestatistical techniques
6. Writethesis
7. Defendthefindings

ProposalDevelopment:

At the ending of third year (Sixth Semester), students individually consultation with designated faculties and extensive literature survey will develop research proposal during the initial6 months period.

DataCollection/ Thesis Writing:

Studentswillcarryoutdatacollection,datamanagement,dataanalysis,andthesiswritingdur-ingtheremainingperiod(Six Semester).
TheDissertation shouldhavefollowingformat:

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

Internship

1. Caserecord
2. Labmanagementandethics
3. Evaluation-Guide(internal)
    a. -Industriesguide(external)
    b. -University-projectreport

Distribution ofClinicalposting:

Subject	Duration
GENERALSURGERY OT	**30Days**
OBG OT	**15Days**
ENTANDOPHTHALMOLOGYOT	**15Days**
MAXILLOFACIALOT	**15Days**
ORTHOPAEDICSOT	**15Days**
UROLOGYOT	**15Days**
NEUROSURGERYOT	**15Days**
PAEDIATRIC/PLASTICSURGERY	**15Days**
CARDIOTHORACICSURGERYOT	**15Days**
ICU	**15Days**
EMERGENCYOT	**15Days**

****