Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIEED

SCIENCES

Program Anesthesia Technician

Course Specification of Technology Anesthesia Equipment

Course No. (08 02 823)

2024

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean
Dr. Adnan Al ethory	Dr. Majid Shaalan	Dr.Fares Mahdi	**Dr.Fadl Shujaa Al-deen**	Dr. Abdulsalam Dallak

Template for Course Specification

I. Course Identification and General Information:

1	**Course Title:**	**Technology Anesthesia Equipment**			
2	**Course Code & Number:**	08 02 824			
3	**Credit Hours:**	**Credit Hours**	**Theory Hours**		**Lab. Hours**
			Lecture	**Field**	
		2	2	--	--
4	**Study Level/ Semester at which this Course is offered:**	Level2\1term			
5	**Pre –Requisite (if any):**	None			
6	**Co –Requisite (if any):**	None			
7	**Program (s) in which the Course is Offered:**	Bachelor of Anesthesia Technician			
8	**Language of Teaching the Course:**	English			
9	**Study System:**	Semester Based System			
10	**Mode of Delivery:**	Full Time			
11	**Location of Teaching the Course:**	**Faculty of Medical Applied Science**			
12	**Prepared by:**	Associate Prof. Adnan Al ethory			
	Date of Approval:	2024-1446^{Ah}			

II. Course Description:

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean
Dr. Adnan Al ethory	Dr. Majid Shaalan	Dr.Fares Mahdi	**Dr.Fadl Shujaa Al-deen**	Dr. Abdulsalam Dallak

. Description of anesthesia equipment technology Anesthesia equipment technology plays a crucial role in modern surgical procedures by ensuring the safety and comfort of patients undergoing anesthesia. Central to this technology is the anesthesia machine, designed to deliver precise concentrations of anesthetic agents and maintain vital life support functions. It typically incorporates a ventilator to assist with or control the patient's breathing, a patient-monitoring system to track vital signs such as heart rate, blood pressure, and oxygen saturation, and a gas delivery system to provide a mixture of oxygen and anesthetic gases.

III. Course Intended Learning Outcomes (CILOs) : (مخرجات تعلم المقرر)

A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:

a1	Demonstrate a comprehensive understanding of the principles of anesthesia, including pharmacology, physiology, and equipment used in various anesthesia modalities.	**A1**	. Recognize the knowledge from nursing science, other sciences and disciplines to make judgments relative to the practice of nursing that is based on research findings and evidence.
a2	Gain hands-on experience with anesthesia machines, monitoring devices, and other related equipment, ensuring the ability to operate and troubleshoot these systems effectively.	**A4**	Synthesize theories and concepts from liberal education to build an understanding of the human experience into nursing practice
a3	Familiarize with regulatory standards and best practices related to anesthesia technology, ensuring compliance with institutional policies and procedures	**A3**	Recognize the full details about the basic physics and its applications in anesthesia, the equipment's and apparatus in anesthesia and critical care unit.

B. Intellectual Skills: Upon successful completion of the course, students will be able to:

b1	Evaluation of some medical conditions after clinical anesthesia.	**B2**	Value the ideal of lifelong learning to support excellence in nursing practice
b2	Engage in research activities to understand the importance of evidence-based practices in improving patient outcomes in anesthesia care.	**B3**	Utilize awareness, interest and contribute towards advancement of self and of the

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			profession
C. Professional and Practical Skills: Upon successful completion of the course, students will be able to:			
c1	Employ knowledge of patient safety and monitoring techniques to assess and respond to patient needs during anesthesia administration.	**C1**	Practice as a professional nurse to facilitate human need fulfillment of individuals, families, groups, communities and populations across the lifespan in a variety of healthcare settings
c2	Demonstrate the ability to recognize and manage anesthesia-related emergencies, employing critical thinking and problem-solving skills.	**C2**	Apply concepts and skills of leadership, management, quality improvement and patient safety in the delivery of high-quality therapeutic nursing interventions for individuals, families, groups, communities
C3	apply ethical considerations in anesthesia practice, including patient rights, informed consent, and confidentiality		Apply concepts and skills of leadership, management, quality improvement and patient safety in the delivery of high-quality therapeutic nursing interventions for individuals, families, groups, communities
D. Transferable Skills: Upon successful completion of the course, students will be able to:			
d1	Develop effective communication and teamwork skills to work collaboratively with anesthesiologists, nurse anesthetists, and other healthcare professionals in perioperative settings.	D1	Communicate effectively with individuals and groups and members of the health team in order to promote effective interpersonal relationships and teamwork
d2	Discuss the legal and ethical issues that arise in the emergency care setting.	D2	Demonstrate professional, ethical, moral, legal, and spiritual concepts into one's practice within a global environment

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
a1	• Demonstrate a comprehensive understanding of the principles of anesthesia, including pharmacology, physiology, and equipment used in various anesthesia modalities.	▪ Interactive lecture ▪ Seminars and student presentations ▪ Brain storming, role-play and simulation ▪ Small group for discussing	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam ▪ Presentations
a2	• Gain hands-on experience with anesthesia machines, monitoring devices, and other related equipment, ensuring the ability to operate and troubleshoot these systems effectively.	▪ Interactive lecture ▪ Seminars and student presentations ▪ Brain storming, role-play and simulation ▪ Small group for discussing	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam ▪ Presentations
A3	• Familiarize with regulatory standards and best practices related to anesthesia technology, ensuring compliance with institutional policies and procedures	▪ Interactive lecture ▪ Seminars and student presentations ▪ Brain storming, role-play and simulation ▪ Small group for discussing	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam ▪ Presentations
(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		**Teaching Strategies**	**Assessment Strategies**
b1	•	▪ Interactive lecture ▪ Brain storming ▪ Role-play & simulation ▪ Small group discussions ▪ Seminars and student presentations	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam
b2	•	▪ Interactive lecture ▪ Brain storming	▪ Assignments ▪ Quizzes

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		▪ Role-play & simulation ▪ Small group discussions ▪ Seminars and student presentations	▪ Mid-term Exam ▪ Final exam
(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		**Teaching Strategies**	**Assessment Strategies**
c1	• Demonstrate a comprehensive understanding of the principles of anesthesia, including pharmacology, physiology, and equipment used in various anesthesia modalities.	▪ Active learning, ▪ Small group learning. ▪ Learning tasks and activities	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam
c2	• Gain hands-on experience with anesthesia machines, monitoring devices, and other related equipment, ensuring the ability to operate and troubleshoot these systems effectively.	▪ Active learning, ▪ Small group learning. ▪ Learning tasks and activities	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam
C3	• Familiarize with regulatory standards and best practices related to anesthesia technology, ensuring compliance with institutional policies and procedures	▪ Active learning, ▪ Small group learning. ▪ Learning tasks and activities	▪ Assignments ▪ Quizzes ▪ Mid-term Exam ▪ Final exam
(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		**Teaching Strategies**	**Assessment Strategies**
d1	Communicate with the patient and his family effectively in	▪ Classroom discussions,	▪ Presentations ▪ Case Studies

	professional manner using the principles of communication techniques	▪ Problems solving ▪ Case study analysis	▪ Learning activities
d2	Discuss the legal and ethical issues that arise in the emergency care setting.	▪ Classroom discussions, ▪ Problems solving ▪ Case study analysis	▪ Presentations ▪ Case Studies ▪ Learning activities

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	**Basic Anesthesia Principles**	• History and development of anesthesia • Types of anesthesia (general, regional, local)	1	2	a1, d2
2	**Anatomy and Physiology**	○ Overview of human anatomy relevant to anesthesia Respiratory and cardiovascular systems	1	2	a1, b1
3	**Anesthesia Equipment**	○ Types and functions of anesthesia machines ○ Monitoring equipment (ECG, pulse oximetry, capnography) ○ Airway management devices	1	2	a1, b1, c1, d1
4	**Patient**	○ Preoperative	3	6	a1, c1, d1

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	Assessment and Monitoring	assessment processes o Intraoperative monitoring techniques o Postoperative recovery considerations			
5	**Safety and Best Practices**	o Infection control and sterility measures o Emergency protocols and crisis management Anesthesia safety standards	1	2	a1, b1, c1, d1
		• Mad exam	1	2	
6	**Clinical Practicum**	Hands-on experience with anesthesia equipment and techniques Simulation training for various anesthesia scenarios	2	4	a2, b2, c2, d2
7	**Professional Issues and Ethics**	Roles and responsibilities of anesthesia technologists Legal and ethical considerations in anesthesia practice	3	6	a2, c2, d2
8	**Advanced Topics (Optional or Elective)**	• **Pediatric and Geriatric Anesthesia** • **Pain Management Techniques** • **Anesthesia in Special Populations** (e.g., obstetrics, cardiac patients) • **Emerging Technologies in**	3	6	a2, c2, d2.C3

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		Anesthesia			
	Final term exam	**Final term exam**	1	2	a2, b2, c2, d2
Number of Weeks /and Units Per Semester			**16**	**32**	

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	None			
Number of Weeks /and Units Per Semester				

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	None			
Number of Weeks /and Units Per Semester				

V. Teaching Strategies of the Course:

- Interactive lecture
- Seminars and student presentations
- Brain storming
- Role-play and simulation
- Small group discussion
- Learning tasks and activities
- Problems solving

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- Case study analysis

VI. Assessment Methods of the Course:

- Assignments
- Quizzes
- Mid-term exam
- Final term exam

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	**Assignment 1: common abbreviations**	W5	**5**	a1, b1
2	**Assignment 2: drug classification**	W11	5	a2, b2,
Total			**10**	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Assignments**	W5,11	10	10%	a1, b1, a2, b2
2	**Quizzes 1 & 2**	W3, 9	10	10%	a1, a2
3	**Mid-Term Theoretical Exam**	W7	20	20%	a1, b1, c1, d1
4	**Final Theoretical Exam**	W16	60	60%	a2, b2, c2, d2
Total			**100**	**100%**	

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IX. Learning Resources:

- *Written in the following order:* Author, Year of publication, **Title**, Edition, Place of publication, Publisher.

1- Required Textbook(s) (maximum two): مثال example

1. **"Anesthesia Equipment: Principles and Applications" by R. K. K. R., R. R. W.**
   - A foundational text that covers the principles and operation of anesthesia machines and monitoring devices.
2. **"Clinical Anesthesia" by Paul G. Barash, Bruce F. Cullen, and Robert K. Stoelting**
   - A comprehensive overview of anesthesia techniques, pharmacology, and patient management.
3. **"Anesthetic Pharmacology: Physiologic Principles and Clinical Practice" by Brian A. W. Smith and others**
   - Focuses on the pharmacological aspects of anesthesia, including drug mechanisms and clinical uses.
4. **"Practical Anesthesia Technology" by Richard D. Urman and Michael A. G. Sugar**
   - Specifically geared toward anesthesia technologists with practical skills and knowledge base.
5. **"Fundamentals of Anesthesia Technology" by Jennifer G. Davidson and Mary C. Sweeney**
   - This book addresses the basic concepts and practical applications of anesthesia technology.

- 2- Essential References:
- **Journals and Articles Anesthesiolog**
- **British Journal of Anaesthesia**

Publishes original research, reviews, and guidelines relevant to anesthesia practice. .a

3- Electronic Materials and Web Sites etc.:

Websites:

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1.

X. Course Policies: (Based on the Uniform Students' By law (2007) تترك كما هي	
1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply**.**
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

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SCIENCES

Program Anesthesia Technician

Course Specification of Technology Anesthesia Equipment

Course No. (08 02 823)

2024

Template for Course Syllabus

13

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean
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i. معلومات عن أستاذ المقرر Information about Faculty Member Responsible for the Course

الاسم Name	Dr. Adnan Al ethory	الساعات المكتبية (أسبوعيا) Office Hours					(3/ أسبوعيا)
المكان ورقم الهاتف Location &Telephone No.		السبت SAT	الأحد SUN	الاثنين MON	الثلاثاء TUE	الأربعاء WED	الخميس THU
البريد الإلكتروني E-mail							

I. Course Identification and General Information:

1	Course Title:	**Clinical Anesthesiology**			
2	Course Code & Number:	08 02 823			
3	Credit Hours:	Credit Hours	Theory Hours		Lab. Hours
			Lecture	Field	
		2	2	--	--
4	Study Level/ Semester at which this Course is offered:	Level2\term1			
5	Pre –Requisite (if any):	None			
6	Co –Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Bachelor of Anesthesia Technician			
8	Language of Teaching the Course:	English			
9	Study System:	Semester Based System			
10	Mode of Delivery:	Full Time			
11	location of teaching the course:	faculty of medical applied science			

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12	**prepared by:**	dr. Adnan Al ethory
13	**date of approval:**	2024-1446[ah]

ii. course description:

Description of anesthesia equipment technology Anesthesia equipment technology plays a crucial role in modern surgical procedures by ensuring the safety and comfort of patients undergoing anesthesia. Central to this technology is the anesthesia machine, designed to deliver precise concentrations of anesthetic agents and maintain vital life support functions. It typically incorporates a ventilator to assist with or control the patient's breathing, a patient-monitoring system to track vital signs such as heart rate, blood pressure, and oxygen saturation, and a gas delivery system to provide a mixture of oxygen and anesthetic gases.

course intended learning outcomes (cilos

a1	Demonstrate a comprehensive understanding of the principles of anesthesia, including pharmacology, physiology, and equipment used in various anesthesia modalities.
a2	Gain hands-on experience with anesthesia machines, monitoring devices, and other related equipment, ensuring the ability to operate and troubleshoot these systems effectively.
a3	Familiarize with regulatory standards and best practices related to anesthesia technology, ensuring compliance with institutional policies and procedures
b1	Evaluation of some medical conditions after clinical anesthesia.
b2	Engage in research activities to understand the importance of evidence-based practices in improving patient outcomes in anesthesia care.
c1	Demonstrate a comprehensive understanding of the principles of anesthesia, including pharmacology, physiology, and equipment used in various anesthesia modalities.
c2	Gain hands-on experience with anesthesia machines, monitoring devices, and other related equipment, ensuring the ability to operate and troubleshoot these systems effectively.
C3	Familiarize with regulatory standards and best practices related to anesthesia technology, ensuring compliance with institutional policies and procedures
d1	Communicate with the patient and his family effectively in professional manner using the principles of communication techniques
d2	Discuss the legal and ethical issues that arise in the emergency care setting.

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
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		○ Emergency protocols and crisis management Anesthesia safety standards			
		• Mad exam	1	2	
6	**Clinical Practicum**	Hands-on experience with anesthesia equipment and techniques Simulation training for various anesthesia scenarios	2	4	a2, b2, c2, d2
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	Final term exam	**Final term exam**	1	2	a2, b2, c2, d2
Number of Weeks /and Units Per Semester			**16**	**32**	

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)

1	None			
Number of Weeks /and Units Per Semester				

V. Teaching Strategies of the Course:

- Interactive lecture
- Seminars and student presentations
- Brain storming
- Role-play and simulation
- Small group discussion
- Learning tasks and activities
- Problems solving
- Case study analysis

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A comprehensive overview of anesthesia techniques, pharmacology, and patient management. .a ○ **"Anesthetic Pharmacology: Physiologic Principles and Clinical Practice" by Brian A. W. Smith and others** Focuses on the pharmacological aspects of anesthesia, including drug mechanisms and clinical uses. .a ○ **"Practical Anesthesia Technology" by Richard D. Urman and Michael A. G. Sugar** Specifically geared toward anesthesia technologists with practical skills and knowledge base. .a ○ **"Fundamentals of Anesthesia Technology" by Jennifer G. Davidson and Mary C. Sweeney** This book addresses the basic concepts and practical applications of anesthesia technology. .a ○ ○
○ 2- Essential References: ○ **Journals and Articles Anesthesiolog** ○ **British Journal of Anaesthesia** Publishes original research, reviews, and guidelines relevant to anesthesia practice. .a
3- Electronic Materials and Web Sites etc.:
Websites: https://www.tru.ca/distance/courses/anes4031.html

X. Course Policies: (Based on the Uniform Students' By law (2007) تترك كما هي

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