GURU KASHI UNIVERSITY

Master in Operation Theatre & Anesthesia Technology

Session: 2022-23

Department of Paramedical Sciences

Program Learning Outcomes

After completion of the program the Masters students will be able to

- Demonstrate ability to prepare and maintain Operation Theatre.
- Demonstrate ability to maintain equipment support in an acute care environment.
- Identify and move to maintain a sterile field. Follow infection control policies and procedures. Manage and maintain theatre equipment.
- Ability to prepare the patient for operative procedures. Demonstrate skills and knowledge to assist anesthetist in handling emergencies outside of OT room.
- Follow infection control policies, procedures and manage and maintain theatre equipment.
- The main goal of OT team is to ensure patient safety and provide the highest quality of care.

Programme structure

Semester 1st							
S. No	**Course Code**	**Course Title**	**Type of course**	**L**	**T**	**P**	**Credits**
1	MOT101	Surgical Equipment, Advanced Instrument & Technique Related to OT	Core course	4	0	0	4
2	MOT102	Basic Anesthesia & Applied OTT	Core course	4	0	0	4
3	MOT103	Applied Anesthesia	Core course	4	0	0	4
Disciplinary Elective(Following option any one)							
4	MOT104	Clinical Microbiology	Disciplinary Elective	3	0	0	3
5	MOT105	Clinical Bio-Chemistry					
6	MOT106	General Patient Care in Hospital	Ability Enhancement	1	0	0	1
Value added Courses For other disciplines also							
7	MOT107	Care and Maintenance of Operation Theatre Equipment	VAC	2	0	0	2
8	MOT108	Surgical Equipment, Advanced Instrument (Practical)	Technical skills	0	0	4	2
9	MOT109	Basic Anesthesia & Applied OTT(Practical)	Technical skills	0	0	4	2
10	MOT110	Applied Anesthesia(Practical)	Technical skills	0	0	4	2
			Total	**18**	**0**	**12**	**24**

Semester -2nd							
S. No	**Course Code**	**Course Title**	**Type of course**	**L**	**T**	**P**	**Credits**
1	MOT201	Anesthetic Management, Clinical Pharmacology	Core Course	4	0	0	4
2	MOT202	Basic Blood Banking Pharmacology	Core course	4	0	0	4
Open Electives Courses (For other Departments)							
3			Open Elective	2	0	0	2
Disciplinary Elective(Following option any one)							
4	MOT205	General Pathology & Terminology	Disciplinary Elective	3	0	0	3
5	MOT206	Sterilization Procedures					
6	MOT207	Research Proposal	Research based skills	4	0	0	4
7	MOT208	Anesthetic Management, Clinical Pharmacology (Practical)	Technical skills	0	0	4	2
8	MOT209	Basic Blood Banking Pharmacology (practical)	Technical skills	0	0	4	2
			TOTAL	**17**	**0**	**8**	**21**
9	MOT203	First Aid	Open Elective	2	0	0	2

10	MOT204	Fitness and Health Management					

Semester -3rd							
S. No	**Course Code**	**Course Title**	**Type of course**	**L**	**T**	**P**	**Credits**
1	MOT301	Technical Adjuncts to Surgery & Anesthesia	Core course	4	0	0	4
2	MOT302	Hospital Management, General Principles of Hospital Practice & Patient Care	Core course	4	0	0	4
Disciplinary Elective (Any one of the following)							
3	MOT303	Safety Measures for Operating Room Personnel	Disciplinary Elective	3	0	0	3
4	MOT304	Protection of Patient in Surgery /Patient Safety					
	Disciplinary Elective (Any one of the following)						
5	MOT305	Biomedical Waste Management	Disciplinary Elective	3	0	0	3
6	MOT306	Innovation and Entrepreneurship					
7	MOT307	Hospital Management, General Principles of Hospital Practice & Patient Care(Practical)	Technical skills	0	0	4	2
8	MOT308	Clinical Visit	Technical skills	0	0	4	2
9	MOT309	Technical Adjuncts to Surgery & Anesthesia(Practical)	Technical skills	0	0	4	2
Value added Courses For other disciplines also							
10	MOT310	Health, Safety & Environment	VAC	0	0	2	1
			Total	**14**	**0**	**14**	**21**

Semester 4th							
S. No	**Course Code**	**Course Title**	**Type of course**	**L**	**T**	**P**	**Credits**
1	MOT401	Dissertation	Technical skills	0	0	0	20
			Total	**0**	**0**	**0**	**20**

Evaluation Criteria for Theory Courses

A. Continuous Assessment: [25 Marks]

i. Surprise Test (Two best out of three) - (10 Marks)
ii. Term paper (10 Marks)
iii. Assignment(s) (10 Marks)
iv. Attendance (5 marks)

B. Mid Semester Test-1: [30 Marks]
C. MST-2: [20Marks]
D. End-Term Exam: [20 Marks]

Evaluation Criteria for other courses has been given separately with the Respective courses

Semester: 1st

Course Title- Surgical Equipment, Advanced Instrument & Technique Related to OT
Course Code: MOT101C

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand the role of every tool used in OT
2. Learn about the instruments used for minor as well as major surgeries.
3. Identify and move to maintain a sterile field
4. Demonstrate ability to prepare & maintain OT

Course Contents

UNIT- I **18 Hours**

Storing sterilization and disinfections in OT General Surgical Principles and instruments: the surgical patient operation room technique Instrument used for preparing surgical Cheatle forceps, Rampley sponge holding forceps, Mayo's towel clip, Esmarch bandage, simple tourniquet, Pneumatic tourniquet.

UNIT- 2 **18 Hours**

Incision making method and instruments: Bard parker knife handle, major abdominal incision artery forceps and their types instruments used in homeostasis, Kocher's forceps, electric cautery, Retractor: Single hook retractor, Czerny's retractor, nerve hook retractor, Morris retractor, Deaver's retractor.

UNIT-3 **12 Hours**

Care and washing sterilization and maintenance of endoscopic instruments, laparoscopic instruments, orthopedic power instruments, advanced OT tables and their attachments.Types settings and use of: Image intensifier portable X-Ray machine, cautery machine, suction machine, pulse oximeter, cardiac monitor.

UNIT-4 **12 Hours**

Wound management: scissors and its types, sucking material and techniques, disinfectants and irritant dressing procedures, different types of bandages, surgical needle and needle holders, various types of suture material

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Morgan, G. E., Mikhail, M. S.,& Murray, M. J. (2002). *Clinicalanesthesiology* (No. RD 81. M67 2002).Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan andMikhail's clinical anesthesiology*. McGraw-Hill Education. Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis. Kaplan, J. A. (2018). *Essentials of Cardiac Anesthesia for Noncardiac Surgery E-Book: A Companion to Kaplan's Cardiac Anesthesia*. Elsevier Health Sciences.Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19. Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences

Course Title- Basic Anesthesia & Applied OTT

Course Code: MOT102

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Know about basic electronics, basic principle, care and maintenance of machine at OT
2. Analyze the electrical safety precautions in OT.
3. Manage indenting, record keeping inventory maintenance.
4. Learn the procedure of record keeping of patients.
5. Learn in detail the principles of sterilization & disinfection.

Course Contents

UNIT-I **12 Hours**

Basics of anesthesia technology Medical ethics and the relevant medico legal aspects Responsibilities and duties Ethical behavior and conduct Medico legal aspects and its relation to consumer protection act Basics of medical statistics Common statistical terms Sources and presentation of data Measures and location – average and percentiles Measures of central tendency and dispersion Normal distribution and normal curve Sampling and probability Sampling variability and its significance of difference in mean Chi square test Designing and methodology of an experimental study Representation of data as tables and drafts Demography of vital statistics Standard deviation P value and its significance Recording of data and maintenance of the records Biomedical waste and its management. Electricity and electro medical equipment and safeguards Basics of electricity and functioning of electro medical equipment Earthing and care of equipment Static electricity Fires and explosion: causes, prevention of fire and explosions, electrical hazards.

UNIT-II **12 Hours**

History of anesthesia- Introduction, antecedents of modern anesthesia, evolution of modern anesthesia Boyle's machine and its functioning Boyle's vaporizer Magill's breathing circuit, Bane's breathing circuit, pediatric anesthesia circuit Gas cylinder and flow meters CO2 absorption canister Suction apparatus- foot operated, electrically operated Ambu bag, laryngoscopes, tracheal tubes Catheters, face masks, venture masks, drugs General principles: pharmacological classification of drugs, route of drug administration, precautions in administration, principles of drugs toxicity, prevention and treatment of poisoning, adverse drug reactions Sedatives and hypnotics Important groups of drugs, NS and other iv fluids, antimicrobial agents and ant allergic drugs Pre anesthetic medication . Local anesthetic agents. Spinal anesthetic agents. General anesthetic agents. Assisting anesthesiologist during pt. in shock, complication of GA and regional; anesthesia assisting anesthesiologists during bronchoscopy & invasive procedures during anesthesia observing CPR o Assisting during transportation of pts from casualty to other wards and care unit

UNIT-III **16 Hours**

Anesthesia operating room Dye allergies Embolization Examination for MRI Monitoring Equipment options in the MRI suite General anesthetics/ sedation techniques Electroconvulsive shock therapy ECT Preoperative Anesthetic techniques and drug effects on seizure and drug effects on seizure duration Hemodynamic responses and appropriate treatment Cardiac catheterization Preoperative evaluation of children Anesthetic considerationElectro physiological tests/ radiofrequency ablation and cardioversion Trauma and resuscitationAll residents must achieve basic and advanced cardiac life support, advanced trauma support, and pediatric life support training. They should start with the training of airway breathing circulation (ABC) training and master the skills repeated and then procedure to advanced life support. Principles of Anesthesia system *Boyle anesthetic machine) Cylinders: storage of gasses oxygen nitrous oxide, tests of cylinders, cylinders valves, pin index system use of cylinders. Liquid oxygen, oxygen concentrators.

UNIT-IV **20 Hours**

Anaesthesia machine, : Pressure gauge, pressure regulator, flow meters, carbon dioxide absorber, pressure relief valves, rebreathing bags, face mask, Boyle vaporizers : ether bottle , fluothane vaporizer , fluotech mark on to six, pipeline system : central pipeline system , advantages and hazard. Anesthesia gadgets. : Different types of laryngoscopes and blades, endotracheal tubes: description of plane and cuffed endotracheal tubes, (Nasal /Oral) indications, methods. Of insertion, sterilization and complication. Other types of endotracheal tubes. Latex armored tubes, ring, Adair and Elwyn tube, microlaryngeal tubes, endobronchial tubes etc. Classification of breathing circuits. Explaining details about Maplesons circuit, Bain Circuit , Lack Circuit. Methods of anaesthesia. Introduction to general anesthesia and regional anesthesia Stages of ether anesthesia, intravenous anesthetic agents, uses and complications Premedication: indication, type of drugs used for premedication, doses and side effects Drugs used in anesthesia: narcotic agents, anticholinesterase drugs, vasopressor drugs, antiarrhythmic drugs, hypotensive drugs, hypoglycemic drugs, anticoagulant drugs, antihypertensive drugs Neuromuscular blocking agents used in anesthesia Inhalational anesthetics; N2O, diethyl ether, halothane, enflurane, isoflurane, sevoflurane, desflurane etc their indications and complications Intraoperative management: monitoring during anesthesia by use of monitors Monitoring during anesthesia: clinical monitoring, by use of monitor monitoring the patient eg. Arterial blood pressure monitoring, ECG, pulse oximetry, capnography, neuromuscular monitoring etc. monitoring during shifting of patient OT to post op care unit. Monitoring of patient in post op care unit, complication in post op period and acute pain management in post op ward Regional anesthesia: local anesthetic agents used in regional anesthesia: indications, contraindications, dosage, complications, route of administration eg. Lignocaine, bupivacaine etc. regional anesthesia: spinal anesthesia in all age group of patients: indications, contraindications, commonly used local anesthetics, adjuvants. Epidural anesthesia: in all age groups: indications, contraindication, commonly used local anesthetics, adjuvants. Caudal anesthesia: in all age groups: indications, contraindications commonly used local anesthetics, adjuvants. Regional blocks: brachial plexus block, popliteal block, hernia block etc., indication, complication Anesthesia for common surgical procedure: GA/Regional anesthesia in surgery, orthopedics, OBG eg. Appendicectomy, LSCS, intramedullary nailing etc. anesthesia for coexisting diseases: hypertensive patient, ischemic heart disease, elderly patient, diabetic patient, renal failure patients,

bronchial asthma, head injury patients etc. anesthesia for special situations: dental anesthesia, outpatient anesthesia , patients in shock, respiratory failure, cardiac diseases, trauma and in emergency medical diseases. Complication in anesthesia: regional and general anesthesia. Basic principles of fluid management: during shock, surgery, accidents, and cardiac patients. Basic principles of blood transfusion and complications: ventilators: types of ventilators, modes of ventilation, sterilization of ventilator, CPR: basic life support, advanced cardiac life support. Intensive coronary care unit. Pain management: acute and chronic. Practical o Attending pre op rounds with anesthesiologists o Attending post op rounds with anesthesiologists o Attending pain clinic everyday along with anesthesiologists Attending rounds in ICU, ICCU, MICU, SICU along with anesthesiologists & understanding ventilators and its implication and sterilization attending regular OT for regular anesthesia cases and attending emergency cases along with anesthesiologists o Arrangement of anesthesia trolley for GA o Arrangement of anesthesia for regional anesthesia for e.g. epidural, brachial etc. Arrangement of monitors & anesthesia machine before starting any case ofanesthesia o Sterilization of anesthesia machine Arrangement of anesthesia breathing circuits e.g. ;Magill's, Ayer's circuits etc. Filling of soda lime canisters of close circuits o Arrangement of simple o2 administration devices during post op ward Airway gadgets arrangements during anesthesia procedures like oropharyngeal airways, nasopharyngeal airways, ETT & LMA Anesthesia vaporizers to be filled and make arrangements for inhalational anesthesia with use of ether, halothane & enflurane etc. Assisting anesthesiologists during Blood transfusion Assisting in transfusion of fluids e.g. RL, D5 etc.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan and Mikhail's clinical anesthesiology*. McGraw-Hill EducationMorgan,G. E.,Mikhail, M. S., & Murray, M. J.(2002). *Clinicalanesthesiology* (No. RD 81. M67 2002).

Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis.Kaplan, J. A. (2018). *Essentials of Cardiac Anesthesia for Noncardiac Surgery E-Book: A Companion to Kaplan's Cardiac Anesthesia*. Elsevier Health Sciences.Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd.

Course Title- Applied Anesthesia

Course Code: MOT103

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Explain the rational selection of regional anaesthesia techniques & the choice of local anaesthesia.
2. Understand the depth of general anaesthesia and its mechanism.
3. Analyze medical standards.
4. Perform skills for management of patients in post anaesthesia recovery room.
5. Teach anesthetic techniques with their application to surgical procedures.

Course Contents

UNIT-I **15 Hours**

Regional anesthesia Drugs used in regional anesthesia Spinal, caudal and epidural anesthesia Anesthesia for common surgical procedures Anesthesia for co-existing diseases Pt in shock and cardiacarrest Anesthesia in special situation Complication inanesthesiaBasic principles of blood transfusion Basic principles of fluid management Ventilators Intensive coronary care unit Pain management CPR

UNIT-II **15 Hours**

Physics applied to anesthesia fundamental concept in systemic

international unit (SI unit).temp conversion, pressure measurement, pressure gauges, regulators, gas laws, misc. concepts such as density and specific gravity Medical gases color coding of anesthetic gases, diff size of cylinders e.g. A to E cylinders storage of cylinder diameter index safety system, medical gas pipeline system and station outlets air compressors 02 concentrators alarm and safety devices Gas administration devices simple 02 administration devices reducing valve flowmeters regulators O2 Therapy Definition of hypoxemia. Clinical signs goals of O2 therapy evaluation of pt. Receiving O2 therapy hazards of O2 therapy Humidification its goals and advantages

UNIT-III **15 Hours**

Aerosol therapy; definition , goals ,hazards, assessment, aerosol therapy in lung disease Anesthesia system; machine, Boyle's anesthesia machine basic principles of anesthesia machine Respiratory gas analyzers(o2 and co2) Definition, classification, uses of pulse oximeters, Capnography, and trans cutaneous oxygen monitors Manual resuscitators Types of resuscitator bags indications methods of increasing oxygen delivery while using oxygen with resuscitation bags Airways management with use of gadgets, Types and sizes of oropharyngeal airways, indications and complications types and sizes of nasopharyngeal airways, indications, and complications parts of airway and features and methods of insertion orotracheal intubation: types of orotracheal tubes, indications and complication nasotracheal intubation types of nasotracheal tubes, indications and complication

UNIT – IV **15 Hours**

Types of humidifiers possible causes of retention of secretions in airway And management Sterilization of anesthesia equipment Cleaning of anesthesia equipment methods of autoclaving, boiling, pasteurization, gamma radiation, chemical sterilization etc. sterilization of syringes needles, spinal and epidural sets, airways, Magill forceps, laryngoscope etc. History of anesthesia Prehistoric era inhalational anesthetics era regional anestheticera intravenous anesthetic era modern anesthetic era. Anaesthesia Principles of pediatric anaesthesia management of neonatal surgical emergencies, RA in infants Associated medical disorders in surgical patients anaesthesia implications and management Basics of orthopedic anaesthesia. Day care anesthesia.

Rural anaesthesia – anaesthesia for camp surgery. Anaesthesia for otorhinolaryngology with special emphasis on difficult airway management Blood and blood component therapy. Anesthetic implications in coagulation disorders. Monitored anesthesia care. Anaesthesia implication in diabetic mellitus thyroid and parathyroid disorders. phaeochromocytoma, cushings disease etc. Management of acid base disorders. Principles of geriatric anesthesia. Anesthesia outside the OR and in special situation.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

anesthesiology (No. RD 81. M67 2002).aw-Hill Goldman,

Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan and* Morgan, G. E., Mikhail, M. S., & Murray, M. J.(2002).*Clinical* Kaplan, J. A. (2018). *Essentials of Cardiac Anesthesia for* Noncardia*cSurgery E-Book: A Companion to Kaplan's Cardiac* Anesthesi*a*. Elsevier Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd.

Course Title- Clinical Microbiology.

Course Code: MOT104

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Prepare bacterial smear from different bacterial cultures to identify bacterial strain.
2. Know the effect of different carbon nitrogen sources on the growth ofmicroorganisms, effect of environmental factors on growth.
3. Observe the effect of pH on the growth of microorganisms.
4. Perform the bacteriological examination of water and milk.
5. Analyze gram negative and special stains for bacterial identification.

Course Contents

UNIT-1 **11 Hours**

Introduction, history & scope of Microbiology: Introduction and historical developments of microbiology, scope of microbiology, general characteristics of prokaryotes and eukaryotes, classification of prokaryotes, introduction to mycology, virology and parasitology

UNIT-II **11 Hours**

Microscopy: Importance of microscopy, principle, operation and applications of light microscope, phase contrast microscopy, fluorescence microscopy, electron microscopy Structure of Bacterial cell :General structure and functions of gram positive and gram negative bacteria, cell wall, cell membrane, cytoplasmic inclusions and mesosomes, flagella, capsule, ribosome, chromosome, plasmid and endospore, morphological classification of bacteria

UNIT-III **15 Hours**

Sterilization &Disinfection: Introduction and its types, principle, procedure and its application, quality control for sterilization and disinfectant techniques, biosafety in microbiology lab Nutrition &Growth: kinetics of growth, continuous culture and synchronous growth cultures, aerobic & anaerobic cultures, Introduction and its types,various factors affects on microbial growth Chemotherapeutic Agents: Introduction, types, mode of action and its clinical importance of antibiotic sensitivity tests, Introduction, types, mode of action and importance of multiple drugs resistance, mechanism of drugresistance

UNIT-IV **08 Hours**

Lab diagnosis of pathogenic microorganisms: Normal microbial flora of the human body, collection and transport of specimens, processing of clinical specimens for microbiological examination Environmental and Applied Microbiology: Bacteriology of air, water, food, milk Nosocomial Infections: Introduction and its types,

pathogenicity and laboratory diagnosis of nosocomial infection, prevention and control of nosocomial infections

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Brown, A., & Smith, H. (2014). *Benson's Microbiological Applications, Laboratory Manual in General Microbiology, Short Version*. McGraw-Hill Education. E Brown, A. (2001). Benson's Microbiological Applications Laboratory Manual in General Microbiology-Alfred E Brown. Kowalska, E., Maliszewska, B., & Ziarno, M. (2021). Characterization of Fermented Milks After the Passaging Process of Starter Cultures. *Postępy Techniki Przetwórstwa Spożywczego*. Parija, S. C. (2013). *Textbook of Microbiology & Immunology-E-book*. Elsevier Health Sciences. Vala, S. (2021). Prevalence of ASO Antibodies among Suspected Patients for Streptococcal Infections at Sir Takhtsinhji Hospital, Bhavnagar. *Saudi J mPathol Microbiol, 6*(10), 386-389

Course Name: Clinical Biochemistry
Course Code: MOT105

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand bio-molecules, metabolism and inborn errors of metabolism. Know about various organ function tests and their significance in result interpretation.
2. Correlate the knowledge of patho-physiology of organ system and hormonal imbalance.
3. Apply biochemical changes involved in various clinical conditions associated with glands and organs of human body.
4. Identify deficiency diseases and their correlate conditions

including interpretations.

Course Contents

UNIT-1 **12 Hours**

Biomolecules :Introduction to carbohydrates and their functions, metabolic reactions of carbohydrates, introduction to lipids and their functions, metabolic reactions of lipids, introduction to proteins and their functions, metabolic reactions of proteins In born errors of metabolism: Inborn errors of carbohydrate metabolism, Inborn errors of lipid metabolism, Inborn errors of protein metabolism, inborn errors of amino acid metabolism: phenyl ketonuria, alkeptonuria, albinism, cystinuria, inborn errors of carbohydrate metabolism: Glycogen storage disease.

UNIT-II **11 Hours**

Biochemical changes in diseases: Biochemistry of diabetes mellitus, fatty liver its cause and symptoms, biochemical changes involved in fatty liver, atherosclerosis and biochemical changes involved Organ function tests 1: Liver function tests, functions of Liver, Metabolic functions, excretory functions, protection and detoxification, diseases of Liver, principle and clinical importance of liver markers

UNIT-III **11 Hours**

Organ function tests 2 :Formation of urine, excretory and reabsorptive functions, regulatory functions, homeostasis, introduction to disease of kidney, kidney profile test, blood urea nitrogen, serum creatinine, total protein, albumins, globulins, A/G ratio., clearance tests, urine examination, Thyroid gland structure and functions, production of thyroid hormones, types of hyper and hypothyroidism, Hashimoto's disease and Grave's disease, thyroid function test

UNIT-IV **Hours: 11**

Malnutrition disorders: Marasmus, kwashiorkor, nutritional deficiency ofvitamins& minerals, prescribed diet, hypervitaminosis and hypovitaminosis Cancer: Etiology of cancer, biochemical changes of cancer, role of oncogenes, apoptosis, biochemical basis of metastasis

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Champe, P. C., Harvey, R. A., & Ferrier, D. R. (2005). *Biochemistry*. Lippincott Williams & Wilkins. Ferrier, D. R. (2014). *Biochemistry*. Lippincott Williams & Wilkins.Varley, H. (1954). Practical clinical biochemistry. *Practical clinical biochemistry*. Lucock, M. (2000). Folic acid: nutritional biochemistry, molecular biology, and role in disease processes. *Molecular genetics and metabolism*, *71*(1-2), 121-138. Nelson, D. L., Lehninger, A. L., & Cox, M. M. (2008). *Lehninger principles of biochemistry*. Macmillan.

Course Title- General patient care in Hospital

Course Code: MOT106

L	T	P	Cr
1	0	0	1

Total Hours: 15

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Gain knowledge regarding maintenance of medical record and documents in radiology department
2. Understanding transferring the patients without causing any hurdle and restrain the un co-operative patients throughout radiological examinations.
3. Categorize the moral, clinical and ethical liability of radiographer.\
4. Analyze sterilized techniques to reduce the chance of infection in work practices.

5. Evaluate the vital signs, handle equipment used for diverse procedures.

Course Content

UNIT -1 **4 Hours**

Hospital Staffing and Administration, records, professional, ethics, cooperation with other staff and departments, Departmental organizations. Handling of the patients, seriously ill and traumatized patients, visually impaired, speech and hearing impaired, mentally impaired, drug addicts and non-English speaking patients. Understanding patient needs - patient dignity of inpatient and out patients. Interaction with the patient's relatives and visitors.

UNIT –II **4 Hours**

Methods of Effective Communication - Verbal skills, body language, professional appearance, visual contact etc. Elementary personal and departmental hygiene, dealing with receptacles, bedpans and urinals etc. General preliminaries to the exam

UNIT - III **4 Hours**

Moving Chair and Stretcher Patient. Unconscious patient, general comfort and reassurance for the patient. Vital signs and oxygen - patient's Homeostasis status. Body temp, respiratory rate, pulse, blood pressure, oxygen therapy, oxygen devices, Chest tubes and lines.

UNIT-IV **3 Hours**

First aid - Shock, electrical shock, hemorrhage, burns, Asphyxia, fractures, loss of consciousness. Emergency treatment to the collapsed patient. Artificial respiration and resuscitation. Preparation of patients for general and special radiological examinations. Supervision of patients undergoing special examination. Administration of drugs and contrast media. Aseptic and Sterile procedures. Handling of infections patients in the department or in the ward. Regulation of dangerous drugs. Trolley set up for special x-ray examinations, Radiation hazardous and

protective measures.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Ashalatha, P. R., & Deepa, G. (2012). *Textbook of Anatomy & Physiology for Nurses*. JP Medical Ltd. al, G. K. (2006). *Textbook Of Practical Physiology-2Nd Edn*. Orient Blackswan. Ehrlich, R. A., & Coakes, D. M. (2016). *Patient care in radiography-e- book: with an introduction to medical imaging*. Elsevier Health Sciences. Adler, A. M., & Carlton, R. R. (2015). *Introduction to Radiologic and Imaging Sciences and Patient Care-E-Book*. Elsevier Health Sciences.

Course Title- Care & Maintenance of Operation Theatre Equipment.

Course Code: MOT107

L	T	P	Cr
2	0	0	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand in detail principles of Sterilization & disinfection.
2. Analyze Hazards & prevention of Hazards of Sterilization.
3. Independently Demonstrate skills of Disinfection & Sterilization.
4. Show efficiency in Methods of Sterilization.
5. Verbalize Methods & Prevention of Infection.

Course Contents

UNIT-I **05 Hours**

Introduction of CSSD:- Layout and location of CSSD and its role in hospital Functioning Functions of CSSD Collection of used items from user area Use of disinfectants Sorting and classification of equipment for cleaning purposes, sharps, blunt lighted Contaminated high risk items,delicate instruments or hot labile instruments Documentation, staff, dress protocol

UNIT -II **05 Hours**

Cleaning process in CSSD various methods of cleaning
Use of detergents- Mechanical cleaning apparatus Cleaning instruments, Cleaning jars, receivers bowl etc. trays, basins and similar hand ware utensils Cleaning of catheters and tubing Cleaning glass ware, cleaning syringes and needles

UNIT-III **10 Hours**

Packing in CSSD Materials used for wrapping and packing- Assembling pack contents Types of packs prepared Method of wrapping Labeling: Date, contents, initials Use of indications to show that a pack of container has been through a sterilization process. Different Methods of Sterilization Principles of sterilization and disinfection Methods of decontamination

UNIT-IV **10 Hours**

Moist heat sterilization Dry heat sterilization EO gas sterilization H202 gas plasma sterilization Irradiation: Gamma sterilization control: Indicator agents Autoclaving Machine. Uses and maintenance of autoclaving machine Mechanism of Autoclaving Machine CSSD Technician Duties of CSSD Technician Disinfection and sterilization of OT and equipment's / Waste management. Sterilization of OT:Fumigation method, Fogging machine and agents, Carbonization Decontamination of spillage of infected material Monitoring protocols for sterilization of OT Critical, semi critical, noncritical equipments Methods of disinfection: High level and Low-level disinfection
Various techniques of sterilization and disinfections of items,

Decontamination procedure Antiseptics, sterilant, sanitization Segregation and disposal of hospital waste.

Transaction Mode- Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Morgan, G. E., Mikhail, M. S.,& Murray, M.J.(2002). *Clinicalanesthesiology* (No. RD 81. M67 2002).utterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan andMikhail's clinical anesthesiology*. McGraw-Hill Education. Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis.Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19. Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences.

Course Title- Surgical Equipment, Advanced Instrument & Technique Related to OT (Practical)

Course Code: MOT108

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand the role of every tool used in OT
2. Gain knowledge about instruments used for minor as well as major surgeries.
3. Identify and move to maintain a sterile field
4. Demonstrate ability to prepare & maintain OT.

Course contents

List of Experiment's/ Practical's

Objective: Student should be able to identify as well as understand the use of anesthetic equipment used for/ or during surgery. To understand various types of use preanesthetic and other groups of

drugs. Boyle's machine and its functioning Boyle's vaporizer Various breathing circuits Magill's, Bain's, pediatrics (Eyre's T-piece)Gas cylinder and flowmeter Carbon dioxide absorption syste Suction apparatus , food operated, electric operated AMBU bags, nlaryngoscope, ET tubes Catheters, face mask, venturi mas Identification and demonstration of working of the equipment FumigationCleaning and disinfection of articlesPacking articles for sterilizationSterilization of equipmentsCare sterilization and lubrication of: Orthopedic power instrumentsSetting up table for various surgeriesScrubbing, gloving and gowningHandling of image intensifier and portable OT machine, cautery machine, types settings and usesPositioning of orthopedic patients and other surgeriesAdvanced OT tables and their attachments as well as teir maintenanceAssisting with anesthesiologistObserving and monitoring patient in recovery roomTerminal disinfectionCare washing sterilization and maintenance of endoscopic instruments, laparoscopic instruments, orthopedic power instruments, advanced OT tables and their attachmentsn Types settings and use of: Image intensifier, portable X-Ray machine, cautery machine, suction machine, pulse oximeter, cardiac monitor Wound management: scissors and its types, sucking material and techniques, disinfectants and irritant dressing procedures, different types of bandages, surgical needle and needle holders, various types of suture material.

Transaction Mode- Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan and Mikhail's clinical anesthesiology*. McGraw-Hill Education. mGoldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis. Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd. Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19. Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences.

Course Title- Basic Anesthesia & Applied OTT (Practical)

Course Code: MOT109

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Know about basic electronics, basic principle, care and maintenance ofmachine at OT
2. Analyse the electrical safety precautions in OT.
3. Able to manage indenting, record keeping inventory maintenance.
4. Learn patients' record keeping (pre-operative).
5. Learn in detail the principles of sterilization & disinfection.

Course Contents

List of Experiment's/ Practical's

Attending pre op rounds with anesthesiologists o Attending post op rounds with anesthesiologists o Attending pain clinic everyday along with anesthesiologists mAttending rounds in ICU, ICCU, MICU, SICU along with anesthesiologists & understanding ventilators and its implication and sterilization attending regular OT for regular anesthesia cases and attending emergency cases along with anesthesiologists Arrangement of anesthesia trolley for GA o Arrangement of anesthesia for regional anesthesia for e.g. epidural, brachial etc Arrangement of monitors & anesthesia machine before starting any case of anesthesia o Sterilization of anesthesia machine o Arrangement of anesthesia breathing circuits e.g. ;Magill's, Ayer's circuits etc. Filling of soda lime canisters of close circuits o Arrangement of simple o2 administration devices during post op ward

Airway gadgets arrangements during anesthesia procedures like oropharyngeal airways, nasopharyngeal airways, ETT & LMA Anesthesia vaporizers to be filled and make arrangements for inhalational anesthesia with use of ether, halothane & enflurane etc. Assisting anesthesiologists during Blood transfusion Assisting in transfusion of fluids e.g. RL, D5 etc. Assisting anesthesiologist during pt. in shock, complication of GA and regional; anesthesia Assisting anesthesiologists during bronchoscopy & invasive procedures during anesthesia

observing CPR o Assisting during transportation of pts from casualty to other wards and care unit

Transaction Mode- Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

. Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan and Mikhail's clinical anesthesiology*. McGraw-Hill Education
Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac
Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis
Anesthesiology. *Journal of* Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd *Cardiothoracic and Vascular Anesthesia, 34*(1), 12-19. Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery. Elsevier Health Sciences.*

Course Title- Applied Anesthesia (Practical).

Course Code: MOT110

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Explain the rational selection of regional anaesthesia techniques & the choice of local anaesthesia.
2. Understand the depth of general anaesthesia and its mechanism.
3. Analyze medical standards.
4. Perform skills for management of patients in post anaesthesia recovery room.
5. Teach anesthetic techniques with their application to surgical procedures.

Course contents

List of Experiment's/ Practical's

Arrangement of anaesthesia machine Understanding of anaesthesia cylinders, color coding, Arranging different size of cylinders, understanding of storage of cylinders Understanding of diameter index safety system. Medical gap pipe line system. Oxygen

concentratorAnaesthesia machine safety. Sterilization of anaesthesia machine. Arrangement of anaesthesia breathing circuits ex. Understanding administration gas flows. Simple oxygen administration devices Method of controlling gas flow. Understanding flow meters. Airway gadgets understanding of the following and their uses in anaesthesia practice Oropharyngea airways Nasopharyngeal airwaysEndotracheal tubes Laryngeal mask airways Inhalation anesthetic . Either Halothane Enflurane and etc. Monitoring of patients Using noninvasive monitors Invasive monitors, above monitoring has to be done in intraoperative and postoperative period. Assisting anesthesiologists during blood transfusion. Assisting in transfusion of fluids ex. Ringer lactate, dextrose 5% etc. Assisting during performing general anesthesia. Attending rounds with anesthesiologis during preoperative and postoperative rounds Attending pain clinic. Oxygen Therapy. Introduction to operative theatre, recovery root (concepts of PACU) ICU. Gas supply & Distribution system. Medical Gas cylinders & Containers. Medical Gas Pipeline systems.Suction equipment 4. The anaesthesia Machine. Vaporizers. The breathing system, general principles& common components & classification Mapleson Breathing system Manual Respiration. Airway equipment's. Face masks & Airways. Supraglotic airways device. Laryngoscopes Endotracheal tube& associated equipments Noninvasive BP monitors Clearing & Sterilization Monitoring device Oxygen concentrators Humidification equipment. Anesthesia ventilators. Hazards of anaesthesia in achme and breedimng system.Latex allergy. Devices for imaging different activities Gas monitors. Pulse oximeter Neuromuscular monitoring. Neuro muscular monitor Equipment related to environment. Equipment of the MRI environment. Penetrate workload equipment. Operating room fires and personal injuring related to sources ofignition.

Transaction Mode- Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan and Mikhail's clinical anesthesiology*. McGraw-Hill Education. Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis. Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19. Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and*

Noncardiac Surgery. Elsevier Health Sciences.

Course Title- Anesthetic Management & Clinical Pharmacology

Course Code: MOTT201

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand the rational selectionofregional anaesthetic techniques and the choice of local anaesthesia.
2. Understand about anti-emetics ,Muscle relaxant & local anaesthetic, commonly used in OT & Emergency medications
3. Assist the anesthesiologist in administering anaesthesia, assist in various procedures & also help in continuous monitoring of patient during surgery.
4. Understand the depth of general anaesthesia and its mechanism.
5. Analyze the application of anaesthetic medication in various Heart diseases, Respiratory diseases.

Course Contents

UNIT – I **15 Hours**

Preoperative assessment, premedication, preoperative documentation. Airway management. Cardiovascular physiology & Anaesthesia. Anaesthesia for patient with respiratory disease. Anaesthesia for Neurosurgery.

UNIT-II **15 Hours**

Pharmacological principle Analgesic agents. Neuromuscular blocking agents. Anticholinergic agents. Adrenergic agonists & antagonists.

UNIT–III **15 Hours**

Anaesthesia for Renal Surgery. Anaesthesia for patients with endocrine disease. Anaesthesia for obstetric procedures. Inhalation and Intervention anaesthetic agents.

UNIT-IV **15 Hours**

Ambulatory, Non operating room & Office based anaesthesia. Hepatic physiology & anaesthesia. Obstetric Anaesthesia. Inhalation Anesthetics.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd.

Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19.n Butterworth, J. F., Mackey, D. C., & Wasnick, J. D. (2018). *Morgan and Mikhail's clinical anesthesiology*. McGraw-Hill Education. Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis.

Course Title- Basic Blood-banking & Pharmacology

Course Code: MOT202

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand the depth of general anaesthesia and its mechanism.
2. Know about hematology in the reference ranges for hemoglobin, erythrocytes & leukocytes in infants, children's & adults.

3. Understand about anti-emetics, Muscle relaxant & local anaesthetic, commonly used in OT & Emergency medications
4. Describe normal & disorder hematopoiesis
5. Understand about rational selection of regional anaesthetic techniques and the choice of local anaesthesia.

Course Contents

UNIT - I **15 Hours**

Introduction , Blood group system, Blood group incompatibility, ABO, Rh systems, Cross match test in emergency, Blood bank preparation, Blood collection procedure, care & donor selection registration medical history, physical examination, Transport and storage, Screening and selection of donor, Preparation and use of whole blood and blood components washed red cells, Plasma preparation etc.

UNIT - II **15 Hours**

Blood grouping – ABO, RH and other system of blood groups, sub group ofA, Bombay group. Antibodies to ABO system & Anti AB and Anti D antibody ABO testing slides and tube test reverse grouping discrepancies between cell and serum results sources of error. Rh grouping test and slide Rapid tube test false positive and false negative results. DU test system and its significance. Cross matching Reasons of cross match Saline Albumin Combs and enzymes in testing Roles formation and methods of checking this Comb's test – direct and indirect, principle, explanation of procedure and sources of error, control interpretation and clinical application. B. Demonstration of Comb's test direct and indirect. Labeling of tubes, methodology legal implication in computable cross. Auto antibodies. Plasma expanders, multiple myeloma etc. affecting a cross match Difficulties in cross match and methods of investigations Quality control in blood banks.n Specimen collection Risk assessment for AIDS and serum hepatitis.

UNIT – III **15 Hours**

PHARMACOLOGY Preparation and dosage of drugs relevant to anesthesia. Experiment pharmacology directed to show the effects of commonly used drugs of relevance and interpretation of few charts Anesthetic agents: Definition and classification of general anesthetics Pharmacokinetics and pharmacodynamics of general anesthetics, inhaled anesthetic agents etc. nLocal anesthetics- classification, mechanism of action, duration and methods to prolongation of duration of action of local anesthetics. Preparation, dose and routes of administration, side effects and management. Pharmacotherapy of Respiratory disorders: Introduction- modulators of bronchial smooth muscle tone and pulmonary vascularsmooth muscle tone. Mucokinetic and mucolytic agents
Use of bland aerosols in respiratory care Pharmacology of bronchial asthma Drugs acting on CNS and Cardio respiratory function which influence the physical exercise Diuretics classification, mechanism of action, adverse effects and complications, preparation, dose and routes of administration. mEndocrine: pharmacology, thyroid hormones, glucocorticoids, anabolic steroids, calcitonin, insulin and oral hypoglycemic agents mMiscellaneous: IV fluids- various preparations and their usage newer drugs included in perfusion technology Drugs used in metabolic and electrolyte imbalance mTheoretical background of the commonly used anesthetic techniques ofgeneral and regional anesthesia: GA- intravenous, inhalational, endotracheal etc. using spontaneous and controlled mode of ventilation RA- spinal, epidural and local

UNIT – IV **15 Hours**

General principles concepts of pharmacokinetics and pharmacodynamics Drug interactions in anesthesiology bDrugs used for premedication, induction, general anesthesia, intravenous and inhalation Neuromuscular blocking drugs & for reversal of Neuromuscular block Vasopressor & anti-hypertensive drugs Anti-thyroid drugs Anti-diabetic drugs Diuretics Local anesthetic drugs Narcotic and non-narcotic analgesics and their antidotes Drugs used for different common disease example, Bronchial asthma, hypertension, TB, CHF.

Transaction Mode-

Suggested Readings

Video based teaching, collaborative teaching, case based teaching,

question Goldman, M. A. (2019). *Pocket guide to the operating room*. FA Davis. Butterworth, J. F., Mackey, Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd D. C., & Wasnick, J. D. (2018). *Morgan and Mikhail's clinical anesthesiology*. McGraw-Hill Education

Course Title- First Aid

Course Code:MOT203

L	T	P	Cr
2	0	0	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand general roles & responsibilities of the pharmacists in public health.
2. Have knowledge about health education its promotion.
3. Provide first aid in various emergency conditions.
4. Design promotional materials for public health awareness.
5. Analyze food & nutrition related health programs.

Course Contents

UNIT-I **8 Hours**

First aid**:** Aims and objectives of first aid; wounds and bleeding, dressing and bandages; pressure and splints, supports etc. Shock; insensibility; asphyxia; convulsions; resuscitation, use of suction apparatus; drug reactions; prophylactic measures;

UNIT-II **7 Hours**

Fractures; splints, bandaging; dressing, foreign bodies; poisons. hemorrhage; pressure points; compression band. Administration of oxygen; electric shock; burns; scalds;

UNIT-III **7 Hours**

Infection: Bacteria, their nature and appearance; spread of infections; auto- infection or cross-infection; the inflammatory process; local tissue reaction, general body reaction; ulceration; Asepsis and antisepsis. Universal precautions, hospital acquired infections- HIV, Hepatitis B, C, and MRSA etc.

UNIT-IV **8 Hours**

Principles of Asepsis: Sterilization - methods of sterilization; use of central sterile supply department; care of identification of instruments, surgical dressings in common use, including filament swabs, elementary operating theatre procedure; setting of trays and trolleys in the radio imaging department

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

1. Davidson, S., Austin, M., Crawford, R., Armstrong, V. J., Mulligan, J., Newman, J., & Aw-Yong, M. (2009). *The first aid manual: The authorised manual of St. John Ambulance, St. Andrew's Ambulance Association and the British Red Cross*. Dorling Kindersley. Shultz, J. M., & Forbes, D. (2014). Psychological first aid: rapid proliferation and the search for evidence. *Disaster Health, 2*(1), 3-12. Clement, I. (2013). *Textbook on First Aid and Emergency Nursing*. JAYPEE BROTHERS PUBLISHERS

Course Title- Fitness & Health Management

Course Code:MOT204

L	T	P	Cr
2	0	0	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand the modern concept of fitness & wellness.
2. Orient students towards the approach to positive life style.
3. Develop competencies for profile development, exercise

guidelines adherence.
4. Develop Skills to apply the fitness & wellness management techniques.
5. Know safety techniques in exercise.

Course Contents

UNIT -I **05 Hours**

Meaning and definition" of physical fitness, physical fitness concepts and techniques Principles of physical fitness, physiological principles involved in human movement. Components of Physical Fitness. Leisure time physical activity and identify opportunities in the community to participate in this activity. Current trends in fitness and conditioning, components of total health fitness and the relationship between physical activity and lifelong wellness.

UNIT - II **10 Hours**

Nutrients: Nutrition labeling in formation, food choices, food guide pyramid, Influences on food choices social, economic, cultural, food sources. Cardio respiratory endurance training: Proper movement forms, i.e., correct stride, arm movements. Body alignment: Proper warm-up, cool down and stretching, monitoring heart rates during activity. Assessment of cardio respiratory fitness and set goals to maintain or improve fitness levels. Cardio respiratory activities including i.e. power walking, pacer test, interval training, incline running, distance running, aerobics and circuits.

UNIT – IV **05 Hours**

Resistance training for muscular strength and endurance, principles of resistance training.

Safety techniques (spotting, proper body alignment, lifting techniques, spatial, awareness. And proper breathing techniques).

UNIT – IV **10 Hours**

Weight training principles and concepts, basic resistance exercises (including freehand exercise, free weight exercise, weight machines, exercise bands and tubing. Medicine balls, fit balls) advanced techniques of weight training Flexibility training, relaxation techniques and core training. Safety techniques (stretching protocol; breathing and relaxation techniques) types of flexibility exercises (i.e. dynamic, static), Develop basic competency in relaxation and breathing techniques. Pilates, Yoga

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Miller, D. K., & Allen, T. E. (1990). *Fitness: A lifetime commitment*. Macmillan Publishing Company. Course, P. B. P. Part A: Theoretical Course. *Education*, *30*(70), 100. Part, A. Course: Master of Physical Education (MP Ed) Semester–I. *Education*, *3*, 3. Heindel, J. J., & Blumberg, B. (2019). Environmental obesogens: mechanisms and controversies. *Annual review of pharmacology and toxicology*, *59*, 89-106. COURSE, M. O. P. E. 2) Eligibilities of Admission. course, P. B. P. Part A: Theoretical Course. *Education*, *30*(70), 100.

Course Title- General Pathology & Terminology

Course Code:MOT205

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Learn basic definitions and terminology used in pathology.
2. Understand the study of oncology and different types of oncogenes.
3. Explain various Tissues factors and their repair
4. Have knowledge of DNA repair genes and their nomenclature.
5. Analyze different types of deficiency diseases of vitamins and minerals

Course Contents

UNIT – I **11 Hours**

Introduction & History of pathology : Basic definitions and familiarization with the common terms used in pathology, Causes and mechanisms of cell injury, reversible and irreversible injury, Introduction of hyperplasia, hypoplasia, hypertrophy, atrophy, metaplasia, necrosis and apoptosis

UNIT – II **11 Hours**

Cancer: Definitions, nomenclature, characteristics of benign and malignant neoplasm, metastasis, Carcinogens and cancer, concept of oncogenes, tumour suppressor genes, DNA repair genes and cancers stem cell

UNIT – III **11 Hours**

Tissue Renewal and Repair: Healing and fibrosis, cirrhosis, introduction of oedema, hyperemia, congestion, haemorrhage, haemostasis, thrombosis, embolism, infarction, shock and hypertension .General features of acute and chronic inflammation: Vascular changes, cellular events, Cells and mediators of inflammation, Phagocytosis and its mechanism

UNIT – IV **12 Hours**

Protein energy malnutrition: Deficiency diseases of vitamins and minerals, nutritional excess and imbalances. Role and effect of metals (Zinc, Iron and Calcium) and their deficiency diseases, Aetiology and pathophysiology of diabetes, arteriosclerosis, myocardial infarction, respiratory diseases (COPD), Parkinson disease Infectious Diseases: pathogenesis & overview of modes of infections, prevention and control with suitable examples like Typhoid, Dengue.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Kumar, V., Abbas, A. K., & Aster, J. C. (2017). *Robbins basic pathology e- book*. Elsevier Health Sciences. Kuttappan, V. A., Shivaprasad, H. L., Shaw, D. P., Valentine, B. A., Hargis, B. M., Clark, F. D., ... & Owens, C. M. (2013). Pathological changes associated with white striping in broiler breast muscles. *Poultry Science*, *92*(2), 331-338. Mohan, H. (2015). *Textbook of pathology* (pp. 474-482). New Delhi: Jaypee Brothers Medical Publishers.

Culling, C. F. A., Allison, R. T., & Barr, W. T. (2014). *Cellular pathology technique*. Elsevier.. Mohan, H. (2012). *Pathology practical book*. JP Medical Ltd.

Course Title- Sterilization Procedures

Course Code:MOT206

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On successful completion of this course, the students will be able to:

1. Understand complete steps in operation of autoclave, its maintenance protocol
2. Demonstrate documents to be maintained in CSSD
3. Apply various physical, chemical methods of sterilization
4. Analyze cleaning and sterilization of OT
5. Evaluate methods to decrease infections in OT

UNIT-I **Hours: 15**

Waste disposal collection of used items from user area, reception protective clothing and disinfections sage guards, Biomedical wastes, Color cooling and management use of disinfections sorting and classification of equipment for cleaning purposes, sharps, blunt lighted etc. contaminated high risk baby care ¬ delicate instruments or hot care instruments,Cleaning process ¬ use of

detergents. Mechanical cleaning apparatus, cleaning instruments, Cleaning jars, receivers bowls etc. trays, basins and similar hand ware utensils. Cleaning of catheters and tubings, cleaning glass ware, cleaning syringes and needles.

UNIT-II **15 Hours**

Materials used for wrapping and packing assembling pack contents. Types of packs prepared. Inclusion of trays and galliparts in packs. Method of wrapping and making use of indications to show that a pack of container has been through a sterilization process date stamping General observations principles of sterilization. Moist heat V. Nervous System. Dry heat Sterilization. EO gas sterilization. H202 gas plasma capo sterilization.

UNIT-III **15 Hours**

Specimens, drugs, OSPE charts Microbiology Sterilization & decontamination Dry Filtration General Principles Asepsis Wound Infection & Urinary Tract Infections Blood stream Infections Respiratory tract Infection Catheter, IV associated Infections Hospital acquired infections & prevention of hospital acquired infections • Hepatitis C, HBV, HIV Hyper sensitivity reaction – Type I, II, III, IV

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Davidson, S., Austin, M., Crawford, R., Armstrong, V. J., Mulligan, J., Newman, J., & Aw-Yong, M. (2009). *The first aid manual: The authorised manual of St. John Ambulance, St. Andrew's Ambulance Association and the British Red Cross*. Dorling Kindersley. Shultz, J. M., & Forbes, D. (2014). Psychological first aid: rapid proliferation and the search for evidence. *Disaster Health*, *2*(1), 3-12.

Clement, I. (2013). *Textbook on First Aid and Emergency Nursing*. JAYPEE BROTHERS PUBLISHERS.

Course Title- Research Proposal

Course Code: MOT207

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Have introduction to Research proposal and its various aspects
2. Study about Ethical problems in Research and Research design
3. Know about various research tools.
4. Analyze the different research problems.
5. Understand Ethical issues in Research

Course Contents

UNIT-I **18 Hours**

Research Methodology Introduction to research methods identifying research problem Ethical issues in research design

UNIT-II **Hours: 14**

Data CollectionExperimental and non-experimental research designs Sampling methods, data collection, observation methods Interview method, questionaries' and schedules construction

UNIT-III **Hours: 12**

Research Frame Work Ethical issues in research Principles and concepts in research ethics-confidentiality and privacy informed consent Writing research proposals Development of conceptual framework in research

UNIT-IV **Hours: 16**

Rationale Basic principles of research and methods applied to draw inferences from the research findings. Measures of Dispersion, Skewness and kurtosis, Sampling, Sample size determination, Introduction and method of collecting and presenting statistical data. Calculation and interpretation of various measures like mean, median, standard deviations, Skewness and Kurtosis, Probability distribution, Correlation and regression Significance tests and confidence intervals

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Kothari, Chakravanti Rajagopalachari. *Research methodology: Methods and techniques*. New Age International, 2004.Mahajan, B. K., &Lal, S. (1999). Methods in biostatistics for medical students and research workers.*Indian Journal of Community Medicine*, *24*(3), 140.Spiegel, M. R., Schiller, J. J., &Srinivasan, R. A. (2013).*Schaum's outline of probability and statistics*. McGraw-Hill Education

Course Title- Anesthetic Management & Clinical Pharmacology (Practical)
Course Code: MOT208

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand about rational selection of regional anaesthetic techniques and the choice of local anaesthesia.
2. Understand about anti-emetics ,Muscle relaxant & local anaesthetic, commonly used in OT & Emergency medications

3. Assist the anesthesiologist in administering anaesthesia, assist in various procedures & also help in continuous monitoring of patient during surgery.
4. Understand the depth of general anaesthesia and its mechanism.
5. Analyze the application of anaesthetic medication in various Heart diseases, Respiratory diseases.

Course contents

List of Experiment's/ Practical's

Preparation and dosage of drugs relevant to anesthesia, experimental pharmacology directly to show the effects of commonly used drugs of relevance an interpretation of few charts. Drugs used for premedication, various groups and individual drugs Drugs used for induction of anesthesia, iv, inhalational and regional anesthesiateaching Drugs used for maintenance of anesthesia- iv and inhalational drugs Neuromuscular blocking drugs Depolarizing Non depolarizing Drugs used for reversal of neuromuscular blocks For antisialogogue and prevent/ treat bradycardia Vasopressor and antihypertensive drugs Anti-thyroid drugs Anti-diabetic drugs Diuretics Local anesthetics Narcotic and non-narcotic analgesics and their antidotes Drugs used for different common disease example, Bronchial asthma, hypertension, TB, CHF etc.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

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Brown, A., & Smith, H. (2014). *Benson's Microbiological Applications, Laboratory Manual in General Microbiology, Short Version*. McGraw-Hill Education. E Brown, A. (2001). Benson's Microbiological Applications Laboratory Manual in General Microbiology-Alfred E Brown. Kowalska, E., Maliszewska, B., & Ziarno, M. (2021). Characterization of Fermented Milks after the Passaging Process of Starter Cultures. *Postępy* Elsevier Health Sciences nmParija, S. C. (2013). *Textbook ofMicrobiology & Immunology-E-book*. Vala, S. (2021). Prevalence of ASO Antibodies among Suspected Patients for Streptococcal Infections at Sir Takhtsinhji Hospital, Bhavnagar. *Saudi*

Course Title-Basic Blood-banking & Pharmacology (Practical)
Course Code:MOT209

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Outcomes: On successful completion of this course, the students will be able to

1. Know the depth of general anaesthesia and its mechanism.
2. Learn about hematology in the reference ranges for hemoglobin, erythrocytes & leukocytes in infants, children's & adults.
3. Know about anti-emetics ,Muscle relaxant & local anaesthetic, commonly used in OT & Emergency medications
4. Describe normal & disorder hematopoiesis.
5. Learn about rational selection of regional anaesthetic techniques and the choice of local anaesthesia.

Course contents

List of Experiment's/ Practical's

Blood Bank Administration Record keeping Computerization in blood transfusion services Blood grouping ABO pH typing various techniques Cross matching Tube test Slide test DU test Sub grouping test Objective: Student should be able to identify as well as understand the use, side effects and doses etc of various drugs used by anesthesiologist in OT/casualty/ICU etc. Practical Preparation and dosage of drugs relevant to anesthesia, experimental pharmacology directly to show the effects of commonly used drugs of relevance an interpretation of few charts. Drugs used for premedication, various groups and individual drugs Drugs used for induction of anesthesia, iv, inhalational and regional anesthesia teaching Drugs used for maintenance of anesthesia- iv and inhalational drugs Neuromuscular blocking drugs Depolarizing Non depolarizing Drugs used for reversal of neuromuscular blocks antisialogogue and prevent/ treat bradycardia Vasopressor and antihypertensive drugs Anti-thyroid drugs Anti-diabetic drugs Diuretics Local anesthetics Narcotic and non-narcotic analgesics and their antidotes Drugs used for different common disease example, Bronchial asthma, hypertension, TB, CHF etc. Drugs Sedatives, hypnotics, barbiturates, morphine Important group of drugs Various iv fluids, colloids and crystalloids Pre anesthetics medication Local anesthetic agents Spinal anesthetic agents General anesthetic

agents Demonstration and use of equipment's and drugs

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Manual in General Microbiology-Alfred E
Brown, A., & Smith, H. (2014). *Benson's Microbiological Applications, Laboratory Manual in General Microbiology, Short Version*. McGraw-Hill E Brown, A. (2001). Benson's Microbiological ApplicationsLaboratory Kowalska, E., Maliszewska, B., & Ziarno, M. (2021). Characterization of Fermented Milks After the Passaging Process of Starter Cultures. *Postępy Techniki Przetwórstwa Spożywczego*.n Parija, S. C. (2013). *Textbook of Microbiology & Immunology-E-book*. Elsevier Health Sciences.
Vala, S. (2021). Prevalence of ASO Antibodies among Suspected Patients for Streptococcal Infections at Sir Takhtsinhji Hospital, Bhavnagar. *Saudi JPathol Microbiol*, *6*(10), 386-389.

Course Title-Technical Adjuncts to surgery & Anesthesia
Course Code:MOT301

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to:

1. Learn the various diseases of CV T's & related surgeries.
2. Understand the respiratory issues & their correlated surgeries.
3. Operate perfusion machine & operational capabilities.
4. Position the patient properly during various types of surgeries.
5. Analyze advance technologies viz, laser technology & Robotic surgery etc.

Course Content

UNIT-I **15 Hours**

Laser technology Types of lasers Endoscopy; A minimal access approach Patient's record keeping preoperative, during anesthesia and post-operative. Principles and techniques of temperature monitoring. Positioning during cardio-thoracic surgical procedures. Positioning and techniques for Radial artery cannulation Central venous cannulation/pulmonary artery catheter. Femoral nartery/venous cannulation Robotic surgeries.

UNIT-II **15 Hours**

Harmonic scalpel & plasma scalpel Argon beam coagulator Radio frequency ablation Cardiovascular and Respiratory System-Techniques, equipment, procedures and instrumentsn Diseases of cardiovascular and respiratory systems. Types of perfusion machines. Techniques of Perfusion and operational capabilities. Intra-aortic Balloon pump. Cell saver techniques. Care, maintenance and working of Heart lung Machine.

UNIT - III **15 Hours**

Integumentary & minimally invasive surgeries Percutaneous insertion of catheters Requirements during intubation in a case of cervical spine fracture including fiber- optic laryngoscope, awake intubation, LMA family especially ILMA. Anesthetic and surgical requirements during aneurysm surgery.

UNIT – IV **15 Hours**

Monitoring Techniques and Equipment: Cardiac monitors blood pressure and ECG monitoring. Respiratory monitors, respiratory rate, Spirometers, SpO2, and EtCO2. Temperature monitors. TEE and echocardiograph machine Non- invasive cardiac output machine Positioning- During various neurosurgical procedures

including sitting, prone, lateral and position for trans-sphenoidal hypo-hysterectomy. Fixation of head during various neurosurgical procedures. Prone and Knee chest position for spine surgery.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Manual in General Microbiology-Alfred E Brown.

E Brown, A. (2001). Benson's Microbiological Applications Laboratoryn Kowalska, E., Maliszewska, B., & Ziarno, M. (2021). Characterization of Fermented Milks After the Passaging Process of Starter Cultures. *Postępy* Elsevier Health Sciences

Techniki Przetwórstwa Spożywczego. Parija, S. C. (2013). *Textbook of Microbiology & Immunology-E-book*. Vala, S. (2021). Prevalence of ASO Antibodies among Suspected Patients for Streptococcal Infections at Sir Takhtsinhji Hospital, Bhavnagar. *Saudi J*

Pathol Microbiol, 6(10), 386-389. Brown, A., & Smith, H. (2014). *Benson's Microbiological Applications, Laboratory Manual in General Microbiology, Short Version*. McGraw-Hill Education.

Course Title-Hospital management, General principles of Hospital practice & patient care
Course Code: MOT302

L	T	P	Cr
4	0	0	4

Total Hours: 60

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand how to manage the accident & emergency patients for a definite training period.
2. Understand ethical issues in health care
3. Introduce the wide range of ethical issues in health care.
4. Develop capacity to rationally justify their decision.
5. Manage an emergency including moving a patient

Course Contents

UNIT–I **15 Hours**

Operating hazardous compound Chemical solvent poisons isotopes, explosives and biological strains Pathological clinics Ethics of the pathological clinics Organization of a pathology lab under board of quality control Personality development and patient relationship Pathology report writing Computer applications in pathological clinics Accountancy in clinical pathology Hospital management Operation ethics Social ethics Proper handling of instruments

UNIT - II **15 Hours**

Lab safety, personal management, record keeping, data analysis, applications of computer in lab, work load analysis Finance: budgeting, operational expenses, cost accounting, justification of budget. Principles, application and maintenance of auto analyzers, blood gas analyzers, electrolyte analyzers, chemi luminescence

UNIT III **15 Hours**

Suggestive number of teaching hours 100 including tutorial and demonstration. This section is intended to emphasis to the student technologist the importance of patient welfare. Many of the points included in this section may be considered during the teaching of other subjects also but it is strongly urged specific teaching and as much practical demonstrating and instruction as possible should be given in this section.Modern hospital treatment is based on team work, it is essential that the student should appreciate the technologist role and that the importance of cooperation with wards and other departments.

UNIT – IV **15 Hours**

The student should be attached to wards or the accident and emergency department for a definite training period, the length of time being suited to the individual hospital. Hospital procedure: hospital staffing and organization records relating to patients and departmental

statistic professional attitude of the technologist to patient and other members of the staff. Medico legal aspects accidents in the department appointment organization, minimizing waiting time out patient and follow up clinics, stock taking and stock keeping.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. Journal of Cardiothoracic and Vascular Anesthesia, 34(1), 12-19. Kaplan, J. A. (2016). Kaplan's Cardiac Anesthesia E-Book: In Cardiac and.Noncardiac Surgery. Elsevier Health Sciences. Pillai, S. A. (2013). Surgeons & Anesthesia. JP Medical Ltd.

Course Title- Safety Measures for Operating Room Personnel

Course Code:MOT303

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand the use of diathermy and apply the necessary precautions in its use.
2. Communicate with patients having a local anaesthesia.
3. Discuss the measures taken to ensure patient safety and follow these procedures.
4. Explain the principles of draping prior to surgery
5. Explain the procedures to minimize the risk of infections.

Course Contents

UNIT-I **10 Hours**

Safety Measures for Operating Room Personnel. Orientation, Surgery Department In-Service Education,

UNIT-II **10 Hours**

Body Mechanics/Ergonomic Safety .Fatigue Factors

UNIT-III **10 Hours**

Radiation Safety, Infection Control and Prevention. Latex Allergy Precautions.

UNIT- IV **15 Hours**

Chemical Waste Hazards. Noxious Smoke Hazards, Fire Hazards

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd.

Morgan, G. E., Mikhail, M. S.,&Murray,M.J.(2002). *Clinical anesthesiology* (No. RD 81. M67 2002). Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences.

Semester: 3rd

Course Title- Protection of Patient in Surgery/ Patient Safety

Course Code:MOT304

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand and maintain the concept of the sterile field.
2. Describe the different types of suture materials and their use.
3. Deal with the collection, labelling and dispatch of specimens.
4. Describe how blood loss is monitored and estimated in theatre.
5. Participate in the duties of a "scrub" nurse in theatre.

Course Contents

UNIT-I **10 Hours**

Patient Safety, Admission Procedure Procedure for Safely Transferring the Patient to the Operating Table, Positioning/Surgical Positions Surgical Positions Drawings,

UNIT-II **10 Hours**

Medication Practices and Guidelines to Avoid Medication Errors, Allergies, Environmental Controls.

UNIT-III **10 Hours**

Electro surgery. Counting Procedures. Sterilization Modalities

UNIT-IV **15 Hours**

Emergency and Disaster Considerations. Legal Rights .
Legal Records. Death in the OR .

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Ning, T. Z., Kin, W. W., Mustafa, S., Ahmed, A., Noordin, R.,

Cheong, T. G. ... & Huat, L. B. (2012). Detection of Entamoeba histolytica in experimentally induced amoebic liver abscess: comparison of three staining methods. *Asian Pacific Journal of Tropical Biomedicine*, *2*(1), 61-65. Culling, C. F. A., Allison, R. T., & Barr, W. T. (2014). *Cellular pathology technique*. Elsevier. Mohan, H. (2015). *Textbook of pathology* (pp. 474-482). New Delhi: Jaypee Brothers Medical Publishers.
Mohan, H. (2012). *Pathology practical book*. JP Medical Ltd.

Course Title- Bio-medical waste Management

Course Code:MOT305

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On completion of this course, the successful students will be able to

1. Learn the concept of Bio-medical Waste management
2. Understand the planning and objective of BMW
3. Learn the technologies used for the treatment of BMW
4. Prepare planning and objectives for BMW Management
5. Analyze the risk factors and legal aspects related to BMW Management

Course Contents

UNIT-I **12 Hours**

Present Scenario of Bio-medical waste – Concepts and Perceptions, Waste Generation, Segregation, Disposal

UNIT-II **11 Hours**

Planning and Objectives of BMW Management -Survey, Policies and Perspectives of BMW Management

UNIT-III **11 Hours**

Management of Bio-medical Waste- Record Keeping, Technologies for Treatment for BMW, Criteria for selecting appropriate Medical Waste Technologies

UNIT-IV **11 Hours**

Legal Aspects and Environment Concern -Training, Occupational Safety and Health Issues, Implementation of Action Plan, Approaches to Common Regional facility

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings:

Ali, S. S., Balaji, P. A., Karthik, S. K., & Jayaprakash, G. (2011). PRACTICES OF BIOMEDICAL WASTE MANAGEMENT AT A MULTI SPECIALITY HOSPITAL. JOURNAL OF KARNATAKA MEDICO–LEGAL
SOCIETY [ISSN: 0972–0839]. Sharma, M. (2002). Hospital waste management and its monitoring. Jaypee brothers publishers.

Course Title-Innovation & Entrepreneurship

Course Code:MOT306

L	T	P	Cr
3	0	0	3

Total Hours: 45

Course Learning Outcomes: On completion of this course, the successful students will be able to

1. Learn Entrepreneur and Entrepreneurship
2. Understand project finding and new enterprises.
3. Explore various opportunities in Small business
4. Analyze legal requirement for setting up a business unit
5. List various problems of Entrepreneurs.

Course Contents

UNIT-I **12 Hours**

Entrepreneur and entrepreneurship: Definition, traits and features, classification; Women entrepreneurs, Role of entrepreneur in India. Create an awareness about EDP. Entrepreneurial development program concept. Need for training, phases of EDP, curriculum & contents of Training Program.

UNIT-II **11 Hours**

General Awareness about project financing and new enterprises: Promotion of a venture, opportunity. Analysis Project identification and selection, External environmental analysis economic, social, technological an competitive factors. Legal requirements for establishment of a new unit,loans. Over rum finance, Bridge finance; Venture capital. Providing finance in approaching financing institutions for loans.

UNIT-III **11 Hours**

To identify different Discuss opportunities in small business: Small business Enterprise - Identifying the Business opportunity in various sectors - formalities for setting up of a small business enterprise - Institutions supporting small business enterprise - EDII (Entrepreneurship Development Institute of India), SLDO (Small Industries Development Organization NSIC (National small Industries Corporation Ltd. (CNSIC) . NIESBUD (National Institute for Entrepreneurship and small Business Development) Sickness in small business enterprise causes and remedies.

UNIT-IV **11 Hours**

To understand about a project report relating to a small business Project formulation - Meaning of a project report significance contents formulation planning commissions guidelines for formulating a project report - specimen of a project report, problems of entrepreneurs ,case studies of entrepreneurs.

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Cameron, F., & Neilson, B. (Eds.). (2015). *Climate change and museumfutures*. London: Routledge.· Cont, M. T. SYLLABUS OF EIGHTH SEMESTER. Drucker, P. F. (2020). *The essential drucker*. Routledge DISTRICT, D., & NADU, T. MBA. McClelland, D. C., &Winter, D. G. (1969). Motivatingeconomicachievement.

Course Title- Hospital Management, General principles ofHospital practice & patient care (Practical)

Course Code: MOT307

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Understand how to manage the accident & emergency patients.
2. Understand ethical issues in health care
3. Introduce the wide range of ethical issues in health care.
4. Develop capacity to rationally justify their decision.
5. Manage an emergency (including moving a patient)

Course contents

List of Experiment's/ Practical's

Arrangement of anesthesia machine: Understanding of anesthesia cylinders, color coding, arranging different size of cylinders, understanding of storage of cylinders Understanding of diameter index safety system Medical gas pipeline systemOxygen

concentrators Anaesthesia machine safety system Sterilization of anesthesia machine Arrangement of anesthesia breathing circuits example, Magills's, Ayer's circuit etc. Filling of soda lime canisters of closed circuit Understanding administration of gas laws:Simple oxygen administration devices Method of controlling gas flow Understanding flowmeters Airway gadgets: Understanding of the following and their uses in anesthesia practice Oropharyngeal airways Nasopharyngeal airways ET Tubes Laryngeal mask airway Monitoring of patients: Using noninvasive monitors Invasive monitors, above monitoring has to be done in intra operative and postoperative periodAssisting anesthesiologist during blood transfusion Assisting in transfusion of fluids example, RL, d5% etc. Assisting during performing general anesthesia Attending rounds with anesthesiologist during preoperative, and post-operative rounds attending pain clinic

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

1. Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19.
2. Kaplan, J. A. (2016). *Kaplan's Cardiac Anesthesia E-Book: In Cardiac and Noncardiac Surgery*. Elsevier Health Sciences.
3. Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd.

Subject Code: Clinical Visit

Sub Code: MOTT308P

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Do practice of different types of surgeries.
2. Work with surgeons and OT technicians.
3. Gain the knowledge about different surgeries
4. Gain the knowledge about different types of anesthesia and patient positions.

Course contents

Students can visit various Clinics/Hospitals of Anesthesia Department to become familiar with the growing number of increasingly Advanced Theatre & Anesthesia modalities and to learn the indications for commonly requested Surgical Procedures and therapeutic procedures performed in Anesthesia Department. Students can also learn to recognize various Surgical Procedures as they appear on a variety of Anesthesia & Theatre modalities.

Course Title- Technical Adjuncts to Surgery & Anesthesia (Practical)
Course Code: MOT309

L	T	P	Cr
0	0	4	2

Total Hours: 30

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Do practice of surgeries.
2. Know about the differences between different organs and drugs which are used during organ surgery.
3. Use special techniques and machines according to requirement.
4. Understand that neurosurgical department has its own different instruments and drugs
5. Realize that cardiology department has its own different devices, drugs and machines.

Course contents

List of Experiment's/ Practical's

Surgical management of endoscopies, laryngectomy with RND and cochlear implant. Management of PPV and perforating eye injury. Care and maintenance of Para-surgical equipment (Cautery, OT Lights, OT Table)

Transaction Mode-

Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Kaplan, J. A. (2018). *Essentials of Cardiac Anesthesia for Noncardiac Surgery E-Book: A Companion to Kaplan's Cardiac Anesthesia*. Elsevier Health Sciences. Pillai, S. A. (2013). *Surgeons & Anesthesia*. JP Medical Ltd. Hessel II, E. A., & Egan, T. D. (2020). Michael K. Cahalan: In Celebration of His Life and Contributions to Cardiac Anesthesiology. *Journal of Cardiothoracic and Vascular Anesthesia*, *34*(1), 12-19.

Course Title- Health, Safety & Environment

Course Code: MOTT310V

L	T	P	Cr
0	0	2	1

Total Hours: 15

Course Learning Outcomes: On successful completion of this course, the students will be able to

1. Know the accident prone areas and adopt methods for reducing accidents following safety precautions.
2. Identify marking and evaluate performance of explosives.
3. Determine and use PPE, care and maintain the same
4. Analyze the construction site for visit, plan and prepare the report.
5. Describe the effect of radiation and how to control the radiation on human body

Course Content

UNIT-I **03 Hours**

Introduction to Safety equipment's and their uses. Knowledge of First AID, Road safety, Operation of electrical mains. Knowledge of general safety, occupational health and hygiene. Accident: definition, classification, need for the analysis of accidents. Safety slogans principles of accidents.

UNIT-II **03 Hours**

Personal protective equipment: Need for personal protection equipment, selection, use, care & maintenance of respiratory and non-respiratory personal protective equipment,.
Introduction to radiation hazards. Its types and effects on human body. Measurement and detection of radiation intensity.

UNIT-III **05 Hours**

Scope and importance: need for public awareness about our environment. Economic and social security; environment impact of transportation. Global warming and greenhouse effect, Urbanization, acid rain. Environmental pollution – causes, effects and control measures of air pollution, water pollution and soil pollution.

UNIT-IV **04 Hours**

Health cleanness, disposal of waste, ventilation & temperatures, dust &fumes, drinking water, lighting, latrines & urinals.
Protection against gases and fumes.

Transaction Mode-
Video based teaching, collaborative teaching, case based teaching, question

Suggested Readings

Clark, N., Monioudis, H., Goldberg, M., & Jones, W. (1997). An Assessment of Metal Maintenance Workers' Solvent Exposures. *The Center to Protect Workers' Rights, Washington, DC.*Manuele, F. A. (2003). *On the practice of safety*. John Wiley & Sons. Vincoli, J. W. (1994). *Basic guide to accident investigation and loss control* (Vol. 1). John Wiley & Sons.

Course Title- Dissertation

Course Code: MOT401

L	T	P	Cr
0	0	0	20

Course Contents:

Students have to carry out a research project (on any topic related to laboratory) under the supervision of a faculty. The project report has to be prepared on the basis of the research work carried out. The assessment is done on the basis of the work done and the presentation and viva.