Ordinance No…..B

ORDINANCE RELATING TO DIPLOMA IN ANAESTHESIA & OPERATION THEATRE TECHNOLOGY (D.AOTT) PROGRAM CURRICULUM AND SYLLABUS

1. This ordinance may be called the "**Ordinance relating to Diploma in Anaesthesia & Operation Theatre Technology (DAOTT) Curriculum and Syllabus**". This ordinance has been drafted in accordance with **National Commission for Allied and Healthcare Professions (NCAHP)** guidelines; all future updates issued by the NCAHP will be strictly implemented.
2. It shall come into force with academic session 2026-27.

Learning Objectives: At the completion of this course, the student should -

1. Be able to understand the basics of -Ethics, Discipline, Layout, and Equipment in OT.
2. Be able to understand the basics of Anesthesia related modalities and procedures.
3. Be able to position the patients in different operating procedures and for anesthesia procedures in operation theatres and intensive care units.
4. Have knowledge of basic principles of IV line, fluids, transfusion and C.P.R.
5. Demonstrate knowledge and skills related to routine care and endoscopes, Anesthetic Machines, Monitors etc.
6. Demonstrate knowledge and skilled related to Sterilization of OT Room, Instruments, Endoscopes, CSSD procedures, work flow and management.
7. Demonstrate knowledge and skilled related to Disposal of waste.
8. Be able to keep records and stock maintenance of Anaesthesia drugs including narcotics and emergency drugs.
9. Be able to collect data and compute information.

Expectation from the future diploma holders:

1. The coursework is designed to train students to work in conjunction within the OT team including surgeon, anaesthesiologist, nurses and other members.
2. The student will be skilled in surgical preparation, supporting the team in peri operative procedure and also ensure patient support.
3. Employment opportunities can be found in hospitals in both private and public sectors as well as in independent trauma centres.
4. Diploma holder is encouraged to pursue further qualification to attain senior position in the professional field, also to keep abreast with the advance and new technology; the professional should opt for continuous professional education credits offered by national and international institutes.

Diploma in Anaesthesia & Operation Theatre Technology (D. AOTT)
Ist SEMESTER

Introduction to Healthcare Delivery System in India

Theory	Subject Code: DAOTT-001
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Learning Objectives

Understanding the key features of the Indian healthcare delivery system, comparing it to other countries, evaluating community participation in healthcare, understanding the role of the private sector in healthcare, familiarizing oneself with the National Health Mission and National Health Policy, identifying issues and challenges, and exploring the background, objectives, and operations of national health programmes are the learning objectives of this course. The course also covers the AYUSH medical system, India's past, present, and future health scenarios, demography, vital statistics, epidemiological concepts, disease transmission, and disease monitoring in infectious and non-communicable diseases.

Course Outcome

The course outcomes include describing the primary, secondary, and tertiary healthcare delivery systems in India, evaluating community participation, comparing and contrasting healthcare systems in developed countries, analyzing the role of the private sector in healthcare provision, understanding the objectives, action plans, and achievements of national health programmes, analyzing the National Health Policy and its implications for healthcare delivery, identifying and annotating national health policies, and identifying and annotating national health policies.

Unit	Topic	Hours
I	1. Introduction to healthcare delivery system a. Healthcare delivery system in India at primary, secondary and tertiary care b. Community participation in healthcare delivery system c. Health system in developed countries. d. Private Sector e. National Health Mission f. National Health Policy g. Issues in Health Care Delivery System in India	**5**
II	National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.	**5**
III	1. Introduction to AYUSH system of medicine. a. Introduction to Ayurveda. b. Yoga and Naturopathy c. Unani d. Siddha	**5**

	e. Homeopathy f. Need for integration of various system of medicine	
IV	1. Health scenario of India- past, present and future. 2. Demography & Vital Statistics- a. Demography – its concept b. Vital events of life & its impact on demography c. Significance and recording of vital statistics d. Census & its impact on health policy	**5**
V	1. Epidemiology a. Principles of Epidemiology b. Natural History of disease c. Methods of Epidemiological studies d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.	**10**
	Total	**30**

Medical Terminology and Record keeping (including anatomical terms)

Theory	Subject Code: DAOTT-002
Total Marks for Evaluation-50	No. of Contact Hours- 30, Credits:2

Learning Objective:

This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests.

Unit	**Topic**	**Hours**
I	Derivation of medical terms.	**5**
II	Define word roots, prefixes, and suffixes.	**4**
III	Conventions for combined morphemes and the formation of plurals.	**3**
IV	Basic medical terms.	**3**
V	Form medical terms utilizing roots, suffixes, prefixes, and combining roots.	**3**

VI	Interpret basic medical abbreviations/symbols.	**3**
VII	Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.	**3**
VIII	Interpret medical orders/reports.	**3**
IX	Data entry and management on electronic health record system.	**3**
	Total	**30**

Anatomy

Theory	Subject Code: DAOTT-003
Total Marks for Evaluation-50	No. of Contact Hours- 60, Credits: 3

Learning Objective:

The course aims to teach basic anatomical terminology, identify bones and features of the limbs, thorax, lungs, and heart, comprehend the muscular system, investigate excretory, digestive, and nervous systems, comprehend the gastrointestinal tract, and comprehend the structure and function of the central nervous system. Students will also learn surface anatomy and radiological interpretation abilities. Understanding the relationship between the muscular system and specific actions, describing the excretory and digestive systems, explaining the structure and function of the central nervous system, and applying surface anatomy and radiology interpretation techniques are among the course outcomes.

Unit	**Topic**	**Hours**
I	a) Introduction to Anatomy: Basic Anatomical terminology • Osteology- ➢ Upper limb – clavicle, scapula, humerus, radius, ulna, ➢ Lower limb - femur, hipbone, sacrum, tibia, fibula &Vertebral column	**15**
II	Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum &thoracic vertebrae Lungs – Trachea, bronchial tree.	**10**
III	Heart – Surface anatomy of heart, chambers of the heart, valves of the heart, and major blood vessels of heart, pericardium, and coronary arteries. Skeleton-muscular system – Muscles of thorax, muscles of upper limb (arm & forearm) Flexor and extensor group of muscles (origin,	**10**

	insertion, action)	
IV	Excretory system – Kidneys, ureters, bladder.	**5**
V	**Digestive System:** Structure and function of the digestive system Oral cavity and digestive enzymes Anatomy and function of the gastrointestinal tract Absorption and digestion of nutrients Common digestive disorders	**10**
VI	**Nervous System:** Structure and function of neurons Organization of the central nervous system (brain and spinal cord) Peripheral nervous system and its divisions Cranial nerves and spinal nerves Basic principles of neurophysiology	**10**
	Total	**60**

Anatomy

Practical	Subject Code: DAOTT-003
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits: 2

Practical in Anatomy

Mannequins to be provided for Teaching Osteology – Bones identification (right and left side) and prominent features and muscle attachment of the bone, clavicle, scapula, radius, ulna, humerus, femur, hip bone, sacrum, tibia, fibula. Surface Anatomy, Organ Anatomy (Heart, Lungs, Stomach, Liver, Spleen, Kidney, Urinary tract, Testis, Female reproductive organs), Radiology, and X-ray Chest PA view.

Physiology

Theory	Subject Code: DAOTT-004
Total Marks for Evaluation-50	No. of Contact Hours-60, Credits:3

Learning Objective:

Learn about cellular physiological processes, blood composition and functions, cardiovascular, respiratory, excretory, reproductive, central nervous, endocrine, gastrointestinal tract, vital signs, electrocardiogram interpretation, and respiratory examinations. Learn how to take vital signs, interpret electrocardiograms, and do respiratory tests. Learn about the activities of the central

nervous system and the endocrine system, as well as the physiological architecture of the gastrointestinal tract.

Unit	Topic	Hours
I	**The Cell:** Acid base balance and disturbances of acid base balances (Alkalosis, Acidosis) **The Blood:** a) Composition of Blood, functions of the blood and plasma proteins, classification and protein, Blood Cascade, Bleeding and Clotting time. b) Pathological and Physiological variation of the RBC. c) Function of Haemoglobin. d) Erythrocyte Sedimentation Rate. e) Detailed description about WBC-Total count (TC), Differential count (DC) and functions. f) Platelets – formation and normal level and functions. g) Blood groups and Rh factor.	8
II	**Cardio-Vascular System:** a) Physiology of the heart. b) Heart sounds. c) Cardiac cycle, Cardiac output. d) Auscultation e) Arterial pressures, blood pressure. f) Hypertension. g) Electro cardiogram (ECG.)	6
III	**Respiratory system:** a) Respiratory ventilation b) Oxygenation c) Definitions and Normal values of Lung volumes and Lung capacities	5
IV	**Excretory system:** a) Renal System: b) Urine volume and specific gravity measurements c) Renal function tests, including assessment of glomerular filtration rate (GFR) d) Analysis of renal tubular function e) Study of renal handling of electrolytes and water f) Assessment of acid-base balance and renal regulation of pH.	6
V	**Reproductive system:** a) Formation of semen and spermatogenesis. b) Brief account of menstrual cycle.	4
VI	**Central Nervous system:** a) Functions of CSF.	8

VII	**Endocrine system:** a) Functions of the pituitary, thyroid, parathyroid, adrenal, and pancreatic Hormones.	**8**
VIII	**Digestive system:** a) Physiological Anatomy of the GIT. b) Food Digestion in the mouth, stomach, intestine c) Absorption of foods d) Role of bile in the digestion.	**8**
IX	**Special Senses:** • Vision testing and assessment of visual acuity • Auditory tests and assessment of hearing function • Study of taste and olfaction perception • Analysis of vestibular system and balance control • Assessment of proprioception and kinesthetic sense	**8**
	Total	**60**

Physiology

Practical	Subject Code: DAOTT-004
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Practical in Physiology

a) Determination of Blood Groups.
b) Vital signs measurement: Students can learn how to measure and interpret vital signs, including blood pressure, heart rate, respiratory rate, and body temperature. This may involve using instruments such as sphygmomanometers, stethoscopes, and thermometers.
c) Electrocardiography (ECG): Students can practice performing and interpreting electrocardiograms to study the electrical activity of the heart. This may involve placing electrodes on the body to record the ECG waveform and analyzing abnormalities.
d) Spirometry: Students can learn how to perform spirometry tests to measure lung function. This involves using a spirometer to assess parameters such as tidal volume, vital capacity, forced expiratory volume, and peak expiratory flow rate.
e) Examination of Respiratory system to count respiratory rate and measure inspiration and respiration.

Healthcare Quality & Patient Safety

Theory	Subject Code: DAOTT-005
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:4

Learning Objectives

Learn essential life support and emergency care procedures, such as vital sign and primary

assessment, infection prevention and control principles, and recognizing prevalent healthcare-associated infections. Identify and implement infection prevention and control methods, as well as enhance environmental safety through biomedical waste management. Proficiency in BLS procedures, accurate vital sign assessment, infection prevention and control, and environmental safety through biomedical waste management practices are among the course outcomes.

Quality assurance and management, antibiotic resistance, disaster readiness, and disaster preparedness are among the learning objectives. Understanding the core concepts of care quality, approaches to improvement, standards, and instruments for improving healthcare procedures are all part of quality assurance. Antibiotic resistance is an increasing concern in healthcare settings, with a variety of forms, trends, and tactics required to effectively combat it. Principles and strategies for antimicrobial stewardship are also discussed. Understanding psychological effect management, resource management, readiness and risk reduction concepts, critical response functions, institutional procedures, and the importance of information management in coordinating and communicating during catastrophes are all part of disaster preparedness and management.

The course covers four key areas of healthcare management: quality assurance and management, antibiotic resistance, disaster preparedness and management. Students will learn to apply quality of care concepts, implement quality improvement approaches, adhere to standards, and use tools to identify areas for improvement. They will also understand the significance of NABH guidelines and their role in promoting quality and patient safety in healthcare organizations.

Antibiotic resistance is addressed by understanding the historical context, factors contributing to its spread, different types of resistance, monitoring trends, advocating for actions and policies, and implementing antimicrobial stewardship practices. Disaster preparedness and management involves applying emergency management principles, managing the psychological impact, managing resources efficiently, developing preparedness plans, coordinating key response functions, contributing to recovery, rehabilitation, and reconstruction efforts, and utilizing information management systems for effective communication and coordination during disasters.

Unit	Topic	Hours
I	**Basics of emergency care and life support skills.** Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows: a) Vital signs and primary assessment b) Basic emergency care – first aid and triage c) Ventilations including use of bag-valve-masks (BVMs) d) Choking, rescue breathing methods e) One- and Two-rescuer CPR f) Using an AED (Automated external defibrillator). g) Managing an emergency including moving a patient	**15**
II	**Infection prevention and control.** The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include – a) Evidence-based infection control principles and practices (such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)), b) Prevention & control of common healthcare associated infections, c) Components of an effective infection control program, and d) Guidelines (NABH and JCI) for Hospital Infection Control	**10**

III	**Bio medical waste management and environmental safety.** The aim of this section will be to help prevent harm to workers, property, the environment, and the public. Topics to be covered under the subject are as follows: a) Definition of Biomedical Waste b) Waste minimization c) BMW – Segregation, collection, transportation, treatment and disposal (including color coding) d) Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste e) BMW Management & methods of disinfection f) Modern technology for handling BMW g) Use of Personal protective equipment (PPE) h) Monitoring & controlling of cross infection (Protective devices)	**8**
IV	**Quality assurance and management.** The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system. a) Concepts of Quality of Care b) Quality Improvement Approaches c) Standards and Norms d) Quality Improvement Tools e) Introduction to NABH guidelines	**12**
	Total	**45**

Healthcare Quality & Patient Safety Practical

Practical	Subject Code: DAOTT-005
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Medical Law and Ethics, Professionalism & Values, Principles of Management

Theory	Subject Code: DAOTT-006
Total Marks for Evaluation-50	No. of Contact Hours- 45, Credits:2

Learning Objectives

This course delves into the legal and ethical issues that arise in medical practice. Medical ethics, confidentiality, informed consent, euthanasia, organ transplantation, medico-legal implications of medical data, and professional indemnity insurance are among the topics covered.

The professionalism module emphasizes the significance of professionalism in the healthcare system and its impact on the patient environment. It addresses professional values like integrity, objectivity, competence, confidentiality, ethical or moral values, attitude and behavior, code of conduct, professional accountability, responsibility, misconduct, differences between professions, team efforts, and cultural issues in the healthcare setting. The programme emphasizes the value of collaboration and adhering to ethical norms in the healthcare system.

This course focuses on management principles and functions in a variety of situations, including healthcare organizations. Planning, organizing, directing, controlling, motivation, communication, leadership, coordination, human management, financial management, and healthcare technology management are among the themes covered.

Unit	Topic	Hours
I	**Medical law and ethics** Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society‟s legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.[26] Medical ethics has developed into a well based discipline which acts as a “bridge” between theoretical bioethics and the bedside. The goal is “to improve the quality of patient	**15**

	care by identifying, behavior, and attempting to resolve the ethical problems that arise in practice" Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Few of the important and relevant topics that need to focus on are as follows: a) Medical ethics – Definition – Goal – Scope b) Introduction to Code of conduct c) Basic principles of medical ethics – Confidentiality d) Malpractice and negligence – Rational and irrational drug therapy e) Autonomy and informed consent – Right of patients f) Care of the terminally ill- Euthanasia g) Organ transplantation h) Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC – ownership of medical records – Confidentiality Privilege communication – Release of medical information – Unauthorized disclosure – retention of medical records – other various aspects. i) Professional Indemnity insurance policy j) Development of standardized protocol to avoid near miss or sentinel events. k) Obtaining an informed consent.	
II	**Professionalism and values.** The module on professionalism will deliver the concept of what it means to be a professional and how a specialized profession is different from a usual vocation. It also explains how relevant is professionalism in terms of healthcare system and how it affects the overall patient environment. Professional ethics act (2002) • Professional values- Integrity, Objectivity,	**10**

	Professional competence and due • Personal values- ethical or moral values • Attitude and behavior- professional behavior, treating people equally. • Code of conduct, professional accountability and responsibility, misconduct • Differences between professions and importance of team efforts • Cultural issues in the healthcare environment	
III	**Principals of Management** a) Development of Management: Definitions of Management – Contributions of F.W. Taylor, Henry Fayol, and others. b) Functions of Management: Planning – Organizing – Directing – Controlling Planning: Types of planning – Short–term and long plans – Corporate or Strategic Planning – Planning premises – Polices – Characteristics and sources – principles of policy making – Strategies as different from policies – Procedures and methods– Limitations of planning. c) Organizing: Importance of organization – Hierarchy – Scalar chain – Organization relationship – Line relationship – Staff relationship – Line staff relationship – Functional relationship – Committee organization – Management committees – Depart mentation. d) Motivation: Motivation theories – McGregor‟s theory X and theory Y – Maslow‟s and Herzberg‟s theory – Porter and Lawler model of complex view of motivation– Other theories – Diagnostic signs of motivational problems – Motivational Techniques. e) Communication: Types of communication – Barriers of effective communication– Techniques for improved communication. f) Directing: Principles relating to Direction process – Principles and theories of leadership – Leadership control process – Corrective measures– Strategic control points – Budgetary control – Types of budgets. g) Co-ordination: Co-ordination and co-operation – Principles of co-ordination – Techniques of co-	**10**

	ordination charts and records – Standard procedure instructions. h) Acts: CPA Act (1986 & 2019), BMW Act (1998,2016), Drugs Act(1940), IMC Act(1956), Patient Privacy – IT Rules, 2011 i) Medical Malpractice sections: - 304A, 337 and IPC 1860.	
IV	**Personnel management:** Objective of Personnel Management – Role of Personnel Manager in an organization – Staffing and work distribution techniques – Job analysis and description – Recruitment and selection processes – Orientation and training – Coaching and counseling – disciplining – Complaints and grievances – Termination of employees – Performance appraisal – Health and safety of employees – Consumer Protection Act as applicable to health care services.	**5**
V	**Financial management:** Definition of financial Management – Profit maximization – Return maximization– wealth maximization – Short term Financing – Intermediate Financing – Long term Financing – leasing as a source of Finance – cash and Security Management – Inventory Management – Dividend policies – Valuations of Shares – Financial Management in a hospital – Third party payments on behalf of patients. Insurance – health schemes and policies.	**5**
	Total	**45**

Medical Law and Ethics, Professionalism & Values, Principles of Management Practical

Practical	Subject Code: DAOTT-006
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

IInd SEMESTER

Basic Computers and Information Science, Communication, and soft skills

Theory	Subject Code: DAOTT-007
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:2

Learning Objectives

This course exposes students to computer technology, including topics such as computer organization, operating systems, software applications (MS Word, Excel, and Power Point), computer networks, internet applications, and computer use in healthcare settings. It also includes fundamental language and communication skills such as grammar, business communication, writing techniques, and oral presentations

Unit	Topic	Hours
I	**Basic computers and information science** • Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages. • Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems). • Processor and memory: The Central Processing Unit (CPU), main memory. • Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.	10
II	• Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.). • Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file,	10

	creating and editing of table, mail merge. • Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs. • Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.	
III	• Introduction of Operating System: introduction, operating system concepts, types of operating system. • Computer networks: introduction, types of networks (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network. • Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet. • Application of Computers in clinical settings.	**5**
IV	**Communication and soft skills** • Basic Language Skills: Grammar and Usage. • Business Communication Skills. With focus on speaking Conversations, discussions, dialogues, short presentations, pronunciation. • Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization	**10**
V	• Basic concepts & principles of good communication • Special characteristics of health communication • Types & process of communication • Barriers of communication & how to overcome	**10**
VI		
	Total	**45**

Basic Computers and Information Science, Communication, and soft skills Practical

Practical	Subject Code: DAOTT-007
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Practical on fundamentals of computers

- Learning to use MS office: MS word, MS PowerPoint, MS Excel.
- To install different software.
- Data entry efficiency

Practical Topics:

- This would involve hands-on training in computer systems and software applications. This includes learning about computer hardware components and their functions, input and output devices, processor and memory management, and storage devices.
- Practical sessions can be conducted on operating systems such as MS Windows, with a focus on navigating the desktop, managing files and folders, and working with windows and shortcuts.
- Students should also gain proficiency in using MS Word for document creation and formatting, MS Excel for data entry and manipulation, and MS PowerPoint for creating and delivering presentations.
- Additionally, practical exercises on computer networks and internet applications, including email, file transfer, and web browsing, can be provided to enhance their understanding of computer usage in clinical settings.

Practical in Communication & Soft Skills

- In terms of communication and soft skills, practical topics should aim to develop effective communication abilities for interacting with patients and healthcare professionals.
- This can involve exercises in grammar and language skills, emphasizing business communication and spoken communication through conversations, discussions, and short presentations.
- Practical sessions on various writing formats such as letters, emails, reports, and case studies should be included, focusing on proper organization and clarity.
- Students should be taught the principles of good communication, including the special characteristics of health communication, and strategies for overcoming communication barriers. Role-playing scenarios and simulated patient interactions can also be incorporated to enhance their communication skills in a healthcare context.

Lab Sciences

Theory	Subject Code: DAOTT-008
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:3

Unit	Topic	Hours
I	**Biochemistry** • Vitamins & Minerals: Fat soluble vitamins (A, D, E, K) – Water soluble vitamins – B- complex vitamins- principal elements (Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and sulphur)- Trace elements – Calorific value of foods – Basal metabolic rate (BMR) – respiratory quotient (RQ). • Acids and bases: Definition, pH, Henderson – Hassel Balch equation, Buffers, Indicators, Normality, Molarity, Molality.	**15**
II	**Haematology.** • Haemoglobin, blood cell counts, differential count. • Anaemia, polycythaemia • Thrombocytopenia • Coagulation parameters- BT, CT, PT, INR, APTT • Coagulation disorders. • Blood transfusion-hazards and complications	**10**
III	**Clinical Microbiology** • Morphology Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria. • Growth and nutrition. Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology. • Culture media Use of culture media in diagnostic	**20**

	bacteriology, antimicrobial sensitivity test. • Sterilization and Disinfection: Principles and use of equipment of sterilization namely hot air oven, autoclave, and serum inspissator, pasteurization, antiseptic and disinfectants. • Immunology. • Immunity, vaccines, types of vaccine and immunization schedule, principles and interpretation of common serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (excluding technical details). **Systematic Bacteriology:** • Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (excluding classification, antigenic structure and pathogenicity), • Staphylococci, Streptococci, Pneumococci, Gonococci, Meningococci, C. diphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, E. coli, Klebsiella, Proteus, Vibrio cholerae, Pseudomonas & Spirochetes. **Parasitology:** • Morphology, life cycle, laboratory diagnosis of following parasites: E. histolytica, Plasmodium, tape worms, Intestinal nematodes. **Mycology:** • Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi **Virology.** • General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.	

	Total	**45**

Lab Sciences Practical

Practical	Subject Code: DAOTT-008
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Basic Concepts in Pharmacology

Theory	Subject Code: DAOTT-009
Total Marks for Evaluation-50	No. of Contact Hours-60, Credits:3

Learning Objectives

This course provides an overview to pharmacology. It discusses several medication classes, their modes of action, indications, contraindications, adverse effects, and interactions.

Unit	Topic	Hours
I	a) Introduction to Pharmacology. b) Pharmacokinetic & Pharmacodynamics & routes of drugs administration c) NSAIDs Drugs. d) Ant sialagogues: Atropine, Glycopyrrolate.	**15**
II	Sedatives/ Anxiolytics: Diazepam, Midazolam, Phenergan, Lorazepam, Chlorpromazine and Tricolors. Narcotics: Morphine, Pethidine, Fentanyl, Pentazocine, tramadol. Antiemetic‟s: Metoclopramide, Ondansetron, Dexamethasone Induction Agent: Thiopentone, Diazepam, Midazolam, Ketamine, Propofol, Etomidate.	**15**
III	Muscle Relaxants: Depolarizing - Suxamethonium, Non depolarizing -Vecuronium, Atracurium, rocuronium. Inhalational Gases: Gases-02, N20, Air, Agents-Ether, Halothane, Isoflurane, Sevoflurane, Desflurane	**8**
IV	Reversal Agents: Neostigmi*ne,* Glycopyrrolate, Atropine, Naloxone, Flumazenil (Diazepam). Local Anesthetics: Xylocaine, Bupivacaine - Topical, Prilocaine-jelly, Emla -	**7**

	Ointment, Etidocaine. Ropivacaine.	
V	Emergency Drugs : Mode or administration, dilution, dosage and effects • Adrenaline, Atropine • Ephedrine, Mephentermine • Bicarbonate, calcium, potassium. • Inotropes: dopamine, dobutamine, amiodarone • Aminophylline, hydrocortisone, antihistaminic, • Antihypertensive –Beta-blockers, Ca-channel blockers. • Antiarrhythmic- xylocard • Vasodilators- nitroglycerin & sodium nitroprusside • Respiratory system- Bronchodilators • Renal system- Diuretics, frusemide, mannitol	**15**
	Total	**60**

Basic Concepts in Pharmacology Practical

Practical	Subject Code: DAOTT-009
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Basics of Biomedical sciences in surgery and Anaesthesia

Theory	Subject Code: DAOTT-0010
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:3

Learning Objective

This course introduces biomedical engineering principles and technology in the realms of surgery and anaesthesia. It discusses surgical and anaesthesia devices, biomedical imaging, surgical navigation and guidance systems, anaesthesia delivery and monitoring, healthcare technology management, and ethical and legal issues in biomedical engineering.

Unit	Topic	Hours
I	Introduction to Biomedical Engineering in Surgery and Anaesthesia.	**4**
II	Surgical and Anaesthesia Devices (OT Table, OT light, Infusion Pumps, TCA pumps, Video Laryngoscopes, Bronchoscopes, Diathermy, Drills, Coagulation devices like E.S.U"s, LASER, Ultrasonic devices, RF Devices and Harmonic Scalpels, 12 Lead ECG), and Physical laws behind Transducer, EtCO2 monitor, Pulse oximeter, Blood pressure monitor.	**15**
III	• Surgical Microscope. • Laparoscopic cart (including various scopes), Veress needle, Trocars and various instruments	**6**
IV	• Biomedical Imaging in Surgery and Anaesthesia. Principles and technologies of medical imaging (e.g., X-ray, computed tomography, magnetic resonance imaging) Image-guided surgical procedures and interventions Image processing and analysis techniques for surgical planning and intraoperative guidance Advances in real-time imaging and its integration into surgical and Anaesthesia workflows • Surgical Navigation and Guidance Systems. Use of imaging, tracking, and registration techniques in surgical navigation.	**8**
V	• Anaesthesia Delivery and Monitoring. Design and development of Anaesthesia monitoring devices Physiological monitoring parameters and their interpretation during Anaesthesia Advances in Anaesthesia technology, such as closed-loop Anaesthesia delivery systems.	**12**
	Total	**45**

Basics of Biomedical sciences in surgery and Anaesthesia Practical

Practical	Subject Code: DAOTT-0010
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Anaesthesia Equipment's & Devices

Theory	Subject Code: DAOTT-011
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:3

Learning Objectives

Students will be learning about the Anaesthesia equipment and devices in this module and they will learn in details about the equipment and devices including their working principles, troubleshooting etc. which is very essential for safe practices of Anaesthesia. Student will be able to manage all the equipment and devices and their general troubleshooting in day to day working.

Unit	Topic	Hours
I	1. Medical gas supply a. Compressed gas cylinders b. Color coding c. Cylinder valves; pin index. d. Gas piping system e. Recommendations for piping system f. Alarms & safety devices. g. Scavenging of waste anesthetic gases	**9**
II	2. Anesthesia machine a. Hanger and yoke system b. Cylinder pressure gauge c. Pressure regulator d. Flow meter assembly e. Vaporizers - types, hazards, maintenance, filling and draining, etc.	**9**
III	3. Breathing system a. General considerations: humidity & heat	**9**

	b. Common components - connectors, adaptors, reservoir bags. c. Capnography d. Pulse oximetry e. Methods of humidification. f. Classification of breathing system g. Mapleson system - a b c d e f h. Jackson Rees system, Bain circuit i. Non rebreathing valves - Ambu valves j. The circle system	
IV	4. Face masks & Airway laryngoscopes a. Types, sizes b. Endotracheal tubes - Types, sizes. c. Cuff system d. Fixing, removing, and inflating cuff, checking tube position, complications.	**9**
V	5. Monitoring a. Electrocardiography (ECG) b. Pulse oximetry (Sp02) c. Temperature- central and peripheral d. End tidal carbon dioxide (EtCO2) e. Anesthesia gas monitoring f. Non-invasive blood pressure (NIPB) and Invasive blood pressure (IBP) g. Central venous pressure (CVP) h. PA Pressure, LA Pressure & cardiac output i. Anesthesia depth monitor j. Neuromuscular transmission monitor	**9**
	Total	**45**

Anaesthesia Equipment's & Devices Practical

Practical	Subject Code: DAOTT-011
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

IIIrd SEMESTER

Basic Techniques of Anaesthesia

Theory	Subject Code: DAOTT-012
Total Marks for Evaluation-50	No. of Contact Hours-60, Credits:4

Learning Objectives

The learning objectives are designed to provide a thorough grasp of the significance of preoperative assessment and patient preparation in assessing Anaesthesia risks and planning appropriate care. The design, components, and performance of the anaesthesia machine, safety systems, fluid management strategies, emergency drugs, anaesthetic induction and airway management procedures, and airway devices are all covered in this course. It also discusses the principles of balanced anaesthesia, the administration of inhalation and intravenous anaesthetics, vital sign monitoring techniques, depth of anaesthesia, and oxygenation.

The training also delves into pain management and analgesia techniques such as systemic analgesics, regional anaesthesia, and patient-controlled analgesia. It also discusses anaesthetic considerations for typical general surgical operations as well as challenges in obstetric and gynaecological surgery. The course outcomes include demonstrating proficiency in conducting preoperative assessments, operating the Anaesthesia machine effectively and safely, implementing safety systems, implementing appropriate perioperative fluid management strategies, registering and managing emergencies, performing anaesthetic induction and airway management, demonstrating knowledge of pre-medication, pre-oxygenation, induction agents, intubation and reversal agents, vaporizers, , and demonstrating knowledge of vaporizers.

Unit	Topic	Hours
I	Preoperative assessment and patient preparation: Understanding the importance of preoperative evaluations, patient history, and physical examinations to assess Anaesthesia risks and plan appropriate care. Anesthesia Machine: Design, Components, and Functionality. Safety systems in Anesthesia machine. Flow systems, CO2 Absorbents,	**16**

	Circuit types, Humidification devices.	
II	Perioperative Fluid Management: Strategies and Considerations. (Crystalloids and Colloids). Perioperative Emergency Medications: Indications, Administration, and Management Anesthetic induction and airway management: Learning about various induction techniques, airway devices, and strategies for maintaining a patent airway during surgery.	**16**
III	Brief Idea about Premedication, Pre oxygenation or denitrogenating, Induction and inducing agents, Sellick‟s maneuverer, Vaporizers, Principles, and types, Intubation, and reversal agents. Maintenance of Anesthesia and monitoring: Understanding the principles of balanced Anaesthesia, administration of inhalation and intravenous anaesthetics, and monitoring techniques for vital signs, depth of Anaesthesia, and oxygenation.	**12**
IV	Pain management and analgesia: Exploring different methods of perioperative pain management, including systemic analgesics, regional Anaesthesia, and patient-controlled analgesia. Anesthetic considerations for common general surgical procedures: Studying the specific Anaesthesia considerations, techniques, and challenges associated with general surgical procedures like appendectomy, cholecystectomy, hernia repair, and laparotomy.	**8**
V	Anesthetic considerations for obstetric and gynaecological surgeries: Learning about the unique challenges and considerations for providing Anaesthesia during labor and delivery, caesarean section, gynaecological surgeries, and management of obstetric emergencies. Management of Anesthesia-related complications: Understanding the recognition and management of potential complications and adverse events related to Anaesthesia, including cardiovascular, respiratory, and allergic reactions.	**8**
	Total	**60**

Basic Techniques of Anaesthesia Practical

Practical	Subject Code: DAOTT-012
Total Marks for Evaluation-50	No. of Contact Hours-75, Credits:2

Practical or Clinical posting topics:

- Preoperative assessment and patient preparation include performing simulated preoperative assessments such as history taking and physical tests.
- Using patient features to stratify risk and make decisions for anesthesia treatment.
- Anesthesia machine and safety systems: Familiarization with the components and functionality of an anaesthesia machine through hands-on experience.
- Regional anesthesia procedures: Training in various regional anaesthesia techniques, such as peripheral nerve blocks and epidurals, using simulation.
- Management of anesthesia-related complications
- Simulation of anesthesia-related problems such as airway obstruction, hypotension, and allergy through role-playing.

Basics of Surgical Procedures

Theory	Subject Code: DAOTT-013
Total Marks for Evaluation-50	No. of Contact Hours-60, Credits:4

Learning Objectives

Understanding the operation theatre layout, WHO checklist, carbolization, and fumigation processes, as well as the concepts, indications, and techniques of typical general surgical procedures, are the learning objectives. They must also use aseptic technique and maintain a sterile field. Appendicitis, hernias, cholecystitis, gastrointestinal cancers, and peptic ulcer disease are among the diseases covered in the course, as are ectopic pregnancy, pelvic inflammatory disease, endometriosis, fibroids, ovarian cysts, and cervical and ovarian cancers.

The course outcomes include demonstrating understanding of the operation theatre layout, WHO checklist, carbolization, and fumigation procedures, effectively applying principles, indications, and techniques, identifying, and managing diseases in general surgical practice, managing diseases in obstetric/gynecologic practice, applying appropriate incision and wound closure techniques, recognizing and handling surgical

instruments, and implementing site infection prevention and control. The learning objectives aim to provide a comprehensive understanding of general surgical procedures, obstetric/gynecologic procedures, and patient positioning requirements.

Unit	Topic	Hours
I	Layout of Operation Theatre, WHO Checklist, Carbolization and Fumigation: Introduction to general surgical procedures: Understanding the principles, indications, and techniques of common general surgical procedures, such as appendectomy, cholecystectomy, and hernia repair.	**12**
II	Principles of aseptic technique and sterile field management: Spaulding‟s Classifications of zones. Learning the importance of maintaining a sterile environment in the operating room, including proper hand hygiene, gowning, gloving, and sterile draping techniques. Diseases in General Surgical Practice: Appendicitis, Hernias, cholecystitis, Gastrointestinal (GI) Cancers, Peptic Ulcer Disease.	**12**
III	Diseases in Obstetric/ Gynecologic Practice": Ectopic Pregnancy, Pelvic Inflammatory Disease (PID), Endometriosis, Fibroids, Ovarian Cysts, Cervical and Ovarian Cancer Incision and wound closure techniques: Studying various surgical incision types, wound closure methods (such as sutures, staples, and adhesive tapes), and wound dressing principle	**12**
IV	Surgical instrument identification and handling: Familiarizing with surgical instruments Surgical site infection prevention and control: Exploring strategies and protocols to minimize the risk of surgical site infections, including preoperative skin preparation, antimicrobial prophylaxis, and aseptic practices.	**12**
V	Anesthesia considerations and patient positioning in general surgery: Understanding the specific Anaesthesia considerations and patient positioning requirements for general surgical procedures to optimize patient safety and surgical outcomes. Common general surgical procedures in obstetrics and gynecology:	**12**

	Studying the specific surgical procedures performed in obstetrics and gynecology, such as caesarean section, hysterectomy, and ovarian cystectomy, and their related considerations	
	Total	**60**

Basics of Surgical Procedures Practical

Practical	Subject Code: DAOTT-013
Total Marks for Evaluation-50	No. of Contact Hours-75, Credits:2

Practical / Clinical Postings topics:

- Operation Theatre Layout and WHO Checklist: A guided tour of an operating theatre, covering the layout, equipment organization, and separate zones (sterile and non-sterile).
- Using the WHO Surgical Safety Checklist to demonstrate preoperative, intraoperative, and postoperative checklist components.
- Suturing materials and suturing techniques will be demonstrated.
- Scenarios were created to emphasize the need to keep a sterile area and avoid contamination during surgical procedures. Gloving, Gowning and Draping Techniques.
- Identification and uses of surgical instruments.
- Anesthesia and patient positioning: Demonstration and practice of patient positioning techniques for general surgical operations, considering patient safety, accessibility, and the demands of the surgeon.
- Simulations of communication and coordination between anaesthesia providers and surgical team members during patient placement.

CSSD & Manifold area

Theory	Subject Code: DAOTT-014
Total Marks for Evaluation- 100	No. of Contact Hours-45, Credits:2

Learning Objectives

The Central Sterile Services Department (CSSD) is responsible for infection control as well as the provision of sterile tools and equipment. It entails a variety of sterilization techniques, decontamination processes, and instrument preparation and packaging techniques. In addition, the department oversees sterile storage and distribution, which

includes inventory control, first- in-first-out processes, and proper labeling and paperwork. Quality assurance and control procedures are put in place, such as monitoring sterilization processes and guaranteeing standard compliance. Hand hygiene, personal protective equipment use, aseptic procedures, and cross- contamination prevention are also addressed as infection control practices.

Procedures for equipment maintenance and troubleshooting are also provided. Overall, the CSSD is critical to the safety and effectiveness of its operations.

Unit	Topic	Hours
I	**CSSD Procedures** Introduction to Central Sterile Services Department (CSSD): Understanding the role and importance of CSSD in maintaining infection control and providing sterile instruments and equipment for surgical procedures. Sterilization methods: Exploring various sterilization methods used in CSSD, such as steam sterilization (autoclaving), ethylene oxide (ETO) sterilization, hydrogen peroxide plasma sterilization, and chemical sterilization.	**13**
II	Decontamination processes: Learning about the decontamination procedures involved in CSSD, including manual cleaning, mechanical cleaning (using ultrasonic cleaners), and enzymatic cleaning. Instrument preparation and packaging: Understanding the proper techniques for instrument cleaning, inspection, assembly, and packaging to ensure their sterility and safe use in surgical procedures.	**7**
III	Sterile storage and distribution: Studying the appropriate storage and distribution methods in CSSD, including maintaining proper inventory control, implementing first-in- first-out (FIFO) system, and ensuring proper labelling and documentation. Quality assurance and control: Exploring the quality assurance and control measures in CSSD, including biological and chemical monitoring of sterilization processes, documentation, and compliance with regulatory standards.	**6**
IV	Infection control practices: Understanding the principles of infection control in CSSD, including hand hygiene, personal protective equipment (PPE) usage, aseptic techniques, and prevention of cross-contamination. Equipment maintenance and troubleshooting: Learning about the	**4**

	maintenance and troubleshooting procedures for CSSD equipment, such as sterilizers, washers, and drying cabinets, to ensure their optimal performance	
V	**Manifold:** Introduction to Hospital Manifold Systems, Types of Medical Gases, Design and Layout of Manifold Systems, Gas Pressure Regulation and Control, Maintenance and Safety Practices, Gas Outlets and Connection Systems, Gas Identification and Labelling, Liquid Medical Oxygen, Emergency Response and Gas Shutdown Procedures, 3. Troubleshooting and Problem-solving, 4. Regulations and Compliance.	**15**
	Total	**45**

CSSD & Manifold Area Practical

Practical	Subject Code: DAOTT-014
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Practical Sessions for CSSD & Manifold Area:

CSSD Procedures: 25 Hours

Sterilization Methods:

Autoclave Operation: Students will learn how to operate an autoclave for steam sterilization.

Chemical Sterilization: Students will be introduced to chemical sterilization methods, such as using high-level disinfectants or low temperature sterilant.

Decontamination Processes:

Manual Cleaning Techniques: Students will practice manual cleaning techniques for decontaminating surgical instruments.

Ultrasonic Cleaner Operation: Students will operate an ultrasonic cleaner and learn about its role in mechanical cleaning.

Sterile Storage and Distribution:

Inventory Management: Students will learn how to maintain an organized inventory system in the CSSD.

Manifold Area: (5 Hours)

Hospital Manifold Systems:

Manifold System Components: Students will explore the layout and components of a hospital manifold system.

They will learn about the gas sources, pressure regulation devices, alarms, and safety features present in the system.

Emergency Equipment Familiarization: Students will familiarize themselves with emergency equipment, such as gas shut-off valves, pressure relief devices, and emergency alarms.

Troubleshooting and Problem-Solving:

Manifold System Maintenance: Students will learn about common issues that can arise in the manifold system and practice troubleshooting techniques.

Basic Intensive Care

Theory	Subject Code: DAOTT-015
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:3

Learning Objectives

- Recognize proper care and maintenance practices for ventilators, suction machines, and monitoring equipment.
- Check, clean, and troubleshoot this equipment on a regular basis.
- Recognize prevalent flaws and take corrective action.
- Understand the concepts of ventilator sterilization and disinfection.
- Recognize the proper sterilization processes and disinfectants for ventilators.
- Know how to care for, maintain, and operate beds, lights, and other pieces of equipment.
- Recognize the significance of air conditioning and pollution control in the ICU setting.
- Recognize HVAC systems and air filtration procedures in order to maintain air quality.
- Be familiar with the attachment and intraoperative use of ventilators and monitoring devices.
- Adult and pediatric patients who are unconscious are cared for.

- Recognize unique care requirements, such as posture, hygiene, and monitoring.
- Recognize and manage any potential difficulties or crises that may arise while caring for unconscious patients.
- Become familiar with physiotherapy procedures, feeding, Ryle's tube insertion, and hyperalimentation.
- Recognize suctioning and posture techniques in semiconscious and unconscious patients.
- Understand the concepts and procedures of oxygen therapy, including identifying and selecting appropriate delivery systems and masks based on patient needs.
- Assess ventilation during a patient emergency.
- Assist with ventilation using mouth-to-mouth, mouth-to-ET tube, or bag-valve mask construction procedures.
- Depending on the patient's condition and response, implement suitable ventilation methods.

Course Outcomes:

Students will leave with knowledge and abilities in ventilator care, maintenance, and troubleshooting, as well as basic sterilization and disinfection practices. It explains how to care for, maintain, and operate beds, lights, and other regularly used ICU equipment. Students will also learn to control air conditioning and pollution in the ICU environment, attach and configure ventilators and monitoring devices intraoperatively, provide appropriate care for unconscious adult and pediatric patients, perform physiotherapy techniques, suctioning, administer oxygen therapy, provide ventilation support, understand the principles of ventilator and monitoring equipment, measure blood pressure, temperature, and expired gases, and understand laryngeal anatomy.

Unit	Topic	Hours
I	• Care and maintenance of ventilators, suction machine, monitoring devices. • Sterilization and disinfection of ventilators. • Care, maintenance and operational capabilities of beds, lights and other apparatus. - • Air conditioning and control of pollution in ICU. • Attachment and intraoperative utility of ventilators and monitoring devices. • Care of unconscious adult and paediatric patients. • Physiotherapy techniques, feeding, Ryle‟s tube insertion and hyper	**12**

	alimentation.	
II	• Suctioning and posturing of semiconscious and unconscious patients. • Oxygen therapy, maintenance of clear Airway, Various types of masks. • Ventilation of patient in crisis: • Resuscitator/ bag valve mask assembly • Different types of Airways.	**12**
III	• Short term ventilation/ Transport ventilators. • ABG techniques & analysis. • Management of asepsis. • Psychological aspects of the patient, relative and staff. • Hemofiltration and hemodialysis. Jet Ventilation.	**13**
IV	• Ventilators: Principles of working of different ventilators: • Volume cycled/Time cycled/Pressure cycled ventilators. • High frequency ventilators and other types. • Methods of measuring the expired gases from the patient; Types of spirometers, Principles of working of spirometers. Clinical application of above apparatus. • Apparatus and techniques of measuring of blood pressure and temperature; Principle and working of direct/indirect blood pressure monitoring apparatus; structure, principle and working of the oscillotonometer. Principles and working of aneroid manometer type B.P. instrument. • Laryngeal sprays; Types, material, principle and mechanism. • Monitoring techniques and equipment; Cardiac monitors, Respiratory monitors, Spirometers, Temperature monitors.	**8**
	Total	**45**

Basic Intensive Care Practical

Practical	Subject Code: DAOTT-015
Total Marks for Evaluation-50	No. of Contact Hours-75, Credits:2

Practicals/ Clinical Postings:

a) Ventilator Care and Maintenance:
   - Hands-on practice in the proper care and maintenance of ventilators, including cleaning, sterilization, and disinfection techniques.
   - Understanding the functions and operation of different modes and settings of ventilators.
   - Troubleshooting common ventilator issues and alarm management.

b) Bed and Apparatus Care:
   - Practical demonstration of bed maintenance, including adjustment of height, positioning, and proper use of bed controls.
   - Familiarization with the operational capabilities of ICU lights and other apparatus, such as infusion pumps and monitors.
   - Cleaning and disinfection procedures for bed surfaces and equipment.

c) Air Conditioning and Pollution Control in ICU:
   - Practical session on the management of air conditioning systems in the ICU to maintain optimal temperature, humidity, and air quality.
   - Understanding the importance of infection control measures and strategies to minimize airborne contaminants in the ICU environment.

d) Care of Unconscious Patients:
   - Simulation-based training on the care and management of unconscious adult and pediatric patients, including monitoring vital signs, maintaining airway patency, and providing basic hygiene.
   - Practice in the proper positioning and turning techniques for unconscious patients to prevent pressure ulcers.

e) Oxygen Therapy and Airway Management:
   - Hands-on practice in administering oxygen therapy using different types of masks and nasal cannulas.
   - Simulation of airway management techniques, including insertion and securing of endotracheal tubes, use of different types of airways, and bag-valve mask ventilation.

f) Physiotherapy Techniques and Feeding Methods:
   - Practical demonstration and practice of physiotherapy techniques, such as chest physiotherapy and postural drainage, to promote airway clearance.
   - Training on safe and proper insertion of Ryle's tube for enteral feeding, followed by simulated feeding procedures and maintenance.

g) Hemofiltration and Hemodialysis:
   - Introduction to the principles and techniques of hemofiltration and hemodialysis for renal replacement therapy.
   - Simulation-based training on the setup and operation of hemofiltration

and hemodialysis machines, including the monitoring of patients during the procedure.

h) Psychological Aspects of Patients, Relatives, and Staff:
   - Interactive sessions focusing on the psychological aspects of patients, their relatives, and healthcare staff in the ICU setting.
   - Role-playing exercises to develop effective communication skills and strategies for providing emotional support to patients and their families.

Disaster Management & Environmental Sciences

Theory	Subject Code: DAOTT-016
Total Marks for Evaluation-100	No. of Contact Hours-45, Credits:3

Learning Objectives

Studying environmental sciences equips students with a deep understanding of ecological concepts, environmental issues, and scientific principles, while also fostering practical skills for data analysis, resource management, and environmental assessment. By developing critical thinking, problem-solving abilities, and effective communication skills, students are empowered to address real-world environmental challenges, promote sustainability, and advocate for the protection of our planet. These outcomes enable students to make informed decisions, contribute to sustainable practices, and create positive change for the environment and future generations

Unit	Topic	Hours
I	**Disaster preparedness and management-** The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include- • Fundamentals of emergency management, • Psychological impact management, • Resource management, • Preparedness and risk reduction, • Key response functions (including public health, logistics and governance, recovery, rehabilitation, and reconstruction), information management, incident command and institutional mechanisms.	**20**

II	**Environmental science-** • Water-safe water, reservoir • Water pollution, • Water related diseases. • Purification of water • Composition of air • Air pollution • Environment protection act • Noise pollution • Radiation & Its hazards • Housing and health • Disposal of solid waste-solid, liquid & biochemical waste • Disposal of liquid waste • Disposal of biochemical waste • Sanitation & general hygiene	**25**
	Total	**45**

IVth SEMESTER

Advanced Anaesthesia Techniques

Theory	Subject Code: DAOTT-017
Total Marks for Evaluation-50	No. of Contact Hours-60, Credits:4

Learning Objectives

The learning objectives cover various aspects of Anaesthesia, including ear, nose, and throat surgeries, airway management, ophthalmic surgeries, local and regional anaesthesia techniques, head and neck procedures, and complications specific to advanced anaesthesia techniques. Anaesthetic considerations include identifying challenges, understanding techniques for maintaining airway patency, evaluating risks and benefits, and developing strategies for pain and discomfort management. Advanced airway management techniques, such as fibreoptic intubation, supraglottic airway devices, and video laryngoscopy, are essential for securing and maintaining the airway.

Course Outcome

The course aims to equip students with the skills to:

1. Anaesthetic considerations for advanced surgeries: Demonstrate understanding of challenges and techniques involved in providing Anaesthesia for advanced procedures, apply appropriate methods and strategies for maintaining airway patency, and implement pain management protocols.
2. Airway management in difficult airway cases: Use of advanced techniques like Fibreoptic intubation, supraglottic airway devices, and video laryngoscopy to maintain airway patency and manage complications.
3. Local and regional anaesthesia techniques for head and neck procedures: Demonstrate proficiency in administering local anaesthetics and performing nerve blocks, and select and apply regional techniques based on surgical requirements.

Unit	Topic	Hours
I	• Anaesthetic considerations for ear, nose, and throat surgeries: Understanding the specific challenges and techniques involved in providing Anaesthesia for ENT procedures such as tonsillectomy, adenoidectomy, and sinus surgery.	**10**
II	• Airway management in difficult airway conditions and procedures: Learning about advanced airway management techniques, such as fibreoptic intubation, supraglottic airway devices, and video laryngoscopy, for securing the airway during ENT surgeries.	**10**
III	• Anaesthetic considerations for orthopedic surgeries: Studying the specific Anaesthesia considerations, techniques, and challenges associated with orthopedics procedures such as joint replacements, fracture fixation, and spine surgeries.	**10**
IV	• Paediatric Anaesthesia techniques and considerations: Understanding the unique physiological and pharmacological considerations for providing Anaesthesia to paediatric patients, including preoperative preparation, induction, airway management.	**10**
V	• Anaesthesia for urological surgeries: Learning about the specific Anaesthesia considerations and techniques for	**10**

	urological procedures such as prostatectomy, nephrectomy, and cystoscopy.	
VI	• Regional Anaesthesia techniques for orthopedics and urological procedures: Studying the principles and techniques of regional Anaesthesia, including peripheral nerve blocks and spinal Anaesthesia, for pain management during orthopedic and urological surgeries	**10**
	Total	**60**

Advanced Anaesthesia Techniques Practical

Practical	Subject Code: DAOTT-017
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Practical Topics: Advanced Anaesthesia Techniques

- Hands-on practice in paediatric airway care using suitable devices and techniques, such as mask ventilation, intubation, and supraglottic airway devices.
- Simulation scenarios concentrating on the special issues for inducing and maintaining anaesthesia in paediatric patients, including as dose calculation, monitoring, and intraoperative care.
- This course provides a practical demonstration of anaesthetic considerations and techniques for various urological, orthopedic and pediatric surgeries.
- Training in patient positioning and patient preparation, including the use of regional anaesthetic and intravenous sedation procedures.
- Techniques of Regional Anaesthesia.
- Practical experience with peripheral nerve blocks, including landmark recognition, needle insertion, and local anaesthetic administration.
- Training in spinal anaesthetic procedures using simulation, including patient placement, sterile technique, and dose calculation.

Advanced Surgical Procedures

Theory	Subject Code: DAOTT-018
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:4

Learning Objectives

The learning objectives cover various aspects of Ear Nose & Throat (ENT), Ophthalmology, orthopedics, Paediatric surgery, urological surgeries. Understanding the principles and techniques involved in surgical management of these patients.

The course is designed to give learners a thorough awareness of prevalent disorders in these patients as well as suitable surgical procedures and techniques. Patient positioning, pain management, perioperative care, C-arm fluoroscopy, anaesthesia, postoperative care protocols, and rehabilitation programmes are all covered. Through continued professional development, students will also learn to effectively work with the surgical team, use evidence-based practices, and regularly update their knowledge and abilities in the field of Anaesthesia & Operation Theatre Technology.

Unit	Topic	Hours
I	• Surgical procedures in ear, nose, and throat (ENT): Learning about the various surgical procedures performed in ENT, including tonsillectomy, septoplasty, laryngectomy, and sinus surgery, and understanding the specialized instruments and techniques used, and positioning for each surgery.	**9**
II	• Orthopedic surgical procedures: Studying the specific Orthopedic surgical procedures, including joint replacement surgeries (such as total knee replacement and total hip replacement), fracture fixation (fracture table), and spine surgeries, and understanding the instrumentation, implants, techniques involved and positioning for each surgery.	**9**
III	• Urological Surgeries including Ureteroscopy, Transurethral Resection of the Prostate (TURP), Transurethral Resection of Bladder Tumor (TURBT), Radical Cystectomy, Nephrectomy etc. and patient positing for these surgeries.	**9**
IV	• Pediatrics surgical procedures such as Pediatric hernia repair, pyloromyotomy, congenital anomaly correction, and Paediatric laparoscopic surgeries, and understanding the specialized considerations, techniques for Paediatric patients and positioning.	**9**
V	• Common Surgeries in Ophthalmology like Cataract Extraction and Intraocular Lens (IOL) Implantation, Trabeculectomy, Shunt Implantation, Laser Therapy,	**9**

	Vitrectomy, Retinal Detachment Repair, Corneal Transplantation (Keratoplasty) etc.	
	Total	**45**

Advanced Surgical Procedures Practical

Practical	Subject Code: DAOTT-018
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Practicals:

- Surgical procedures in ear, nose, and throat (ENT) include tonsillectomy, septoplasty, sinus surgery, endoscopic sinus surgery, chronic sinusitis, tonsillitis, ophthalmic surgery, cataract extraction, corneal transplantation, and laryngoscopic examination. Students will know the identification of all surgical instruments of the above specialties.
- Students will practice arrangement techniques for cold knife dissection, electrocautery, and coblation, as well as the proper use of specialized instruments like tonsil snares, dissectors, and hemostatic agents. They will also learn the principles of maintaining nasal airway patency and proper positioning of nasal packing.
- Endoscopic sinus surgery involves hands-on experience with endoscopic instruments, including sinus scopes and instrumentation.

Specialized Anaesthesia & Surgery

Theory	Subject Code: DAOTT-019
Total Marks for Evaluation-50	No. of Contact Hours-45, Credits:3

Learning Objectives

The learning objectives include anaesthetic considerations for cardiovascular and thoracic surgery, as well as hemodynamic management strategies and monitoring approaches. They also cover central venous catheters, arterial line insertion, cardiac bypass and valve replacement procedures, controlling hemodynamic changes during cardiothoracic surgeries, and neurosurgery.

The course aims to teach students about anaesthesia considerations for cardiovascular and thoracic surgeries, including hemodynamic management techniques and monitoring methods. It covers anaesthesia protocols for coronary artery bypass grafting, valve replacement, and lung resection surgeries. Students will also demonstrate proficiency in selecting and inserting central

venous catheters and applying infection control measures during insertion. They will also perform arterial line insertion with precision and safety, and assess collateral circulation using Allen's test.

The course also covers anaesthesia considerations for neurosurgical procedures, including patient positioning, intracranial pressure management, and neurophysiological monitoring. It also emphasizes patient safety during brain and spine surgeries. Neuroanesthesia techniques and monitoring in neurosurgery include total intravenous Anaesthesia (TIVA) and neurophysiological monitoring methods to optimize surgical conditions and patient outcomes.

Unit	Topic	Hours
I	• Anaesthetic considerations for cardiovascular and thoracic surgeries: Understanding the specific Anaesthesia considerations, hemodynamic management, and monitoring techniques for cardiac and thoracic surgeries such as coronary artery bypass grafting, valve replacement, and lung resection.	**9**
II	• Central Venous catheter and various insertions techniques(IJV, Femoral, PICC and subclavian), Arterial Line insertion and various techniques(including Allen‟s test) • Anaesthesia techniques for cardiac bypass and valve replacement procedures: Learning about, cardiopulmonary bypass management, and strategies for maintaining stable hemodynamic during open-heart surgeries.	**9**
III	• Management of hemodynamic changes during cardiothoracic surgeries: Exploring the principles and techniques for managing hemodynamic changes, such as hypotension and hypertension, during cardiothoracic surgeries and TEE.	**9**
IV	• Anaesthetic considerations for neurosurgical procedures: Understanding the unique challenges and considerations in providing Anaesthesia for brain and spine surgeries, including patient positioning.	**9**
V	• Common cardiothoracic and vascular surgeries like Coronary Artery Bypass Grafting (CABG), Valve Repair and Valve Replacement surgeries: (Surgical removal of the damaged valve and implantation of a prosthetic valve.), Aneurysm Repair, Cardiac Defect Repair: such as atrial septal	**9**

	defect (ASD), ventricular septal defect (VSD), or Tetralogy of Fallot. Common Neurosurgical procedures, such as craniotomy, spinal fusion, tumor resection, and deep brain stimulation, and understanding the principles, instrumentation, and patient positioning requirements in neurosurgery (Placement of horseshoe, Cranial pins and Stereotactic devices.	
	Total	**45**

Specialized Anaesthesia & Surgery Practical

Practical	Subject Code: DAOTT-019
Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Recent Advancements in Anaesthesia & Surgery

Theory	Subject Code: DAOTT-020
Total Marks for Evaluation-50	No. of Contact Hours-75, Credits:2

Learning Objectives

Recent advances in anaesthesia and surgical fields offer exciting opportunities for students to expand their knowledge and skills. By exploring topics such as minimally invasive surgery, enhanced recovery after surgery (ERAS), patient safety in the operating room, advances in anaesthetic techniques, and perioperative pain management, students can achieve specific outcomes. The outcomes focus on understanding and appreciating these advancements. Students will develop a clear understanding of the principles, advantages, and limitations of minimally invasive surgical techniques, as well as the concept and significance of ERAS in improving surgical outcomes. They will also recognize the importance of patient safety protocols and their application in the operating room.

Unit	Topic	Hours
I	Minimally Invasive Surgery: Exploring the advancements in minimally invasive surgical techniques, such as laparoscopy, robotic surgery, and endoscopic procedures, and their benefits in terms of reduced trauma, faster recovery, and improved patient outcomes.	**15**

II	Enhanced Recovery After Surgery (ERAS): Understanding the concept of ERAS protocols, which involve a multidisciplinary approach to optimize patient preparation, surgical techniques, anaesthesia management, and postoperative care, leading to shorter hospital stays, reduced complications, and enhanced recovery.	**10**
III	Patient Safety in the Operating Room: Discussing the importance of patient safety in the operating room and highlighting recent initiatives and technologies aimed at improving safety, such as surgical checklists, surgical site infection prevention measures, and the use of simulation training for healthcare professionals.	**10**
IV	Advances in Anaesthetic Techniques: Exploring recent developments in anaesthetic techniques, including total intravenous anaesthesia (TIVA), target-controlled infusion (TCI), BIS monitoring, CNAP monitoring and the use of neuromuscular monitoring to improve drug dosing and patient safety during anaesthesia.	**10**
V	Perioperative Pain Management: Discussing novel approaches and advancements in perioperative pain management, such as the use of multimodal analgesia techniques, regional anaesthesia, and the role of non-opioid analgesics in reducing opioid consumption and improving pain control Advances in Imaging Technology: Exploring the use of advanced imaging techniques, such as intraoperative ultrasound, 3D imaging, and image-guided navigation systems, in surgical planning, intraoperative decision-making, and improved surgical accuracy.	**15**
VI	Surgical Innovation and Emerging Technologies: Discussing the latest trends and innovations in surgical techniques and technologies, including the use of 3D printing for surgical models and implants, virtual reality and augmented reality in surgical training and planning, and the potential of artificial intelligence in surgical robotics and decision support systems. Advances in Endoscopic Procedures: Examining the latest developments in endoscopic procedures, such as single-incision laparoscopy, natural orifice transluminal endoscopic surgery (NOTES), and advanced endoscopic imaging modalities, and their impact on minimally invasive surgery and patient outcomes.	**15**
	Total	**75**

Recent Advancements in Anaesthesia & Surgery Practical

Practical	Subject Code: DAOTT-020

Total Marks for Evaluation-50	No. of Contact Hours-30, Credits:2

Research Methodology & Biostatistics

Theory	Subject Code: DAOTT-021
Total Marks for Evaluation-100	No. of Contact Hours-45, Credits:3

Learning Objectives

The course's goal is to give learners a thorough understanding of research methodologies, their applications, and the necessity of expanding knowledge and solving issues. It discusses numerous research methodologies and their applications in various fields, as well as research ethics issues such as informed permission, confidentiality, and privacy. Students will also gain knowledge of research design, fundamental biostatistics principles, data kinds, research tools and data collection methods, sampling procedures, and formulating a research proposal.

The course also emphasizes the significance of ethical issues in research, such as informed consent, confidentiality, and privacy, as well as the significance of ethical rules and legislation. Students will also learn about different forms of data, data gathering methods, and the peer review and ethical approval procedure for research ideas.

After completing the course, students will be able to identify and formulate research problems and questions, evaluate ethical considerations, select appropriate research designs, apply basic biostatistics concepts, classify and handle different types of data in research analysis, effectively use various research tools and data collection methods, and develop a well-structured research report.

Unit	Topic	Hours
I	Introduction to research methods	**5**
II	Identifying research problem	**5**
III	Ethical issues in research	**5**
IV	Research design	**5**
V	Basic Concepts of Biostatistics	**5**
VI	Types of Data	**5**

VII	Research tools and Data collection methods	**5**
VIII	Sampling methods	**5**
IX	Developing a research proposal	**5**
	Total	**45**

Vth SEMESTER

DAOTT Internship

Clinical Posting	Subject Code: DAOTT-022
Total Marks for Evaluation- 300	No. of Contact Hours-720, Credits:20

The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and service delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 8 hours per day and this may be more depending on the need and the healthcare setting.

Professionalism in the Operating Room and Anaesthesia Technologists:

As an OT and Anaesthesia Technologist, it is critical to maintain a high standard of professional behavior in order to guarantee patient safety, maintain workplace professionalism, and contribute to the overall efficacy of the healthcare team.

In order to improve your abilities as a Surgical and Anaesthesia Technologist, look for possibilities for professional growth and development. Keep up with the most recent developments in anaesthesia control, surgical technique, and patient safety.

Here are some crucial professional conduct guidelines to remember:

- Patient Security: To reduce the risk of mistakes and problems during surgical and anaesthesia operations, adhere to established protocols and recommendations.
- Maintain a clean and sterile operating room environment by following infection control procedures.
- Competence and Professional Development: Strive for excellence in your profession on a regular basis.

- Keep up to date on the most recent innovations and best practices in operation theatre and Anaesthesia Technology.
- Maintain a professional look and demeanor by following to the authorized dress code and wearing adequate personal protection equipment (PPE) in the operation theatre.
- Maintain a cheerful and polite demeanor towards patients, coworkers, and other healthcare professionals.
- Empathy, compassion, and attention to the needs and concerns of patients and their families are required.
- Communication abilities: Improve your verbal and written communication abilities.
- Policy and protocol adherence: Familiarize yourself with the institution's or facility's standard operating procedures and policies.
- Professional Honesty: Maintain the finest professional ethics.
- Be truthful, dependable, and accountable for your activities.
- Avoid any activity that may jeopardize the integrity of the profession or patient care.
- Recognize and appreciate the contributions of a diverse healthcare workforce.
- Continuous Improvement: Adopt a continuous improvement mentality.
- To improve your abilities and performance, seek feedback from superiors, coworkers, and patients.
- By following to these professional behavior norms Anaesthesia & Operation Theater Technologists may help to provide safe, efficient, and compassionate treatment in the surgical context.