KHYBER MEDICAL UNIVERSITY

ANESTHESIA TECHNOLOGY CURRICULUM

STUDY GUIDE SEMESTER 5

16 Weeks Activity Planner

2024-25

CENTRAL CURRICULUM AND ASSESSMENT COMMITTEE FOR NURSING, REHABILITATION SCIENCES AND ALLIED HEALTH SCIENCES

VISION AND MISSION

Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Medical University (KMU) Mission:

Khyber Medical University's goals are to encourage professional aptitude through learning and innovation for providing comprehensive quality health care to the nation.

Institute of Paramedical Sciences Peshawar (IPMS-PESH) Mission:

To produce allied health professionals who excel in their skills, research, compassionate care, and community involvement, thereby enhancing the healthcare

6TH SEMESTER SUBJECTS OF BS ANESTHESIA TECHNOLOGY

S. No	Subject Name	Course Code	Credit Hours	Duration
1	PHARMACOLOGY RELATED TO ANESTHESIA	ANS-605	3 (2+1)	16 WEEKS
2	ANESTHESIA EQUIPMENT	ANS-606	3 (2+1)	16 WEEKS
3	HISTORY TAKING PRE-OPERATIVE ASSESSMENT & MEDICATION POST-OP CARE	ANS-607	3 (2+1)	16 WEEKS
4	ANESTHESIA AND CO-EXISTING DISEASES	ANS-608	3 (2+1)	16 WEEKS
5	CRITICAL CARE	ANS-609	3 (2+1)	16 WEEKS
6	LEADERSHIP AND MANAGEMENT	ANS-610	2 (2+0)	16 WEEKS

ANESTHESIA TEAM MEMBERS FOR TOS DEVELOPMENT

1	Mr. Matiullah
2	Mr. Mukhtiar Ahmad
3	Mr. Arif Hussain
4	Muhammad Basit
5	Muhammad Irfan
6	Mr. Syed Khitab Shah

ANS-605 TOS PHARMACOLOGY RELATED TO ANESTHESIA 3 (2+1)

Course Description

The purpose of this course is to provide a comprehensive understanding of pharmacological principles and their application in anesthesia practice. It covers the mechanisms of action, pharmacokinetics, pharmacodynamics, and clinical use of drugs commonly administered during all phases of anesthesia — preoperative, intraoperative, and postoperative care. Major drug classes discussed include sedatives, hypnotics, analgesics, local and general anesthetics, muscle relaxants, and emergency drugs. Emphasis is placed on drug interactions, patient safety, and individualized anesthetic management in special populations (pediatrics, geriatrics, and patients with comorbidities). Students will develop the skills to make informed decisions regarding drug selection, dosing, and monitoring to optimize patient outcomes during surgical and procedural anesthesia.

Cognitive Domain

By the end of this subject, students should be able to:

1) Classify intravenous anesthetic agents and their importance
2) Explain the factors affecting the absorption, distribution, and biotransformation of propofol.
3) Describe the physical characteristics of different inhalational agents
4) Explain the systemic effects of different inhalational agents
5) Explain the pharmacokinetics and pharmacodynamics of local anesthetics

Skills Domain

By the end of this subject, students should be able to:

1) Perform correctly, setting up and operating infusion pumps, syringe drivers, or other equipment for the controlled administration of propofol or thiopental in clinical settings.
2) Perform dose drug preparation and dilution of ketamine and etomidate for different age groups.
3) Demonstrate the vaporizer setting for inhalational agents.
4) Demonstrate the correct preparation of a narcotic analgesic solution for TIVA based on the standard procedure.
5) Demonstrate accurate preparation techniques for local anesthetic solutions used in various regional blocks and surgeries

Affective Domain

By the end of this subject, students should be able to:

1) Comply with SOPs of OT safety practices and learn how to care for and handle Anesthesia equipment
2) Follow the specified norms of the IL, SGD teaching & learning.
3) Demonstrate the humbleness and use socially acceptable language during academic and social interactions with human models, colleagues, and teachers.
4) Demonstrate ethically competent decisions when confronted with an ethical, social, or moral problem related to professional or personal life.

S.No	Weeks	Contents	Learning Outcome	Domain			MIT's	Time/Hours	Assessment	No of Items
				C	P	A				
TOPIC: INTRAVENOUS ANESTHETIC AGENTS I										
1	Week-1	Definition	Classify intravenous anesthetic agents and their importance	C2			Interactive lecture/SGD	2	MCQs/SEQs	6
2		Propofol	Describe the physical characteristics of propofol suspension, along with its clinical applications, potential complications, and safety precautions.	C3						
3		Pharmacokinetics of propofol	Explain the factors affecting the absorption, distribution, and biotransformation of propofol.	C2						
4		Pharmacodynamics of propofol	Categorize the systematic effects of propofol and how it affects various age groups.	C2						
5		Thiopental Sodium	Describe the physical characteristics of thiopental powder, its preparation, clinical applications, potential complications, and safety precautions.	C2						
6		Pharmacokinetics, Pharmacodynamics of Thiopentone	Explain the factors affecting the absorption, distribution, and biotransformation of thiopental and its systemic effects.	C2						
7		Operation Theater Safety Practices	Perform correctly, setting up and operating infusion pumps, syringe drivers, or other equipment for the controlled administration of propofol or thiopental in clinical settings.		P4		Practical/Video Demonstration	1	OSPE	1
8		SOPs compliance	Comply with SOPs of OT safety practices and learn how to care for and handle Anesthesia equipment's			A4	Role Play			
TOPIC: INTRAVENOUS ANESTHETIC AGENTS II										
9	Week-2	Ketamine and etomidate	Compare the clinical use of ketamine and etomidate for the induction of anesthesia	C2			Interactive lecture /SGD	2	MCQs/SEQs	6
10		Pharmacokinetics of ketamine and etomidate	Describe the physical characteristics of etomidate suspension, along with its clinical applications, potential complications, and safety precautions.	C2						
11		Pharmacodynamics of ketamine and etomidate	Categorize the systematic effects of ketamine and etomidate and how it affect various age groups.	C2						
12		Complications	Explain why ketamine is unique from other intravenous induction agents	C2						
13		Operation Theater Safety Practices	Perform dose drug preparation and dilution of ketamine and etomidate for different age groups		P4		Practical/Video Demonstration	2	OSPE	1
14		SOPs compliance	Adopts sepsis care while administering medications.			A2	Role Play			

TOPIC: INHALATIONAL ANESTHETIC AGENTS										
15	Week-3	Definition	Define inhalational anesthetic agents	C1			Interactive lecture /SGD	2	MCQs/S MCQs	8
16		Pharmacokinetics	Explain the mechanism of action of inhalational anesthetics	C2						
17		Pharmacokinetics	Describe the physical characteristics of different inhalational agents	C2						
18		Pharmacodynamics	Explain the systemic effects of different inhalational agents	C2						
19		Practical performance	Demonstrate the vaporizer setting for inhalational agents		P3		Practical/Video Demonstration	2	OSPE	1
20		SOPs compliance	Promote the protection of operating room professionals from the hazardous effects of inhalational anesthetic agents			A3	Role Play			
TOPIC: NARCOTIC ANALGASIC										
21	Week-4	Definition	Define narcotic analgesic	C1			Interactive lecture/SGD	2	MCQs/S EQs	4
22		Classification	Discuss the classification of narcotic analgesics	C2						
23		Pharmacokinetics	Explain the mechanism of action and receptor interaction of narcotic analgesics	C2						
24		Pharmacokinetics	Explain the pharmacokinetics and physical properties of narcotic analgesics	C2						
25		Pharmacodynamics	Explain the pharmacodynamics of narcotic analgesics	C2						
26		Pharmacodynamics	Discuss the action of the antagonist of narcotic analgesics and their clinical uses	C2						
27		Practical performance	Demonstrate the correct preparation of a narcotic analgesic solution for TIVA based on the standard procedure.		P3		Practical/Video Demonstration	2	OSPE	1
28		SOPs compliance	Ask for clarification when unsure about the proper use of controlled drugs to ensure adherence to guidelines.			A1	Role Play			
TOPIC: NON-NARCOTIC ANALGASIC										
29	Week-5	Definition	Define non-narcotic analgesic and its classification	C1			Interactive lecture /SGD	2	MCQs/S EQs	4
30		Pharmacokinetics	Explain the Pharmacokinetics of non-narcotic analgesics	C2						
31		Pharmacodynamics	Explain the pharmacodynamics of non-narcotic analgesics.	C2						
32		Practical performance	Demonstrate proper preparation and administration of drug doses for patient-controlled analgesia and postoperative periods.		P3		Practical/Video Demonstration	2	OSPE	2
33		SOPs compliance	Advocate for the safe and effective use of NSAIDs as part of multimodal postoperative pain management.			A2	Role Play			
TOPIC: LOCAL ANESTHETIC AGENTS										
34	Week 6	Definition	Define local anesthetics and their uses	C1			Interactive lecture /SGD	2		5

35		Pharmacokinetics	Explain the pharmacokinetics of local anesthetics	C2					MCQs/SEQs	
		Pharmacodynamics	Explain the pharmacodynamics of local anesthetics	C2						
36		Practical performance	Demonstrate accurate preparation techniques for local anesthetic solutions used in various regional blocks and surgeries		P3		Practical/Video Demonstration	2	OSPE	1
37		SOPs compliance	Advocate for patient-centered care practices within the healthcare team.			A2	Role Play			
TOPIC: DEPOLARIZING NEUROMUSCULAR BLOCKING AGENTS										
38	Week 7	Definition	Define depolarizing neuromuscular blocking agents	C1			Interactive lecture /SGD	2	MCQs/SEQs	5
39		Pharmacokinetics	Discuss the Pharmacokinetics of depolarizing neuromuscular blocking agents	C2						
40		Pharmacodynamics	Discuss the Pharmacodynamics of depolarizing neuromuscular blocking agents	C2						
41		Pharmacodynamics	Discuss the risk factors of S-choline apnea and malignant hyperthermia associated with depolarizing neuromuscular blocking agents	C2						
41		Practical performance	Demonstrate the correct steps for administering succinylcholine as a depolarizing neuromuscular blocker.		P3		Practical/Video Demonstration	2	OSPE	1
42		SOPs compliance	Ask meaningful questions to better understand patients' concerns and perspectives.			A1	Role Play			
TOPIC: NON-DEPOLARIZING NEUROMUSCULAR BLOCKING AGENTS										
43	Week-8	definition	Define non-depolarizing neuromuscular blocking agents	C1			Interactive lecture/SGD	2	MCQs/SEQs	5
44		Pharmacokinetics	Discuss the Pharmacokinetics of non-depolarizing neuromuscular blocking agents.	C2						
45		Pharmacodynamics	Discuss the Pharmacodynamics of non-depolarizing neuromuscular blocking agents.	C2						
46		Practical performance	Demonstrate the correct technique for preparing, monitoring, and injecting non-depolarizing neuromuscular blocking agents.		P3		Practical/Video Demonstration	2	OSPE	1
47		SOPs compliance	Accept the importance of empathy and ethical responsibility in patient care.			A1	Role Play			
TOPIC: REVERSAL AGENTS										
48	Week-9	Introduction	Introduction to reversal agents	C1			Interactive lecture /SGD	2	MCQs/SEQs	3
49		Pharmacokinetics	Discuss the pharmacokinetics of acetylcholinesterase	C2						

50		Pharmacodynamics	Illustrate the pharmacodynamics of acetylcholinesterase	C2						
51		Practical performance	Demonstrate the correct use of a nerve stimulator to monitor neuromuscular function while administering reversal agents during recovery from anesthesia.		P3		Practical /Video Demonstration	2	OSPE	2
52		SOPs compliance	Comply with SOPs of practical and affectively.			A4	Role Play			
TOPIC: ANTIEMETIC										
53	Week-10	Definition	Define antiemetic drugs and their classification	C1			Interactive lecture /SGD	2	MCQs/SEQs	3
54		Pharmacokinetics	Discuss the pharmacokinetics of antiemetic drugs	C1						
55		Pharmacodynamics	Illustrate the pharmacodynamics of antiemetic drugs	C3						
56		Practical performance	Perform clinical judgment by using the PONV risk assessment scale to evaluate postoperative nausea and vomiting risk, and administer the appropriate antiemetic dosage tailored to the surgical procedure and patient profile.		P2		Practical/Video Demonstration	2	OSPE	1
57		SOPs compliance	Comply with SOPs of practical affectively			A4	Role Play			
TOPIC: BENZODIAZEPINE										
58	Week-11	Definition	Define benzodiazepines and their uses in anesthesia	C1			Interactive lecture /SGD	4	MCQs/SEQs	4
59		Classification	Discuss the classification of benzodiazepines	C2						
60		Pharmacokinetics	Describe the pharmacokinetics of benzodiazepines	C2						
61		Pharmacodynamics	Describe the Pharmacodynamics of benzodiazepines	C2						
62		Clinical uses	Discuss the use of benzodiazepines in intensive care units	C2						
63		Use for MAC	Explain the role of benzodiazepines in providing sedation for monitored anesthesia care (MAC) across different diagnostic procedures.	C2						
65		Practical performances	Perform correctly, setting up and operating infusion pumps, syringe drivers, or other equipment for the controlled administration of benzodiazepines in different clinical settings.		P2		Video Demonstration	2	OSPE	2
66		SOPs compliance	Advocate the patient safety during procedural sedation		A1		Roleplay			
TOPIC: ANTICHOLINERGIC										
67	Week-12	Definition	Define anticholinergic drugs and their classification	C1			Interactive lecture /SGD	2	MCQs/SEQs	3
68		Pharmacokinetics	Describe the pharmacokinetics of anticholinergic drugs	C2						

69		Pharmacodynamics	Describe the Pharmacodynamics of anticholinergic drugs	C2						
70		Uses	Discuss the use of anticholinergic drugs in perioperative emergencies	C2						
71		Practical performances	Demonstrate the proper handling of anticholinergic agents, including accurate dosage calculation, appropriate dilution, and calibration of equipment for drug administration.		P3		Practical /Video Demonstration	4	OSPE	1
72		SOPs compliance	Comply with SOPs of practical affectively			A4	Role Play			
TOPIC: SYMPATHOMIMETICS										
73	Week-13	Definition	Define sympathomimetic drugs and their classification	C1			Interactive lecture /SGD	2	MCQs/SEQs	4
74		Pharmacokinetics	Describe the pharmacokinetics of sympathomimetic drugs	C2						
75		Pharmacodynamics	Describe the Pharmacodynamics of sympathomimetic drugs	C2						
76		Uses	Describe the indications and applications of sympathomimetic drugs in the management of different perioperative emergencies based on patient-specific requirements.	C2						
77		Practical performances	Demonstrate the preparation and administration of sympathomimetic drugs during simulated emergencies, and illustrate the drug's physiological effects on cardiovascular function while exercising proper clinical judgment.		P3		Practical /Video Demonstration	4	OSPE	1
78		SOPs compliance	Comply with SOPs of practical affectively.			A4	Role Play			
TOPIC: ANTIARRHYTHMIC										
79	Week-14	Definition	Define antiarrhythmic drugs and their classification	C1			Interactive lecture /SGD	2	MCQs/SEQs	4
80		Pharmacokinetics	Describe the pharmacokinetics of antiarrhythmic drugs	C2						
81		Pharmacodynamics	Describe the Pharmacodynamics of antiarrhythmic drugs	C2						
82		Uses	Describe the indications and applications of antiarrhythmic drugs in the management of different perioperative emergencies based on patient-specific requirements.	C2						
83		Practical performances	Build and construct an emergency drug kit containing antiarrhythmic agents, calibrate all necessary administration equipment, and create a checklist to ensure readiness for perioperative emergencies.		P2		Practical /Video Demonstration	2	OSPE	1
84		SOPs compliance	Follow the specified norms of the IL, SGD teaching & learning.			A4	Role Play			
TOPIC: VASODILATOR										
85		Definition	Define vasodilator drugs and their classification	C1			Interactive lecture /SGD	2		3

86	Week-15	Pharmacokinetics	Describe the pharmacokinetics of vasodilator drugs	C2					MCQs/SEQs	
87		Pharmacodynamics	Describe the Pharmacodynamics of vasodilator drugs	C2						
88		Uses	Describe the indications and applications of vasodilator drugs in the management of different perioperative emergencies based on patient-specific requirements.	C2						
89		Practical performances	Build and construct an emergency drug kit containing vasodilator agents, calibrate all necessary administration equipment, and create a checklist to ensure readiness for perioperative emergencies.		P2		Practical /Video Demonstration	4	OSPE	1
90		SOPs compliance	Comply to SOPs of practical affectively.			A4	Role Play			
TOPIC: BRONCHODILATORS										
91	Week-16	Definition	Define bronchodilator drugs and their classification	C1			Interactive lecture /SGD	2	MCQs/SEQs	3
92		Pharmacokinetics	Describe the pharmacokinetics of bronchodilator drugs	C2						
93		Pharmacodynamics	Describe the Pharmacodynamics of bronchodilator drugs	C2						
94		Uses	Describe the indications and applications of bronchodilator drugs in the management of different perioperative emergencies based on patient-specific requirements.	C2						
95										
96		Practical performance	Build and construct an emergency drug kit containing vasodilator agents, calibrate all necessary administration equipment, and create a checklist to ensure readiness for perioperative emergencies.		P2		Practical /Video Demonstration	2	OSPE	1
97		SOPs compliance	Take care of ethics during the anesthesia and surgical procedure			A4	Role Play			

Recommended Books:

1. Anesthetic pharmacology. Evers .Alex & Maze,Mervyn, .kharasch, .D, .even, .2nd edition.
2. Principles and practice of pharmacology for anesthesia.Calve, Norman & William, Norton, 5th edition.
3. Textbook of Anesthesia. Aitkenhead, Alan, R., 5TH edition.
4. Lippincott's pharmacology. Howland, Richard, D, & Mycek, .Mary, J, 3rd edit.
5. Clinical anesthesiology. Morgan & Mikhail's, 5TH edit

ASSESSMENT BREAKDOWN

S.No	Topics	No of MCQ	No of OSPE / OSCE Stations	Static / Interactive
1	Intravenous Anesthetic Agents I	6	1	Interactive
2	Intravenous Anesthetic Agents II	6	1	Interactive
3	Inhalational Agents	8	1	Interactive
4	Demoralizing muscle relaxant	5	1	Interactive
5	Non-demoralizing Muscle relaxant	5	2	Interactive
6	Local Anesthetic agents	5	1	Static
7	Narcotic analgesic	4	1	Interactive
8	Non-Narcotic analgesic	4	1	Interactive
9	Anticholinergic	3	2	Interactive
10	Reversal agents	3	1	Interactive
11	Benzodiazepine	4	2	Interactive
12	Antiemetic	3	1	Interactive
13	Antiarrhythmic	4	1	Static
14	Sympathomimetic	4	1	Interactive
15	Vasodilator	3	1	Interactive
16	Bronchodilator	3	1	Interactive
Total	**16**	**70**	**14**	**14**

ANS-606 TOS Anesthesia Equipment 3 (2+1)

Course Description

The purpose of this course is to equip students with comprehensive knowledge and understanding of anesthesia equipment and airway management. It aims to foster the development of professional skills by exploring the principles, functionality, and clinical applications of essential anesthesia devices. Through this curriculum, students will gain insight into oxygen delivery systems, supraglottic airway devices, ventilators, and monitoring tools, understanding their role in patient care. Designed to bridge theoretical knowledge with real-world clinical scenarios, this course ensures competency in the safe and effective use of anesthesia equipment in various healthcare settings.

Cognitive Domain

By the end of this subject, students should be able to:

1. Discuss the historical development and recent advancements in anesthesia equipment and airway management.
2. Describe the structure, function, and principles of operation of various anesthesia devices, including oxygen delivery systems, ventilators, and airway management tools.
3. Explain the fundamental concepts related to anesthesia equipment, including gas supply, pressure systems, and circuit dynamics.
4. Identify different types of airway management devices, such as supraglottic airways, endotracheal tubes, and laryngoscopes, along with their clinical applications.
5. Discuss the mechanisms, advantages, and limitations of different anesthesia ventilation systems.

Skills Domain

By the end of this subject, students should be able to:

1. Identify and set up anesthesia equipment, including oxygen delivery systems and airway devices.
2. Apply safety protocols and infection control measures in anesthesia practice.
3. Operate and troubleshoot anesthesia machines and ventilators.
4. Perform airway management techniques, including supraglottic and endotracheal intubation.
5. Use anesthesia monitoring devices to assess patient vitals.

Affective Domain

By the end of this subject, students should be able to:

1. Demonstrate punctuality and professionalism.
2. Follow learning norms and respectful communication.
3. Uphold ethical and socially responsible behaviour in academic and clinical settings

S.No	Weeks	Contents	Learning Outcome	Domain			MIT's	Time/Hours	Assessment	No of Items
				C	P	A				
TOPIC: OXYGEN DELIVERY DEVICES										
1	Week-1	Introduction	Enlist the Oxygen delivery devices	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
2		Working principle	Discuss the working principles, high- and low-pressure systems	C2						
3		Safety and efficiency	Differentiate different oxygen sources in terms of safety and efficiency	C4						
7		Practical	Perform la Assist in setting up oxygen cylinders and wall-mounted oxygen systems.		P2		Practical/Video Demonstration	2	OSPE	1
8		SOPs compliance	Show interest in learning about different oxygen supply devices.			A2	Role Play			
TOPIC: SUPRAGLOTTIC AIRWAY DEVICES										
9	Week-2	Introduction to Supraglottic airway devices	List the types of airways (OPA, NPA, LMA, etc.)	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	3
10		Indication and contraindication	Explain the indications, advantages, and disadvantages of all airways	C2						
11		Choosing airways in different scenario	Choose appropriate airway device for emergencies, elective and recovery of patients	C3						
12		Effectiveness	Compare the effectiveness of different airway devices in difficult airway management	C4						
13		Practical	Perform airway insertion under supervision.		P3		Practical/Video Demonstration	2	OSPE	1
14		SOPs compliance	Value the selection of appropriate airway devices based on patient needs.			A3	Role Play			
TOPIC: ENDOTRACHEAL TUBE (ETT), LARYNGOSCOPE &AIRWAY ADJUVANTS										
15	Week-3	Definition	Define an endotracheal tube (ETT) and list its types (cuffed, un-cuffed, reinforced, double lumen, and others ETTs	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	3
16		Structure and indication	Discuss the structure, function, and indications for different types of ETTs	C2						
17		Selection and technique of insertion of ETT	Explain the proper selection, preparation, and technique of insertion of an ETT.	C2						
18		Airway adjuvants	Recognize bougie, stylet, and their proper use.	C2						
		Laryngoscope and its types	Explain a laryngoscope and its types (Macintosh, Miller, video laryngoscope, fiber-optic)	C2						

19		Practical	Perform intubation under supervision.		P3		Practical/Video Demonstration	2	OSPE	1
20		SOPs compliance	Advocate regular practice of intubation techniques to ensure competency.			A4	Role Play			
TOPIC: RESERVOIR BAGS AND FACE MASKS										
21	Week-4	Componethe nts of Ambu bag and face mask	Recall the components of the Ambu bag and the Face mask	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	3
22		Functions	Discuss the function and types of reservoir bags & face masks	C2						
23		Choosing an appropriate size	Choose the appropriate reservoir bags and masks for neonates, pediatrics, and adults	C2						
27		Practical	Independently apply and manage a face mask for ventilation.		P4		Practical/Video Demonstration	2	OSPE	1
28		SOPs compliance	Actively participate in assembling and handling these devices.			A2	Role Play			
TOPIC: MEDICAL GAS SUPPLY AND CYLINDERS										
29	Week-5	Definition	Define a gas cylinder and a medical gas supply system	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
		Color codes	Enlist the color codes and pressure systems	C1						
30		Capacity of cylinders	Discuss the capacity of different cylinders	C2						
31		Risks and handling	Discuss the potential the risks associated with improper handling of gas cylinders.	C2						
32		Practical	Perform cylinder handling and connection under supervision		P3		Practical/Video Demonstration	2	OSPE	2
33		SOPs compliance	Show attentiveness while learning about gas cylinder color coding and pressure levels.			A2	Role Play			
TOPIC:ANESTHESIA MACHINE										
34	Week 6	Introduction	Define an anesthesia machine and list the components of an anesthesia machine	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
		Pressure system	Explain the low-pressure, intermediate-pressure pressure and high-pressure systems	C2						
		Components	Discuss the components of anesthesia machine	C2						
35		Function of major components	Explain the function of O2 flush, Soda lime, and scavenging system	C2						
36		Practical	Assist in daily machine checks and circuit connections.		P2		Practical/Video Demonstration	2	OSPE	1

37		SOPs compliance	Advocate strict adherence to machine pre-use checklists.			A4	Role Play			
TOPIC: VENTILATORS AND ITS TYPES										
38	Week 7	Introduction	Define the types of ventilators (pneumatic, electronic)	C3			Interactive lecture /video demonstration	2	MCQs/SEQs	7
39		Different types of ventilators	Discuss different types of ventilators (Invasive and Non-Invasive ventilators)	C1						
40		Ventilation criteria	Discuss the criteria for ventilating a patient	C3						
41		Difference	Differentiate between various ventilators (Positive &Negative pressure ventilator, high frequency ventilator, Neonatal ventilator)	C3						
41		Practical	Perform ventilator settings adjustments under supervision.		P3		Practical/Video Demonstration	2	OSPE	1
42		SOPs compliance	Engage in discussions about different types of ventilators			A2	Role Play			
TOPIC: MODES OF VENTILATION										
43	Week-8	Introduction to modes	Define different ventilation modes (VCV, PCV, SIMV, APRV, HFOV, CMV, Spontaneous, ASV, BIPAP, PSV, and CPAP).				Interactive lecture /video demonstration	2	MCQs/SEQs	7
44		Working Principles	Discuss the working principles of each mode							
45		Basic concepts	Explain the Triggering, time, limit, cycling, PEEP, PIP, and plateau pressure							
		Practical implication	Differentiate which ventilation mode is best suited for specific clinical conditions (Asthma, COPD, Pneumonia, ARDS)							
46		Practical	Perform adjustments to ventilation settings under supervision		P3		Practical/Video Demonstration	2	OSPE	1
47		SOPs compliance	Advocate for evidence-based selection of ventilation modes.			A4	Role Play			
TOPIC: BREATHING CIRCUITS										
48	Week-9	Introduction	Define breathing circuits and types of breathing circuits (open, closed, semi-closed)	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	3
49		Impact	Discuss the differences between circuits and their impact on anesthesia	C2						
50		Mapleson circuits	Discuss the Mapleson breathing circuits	C2						
		Differences	Differentiate the efficiency of different circuits in reducing dead space and rebreathing.	C3						

51		Practical	Observe different types of breathing circuits.		P1		Practical /Video Demonstration	2	OSPE	2
52		SOPs compliance	Engage in discussions about the advantages and limitations of various circuits.			A2	Role Play			
TOPIC: SPINAL & EPIDURAL NEEDLES, IV CANNULAE										
53	Week-10	Introduction	Define types of spinal and epidural needles, and list IV cannula sizes	C1			Team-Based Learning	2	MCQs/SEQs	4
54		Selection criteria	Explain the needle designs and selection criteria of Spinal and Epidural needles.	C2						
		Flow rates and color codes	Discuss the flow rate and gauge of the IV cannula along color codes	C2						
55		Risks and benefits analysis	Differentiate the risks and benefits of different needle designs in regional anesthesia (PDPH)	C3						
56		Practical	Assist in preparing and positioning patients for spinal/epidural anesthesia.		P2		Practical /Video Demonstration	2	OSPE	1
57		SOPs compliance	Encourage strict adherence to aseptic techniques.			A4	Role Play			
TOPIC: CAPNOGRAPHY & PULSE OXIMETRY										
58	Week-11	Definition	Define Capnography and Pulse oximeter	C1			Interactive lecture /video demonstration	4	MCQs/SEQs	8
59		Working principles	Explain the working principles of both	C2						
60		Importance	Discuss the importance of both in Perioperative settings	C2						
61		Interpretation	Interpret the capnography waveforms and SpO_2 readings	C3						
62		False readings	Explain the conditions in which pulse oximeter gave false readings	C3						
63		Different capnography readings	Differentiate normal and abnormal capnography readings for various clinical conditions	C3						
64		Summary	Summarize the content	C2						
65		Practical	Independently interpret and act on capnography and pulse oximetry readings.		P4		Practical /Video Demonstration	2	OSPE	2
66		SOPs compliance	Show interest in learning how to interpret waveforms and readings.			A2				
TOPIC: NERVE STIMULATOR & GLUCOMETER										
67	Week-12	Introduction	Define nerve stimulators and glucometer	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	5
68		Working Principles	Discuss the working principle of Nerve stimulator and its role in perioperative management	C2						
69		Interpretation	Interpret Train-of-four" (TOF)	C3						
70		Importance of glucometer	Discuss the importance of Glucometer and its operating technique	C1						

71		Practical	Observe nerve stimulator and glucometer usage		P1		Practical /Video Demonstration	4	OSPE	1
72		SOPs compliance	Engage in discussions on nerve stimulation and glucose assessment techniques.			A2	Role Play			
TOPIC: OT TABLE & SUCTION APPARATUS										
73	Week-13	Introduction	Define Negative suction	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	3
74			Recall the parts of OT tables and suction apparatus	C1						
75		Working principles	Discuss the working mechanisms and applications of different suction catheters.	C2						
		Appropriate pressure and catheter	Choose appropriate suction pressure and catheter in adults, peads and neonates	C3						
76		OT table positioning	Differentiate, different OT table positioning techniques for specific surgeries	C4						
77		Practical	Perform suctioning under supervision with a different suction catheter.		P3		Practical /Video Demonstration	4	OSPE	1
78		SOPs compliance	Promote routine equipment checks before surgical procedure			A4	Role Play			
TOPIC: AUTOCLAVE, TYPES, AND FUNCTION										
79	Week-14	Introduction	Recall sterilization and define autoclave	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
80		Types of Autoclaves	Discuss the types of Autoclaves	C2						
81		Principles	Explain the principles of autoclave	C2						
82		Importance	Explain the importance of autoclave in Hospital settings and anesthesia	C2						
83		Practical	Observe the autoclaving process of anesthesia equipment.		P1		Practical /Video Demonstration	2	OSPE	1
84		SOPs compliance	Show interest in learning about different sterilization techniques.			A2	Role Play			
TOPIC: DEFIBRILLATOR										
85	Week-15	Introduction	Define a defibrillator and list its types (manual, semi-automatic, automatic)	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	5
86		Working principles	Explain the working principle of defibrillators and their role in cardiac arrest management	C2						
87		Types	Discuss the monophasic and Biphasic defibrillator mechanism	C2						

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88		Precautions	Discuss the SOPs and precautions while applying defibrillator	C2						
89		Practical	Observe the functioning of a defibrillator on dummy		P1		Practical /Video Demonstration	4	OSPE	1
90		SOPs compliance	Show willingness to learn about defibrillator operation.			A2	Role Play			
TOPIC: INFUSION PUMP & VAPORIZER										
91	Week-16	Definition	Define an infusion pump	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	3
92		Types	Explain its types (volumetric, syringe, PCA)	C2						
93		Working Principles	Explain the working principle, components, and clinical applications	C2						
94		Troubleshooting	Interpret the correct setup, programming, and troubleshooting of an infusion pump.	C3						
		Vaporizer	Define an anesthetic vaporizer and list its types (variable bypass, Desflurane vaporizer)							
		Working principle of the Vaporizer	Discuss the working principles, temperature compensation, and output control							
95										
96		Practical	Assist in priming an infusion pump and refilling a vaporizer		P2		Practical /Video Demonstration	1	OSPE	1
97		SOPs compliance	Show responsibility in ensuring accurate dosing			A3	Role Play			

Recommended Books:

6. Understanding Anesthetic Equipment & Procedures: A Practical Approach, Dwarkadas K Baheti, First Edition
7. Understanding Anesthetic Equipment: Jerry A. Dorsch, MD & Susan E. Dorsch, MD, Fifth Edition
8. Essentials of Anesthetic Equipment: Baha Al-Shaikh & Simon Stacey Fourth Edition

ASSESSMENT BREAKDOWN				
S.No	**Topics**	**No of MCQ**	**No of OSPE / OSCE Stations**	**Static / Interactive**
1	Oxygen Supply Devices	4	1	Interactive
2	Supraglottic Airway devices	3	1	Interactive
3	Endotracheal Tube (ETT), Laryngoscope &airway adjuvants	5	1	Interactive
4	Reservoir Bags and Face Masks	3	1	Static
5	Medical Gas Supply and Cylinders	4	0	Interactive
6	Anesthesia Machine	4	1	Interactive
7	Ventilators and Its Types	7	1	Interactive
8	Modes of Ventilation	7	0	Interactive
9	Breathing Circuits	3	1	Interactive
10	Spinal & Epidural Needles, IV Cannula	4	1	Interactive
11	Capnography & Pulse Oximeter	5	1	Interactive
12	Nerve Stimulator & Glucometer	4	1	Interactive
13	OT Table & Suction Apparatus	5	1	Static
14	Autoclave, Types, and Function	4	1	Interactive
15	Defibrillator	5	1	Interactive
16	Infusion Pump & Vaporizer	3	1	Interactive
Total	**16**	**70**	**14**	**14**

Commented [BD2]: Add some static also…

ANS-607 HISTORY TAKING PRE-OPERATIVE ASSESSMENT & MEDICATION POST-OPE CARE 3(2+1)

COURSE DESCRIPTION

This course covers evidence-based preoperative evaluation, intraoperative monitoring, and postoperative management aligned with ASA guidelines and ERAS protocols. Students will master systematic history-taking, risk stratification tools (e.g., ASA classification, RCRI), and comorbid condition optimization (cardiovascular, pulmonary, endocrine). The curriculum emphasizes airway assessment, medication reconciliation, and perioperative documentation, integrating cognitive, psychomotor, and affective domains. Hands-on training includes vital signs monitoring, PONV/pain management algorithms, and PACU discharge criteria, with simulations for crisis scenarios. By the end of the course, participants will demonstrate competency in developing patient-specific care plans and implementing ERAS principles to enhance surgical outcomes.

LEARNING OBJECTIVES

Cognitive Domain

By the end of this course, students should be able to:

1. Identify and interpret essential components of preoperative history, physical examination, and diagnostic investigations required to evaluate surgical risk and formulate an appropriate anesthetic plan.
2. Evaluate preoperative laboratory and diagnostic test indications based on patient comorbidities, surgical risk, and current guidelines, ensuring judicious and evidence-based use.
3. Formulate a comprehensive and individualized anesthetic plan incorporating ASA classification, functional capacity, airway evaluation, medication management, fasting guidelines, and perioperative optimization strategies.

Psychomotor Domain

By the end of this course, students should be able to:

1. Perform a systematic preoperative assessment and physical examination, including cardiovascular, pulmonary, and airway assessment to identify perioperative risks.
2. Demonstrate accurate documentation of preoperative assessment, including completion of the anesthesia record and postoperative notes in line with institutional and regulatory requirements.
3. Conduct a focused airway examination and apply difficult airway assessment tools to plan airway management.

Affective Domain

By the end of this course, students should be able to:

1. Demonstrate empathy and cultural sensitivity when obtaining preoperative history and explaining anesthesia plans and associated risks to patients and families.
2. Value the importance of shared decision-making by involving patients in discussions about anesthetic options, risks, and preferences.
3. Exhibit professionalism and ethical conduct while documenting preoperative findings, ensuring honesty, accuracy, and patient confidentiality.
4. Advocate for patient safety and optimal care by recognizing the need for specialist consultations or postponement of surgery when appropriate.
5. Respect the interprofessional team dynamic by communicating effectively with surgeons, nurses, and consultants during the preoperative planning process.

S.No	Weeks	Contents	Learning Outcome	Domain			MIT's	Time/Hours	Assessment	No of Items
				C	P	A				
TOPIC: TOPIC: INTRODUCTION TO PERIOPERATIVE CARE AND HISTORY TAKING										
1	Week-1	Definition	Define pre-up, intra-up and post-up care.	C1			Interactive lecture / SGD	2	MCQs/ SEQs	8
2		Goal and objectives of perioperative care	Describe the goal and objectives of perioperative care	C2						
3		Importance of preoperative evaluation	Explain the importance of preoperative evaluation.	C2						
4		presenting complaint	Identify the patient's presenting complaint and planned surgical procedure	C3						
5		Past Medical History	Identify past medical History, surgical history, anesthetic history, drug history, and Allergy History	C3						
6		Social History	Take Family, smoking and alcohol history	C3						
7		Practical performance	Demonstrate the ability to take a patient's history accurately in the preoperative record.		P2		Practical/Video Demonstration	1	OSPE/OSCE	1
8		Ethical Vigilance	Recognize the ethical and legal responsibilities in preoperative care.			A2	Role Play			
TOPIC: PREOPERATIVE PHYSICAL EXAMINATION										
9	Week-2	Components of Physical Examination	List the essential components of a preoperative physical examination relevant to anesthesia.	C1			Interactive lecture /SGD	2	MCQs/ SEQs	6
10		Berlin Questionnaire	Define the Berlin Questionnaire and its purpose in preoperative screening.	C1						
11		Components of the Berlin Questionnaire	List the key components (categories) of the Berlin Questionnaire	C1						

12		Obstructive sleep apnea	Classify patients into "high-risk" or "low risk" OSA categories based on responses to Berlin Questionnaire	C2						
13		risk for obstructive sleep apnea	Explain how the berlin questionnaire identifies patients at risk for obstructive sleep apnea	C2						
14		STOP-BANG questionnaire	Recall the eight components of the STOP-BANG Questionnaire (Snoring, Tiredness, observed apnea, Pressure [BP], BMI, Age, Neck circumference, Gender).	C1						
15		purpose of the STOP-BANG Questionnaire	Explain the purpose of the STOP-BANG Questionnaire in preoperative risk stratification.	C2						
16		OSA risk score based on STOP-BANG Questionnaire	Interpret the patient's OSA risk score based on responses	C3						
17		cutoff OSA risk score	Compare the cutoff scores for low, intermediate, and high risk of obstructive sleep apnea (OSA).	C4						
18		ADMINISTERING Berlin Questionnaire	Demonstrate airway assessment BY ADMINISTERING Berlin Questionnaire		P3		Practical/Video Demonstration	1	OSPE	1
19		Ethical Vigilance	Show empathy while counseling high-risk OSA patients			A2	Role Play			
TOPIC: PREOPERATIVE LABORATORY INVESTIGATIONS										
20	Week-3	Standard preoperative investigations	List the standard preoperative investigations (e.g., urinalysis, FBC, ECG, Cardiopulmonary Exercise Testing, chest x-ray) and their indications.	C1			Interactive lecture / SGD	2	MCQs/ SEQs	5
21		Specific tests	Recall the patient groups requiring specific tests (e.g., electrolytes for patients >65 years, LFTs for liver disease).	C1						

22		Abnormal results	Describe how abnormal results (e.g., proteinuria, glycosuria) influence anesthetic management	C2						
23		Preoperative test Results Interpretation	Interpret common preoperative test results (e.g., anemia on FBC, hyperkalemia on electrolytes	C4						
24		Practical performances	Integrate preoperative test results into a comprehensive perioperative management plan		P4		Problem-Based Learning	1	OSPE	1
25		Sop complances	show empathy when discussing abnormal results (e.g., newly detected diabetes on urinalysis)			A2	Role Play			
TOPIC: PREDICTION OF PERIOPERATIVE MORBIDITY OR MORTALITY										
26	Week-4	ASA Physical Status Classification	Explain ASA Physical Status Classification grades (I-VI) and associated mortality rates	C2			Interactive lecture/ SGD	2	MCQs/ SEQs	6
27		perioperative risk	Explain how ASA classification correlates with perioperative risk	C2						
28		Revised Cardiac Risk Index	List the Revised Cardiac Risk Index (RCRI) criteria for predicting 30-day postoperative MI/cardiac death.	C1						
29		POSSUM score	Identify the POSSUM score components (physiological + surgical variables)	C3						
30		Implications of POSSUM/RCRI	Explain scoring POSSUM/RCRI using standardized patient data	C2						
31		difficult airway predictors	Demonstrate the use of difficult airway predictors (e.g., Mallampati, thyromental distance) in risk assessment	C2						
32		Practical performance	Demonstrate proper ASA classification documentation at preoperative level.		P3		Practical/Video Demonstration	1	OSPE	1
33		Sops complances	Acknowledge the ethical imperative to disclose surgical risks transparently.			A3	Role Play			
TOPIC: PREOPERATIVE CARE OF SPECIFIC COMORBID CONDITIONS										

34	Week-5	Cardiovascular Issues	In List high-risk cardiac conditions	C1			Interactive lecture /SGD	2	MCQs/ SEQs	6
35			Explain how uncontrolled HTN increases perioperative risk	C2						
36		Pulmonary Issues	Analyze how COPD/OSA impacts ventilation strategies	C4						
37		Coagulation Issues	Compare bleeding risks in liver disease vs. anticoagulant use	C4						
38		Endocrine/Metabolic	Analyze how COPD/OSA impacts ventilation strategies	C4						
			Identify when to postpone surgery for uncontrolled thyrotoxicosis	C3						
39		Practical performance	Perform independently according to ADA guidelines for preoperative glucose control		P4		Problem-Based Learning	1	OSPE	2
40		Sop compliances	Show empathy while sampling from patients at the preoperative level			A2	Role Play			
TOPIC: POSTPONING SURGERY FOR CLINICAL REASONS										
41	Week 6	ASA Fasting Guidelines	In List NPO durations (solids/clear fluids)	C1			Interactive lecture /SGD	2	MCQs/ SEQs	5
42			Analyze how fasting violations increase risk	C4						
43			Explain the aspiration risks related to fasting violations	C2						
44		Other Medical conditions	Identify conditions requiring surgery postponement	C3						
45			Explain the effect of hyperglycemia on the patient's body system	C2						
47		Practical performance	Prepare emergency airway cart for high-risk cases		P4					
48		Sop compliances	Value to strict NPO guideline of ASA			A2	Role Play			
TOPIC: PREMEDICATION AND OTHER PROPHYLACTIC MEASURES										
49	Week 7	Definition premedication	Define premedication and list its objectives	C1			Interactive lecture /SGD	2	MCQs/ SEQs	6
50		Drugs for premedication	Explain the drugs used for premedication for various prophylactic measures	C2						

51		Aspiration prophylaxis	Explain aspiration prophylaxis methods (e.g., H2 blockers vs. PPIs).	C2						
52		DVT Prophylaxis	Describe mechanical/pharmacologic DVT prophylaxis methods	C2						
53		Infection Prevention	Explain antibiotic protocols for common surgical procedures.	C2						
55		Practical performances	Demonstrate the preparation of various drugs and proper dosage for preoperative medications.		P3		Practical/Skill Lab	1	OSPE	1
56		Sop compliances	Share information with patients about the purpose and importance of premedication.			A3	Role Play			
TOPIC: AIRWAY ASSESSMENT										
57	Week-8	Pre-anesthetic Airway Assessment	Explain the components of airway assessment (Mallampati, thyromental distance, etc.	C2			Interactive lecture /SGD	2	MCQs/ SEQs	5
58			Explain difficult airways using validated tools (Mallampati, LEMON).	C3						
60		Practical performances	Perform a proper Mallampati assessment		P3		Practical/Video Demonstration	1	OSPE	1
61		Sop compliance	Demonstrate professionalism in airway emergencies.			A2	Role Play			
TOPIC: AIRWAY MANAGEMENT EQUIPMENT										
62	Week-9	Preparation & Equipment Check	Explain the importance of checking suction, O_2, and airway equipment.	C2			Interactive lecture /SGD	1	MCQs/ SEQs	3
63			Describe the preparation of a difficult airway cart	C2						
64		Patient Positioning & Pre-oxygenation	Explain the importance of sniffing position for ventilation	C2						
65		Practical performances	Demonstrate head-tilt/chin-lift maneuver.		P2		Practical /Video Demonstration	2	OSPE	2
66		Sop compliance	Take care of ethics during airway emergencies.			A1	Role Play			

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TOPIC: BAG-MASK VENTILATION										
67	Week-10	Bag-Mask Ventilation & Intubation	Define bag-mask ventilation and its component.	C1			Team-Based Learning	2	MCQs/ SEQs	3
68			Compare the effectiveness of ETT vs. LMA for a morbidly obese patient	C4						
69		Confirmation & Extubation	Interpret capnography to confirm ETT placement.	C3						
			Design an extubating checklist for a reactive airway patient	C6						
70		Practical performances	Demonstrate the bag mask ventilation using C & E techniques		P3		Video Demonstration/Skill Lab	1	OSPE	1
71		Sop compliance	Demonstrate professionalism in bag mask ventilation			A2	Role Play			
TOPIC: INTRAOPERATIVE MONITORING										
72	Week-11	ASA Monitoring Standards Fundamentals	Define ASA monitoring parameters	C1			Interactive lecture /SGD	2	MCQs/ SEQs	6
73			Explain the rationale for each standard	C2						
74		Core Vital Signs & Norms	Explain the essential parameters normal/abnormal ranges for adults & pediatric (HR, BP, SpO_2, RR, Temp, $EtCO_2$	C2						
75										
76		CVS Monitoring	Describe the methods for blood pressure monitoring	C3						
77		Temperature mentoring	Explain the importance of temperature maintenance and how to monitor	C2						
79		Practical performances	Apply ECG electrodes correctly positioned on the patient under supervision		P4		Video Demonstration	1	OSPE	1
		Sop compliances	Respect patient dignity during skin prep for ECG Electrodes			A3	Roleplay			
TOPIC: POSTOPERATIVE CARE IN ANESTHESIA										
81	Week-12	PACU Admission & Initial Assessment	Explain PACU admission criteria (Aldrete score components)	C2			Interactive lecture /SGD	2	MCQs/ SEQs	5
82		post-op assessment	Describe initial post-op assessment (airway, breathing, circulation)	C2						
83		compromise	Explain signs of airway compromise (stridor, desaturation)	C2						

84		Practical performances	Practice Aldrete scoring using simulated patient charts		P3		Practical /Video Demonstration/ Simulated Patient	1	OSPE	1
85		Sop compliances	Lead team during "crashing" PACU patient			A4	Role Play			
TOPIC: PACU PAIN MANAGEMENT										
86	Week-13	Pain Assessment Tools adjuncts	Explain pain scales (NRS, FLACC, CPOT)	C1			Interactive lecture /SGD	2	MCQs/ SEQs	3
87		Adjuncts	Describe the benefits of multimodal analgesia techniques	C2						
88		ERAS Fundamentals	In List, the core components of ERAS	C1						
89		Multimodal Pain Management	Recall the local blocks for postoperative analgesia	C1						
90		Practical performances	Show willingness to use an appropriate pain scale for Pain assessment at PACU		P2		Practical /Video Demonstration	1	OSPE	1
91		Sop compliances	Acknowledge the impotence of assessing pain			A1	Role Play			
TOPIC: POSTOPERATIVE NAUSEA AND VOMITING										
92	Week-14	PONV Risk Factors	Explain the risk factors for PONV	C2			Interactive lecture /SGD	2	MCQs/ SEQs	2
93		Mechanisms of antiemetic	Explain mechanisms of antiemetic (5-HT3, NK1, D2 antagonists)	C2						
94		Combination regimens	Compare combination regimens (e.g., dexamethasone + ondansetron)	C4						
95		Multimodal techniques	Describe the various drugs used for the management of PONV	C2						
96		Practical performances	Administer antiemetic prophylaxis in high-risk patients under supervision		P3		Practical /Video Demonstration	1	OSPE	1
97		Sop compliances	Participate actively in the selection and administration of antiemetic agents			A2	Role Play			
TOPIC: FLUID BALANCE & RENAL PROTECTION										
98	Week-15	Fluid Assessment	Explain fluids balance in postoperative care unit patients	C2			Interactive lecture /SGD	2	MCQs/ SEQs	2
99		Fluid Types	Compare crystalloids vs. colloids	C4						
100		Renal protection	Analyze AKI risk factors (contrast, hypotension)	C4						

101		Fluid overload vs. deficit	Describe fluids overload and deficit and its sign symptoms	C2						
103		Practical performances	Administer IV fluids with a precision pump under supervision		P3		Practical /Video Demonstration	1	OSPE	1
104		Sop compliances	Participate actively in the selection and administration of fluids postoperative			A2	Role Play			
TOIPC: DISCHARGE CRITERIA & COMPLICATIONS										
105	Week-16	Discharge Scoring Systems	Recall Aldrete & PADSS components	C1			Interactive lecture /SGD	2	MCQs/ SEQs	2
		Discharge criteria	Compare the signs and symptoms used to evaluate discharge criteria.	C4						
106		Practical performances	Demonstrate the application of the Aldrete and PADSS scoring systems for determining discharge readiness.		P2		Practical /Video Demonstration	1	OSPE	1
107		Sop compliances	Advocate the patients attendant for delayed discharge			A3	Role Play			

Recommended Books:
1. Smith and Aitkenhead's textbook of anesthesia -7th edition 2. Morgan and Mikhel's clinical anesthesiology -7th edition

ASSESSMENT BREAKDOWN				
S.No	Topics	No of MCQ	No of OSPE / OSCE Stations	Static / Interactive
1	Perioperative Care & History Taking	8	1	Interactive
2	Physical Examination & Investigations	6	1	Interactive
3	Special Investigations	7	1	Static
4	Prediction of Perioperative Morbidity/Mortality	8	1	Interactive
5	Continued Risk Assessmen.t	4	1	Interactive
6	Preoperative Care of Comorbid Conditions	7	2	Interactive
7	Postponing Surgery & Fasting Guidelines	6	1	Interactive
8	Premedication & Prophylactic Measures	6	1	Interactive
9	Continued Prophylactic Measures	2	1	Interactive
10	Airway Management	4	2	Interactive

11	Airway Equipment & Positioning	2	1	Interactive
12	Bag-Mask Ventilation & Intubation	2	1	Interactive
13	Intraoperative Ventilation Management	2	1	Interactive
14	Intraoperative Monitoring	4	1	Interactive
15	Postoperative Care (PACU, Pain, PONV	2	1	Static
16	ERAS & Discharge Criteria	2	2	Interactive
Total	16	70	19	14

ANS-608 TOS ANESTHESIA AND CO-EXISTING DISEASE 3(2+1)

Course Description

The goal of this course is to provide students with an understanding of medical conditions that affect anesthesia administration and perioperative care. It also highlights the challenges anesthesia professionals encounter when treating patients with conditions such as cardiovascular, respiratory, renal, hepatic, or endocrine disorders. By comprehending the impact of these diseases, students will learn to tailor anesthesia techniques to minimize risks and complications, ensuring safer surgical outcomes. The course combines knowledge of pathophysiology, pharmacology, and clinical guidelines to effectively address these complexities.

Cognitive Domain

By the end of this subject, students should be able to:

6. Discuss the pathophysiology of disease affecting organ systems.
7. Describe the key elements of the preoperative evaluation of these diseases.
8. Identify appropriate anesthetic agents and precautions in patients with these diseases.
9. Evaluate strategies for managing these patients pre-operatively to prevent post-operative complications.
10. Plan a safe and effective anesthetic technique for a patient with a different disease.

Skills Domain

By the end of this subject, students should be able to:

6. Demonstrate the smooth operation of the infusion machine/syringe pump.
7. Demonstrate the invasive and non-invasive techniques for blood pressure measurement and monitoring cardiac functions.
8. Demonstrate the use of advanced monitoring techniques for patients (e.g., cerebral perfusion monitoring).
9. Demonstrate proper positioning and techniques for safe airway management in patients with thyroid enlargement/spine abnormalities, etc.
10. Demonstrate the use of ventilatory support systems tailored to respiratory diseases.

Affective Domain

By the end of this subject, students should be able to:

4. Demonstrate punctuality.
5. Follow the specified norms of the IL, SGD teaching & learning.
6. Demonstrate the humbleness and use socially acceptable language during academic and social interactions with human models, colleagues, and teachers.
7. Demonstrate ethically competent decisions when confronted with an ethical, social or moral problem related to professional or personal life.

S.No	Weeks	Contents	Learning Outcome	Domain			MIT's	Time/Hours	Assessment	No of Items
				C	P	A				
TOPIC: DIABETES MELLITUS										
1	Week-1	Importance of glycemic control	Explain the role of glycemic control in preoperative preparation	C2			Interactive lecture /video demonstration	2	MCQs/SEQs	4
2		Preoperative assessment	Describe the preoperative assessment of diabetic patients	C2						
5		Perioperative management strategies	Apply perioperative management protocols for diabetic patients	C3						
6		Postoperative monitoring	Analyze postoperative complications associated with diabetes	C4						
7		Psychomotor domain	Demonstrate the insulin infusion preparation and infusion machine operation.		P3		Practical/Video Demonstration	2	OSPE	1
8		Affective domain	Value the significance of patient-centered care in anesthesia for diabetes			A3	Role Play			
TOPIC: HYPERTENSION, ISCHEMIC HEART DISEASE										
9	Week-2	Pathophysiology of hypertension and IHD	Explain the underlying pathophysiology of hypertension and ischemic heart disease	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
10		Preoperative risk assessment	Describe the considerations for preoperative risk stratification in hypertensive and IHD patients	C1						
11		Perioperative management protocols	Implement evidence-based perioperative management strategies for these patients	C3						
12		Postoperative care	Evaluate potential complications and their management in the postoperative period							
13		Psychomotor domain	Demonstrate the invasive and non-invasive technique for blood pressure measurement/monitoring and cardiac function during anesthesia.		P4		Practical/Video Demonstration	2	OSPE	1
14		Affective domain	Appreciate the importance of individualized care for hypertensive and IHD patients			A2	Role Play			
TOPIC: MYASTHENIA GRAVIS										
15	Week-3	Pathophysiology of myasthenia gravis	Explain the pathophysiological mechanisms of myasthenia gravis	C2			Interactive lecture /video demonstration	2	MCQs/SEQs	4
16		Preoperative evaluation	Describe the key elements of preoperative evaluation in myasthenia gravis patients	C2						

17		Anesthesia drug considerations	Identify anesthetic drugs and their interactions in myasthenia gravis	C3						
18		Postoperative respiratory care	Analyze postoperative risks, particularly respiratory complications, and their management	C4						
19		Psychomotor domain	Demonstrate intra-operative neuromuscular monitoring for patients with Guillain-Barre syndrome.		P3		Practical/Video Demonstration	2	OSPE	1
20		Affective domain	Value the importance of empathetic communication with patients who have neuromuscular disorders			A3	Role Play			
TOPIC: GUILLAIN-BARRÉ SYNDROME.										
21	Week-4	Pathophysiology of Guillain-Barre syndrome	Explain the mechanisms of Guillain-Barre syndrome and its impact on the nervous system	C2			Interactive lecture /video demonstration	2	MCQs/SEQs	4
22		Preoperative evaluation	Describe the assessment of autonomic dysfunction and respiratory status in these patients	C2						
23		Anesthetic management	Identify suitable anesthesia techniques and precautions for Guillain-Barre syndrome patients	C3						
24		Postoperative care	Analyze potential postoperative complications, including autonomic instability, and their management	C4						
28		Affective domain	Value the importance of holistic care and empathetic communication with patients experiencing severe motor deficits			A3	Role Play			
TOPIC: RENAL DISEASE										
29	Week-5	Pathophysiology of renal disease	Explain the effects of renal dysfunction on fluid and electrolyte balance	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	5
30		Preoperative assessment	Describe the importance of assessing renal function and associated comorbidities preoperatively	C2						
31		Anesthetic drug selection and precautions	Identify appropriate anesthetic agents and precautions in patients with renal impairment	C3						
		Postoperative care	Evaluate strategies for managing fluid balance and preventing complications postoperatively	C4						
32		Psychomotor domain	Demonstrate the collection of electrolyte disturbance data in various renal diseases.		P3		Practical/Video Demonstration	2	OSPE	1
33		Affective domain	Value the need for personalized care and empathy towards patients with chronic kidney conditions			A3	Role Play			
TOPIC: LIVER DISEASE										

38	Week 7	Pathophysiology of liver disease	Explain the impact of liver dysfunction on coagulation and drug metabolism	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	5
39		Preoperative assessment	Describe the importance of evaluating liver function and identifying comorbidities	C2						
40		Anesthetic drug considerations	Select appropriate anesthetic agents considering altered drug metabolism	C3						
41		Postoperative care	Analyze strategies to manage bleeding and monitor liver function postoperatively	C4						
41		Psychomotor domain	Demonstrate the collection of data relevant to liver abnormal biochemistry.		P3		Practical/Video Demonstration	2	OSPE	1
42		Affective domain	Value the significance of holistic care and sensitivity towards patients with hepatic conditions			A3	Role Play			
TOPIC: NEUROVASCULAR DISORDER (CEREBROVASCULAR ACCIDENT/STROKE)										
43	Week-8	Pathophysiology of cerebrovascular accidents	Explain the mechanisms and implications of cerebrovascular accidents	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
44		Preoperative assessment	Describe key elements of preoperative evaluation, including neurological status	C2						
		Anesthetic drug considerations	Identify appropriate anesthetic agents for neurovascular conditions	C3						
45		Hemodynamic management during surgery	Analyze techniques to maintain cerebral perfusion during anesthesia	C4						
46		Psychomotor domain	Demonstrate the use of advanced monitoring techniques for patients (e.g., cerebral perfusion monitoring).		P3		Practical/Video Demonstration	2	OSPE	1
47		Affective domain	Value the role of patient-centered communication with stroke survivors and families			A4	Role Play			
TOPIC: THYROID DISEASE										
48	Week-9	Pathophysiology of thyroid disorders	Explain the impact of hyperthyroidism and hypothyroidism on body systems	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	5
		Preoperative assessment	Describe the importance of evaluating thyroid function and associated risks	C2						

		Anesthetic drug selection and precautions	Identify safe anesthetic agents and precautions for thyroid dysfunction patients	C3						
49		Perioperative management of thyroid storm	Analyze strategies to recognize and manage thyroid storm during anesthesia	C4						
51		Psychomotor domain	Demonstrate techniques for safe airway management in patients with thyroid enlargement		P3		Practical /Video Demonstration	2	OSPE	1
52		Affective domain	Value the importance of compassionate care for patients with chronic endocrine conditions			A3	Role Play			
TOPIC: LUNG DISEASE (RESTRICTIVE LUNG DISEASE)										
53	Week-10	Pathophysiology of restrictive lung disease	Explain the impact of restrictive lung disorders on pulmonary mechanics	C1			Team Base Learning	2	MCQs/SEQs	4
54		Preoperative evaluation	Describe the assessment of respiratory function and associated comorbidities	C2						
		Anesthetic strategies	Identify suitable anesthetic approaches for patients with restrictive lung disease	C3						
55		Ventilation management during anesthesia	Analyze the techniques for optimizing ventilation in restrictive lung disease patients	C4						
56		Psychomotor domain	Demonstrate the use of ventilatory support systems tailored to restrictive lung mechanics		P3		Video Demonstration	2	OSPE	1
57		Affective domain	Value the significance of empathetic care for patients with chronic pulmonary conditions			A3	Role Play			
TOPIC: LUNG DISEASE (OBSTRUCTIVE LUNG DISEASE)										
58	Week-11	Pathophysiology of obstructive lung disease	Explain the pathophysiological changes in obstructive lung disorders such as COPD and asthma	C1			Interactive lecture /video demonstration	4	MCQs/SEQs	4
59		Preoperative evaluation	Describe the assessment of pulmonary function and coexisting conditions	C2						
63		Anesthetic strategies	Identify anesthetic techniques that minimize respiratory complications	C3						
64		Ventilation strategies during anesthesia	Analyze approaches to optimize ventilation and avoid air trapping	C4						
65		Psychomotor domain	Demonstrate the setup and use of ventilators tailored to obstructive lung conditions		P3		Video Demonstration	2	OSPE	1

66		Affective domain	Value the need for empathetic communication with patients facing chronic respiratory challenges			A3				
TOPIC: OBESITY, OBSTRUCTIVE SLEEP APNEA										
67	Week-12	Pathophysiology of obesity and OSA	Explain the physiological changes and implications of obesity and obstructive sleep apnea	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	6
68		Preoperative assessment	Describe the evaluation of obesity-related comorbidities and airway risks	C2						
69		Anesthetic drug considerations	Identify appropriate anesthetic agents and dosages tailored to bariatric patients	C3						
70		Airway and ventilation management	Analyze techniques for securing the airway and optimizing ventilation in obese patients	C4						
71		Psychomotor domain	Demonstrate proper positioning and airway management techniques for patients with obesity and OSA during surgery.		P3		Practical /Video Demonstration	4	OSPE	1
72		Affective domain	Appreciate the importance of multidisciplinary collaboration in the care of bariatric surgery patients			A3	Role Play			
TOPIC: RHEUMATOID ARTHRITIS.										
73	Week-13	Pathophysiology of rheumatoid arthritis	Explain the systemic effects of rheumatoid arthritis and its impact on anesthesia	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
74		Preoperative assessment	Describe the evaluation of joint mobility, airway involvement, and comorbidities	C3						
75		Anesthetic drug considerations	Identify suitable anesthetic agents and techniques for patients with rheumatoid arthritis	C2						
76		Perioperative management of complications	Analyze strategies for managing perioperative challenges, including cervical spine instability	C2						
77		Psychomotor domain	Demonstrate safe airway management techniques considering possible cervical spine involvement and Perform appropriate patient positioning to protect joints and prevent injury during anesthesia		P4		Practical /Video Demonstration	4	OSPE	1
78		Affective domain	Value the importance of empathy and effective communication with patients facing chronic joint pain and disability			A3	Role Play			
TOPIC: MALIGNANT HYPERTHERMIA										
79	Week-14	Pathophysiology of malignant hyperthermia	Explain the genetic basis and pathophysiological mechanisms of malignant hyperthermia	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4

80		Triggers and risk factors	Describe the common triggers (e.g., inhalational agents, succinylcholine) and patient risk factors	C2						
81		Diagnosis and early recognition	Identify the clinical signs and symptoms for early diagnosis of malignant hyperthermia	C3						
82		Management and treatment	Analyze protocols for the management of malignant hyperthermia, including the use of dantrolene.	C4						
83		Psychomotor domain	Demonstrate the preparation and administration of dantrolene in a simulated scenario, effective monitoring of patient vitals, and management of cooling techniques during a malignant hyperthermia crisis		P4		Practical /Video Demonstration	2	OSPE	1
84		Affective domain	Value the significance of teamwork and clear communication during critical events			A4	Role Play			
TOPIC: ARRHYTHMIAS AND HEART BLOCK										
85	Week-15	Pathophysiology of arrhythmias and heart block	Explain the mechanisms and clinical implications of arrhythmias and heart block	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	5
86		Preoperative evaluation	Describe the assessment of cardiac rhythm and identification of conduction abnormalities	C2						
87		Anesthetic management strategies	Identify suitable anesthetic techniques and precautions for patients with arrhythmias and heart block	C3						
88		Perioperative monitoring and intervention	Analyze methods for continuous cardiac monitoring and emergency interventions during anesthesia	C4						
89		Psychomotor domain	Perform proper monitoring techniques for detecting arrhythmias during anesthesia and demonstrate the setup and operation of external pacing devices for intraoperative use		P3		Practical /Video Demonstration	4	OSPE	1
90		Affective domain	Appreciate the importance of vigilance in managing perioperative cardiac rhythm abnormalities			A4	Role Play			
TOPIC: SPINAL CORD DISORDERS.										
91	Week-16	Pathophysiology of spinal cord disorders	Explain the effects of spinal cord injuries and disorders on anesthesia management	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
92		Preoperative evaluation	Describe the assessment of neurological deficits and associated complications	C2						
93		Anesthetic drug considerations	Identify suitable anesthetic techniques for patients with spinal cord disorders	C3						
94				C4						

95		Hemodynamic management	Analyze strategies for managing autonomic dysfunction during anesthesia							
96		Psychomotor domain	Demonstrate techniques for positioning patients with spinal cord injuries to avoid secondary injury and appropriate intraoperative monitoring techniques for spinal cord patients		P4		Practical /Video Demonstration	2	OSPE	1
97		Affective domain	Appreciate the importance of a multidisciplinary approach in caring for patients with spinal cord disorders			A4	Role Play			
TOPIC: ACROMEGALY										
91	Week-16	Pathophysiology of acromegaly	Explain the systemic effects of acromegaly and its anesthetic implications	C1			Interactive lecture /video demonstration	2	MCQs/SEQs	4
92		Preoperative evaluation	Describe the assessment of airway difficulties, cardiopulmonary function, and comorbidities	C2						
93		Anesthetic drug considerations	Identify anesthetic agents suitable for acromegaly patients	C3						
94		Management of airway challenges Affective domain	Analyze strategies to manage airway complications caused by soft tissue and skeletal changes Value the significance of empathetic communication with patients experiencing the physical and emotional effects of acromegaly	C4						
95										
97		Affective domain	Value the significance of empathetic communication with patients experiencing the physical and emotional effects of acromegaly			A3	Role Play			

Recommended Books:

1. Anesthesia and co-existing diseases. Roberta l.hines, .6th edition.
2. Evidence-based practice of anesthesiology.fleisher, .a, .lee, .3rd edition.
3. Textbook of Anesthesia. Aitkenheads, .Alan, .r, 5th edition.
4. Clinical anesthesiology. Morgan & Mikhail's, 5th edit.
5. A practice of anesthesiology. Healy, .e, .j, Thomas, 7th edition.
6. Fundamental of anesthesia. Smith, Tim, Pinock, .colin, Line, .ted, .johan, .robert, .3rd edition.

ASSESSMENT BREAKDOWN

S.No	Topics	No of MCQ	No of OSPE / OSCE Stations	Static / Interactive
1	Diabetes Mellitus	4	1	Interactive
2	Hypertension	4	1	Interactive
3	Myasthenia Gravis	4	1	Interactive
4	Guillain-Barre syndrome.	4	0	Static
5	Renal disease	5	1	Interactive
6	Liver disease.	5	1	Interactive
7	Neurovascular disorder (cerebrovascular accident/stroke)	4	1	Interactive
8	Thyroid disorder	5	1	Interactive
9	Lung Disease (Restrictive lung disease)	4	1	Interactive
10	Lung Disease (Obstructive lung disease)	4	1	Interactive
11	Obesity, Obstructive sleep Apnea	6	1	Interactive
12	Rheumatoid arthritis.	4	1	Interactive
13	Malignant hyperthermia.	4	1	Static
14	Arrhythmias and heart block	5	1	Interactive
15	Spinal cord disorders.	4	1	Interactive
16	Acromegaly	4	0	Interactive
Total	**16**	**70**	**14**	**14**

ANS-609	TOS Critical Care	3(2+1)

COURSE DESCRIPTION

This course provides undergraduate anesthesia students with foundational knowledge and essential skills in critical care.
It focuses on the management of critically ill patients, with emphasis on pathophysiology, monitoring techniques, life-support measures, and pharmacological interventions in the intensive care unit (ICU). Students will learn to assess and respond to emergencies, interpret critical care data, and apply evidence-based practices in collaboration with multidisciplinary teams.
The course aims to prepare students to play a proactive role in ICU settings.

LEARNING OBJECTIVES

Cognitive Domain

By the end of this course, students should be able to:

1. Explain the various levels of critical care units and their functions
2. Identify the different steps of BLS and ACLS
3. Explain the different modes of mechanical ventilation.
4. Discuss Respiratory and Metabolic Problems that can affect ABG's interpretations.
5. Identify clinical signs of electrolyte and fluid imbalances

Psychomotor Domain

By the end of this course, students should be able to:

1. Demonstrate different ICU zones and their functions.
2. Demonstrate placement of ECG electrodes, CVP line placement, and Arterial line.
3. Operate the ventilator (settings) based on patient-specific conditions.
4. Insert an enteral feeding tube.
5. Perform an arterial puncture to obtain an ABG sample.

Affective Domain

By the end of this course, students should be able to:

1. Develops a personal routine for the timely checking of monitored parameters.
2. Operate the ventilator (settings) based on patient-specific conditions.
3. Respond to ventilator alarms, assisting in troubleshooting.
4. Show attentiveness in monitoring patients' fluid and electrolyte balance.
5. Acknowledge the potential for post-traumatic stress in thoracic trauma survivors.

S.No	Weeks	Content	Learning Outcome	Domain			MIT's	Time/ Hours	Assessment	No of Items
				C	P	A				
TOPIC: INTRODUCTION TO CRITICAL CARE										
1	Week-1	Introduction	Define Critical care	C1			Interactive Lecture/SGD	2	MCQS	3
2		Types of ICU	Explain the various levels of critical care units and their functions	C2						
3		Admission criteria	Identify the criteria for admitting a patient to the ICU	C3						
4		The equipment	Identify basic equipment's use in critical care	C3						
5		Admission to critical care	Discuss the indications for admission to the ICU	C6						
6		Practical performance	Demonstrate different ICU zones and their functions.		P 3		Demo	1	OSPE	2
7		Sop compliance	Commitment to respecting patients' dignity and rights while providing care in the ICU.			A3	Role Play			
TOPIC: INFECTION CONTROL IN THE ICU										
8	Week-2	Definition	Define Nosocomial infection	C1			Interactive Lecture/SGD	2	MCQS	3
9		Causes	Enlist Common infection occurs in critical care	C1						
10		Infection control	Apply infection control protocols in critical care	C3						
11		Infection Control in Critical Care	Differentiate between cleaning, Disinfection, and sterilization.							
12		Protocol	Develop infection control protocol for ICU patients	C6						
13		Practical performance	Observe different isolation rooms in the critical care area.		P1		Demonstration	1	OSPE/OSCE	

14		Practical	Demonstrate proper Hand hygiene techniques		P3		Demonstration			
15		Sop compliance	Display a commitment to maintaining hygiene standards in the ICU.			A2	Roleplay			
TOPIC: MONITORING IN THE ICU										
17	Week-3	Monitoring in the ICU	Enlist the types of monitoring used in the ICU	C1			Interactive Lecture/SGD	2	MCQS	4
18		Vital Monitoring	Explain Different basic ICU monitoring (B.P., ECG, CVP, SPO2, Arterial line)	C2						
19		Techniques	Explain the invasive and noninvasive monitoring techniques	C2						
20		Trouble shooting	Identify equipment errors and errors related to the patient	C3						
21		Errors	Identify factors that can interfere with pulse oximetry, ECG, and CVP readings.	C3						
22		Check list	Design a checklist for assessment based on daily ICU monitoring data.	C6						
23		Practical performance	Demonstrate placement of ECG electrodes, CVP line placement, and Arterial line.		P 3		Demo	1	OSPE/ OSCE	3
24		Sop compliances	The student develops a personal routine for the timely checking of monitored parameters.			A3	Role Play			
TOPIC: CARDIOPULMONARY RECUSATION (BLS, ACLS)										
25	Week-4	Definition	Define cardiopulmonary resuscitation (CPR)	C1			Interactive Lecture/SGD	2	MCQS	6
26		Types of CPR	Briefly Explain Basic life support and advanced cardiac life support	C2						
27		Chain of survival	Explain the chain of survival	C2						
28		Protocol	Identify the indications for initiating CPR.	C3						

29		Steps in CPR	Identify the different steps of BLS and ACLS	C3						
30		Protocol	Identify situations that tend to stop CPR	C3						
31		Post care	Formulate a post-cardiac arrest care protocol	C6						
32		Practical performance	Demonstrate proper chest compression technique, including rate, depth, and recoil.		P3		Demonstration	1	OSPE/OSCE	
33		Sop compliances	Responds positively to instructor feedback regarding accurate chest compression and demonstrates willingness to improve.			A2	Roleplay			
TOPIC: SHOCK										
34	Week-5	Definition	Define shock and list its different types	C1			Interactive Lecture/SGD	2	MCQS	5
35		pathophysiology	Explain the pathophysiology of each type of shock	C2						
36		Signs and symptoms	Identify the causes, signs, and symptoms of each type of shock	C3						
37		Management	Discuss the initial management strategies for shock, including ABCDE protocols.	C6						
38		Practical performance	Observe the assessment of a patient in shock, including vital signs.		P1		Demonstration	1	OSPE/OSCE	3
39		Sop compliances	Becomes a role model for colleagues by promoting rapid response and focused care for patients in shock.			A5	Role Play			
TOPIC: MECHANICAL VENTILATION										
40	Week-6	Definition	Define mechanical ventilation and its types	C1			Interactive Lecture/SGD	2	MCQS	7
41		Indication	Enlist the indications and contraindications of mechanical ventilation	C1						
42		Types of ventilation	Explain the difference between invasive and non-invasive ventilation	C2						

43		Mode	Explain the different modes of mechanical ventilation.	C2						
44		Complication	Identify potential complications associated with mechanical ventilation.	C3						
45		Setting	Formulate a step-by-step approach to troubleshooting ventilator alarms	C6						
46		Weaning	Develop a weaning protocol for a patient recovering from mechanical ventilation.	C6						
47		Practical performance	Operate the ventilator (settings) based on patient-specific conditions.		P 2		Demonstration	1	OSPE/ OSCE	4
48		Sop compliances	Operate the ventilator (settings) based on patient-specific conditions.				Role play			
TOPIC: ABG'S INTERPRETATIONS										
49	Week-7	Definition	Define arterial blood gas (ABG)	C1			Interactive Lecture/SGD	2	MCQS	6
50		Normal values	Explain the components of ABGs and their normal values.	C1						
51		Interpretation	Repeat the stepwise approach to interpreting ABG reports	C1						
52		Simple collection	Explain how to take a sample for ABG's Report	C2						
53		Respiratory disorder	Discuss Respiratory and Metabolic Problems that can affect ABG's interpretations and their management	C2						
54		ABGS in ventilated patients	Demonstrate the interpretation of ABG values in a ventilated patient.	C3						
55		Practical performance	Perform an arterial puncture to obtain an ABG sample.		P 2		Demo	1	OSPE	2
56		Sop compliances	Makes ABG interpretation a consistent part of clinical decision-making			A5	Role Play			
TOPIC: NUTRITION IN THE ICU										
57		Definition	Define enteral and parenteral nutrition	C1			Interactive	2	MCQS	3

58	Week-8	Macronutrients and micronutrients	Enumerate the essential macronutrients and micronutrients required in ICU patients.	C1			Lecture/SGD			
59		Administration	Demonstrate the proper administration of enteral nutrition via NG/PEG tube.	C2						
60		Signs and symptoms	Identify signs of nutritional deficiencies in critically ill patients.	C2						
61		Complication	Discuss complications related to enteral and parenteral nutrition	C2						
62		Plan for nutrition	Develop a nutritional plan for a ventilated ICU patient	C6						
63		Practical performances	Insert an enteral feeding tube under supervision.		P 3		Demo	1	OSPE	2
64		Sop compliances	Display sensitivity towards patients' nutritional needs and preferences.			A2	Role Play			
TOPIC: CARE OF PATIENTS ON A VENTILATOR										
65	Week-9	Complication	Enumerate complications associated with long-term mechanical ventilation	C1			Interactive Lecture/ SGD	2	MCQS	4
66		Care of a patient on a ventilator	Explain the importance of maintaining airway patency in ventilated patients.	C2						
67		Pneumonia	Identify early signs of ventilator-associated pneumonia (VAP) and barotrauma.	C3						
68		Ulcers	Demonstrate the correct method of repositioning a bedridden patient to prevent pressure ulcers.	C3						
69		Practical performances	Demonstrate proper suctioning techniques to maintain airway clearance and to prevent airway injury.		P 3		Demo	1	OSPE	1
70		Sop compliances	Respond to ventilator alarms, assisting in troubleshooting			A2	Role play			
TOPIC: FLUIDS AND ELECTROLYTES BALANCE										

71		Plasma electrolytes	Enlist the major electrolytes and their normal ranges	C1						
72		IV fluids	Classify different IV fluids and their use in the ICU	C2						
73	Week-10	Fluids and Electrolytes balance	Explain the physiological mechanisms that regulate fluid and electrolyte balance.	C2						
74		Clinical signs	Identify clinical signs of electrolyte and fluid imbalances	C3						
75		Management	Discuss management of dehydration vs. fluid overload	C3						
76		Practical performances	Arrange IV fluids, administration sets, and necessary medications for fluid therapy.		P 2		Demo	1	OSPE	2
77		Sops compliances	Show attentiveness in monitoring patients' fluid and electrolyte balance.			A2	Role play			
TOPIC: MASSIVE BLOOD TRANSFUSION										
78	Week-11	Definition	Define massive blood transfusion	C1			Interactive Lecture/SGD	2	MCQS	4
79		Blood product	Enlist blood products for a massive blood transfusion	C1						
80		Massive Blood Transfusion	Discuss the importance of the Massive Transfusion Protocol (MTP) in critically ill patients.	C2						
81		Complication	Identify potential complications associated with massive blood transfusion	C3						
82		Management	Formulate strategies for managing transfusion-related	C6						
83		Practical performances	Practice to regulate blood transfusion speed using infusion pumps and blood warmers		P 2		Demo	1	OSPE	2
84		Sop compliances	Demonstrate a commitment to minimizing transfusion-associated risks.			A3	Role play			

TOPIC: SEDATION IN ICU										
85	Week-12	Definition	Define sedation and its use in the ICU.	C1			Interactive Lecture/ SGD	2	MCQS	4
86		Drugs for sedation	Enlist commonly used sedative drugs in Critical care	C1						
87		Sedation in the ICU	Explain different challenges for sedation in critical care	C2						
88		Types of sedation	Classify deep sedation, light sedation, and minimal sedation	C2						
89		Sedation in ventilated patients	Contrast sedation strategies for mechanically ventilated vs. non-ventilated ICU patients	C4						
90		Complication	Assume possible complications that may arise due to prolonged sedation	C4						
91		Practical performances	Observe protocols for administering sedation in critical care.		P1		Demo		OSPE/OSCE	
92		Sop compliances	Respond to changes in the patient's condition by adjusting sedation levels as needed.			A3				
TOPIC: PAIN MANAGEMENT IN ICU										
93	Week-13	Definition	Define pain and its significance in critically ill patients	C1			Interactive Lecture/SGD	2	MCQS	5
94		Signs and symptoms	What are the common signs of pain in a critically ill patient	C1						
95		Pain Management in the ICU	What are the signs of pain in non-communicative ICU patients	C1						
96		Mechanism of pain	Explain the physiological mechanisms of pain in ICU patients.	C2						
97		Drugs used for pain	Describe the pharmacological and non-pharmacological options for pain	C2						

			management in the ICU.							
98		Side effects in ICU patients	Discuss the potential side effects of pain medications and their Management.	C2						
99		Practical performances	Demonstrate the use of a pain assessment scale in ICU patients		P 3		Demo	1	OSPE	2
100		Sop compliances	Demonstrate a commitment to minimizing pain and discomfort for ICU patients by giving a timely and effective analgesia dose.			A3	Role play			
TOPIC: MANAGEMENT OF THORACIC TRAUMA										
101	Week-14	Definition	Define thoracic trauma and its common causes.	C1			Interactive Lecture/ SGD	2	MCQS	4
102		Causes	Discuss Different types of thoracic trauma	C2						
103		Complication	Discuss the complications associated with thoracic trauma and their management.	C2						
104		Management of thoracic trauma	Identify the management strategies for specific thoracic injuries (e.g., pneumothorax, hemothorax).	C3						
105		Treatment	Develop a treatment plan for a patient with penetrating thoracic trauma	C6						
106		Practical performances	Observe the intercostal chest tube insertion and secure it properly		P 1		Demo	1	OSPE	1
107		Sop compliances	Acknowledge the potential for post-traumatic stress in thoracic trauma survivors.			A1	Role Play			
TOPIC: DIABETIC KETOACIDOSIS (DKA) AND MANAGEMENT										
108	Week-15	Definition	Define diabetic ketoacidosis (DKA) and its precipitating factors	C1			Interactive Lecture/ SGD	2	MCQS	3
109		Clinical presentation	Describe the clinical presentation and diagnosis of DKA.	C2						
110		Pathophysiology	Explain its pathophysiology	C2						

111		Diabetic Ketoacidosis (DKA) and Management	Discuss the potential complications of DKA and their management.	C2						
112		Prevention	Formulate a strategy to prevent recurrent DKA in diabetic patients	C6						
113		SOP compliances	Demonstrate attentiveness in monitoring DKA patients' glucose levels.			A3	Role play	1	OSPE	1
TOPIC: COMMON DRUGS USED IN THE ICU										
114	Week-16	Drugs in the ICU	Enlist the most commonly used drugs in ICU settings.	C1			Interactive Lecture/ SGD	2	MCQS	4
115		Pharmacokinetics	Explain the pharmacokinetics and pharmacodynamics of common drugs used in the ICU.	C2						
116		Common Drugs Used in the ICU	Describe the dosing and administration protocols of these drugs.	C2						
117		Side effect	Identify potential side effects of these drugs	C3						
118		Practical performances	Perform accurate calculations for drug dosages and infusion rates		P 2		Demo	1	OSPE	2
119		Sop compliances	Recognize the critical importance of understanding drug indications, dosages, and side effects.			A1	Role play			

Recommended Books:

1. Oxford Handbook of Critical Care by Mervyn Singer, Andrew R. Webb
2. The Washington Manual of Critical Care, 3rd edition by Marin H. Kollof.
3. Marino's ICU book, 4th edition by Paul L. Marino, MD, PhD, FCCM.

4. Clinical anesthesiology. Morgan & Mikhail's, 5TH edition.

5. Textbook of Anesthesia. Aitkenheads, Alan, R., 6TH edition.

ASSESSMENT BREAKDOWN				
S.No	**Topics**	**No of MCQ**	**No of OSPE / OSCE Stations**	**Static / Interactive**
1	Introduction to Critical Care	3	0	Static
2	Infection control in the ICU	3	1	Static and Interactive
3	Monitoring in the ICU	4	1	Interactive
4	Cardiopulmonary resuscitation (BLS, ACLS)	6	2	Interactive
5	Shock	5	1	Interactive
6	Mechanical Ventilation	7	2	Interactive
7	ABG's Interpretations	6	2	Interactive
8	Nutrition in the ICU	3	0	Interactive
9	Care of patients on a ventilator	4	0	Interactive
10	Fluids and Electrolytes balance	5	1	Interactive
11	Massive Blood Transfusion	4	1	Interactive

12	Sedation in the ICU	4	0	Interactive
13	Pain Management in the ICU	5	1	Interactive
14	Management of Thoracic Trauma	4	1	Interactive
15	Diabetic Ketoacidosis (DKA) and Management	3	0	Interactive
16	Common Drugs Used in the ICU	4	1	Interactive
Total	**16**	**70**	**14**	**14**

ANS-610 TOS Leadership and Management 2(2+0)

Course Description

The purpose of this course is to equip students with essential knowledge and understanding of leadership and management principles in healthcare. It aims to develop professional competence by exploring leadership theories, emotional intelligence, communication, motivation, and resource management. Students will gain insight into planning, policymaking, organizational structures, and ethical leadership practices. Designed to integrate theoretical foundations with real-world applications, this course prepares learners to lead effectively and manage resources efficiently in diverse healthcare settings.

Cognitive Domain

At the end of this subject, students should be able to:

1. Discuss the foundational concepts of leadership and management in healthcare.
2. Describe various leadership theories, including trait, behavioural, contingency, and transformational approaches, and their relevance to clinical practice.
3. Explain the core functions of management, such as planning, organizing, leading, and controlling, within the context of healthcare organizations.
4. Identify different organizational structures and managerial hierarchies, analysing their roles and interrelationships in healthcare delivery.
5. Discuss key concepts of emotional intelligence, motivation, communication, and professionalism as they apply to effective leadership.
6. Describe essential aspects of policymaking, financial management, and human resource practices in healthcare leadership and administration

Affective Domain

At the end of this subject, students should be able to:

1. Demonstrate a positive attitude towards leadership responsibilities and teamwork.
2. Respect diverse perspectives and communicate professionally in group discussions and collaborative tasks.
3. Uphold ethical principles, accountability, and integrity in leadership and managerial roles within healthcare settings

S.No	Weeks	Contents	Learning Outcome	Domain			MIT's	Time/Hours	Assessment	No of Items
				C	P	A				
TOPIC: INTRODUCTION TO LEADERSHIP										
1	Week-1	Introduction	Define leadership	C1			Interactive lecture	2	MCQs/SEQs	4
2		Roles of leader	List of roles of a leader	C1						
3		Importance in healthcare	Describe importance in healthcare	C2						
7		Differences in contexts	Explain how leadership roles, styles, or effectiveness may change based on the environment	C2						
8		SOPs compliance	Demonstrate willingness to listen during leadership discussions.			A1	Role Play			
TOPIC: LEADERSHIP THEORIES										
9	Week-2	Key Theories	Identify key leadership theories	C1			Interactive lecture	2	MCQs/SEQs	3
10		Trait and Behavioral theories	Describe traits and behavioral theories	C2						
11		Contingency and transformational	Compare contingency vs transformational	C2						
12		Situational and charismatic theory	Explain the situational and charismatic theory of leadership	C2						
13		Great man theory	Explain the great man theory	C2						
14		SOPs compliance	Respond with interest to theoretical frameworks			A2	Role Play			
TOPIC: LEADERSHIP STYLES										
15	Week-3	Introduction	Define different leadership styles used in healthcare settings.	C1			Interactive lecture Role Play	2	MCQs/SEQs	3
16		Directive styles	Explain Directive Styles (Autocratic, Authoritative, Transactional, Bureaucratic)	C2						
17		Collaborative and supportive styles	Collaborative and Supportive Styles (Democratic, Laissez-faire, Transformational, Servant, Coaching)	C2						
18		Application of autocratic style	Describe the circumstances where an autocratic style would be effective (e.g., during a medical emergency, code blue).	C2						
20		SOPs compliance	Accept the value of diverse leadership styles and demonstrate openness to adapting one's own approach in collaborative healthcare settings			A3				
TOPIC: PROFESSIONALISM IN LEADERSHIP										

21	Week-4	Definition	Define Professionalism and Ethics	C1			Interactive lecture	2	MCQs/SEQs	3
22		Key components	Recall key components of effective communication, teamwork, and conflict resolution	C1						
23		Importance of professionalism healthcare	Explain the importance of professionalism in maintaining patient trust and ensuring quality care	C2						
27		Conflict resolution	Apply conflict resolution skills to manage disagreements among team members	C4						
28		SOPs compliance	Willingly engage in respectful dialogue to resolve conflicts, valuing diverse perspectives and teamwork			A2	Role Play			
TOPIC: EMOTIONAL INTELLIGENCE										
29	Week-5	Definition & its Components	Define emotional intelligence and its key components	C1			Interactive lecture	2	MCQs/SEQs	4
		Role in leadership	Explain the role of emotional intelligence in effective leadership.	C2						
30		Applying EI Strategies in Workplace Scenarios	Apply appropriate emotional intelligence strategies to manage common workplace scenarios such as conflict resolution, feedback response, motivation, and stress management	C3						
33		SOPs compliance	Accept responsibility in collaborative leadership tasks			A2	Role Play			
TOPIC: PROCESS MODELS AND CORE SKILLS										
34	Week 6	Introduction	Recall core leadership skills	C1			Interactive lecture	2	MCQs	4
		Leadership models	Explain Kouzes and Posner's Leadership Practices and Dunham and Pierce's Leadership Process Model	C2						
		Decision making process	Illustrate decision-making processes	C2						
35		Team based task	Apply skills to team-based tasks	C2						
		The 5 Es of Leadership	Explain the 5 Es of leadership	C2						
37		SOPs compliance	Advocate regular practice of intubation techniques to ensure competency.			A4	Role Play			
TOPIC: INTRODUCTION TO MANAGEMENT										
38	Week 7	Introduction	Discuss the 4 core functions of management	C2			Interactive lecture	2	MCQs	7
39		Types of management	Discuss Macro and Micromanagement	C2						
40		Differences with leadership	Describe differences between leadership and management	C2						

41		Difference between leader and manager	Explain in detail the differences between manager and leader	C2						
42		SOPs compliance	Demonstrate curiosity about managerial roles			A2	Role Play			
TOPIC: MANAGERIAL HIERARCHY										
43	Week-8	Level of management	Enlist the levels of management	C1			Interactive lecture	2	MCQs/SEQs	7
44		Responsibilities	Describe responsibilities of each level	C2						
45		Upward and downward communication	Explain upward and downward communication	C2						
		Decision flow in hierarchy	Illustrate how decisions flow through different levels of the managerial hierarchy in healthcare setting	C3						
47		SOPs compliance	Show respect for the roles of all levels of management			A1	Role Play			
TOPIC: COMMUNICATION IN MANAGEMENT										
48	Week-9	Introduction	Recall the types of communication used in management	C1			Interactive lecture	2	MCQs/SEQs	3
49		Communication models	Describe communication models in details	C2						
50		barriers to communication	Explain barriers to communication in healthcare management settings	C2						
		Cultural differences influence	Explain how cultural differences influence communication styles in a diverse healthcare team	C2						
52		SOPs compliance	Participate actively in team discussions, demonstrating attentive listening and respectful engagement			A2	Role Play			
TOPIC: CONTROLLING IN MANAGEMENT										
53	Week-10	Definition	Define controlling	C1			Interactive lecture	2	MCQs/SEQs	4
54		Span of control	Define span of control – how many people a manager can effectively supervise	C2						
		Controlling tools	Describe common control tools and techniques used in management, such as Key Performance Indicators (KPIs), audits, budgets, and performance appraisals	C2						
55		Patient feedback as controlling tool	Describe how feedback from patients and staff can be used as a control tool to improve healthcare services	C2						
57		SOPs compliance	Recognize the importance of accountability and consistent monitoring in delivering safe and effective patient care			A3	Role Play			
TOPIC: HR MANAGEMENT										

58	Week-11	Definition	Define Human resources management	C1			Interactive lecture	4	MCQs/SEQs	8
59		Function of HR	List down the functions and responsibilities of HR	C1						
60		Recruitment process	Discuss the recruitment and selection process in public and private sector	C2						
61		Handling grievances	Explain grievance handling in healthcare management	C2						
66		SOPs compliance	Appreciate the role of HRM in team well-being			A3				
TOPIC: FINANCIAL MANAGEMENT										
67	Week-12	Introduction	Define financial management and financial terms used in healthcare, such as revenue, expenses, cost, and profit	C1			Interactive lecture	2	MCQs/SEQs	5
68		Importance of financial management	Explain why financial management is important in ensuring quality patient care and sustainability of healthcare services	C2						
69		Decision making and financial management	Discuss how financial management supports decision-making in healthcare organizations	C2						
72		SOPs compliance	Demonstrate willingness to participate in discussions about the importance of financial responsibility in healthcare settings			A2	Role Play			
TOPIC: BUDGETING										
73	Week-13	Introduction	Define budgeting in the context of healthcare management.	C1			Interactive lecture	2	MCQs/SEQs	3
74			Define the types of budgets used in healthcare (e.g., operating, capital, cash, departmental)							
75		Basic steps of the budgeting	Discuss the basic steps of the budgeting process	C2						
		Purpose of budgeting	Explain the purpose of budgeting in healthcare organizations	C2						
76		Fixed and flexible budgets	Describe the differences between fixed and flexible budgets in a healthcare setting	C2						
78		SOPs compliance	Demonstrate willingness to engage in discussions on the role of budgeting in ensuring effective healthcare delivery			A2	Role Play			
TOPIC: PLANNING										
79	Week-14	Introduction	Define planning in the context of healthcare management and List types of planning	C1			Interactive lecture	2	MCQs/ SEQs	4
80		planning steps	Describe planning steps in details	C2						
81		strategic and operational planning	Explain the strategic and operational planning in a hospital setting	C2						

82		Influence on planning	Explain how external factors (e.g., government policy, epidemics, outbreaks and pandemics) influence healthcare planning	C2						
84		SOPs compliance	Participate actively in group activities and discussions related to healthcare planning scenarios			A2	Role Play			
TOPIC: MOTIVATION AND THEORIES										
85	Week-15	Definition	Define motivation in the context of healthcare work environments and key terms such as intrinsic motivation, extrinsic motivation, job satisfaction, hygiene factors, and incentives	C1			Interactive lecture	2	MCQs/SEQs	5
86		Maslow's Hierarchy of Needs	Explain Maslow's Hierarchy of Needs and how it applies to healthcare professionals	C2						
87		Herzberg's Two-Factor Theory	Describe Herzberg's Two-Factor Theory	C2						
88		Vroom's Expectancy	Discuss Vroom's Expectancy Theory and its implications for performance and reward systems in healthcare	C2						
90		SOPs compliance	Show interest in understanding what motivates oneself and others in clinical practice			A2	Role Play			
TOPIC: POLICY										
91	Week-16	Definition	Define policy in the context of healthcare systems.	C1			Interactive lecture	2	MCQs/SEQs	3
92		Types of policies	Explain types of healthcare policies, such as institutional policies, government health policies, and clinical practice guidelines	C2						
93		Differences	Describe the difference between a policy, a procedure, and a protocol in simple terms	C2						
94		Health policies making	Discuss how health policies are made	C2						
95		MTI	Discuss how MTI reforms affect hospital staff, such as changes in hiring, promotions, and accountability	C2						
97		SOPs compliance	Demonstrate respect for policies that promote patient safety and professional conduct			A3	Role Play			

Recommended Books:

3. The art of medical leadership. Suzan Oran. Scott Conrad
4. Strategic management. Ritson, Neil
5. Management basics. Quinn, Susan,
6. Emotional intelligence. MTD training
7. On Becoming a Leader. Bennis, Warren, 4th edition.
8. How to Win Friends & Influence. Kouzes, M. James. & Posner, Z, Barry, 5th edition