PARAMEDIC CRITICAL CARE (PCC) Diploma

2026

V. 01

الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

In The Name of Allah

PREFACE

The main objective of this curriculum was to improve the educational experience of postgraduate trainees by defining the educational goals required to develop skilled and independent critical care paramedics.

While this curriculum outlines certain training regulations, it is important to consult the "General Bylaws of Training in Postgraduate Programs" and "Executive Policies" issued by the Saudi Commission for Health Specialties (SCFHS) for comprehensive regulations. These documents are available on the official website of the SCFHS. If there are inconsistencies in the regulatory statements, the versions found in the latest bylaws and executive policies should be considered authoritative.

Given that this curriculum undergoes regular updates, please consult the electronic copy available at www.scfhs.org.sa.

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II. COPYRIGHT STATEMENTS

Any amendment to this document shall be approved by the Specialty Scientific Council and Executive Council of the commission and considered effective from the date the electronic version of this curriculum published on the commission website was updated.

We would also like to acknowledge that the CanMEDS framework is a copyright of the Royal College of Physicians and Surgeons of Canada and that many of the descriptions' competencies have been acquired from their resources. (Please refer to: Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework.

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IV. INTRODUCTION

1. Context of Practice

The origins of Emergency Medical Services (EMS) in Saudi Arabia can be traced back to the establishment of the National Medical Emergency Association in 1353 Hijri (1934). The development of EMS in the country was closely associated with the founding of the Saudi Red Crescent Authority (SRCA) in 1383 (Hijri, 1963). Although EMS care has evolved over the years, it remained primarily focused on basic medical care and first aid from 1934 to 2005. This sector garnered significant attention with induction of the SRCA as the 91st member of the International Federation of the Red Crescent and Red Cross Societies, leading to advancements in EMS education and higher-level qualifications in the field.

As Saudi Arabia undergoes a significant economic and social transformation, new challenges emerge within its healthcare system, making the provision of high-quality healthcare services a top priority for the government.

The ability to recognize critically ill patients and administer appropriate care is crucial for improving patient outcomes. This demands that paramedics be well-versed and accountable for the initiation, adjustment, or administration of complex and powerful medications. Additionally, these patients often rely on specialized supportive or diagnostic tools, necessitating paramedics to initiate or manage mechanical ventilation, hemodynamic monitoring, central/arterial lines, intra-aortic balloon pumps, or extracorporeal membrane oxygenation (ECMO).

However, traditional paramedic education programs, which focus on teaching fundamental skills and knowledge for pre-hospital patient

management, frequently fall short of providing the necessary training for handling critical patients during transfers between hospitals, specialized referral centers, and extended care facilities.

The Paramedic Critical Care (PCC) diploma program is designed to enhance the capabilities of existing paramedics, equipping them to manage critically injured or ill patients during transfers between facilities and in unique situations such as air transport via rotor or fixed-wing aircraft. The objective is to broaden the foundational skills and knowledge of paramedics to conduct specialized critical care assessments and interventions. The program employs an in-depth educational approach covering advanced anatomy, physiology, and pathophysiology, and practical competency-based training in critical care management and assessments for neonatal, pediatric, and adult patients requiring complex care. A clinical internship in various critical care domains within hospital and transport settings is also integral to the program.

Thus, the objective of the PCC diploma is to enhance the capacity of paramedic specialists to deliver advanced and intensive care unit (ICU)-level care to critically ill and injured patients, ensuring their safe transport to suitable facilities via both air and ground medical services.

2. Goals and Responsibilities of Curriculum Implementation

The curriculum is designed to empower learners to excel at their chosen specialization through comprehensive guidance. Achieving this objective requires concerted effort and collaboration from all parties participating in the postgraduate training. As adult learners, trainees are expected to play an active role in their education, demonstrating a keen understanding of educational goals, engaging in self-directed learning, solving problems, applying knowledge through reflective practice based on formative assessments and feedback, and recognizing the need for and seeking support when necessary. The program

director is critical in facilitating the successful execution of this curriculum, with the program administrator, chief resident, and training committee members playing pivotal roles in its implementation. Trainees are encouraged to assume shared responsibility for curriculum execution.

The Saudi Commission for Health Specialties (SCFHS) advocates a competency-based approach to training governance in order to ensure the highest quality of training. Postgraduate programs also emphasize the inclusion of evidence-based practices and research. The involvement of academic affairs in regional supervisory training committees and training centers is essential for overseeing training and its implementation. The Specialty Scientific Committee ensures that the curriculum remains contemporary and reflects the highest educational standards for each specialty.

V. ABBREVIATIONS USED IN THIS DOCUMENT

Abbreviation	Description
SCFHS	Saudi Commission for Health Specialties
D(1)	(First) year of Diploma
D(2)	(Second) year of Diploma
PT	Progress test
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
Mini-CEX	Mini-Clinical Experience report
DOPS	Direct Observation of Procedural Skills report
CBD	Case-Based Discussion report
CBE	Competency-Based Education
ITER	In-Training Evaluation Report
PCC	Paramedic Critical Care
EMS	Emergency Medical Services
SRCA	Saudi Red Crescent Authority

Abbreviation	Description
ER	Emergency Room
ICU	Intensive Care Unit
CCU	Coronary Care Unit
NICU	Neonatal Intensive Care Unit
PICU	Pediatric Intensive Care Unit
OR	Operating Room
MEDEVAC	Medical Evacuation
ECMO	Extracorporeal membrane oxygenation
RT	Respiratory Therapy
Pharma D	Doctor of Pharmacy
RAD	Radiology Department
HEMS	Helicopter Emergency Medical Services
ECG	Electrocardiography
CCTPs	Critical care transport professionals
SIRS	Systemic inflammatory response syndrome
MODS	Multiple organ dysfunction syndrome
ICP	Intracranial pressure
EBP	Evidence-based practice

Abbreviation	Description
PICO	Patient/Population, Intervention, Comparison, Outcome
K. S. A.	K: knowledge, S: Skills, A: Attitude
CPD	Continuous professional development
SOE	Structured Oral Exam
FITER	Final In-training Evaluation Report
GI	Gastrointestinal
IV	Intravenous

VI. PROGRAM ENTRY REQUIREMENTS

For the updated program entry requirement, please refer to the executive policy of the SCFHS on admission and registration

VII. LEARNING AND COMPETENCIES

1. Introduction to Learning Outcomes and Competency-Based Education

Education and learning should be well-organized around clearly articulated "learning objectives" aligned with the specific "learning outcomes" desired by a given program to address the needs of a particular specialty. These educational outcomes are intended to mirror the professional "competencies" and responsibilities in which trainees are expected to be proficient by the time they graduate. This approach aims to ensure that graduates are prepared to meet the needs of the healthcare system and provide specific patient care to their specialty. Competency-based education (CBE) is a method of adult learning that focuses on attaining well-defined, detailed, and systematically paced learning objectives derived from intricate professional competencies. In this curriculum, the learning objectives and outcomes are clearly delineated for each module and categorized into the following learning domains: knowledge, skills, and attitude.

2. Program Duration

The PCC Program is of 2-year duration.

3. Program Rotations

Clinical Rotation

PCC professionals play a crucial role within hospitals and in prehospital settings, offering both direct and indirect care to patients. They are adept at providing a range of life support services, from basic to advanced, and critical care for patients across all age groups, following established protocols and guidance from online medical controls. As an essential part of the healthcare team, the PCC conducts assessments and delivers care according to department-specific protocols. They collaborate closely with physicians across ICUs, emergency departments, and other critical care settings to ensure comprehensive patient care. Consequently, participation in certain program rotations is essential for all PCC programs.

Training Year	Mandatory core rotations*		
	Rotation name	**Duration**	**Setting**
D1	Orientation	1 W	Hospital rotation
	Module 1: Foundation of Critical Care Paramedics		
	○ **Topic 1:** Critical Care Interfacility Transport Overview	6 W	ER
	○ **Topic 2:** Ground Transport Safety and HEMS	6 W	ER, Hajj, SRCA, EMS
	○ **Topic 3:** Medical-Legal and Ethical Aspects	6 W	ER, MEDEVAC, SRCS
	Module 2: Critical Care Paramedic I		
	○ **Topic 1:** RESPIRATORY EMERGENCIES, AIRWAY MANAGEMENT AND VENTILATION	6 W	ICU, ECMO, RT, urgent care

Training Year	Mandatory core rotations*		
	Rotation name	**Duration**	**Setting**
	○ **Topic 2:** ELECTROPHYSIOLOGY, CARDIAC DEVICES AND TRANSPORT MANAGEMENT	4W	CCU, Cardiac Cath, OR
	○ **Topic 3:** HEMODYNAMIC MONITORING AND CIRCULATORY SUPPORT	6W	ER, ICU, CCU, Urgent care
	○ **Topic 4:** CRITICAL CARE PHARMACOLOGY	6W	Pharma D dep, EMS
	○ **Topic 5:** LABORATORY ANALYSIS AND DIAGNOSTIC STUDIES	3W	RAD, OR
	○ **Topic 6:** RESUSCITATION, SHOCK, AND BLOOD PRODUCTS	4W	ER, ICU, CCU, Urgent care
Annual vacation: 30 Days		**4W**	
Total		**52**	
D2	**Module 3: Critical Care Paramedic II**		
	○ **Topic 1:** GASTROINTESTINAL AND GENITOURINARY EMERGENCIES	4W	ER, ICU, CCU, Urgent care
	○ **Topic 2:** ENDOCRINE EMERGENCIES	4W	ER, ICU, CCU, Urgent care
	○ **Topic 3:** NEUROLOGIC EMERGENCIES	4W	ER, ICU, CCU, Urgent care
	○ **Topic 4:** TRAUMA	6W	ER, ICU, CCU, Urgent care, MEDEVAC
	○ **Topic 5:** BURN	4W	Burn Unit

Training Year	Mandatory core rotations*		
	Rotation name	**Duration**	**Setting**
	○ **Topic 6:** INFECTIOUS AND COMMUNICABLE DISEASES	4W	ER, ICU, CCU, Urgent care
	Module 4: Paramedic Research and Evidence- based Practice in Paramedic		
	○ **Topic 1:** Introduction to Evidence-Based Practice	2W	
	○ **Topic 2:** Formulating Clinical Questions	2W	Related to selected clinical rotation
	○ **Topic 3:** Searching and Reviewing the Evidence	4W	
	○ **Topic 4:** Critical Appraisal of Research Studies	2W	
	○ **Topic 5:** Applying Evidence in Clinical Decision-Making	4W	Related to selected clinical rotation
	Module 5: Special Considerations		
	○ **Topic 1:** OBSTETRIC AND GYNECOLOGIC EMERGENCIES	2W	OB-GYN, OR
	○ **Topic 2:** NEONATAL EMERGENCIES	2W	NICU, PICU
	○ **Topic 3:** PEDIATRIC EMERGENCIES	2W	NICU, PICU
	○ **Topic 4:** BARIATRIC AND SPECIAL SITUATIONS	2W	EMS, MEDEVAC, Emergency of Psychiatric
Annual vacation: 30 Days		**4W**	
Total		**52**	

4. Mapping of learning objectives and competency roles to program rotations

This segment was designed to align the skills and goals associated with each rotation. It is imperative for trainees and their mentors to collaborate to achieve these objectives throughout the instructional and formative evaluation phases. Expectations are set to advance in complexity and depth as the trainee progresses through different stages of training marked by specific milestones.

The Competency Matrix serves as a tool for charting the progression of the learning domain, competency, and milestones, as detailed in Appendices A and B.

<table>
<tr><th colspan="2">Module 1: Foundation of Critical Care Paramedics</th></tr>
<tr><td colspan="2">Module Description: The objectives of this module are to provide a comprehensive review of medical care, procedures, and practices common to critical care transport. The student will gain a comprehensive knowledge of all aspects of critical care transport, including medical-legal and ethical aspect; safety; and regulations.</td></tr>
<tr><td colspan="2">Topic 1: Critical Care Interfacility Transport Overview</td></tr>
<tr><th>Learning Outcomes</th><th>Teaching/Learning Strategies</th></tr>
<tr><td colspan="2">Learning Domains: Knowledge</td></tr>
<tr><td colspan="2">After completing this module, the trainees should be able to:</td></tr>
<tr><td>1- Explain the critical care transport history and future in Saudi Arabia</td><td rowspan="2">○ Lectures
○ Case studies
○ Discussion
○ Interactive games</td></tr>
<tr><td>2- Define the following terms: critical care, critical care patient, critical care transport, and critical care transport professional</td></tr>
</table>

Module 1: Foundation of Critical Care Paramedics	
3- Differentiate between pre-hospital EMS, interfacility EMS transport, and critical care transport	
4- Describe roles of team members in critical care interfacility transport	
5- Differentiate between critically ill trauma and medical patient transport theories of (scoop and run) or (stay and play/resuscitate)	
6- Describe safe transport techniques to critically ill and injured patients	
7- Describe proper transport equipment required for different critical care interfacility transports	
8- Describe the scope of practice for regulations and rules and critical care paramedic in Saudi Arabia	
9- Describe the essential components required to deliver the highest quality of care during critical care interfacility transportation.	
10- Describe the significance of primary stabilization of the critically ill patient before transport.	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Apply the team concept across several scenarios incorporating communication skills and conflict resolution	○ Reflective exercises ○ Demonstration observation and supervised practice ○ Simulation
2- Participate in safe vehicle operations by securing equipment and ensure safety of both team and patients during interfacility transportation	
Learning Domains: Attitude	

Module 1: Foundation of Critical Care Paramedics	
After completion of this module, the trainees should be able to:	
1- Discuss healthcare professional role in the safety of the patient and team and critical care transport environment.	○ Clinical practice ○ Clinical teaching
Topic 2: Ground Transport Safety and HEMS	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Describe ways of creating and maintaining a safe work environment during ground transport safety including: 1.1. Vehicle checks 1.2. Equipment checks 1.3. Potential hazards during vehicle operations 1.4. Physical hazards 1.5. Stress hazards 1.6. Safety equipment 1.7. Safety of passengers and patient during transport	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Differentiate between classes of aircraft including: 2.1. Fixed wing vs. rotor wing 2.2. Pressurized vs. non-pressurized 2.3. Twin vs. single-engine aircraft 2.4. Weight considerations and aircraft performance	
3- Explain safety awareness in air medical transport, focusing on landing zone protocols, communications and coordination.	
4- Identify the basic gas law and the composition of atmospheric gases.	

Module 1: Foundation of Critical Care Paramedics	
5- Identify flying stressors and interventions during air transport	
6- Identify the signs and symptoms and the interventions for the following conditions related to air medical environment 6.1. Barotrauma 6.2. Barosinusitis 6.3. Barodontalgia 6.4. Barotitis media 6.5. Decompression sickness	
7- Identify the causes, effects, and emergency procedures for rapid decompression	
8- Compare and contrast the activities for patient preparation for air transport vs. ground transport	
9- Compare and contrast the advantages and limitations of air transport vs. ground transportation for critical care transport	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Conduct assessment and reassessment techniques and interventions specific to flight physiology	○ Demonstration ○ Observation ○ Supervised practice
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	

Module 1: Foundation of Critical Care Paramedics	
1- Demonstrate commitment of continuous visual and tactile reassessment related to environmental factors	○ Reflective exercises
Topic 3: Medical-Legal and Ethical Aspects	
11- Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain rules and regulation by governmental agencies regarding medical control, communications, standards of care, scope of practice for critical care paramedic, and national standards of practice	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- List the authorities and responsibilities involved in critical care transports	
3- Describe the critical patient acceptance steps and the responsibilities of critical care paramedics during the transport	
4- Identify the rights of patients and legal liabilities and risks in Critical Care Transportation	
5- Explain the legal principles of consent and negligence	
6- Identify potential organ donors as defined by Saudi Center for Organ Transplant	
7- Identify the main component for comprehensive documentation for a transportation critical report	
8- Discuss the roles and responsibilities of other health care providers, who may participate in critical patient care	

Module 1: Foundation of Critical Care Paramedics	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Demonstrate skills in completing necessary documentation prior to, during, and following a critical care transport.	○ Demonstration ○ Clinical rotation
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Prioritize professional practice within the field of a critical care paramedic.	○ Demonstration ○ Clinical rotation
2- Respect the rules, regulations, and practice within the scope of practice for a critical care paramedic	

Module 2: Critical Care Paramedics I	
Module Description: This module aims to provide students with essential knowledge and skills in anatomy, physiology, pathophysiology, and pharmacology that enhance their abilities to assess and manage critically ill and injured patients in interfacility and pre-hospital settings. This module will highlight the following: Respiratory emergencies, airway management and ventilation, electrophysiology, cardiac devices and transport management, hemodynamic monitoring and circulatory support, critical care pharmacology, laboratory analysis and diagnostic studies, and resuscitation, shock, and blood products.	
Topic 1: Respiratory emergencies, airway management and ventilation	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Summarize the anatomy and physiology of the respiratory system	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Discuss abnormalities in perfusion and ventilation that impact blood gas values.	
3- Describe clinical events that change respiratory system function in critical care patients.	
4- Assess the respiratory cycle and parameters evaluated in monitoring arterial blood gas, and identify the parameter indicating the efficiency of both ventilation and oxygenation	
5- Define, differentiate, and list the indications, contraindications and complications of: 13.1. Orotracheal intubation	

Module 2: Critical Care Paramedics I	
13.2. Nasotracheal intubation 13.3. Digital intubation 13.4. Retrograde intubation 13.5. Laryngeal mask airway 13.6. King airway 13.7. Needle Cricothyrotomy 13.8. Surgical Cricothyrotomy	
6- Describe Rapid Sequence Intubation (RSI) and list its indications, contraindications and complications	
7- Discuss the pharmacologic agents used in RSI including sedative/induction agents and neuromuscular blocking agents	
8- Define tracheostomy and explain the pre-hospital management of tracheostomy during transport	
9- Identify the components of a ventilator circuit and the difference between positive-pressure and negative-pressure ventilators.	
Learning Domains: Skills	
After the completion of this module, the trainees should be able to:	
1- Conduct a basic respiratory evaluation for sufficiency of ventilation and oxygenation through inspection, palpation, auscultation, and noninvasive monitoring, and identify abnormal respiratory patterns.	○ Demonstration and redemonstration ○ Observation and supervised practice ○ Clinical rotation ○ Bedside teaching
2- Perform the steps for suctioning with an endotracheal tube in place.	
3- Perform the steps for:	

Module 2: Critical Care Paramedics I	
• Orotracheal intubation • Nasotracheal intubation • Digital intubation • Retrograde intubation • Laryngeal mask airway • King airway • Needle Cricothyrotomy • Surgical Cricothyrotomy • Rapid Sequence Intubation	
4- Perform the steps for using a portable ventilator	
5- Perform the steps for troubleshooting a ventilator pressure alarm	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Displays a professional commitment to clinical practice and procedures. 2- Respect other trainees' opinion and class discussion.	○ Demonstration ○ Observation ○ Supervised practice
Topic 2: Electrophysiology Cardiovascular emergencies, Cardiac Devices and Transport Management	
12-**Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	

Module 2: Critical Care Paramedics I	
1- Discuss the anatomy and physiology of the cardiovascular system	
2- Discuss the process of monitoring a patient with electrocardiography (ECG) throughout critical care transport.	
3- Describe the systematic approach that should be applied in ECG interpretation.	
4- Discuss the importance of ST-segment and T-wave changes and identification on an ECG.	
5- Describe the identification and management of: • A bundle branch block on an ECG • Ventricular tachycardia • Digoxin toxicity • Coronary artery disease and angina	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
6- Identify ECG changes that could indicate: • Wolff-Parkinson-White syndrome • Pericarditis • Electrolyte imbalances • Digoxin toxicity • Association with various types of myocardial infarction	
7- Explain the clinical implications of electrolyte imbalances: • Hyperkalemia VS hypokalemia • Hypercalcemia VS Hypocalcemia	
8- Explain the process underlying myocardial infarction, including the actions of cardiac enzymes, changes in blood supply, and the ischemia–injury– infarction pathway	

Module 2: Critical Care Paramedics I	
9- Summarize the development of heart failure, including the associated signs and symptoms	
10- Explain the basic principles underlying cardiac pacemaker technology and the general steps in pacemaker troubleshooting	
11- Briefly identify the particular considerations to external defibrillation in the presence of an Implantable Cardioverter-Defibrillator (ICD).	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Conduct a basic cardiovascular assessment for cardiac pulse, blood pressure monitoring, peripheral perfusion, fluids status, and cardiovascular complications.	○ Demonstration and redemonstration ○ Observation and supervised practice ○ Clinical rotation ○ Bedside teaching
2- Perform the steps for appropriately conducting 12-leads ECG.	
3- Demonstrate the ability to connect patients to portable cardiac monitors.	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Listen with respect to instructors and other trainees during class discussion and learning activity.	○ Group activity ○ In-class discussion
2- Participate actively in demonstration and redemonstration for clinical practice and performing procedures.	
Topic 3: Hemodynamic monitoring and circulatory support	

Module 2: Critical Care Paramedics I	
13-**Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Discuss cardiovascular physiology and anatomy, including the phases of the cardiac cycle	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Explain the basic concepts and indications for invasive hemodynamic monitoring	
3- Analyze hemodynamic data measurements obtained from invasive measurement	
4- Explain the indications, contraindications, and complications for: 5- Arterial lines 6- Central venous lines 7- Intra-aortic balloon pump therapy 8- Other cardiac-assist devices, including: 9- Continuous-flow pumps 10-Extracorporeal membrane oxygenation 11-Ventricular-assist devices 12-Total artificial heart	
13-Discuss the importance of every pressure measurement used in patient management.	
14-Describe general transport considerations for common problems associated invasive hemodynamic monitoring and cardiac-assist devices while transport.	

Module 2: Critical Care Paramedics I	
15-Discuss flight considerations associated with invasive cardiac-assist devices and hemodynamic monitoring	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Perform the steps for inserting an arterial line for critically ill patients	○ Lab practice ○ Bedside teaching
2- Perform the steps for inserting a central venous line for critically ill patients	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Listen with respect to instructors and other trainees during class discussion and learning activity.	○ Group activity ○ In class discussion
2- Demonstrate teamwork during invasive line insertion	
Topic 4: Critical care pharmacology	
14-**Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
Recognize reliable resources of medication and pharmacology information	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
List the administration principles of medication for CCTPs	
Explain the significance of medication pharmacokinetics and pharmacodynamics in the critical care transport setting	

Module 2: Critical Care Paramedics I	
Review principles of medication management, including storage of drugs and maintaining the security of controlled substances	
Discuss the different types and classes of medication used in the critical care arena	
Explain the sequence for medication infusion and common associated side effects	
Discuss the process of medication infusion using an infusion pump during transportation and altitude variations	
Learning Domains: Skills	
Upon completion of this module, the trainees should be able to:	
1- Perform the steps for administering medication using an infusion pump	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Perform drug calculation for specific medication dosage	
3- Demonstrate appropriate steps for medication preparation and administration	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Adhere to medication administration rights to maintain patient safety and prevent medication errors.	○ Clinical teaching and practice
Topic 5: Laboratory analysis and diagnostic studies	
2- **Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	

Module 2: Critical Care Paramedics I	
After completion of this module, the trainees should be able to:	
1- Discuss the laboratory analysis general principles.	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Discuss sensitivity and specificity differentiation	
3- Explain the difference between specimen culture and sensitivity	
4- Discuss the basic principles of chemistry and biochemistry.	
5- Identify the most frequently requested lab tests in the emergency department and the ICU.	
6- Discuss the significance of abnormal lab results regarding the medical condition of the patient	
7- Explain the reasons of abnormal lab test finding regarding the medical condition of the patient	
8- Explain the ideal method for blood sample collection	
9- Recognize the appropriate test tubes for blood sample collection.	
10- Recognize which point-of-care testing may be performed during transport	
11- Describe normal and abnormal values obtained during urinalysis and their implications	
12- Discuss the basics of diagnostic imaging, including magnetic resonance imaging and ultrasound	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Perform the steps for obtaining arterial blood sample	○ Clinical rotation

Module 2: Critical Care Paramedics I	
2- Perform the steps for obtaining blood sample from central line	○ Bedside teaching ○ Simulation ○ Lab practice
3- Demonstrate the steps for collecting a blood sample from critically ill patient	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Implement safety rules during blood sample collection procedure.	○ Clinical rotation and practice
Topic 6: Resuscitation, shock, and blood products	
3- **Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain cellular respiration and transportation and cell utilization of oxygen.	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Recognize the stages and pathophysiology of shock: initial, compensatory, decompensatory, and refractory	
3- Describe the clinical manifestations linked with different types of shock states.	
4- Explain the shock classification	
5- Determine the specific kind and phase of shock based on patient presentation	

Module 2: Critical Care Paramedics I	
6- Define the following: infection, sepsis, sepsis syndrome, septic shock, systemic inflammatory response syndrome (SIRS), and multiple organ dysfunction syndrome (MODS)	
7- Explain the epidemiology and pathophysiology of sepsis, shock, MODS, and SIRS	
8- Recognize the signs and symptoms in patients indicative of sepsis, shock, MODS, or SIRS	
9- Explain laboratory results associated with the patient with MODS or sepsis.	
10- Explain the evaluation and management of patients with shock.	
11- List the parameters that should be monitored while transporting a critical patient suffering from shock.	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
12- Identify the essential interventions required while transporting critical patient suffering from sepsis, shock, SIRS, or MODS.	
13- Explain the pharmacologic medications used to treat patients with shock or MODS	
14- Discuss blood administration, including the ABO blood system, various blood products, and the procedure for blood transfusion	
15- Describe the types of adverse transfusion reactions and their etiology	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	

Module 2: Critical Care Paramedics I	
1- Perform the steps for administering blood products to critically ill patient.	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Perform appropriate basic and advanced patient assessment to identify the type of shock	
3- Perform continuous patient monitoring for hemodynamic status	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Apply safety rules during administration of blood products	○ Demonstration ○ Observation ○ Supervised practice

Module 3: Critical Care Paramedics II	
Module Description: This module is designed to provide the students with required anatomy, physiology, and pathophysiology knowledge and skills that enhance their abilities to assess and manage critically ill and injured patients in interfacility and pre-hospital settings. This module will highlight the following: gastrointestinal and genitourinary emergencies, endocrine emergencies, neurological emergencies, trauma, burn emergencies, and infectious diseases.	
Topic 1: GASTROINTESTINAL AND GENITOURINARY EMERGENCIES	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain the anatomy and physiology of: • the gastrointestinal system, including the alimentary canal and accessory organs. • The genitourinary system, including urinary system and reproductive systems of males and females	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Differentiate between upper and lower gastrointestinal bleeding	
3.1.1. Explain the pathologies associated with prevalent gastrointestinal system disorders, including: 3.1.2. Peptic ulcers 3.1.3. Gastritis 3.1.4. Esophageal varices 3.1.5. Mallory-Weiss syndrome	

Module 3: Critical Care Paramedics II	
3.1.6. Diverticulitis 3.1.7. Angiodysplasia 3.1.8. Appendicitis 3.1.9. Inflammatory bowel disease 3.1.10. Ulcerative colitis 3.1.11. Crohn disease 3.1.12. The genitourinary system including: 3.1.13. Acute kidney injury 3.1.14. Chronic kidney disease 3.1.15. Urinary tract infections 3.1.16. Testicular torsion, penile fracture, and priapism	
3.1.17. Assess the signs and symptoms of the various gastrointestinal conditions and pathologies	
3- Discuss the lab results related to the gastrointestinal and genitourinary systems disorders	
4- Describe the management of the different gastrointestinal conditions and genitourinary pathologies	
5- Describe the pathologies associated with gastrointestinal system diseases, including intestinal obstructions, ileus, liver disease, choledocholithiasis, and pancreatitis	
6- Describe evaluation, maintenance, and possible complications in different drainage tubes.	
7- Explain acid-base physiology and the role of chemical buffering system to maintain acid-base balance.	

Module 3: Critical Care Paramedics II	
8- Explain the pathologies associated with acid-base imbalances, including their clinical features and treatment.	
9- Discuss considerations for flight for patients with: • different feeding or drainage tubes • gastrointestinal and genitourinary tract complications	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Perform the steps for inserting a nasogastric tube in a conscious patient and orogastric tube	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Perform gastrointestinal and genitourinary system assessment for critically ill patients	
3- Perform the steps for placing a female and male urinary catheter	
4- Perform the steps for cleaning and replacing an Ostomy Pouch	
5- Interpret blood gas identifying acid-based imbalance	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Listen with respect to instructors and other trainees during class discussion and learning activity.	○ Demonstration ○ Observation ○ Supervised practice
2- Participate actively in demonstration and redemonstration for clinical practice and performing procedures.	

Module 3: Critical Care Paramedics II	
Topic 2: ENDOCRINE EMERGENCIES	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain the anatomic structures and endocrine system physiology	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Explain all the Diabetes Conditions: Pathophysiology, Assessment, and Critical Care Transportation	
3- Explain Pituitary Disorders: Pathophysiology, Assessment, and Management of Critical Care Transportation	
4- Explain Adrenal Abnormalities: Pathophysiology, Assessment, and Management of Critical Care Transportation	
5- Explain Thyroid Abnormalities: Pathophysiology, Assessment, and Management of Critical Care Transportation	
6- Explain Lipid Disorders: Pathophysiology, Assessment, and Management of Critical Care Transportation	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Demonstrate proficiency in accurately measuring blood glucose levels using point-of-care testing devices.	○ Clinical rotation

Module 3: Critical Care Paramedics II	
2- Develop skills in managing abnormal blood glucose levels, including administering glucose for hypoglycemia and initiating appropriate interventions for hyperglycemic emergencies.	○ Bedside teaching ○ Simulation ○ Lab practice
3- Display proficiency in initiating and managing fluid resuscitation in patients with endocrine emergencies, addressing dehydration, and restoring fluid balance.	
4- Develop skills in managing airway complications associated with thyroid crises, such as addressing airway obstruction or respiratory distress.	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Demonstrate teamwork during clinical practice and class activity	○ Demonstration observation and supervised practice
Topic 3: NEUROLOGIC EMERGENCIES	
4- Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Discuss the main anatomical structures of the nervous system and their physiological functions.	○ Lectures ○ Case studies ○ Discussion
2- Describe a comprehensive neurological assessment including the following:	

Module 3: Critical Care Paramedics II	
2.1. Mini-Mental Examination 2.2. Evaluation of speech abnormalities 2.3. Cranial nerves, eyes, motor function, and sensory function 2.4. Reflex testing	○ Interactive games
3- Discuss the pathophysiology of: 3.1. Traumatic brain injury, including skull fractures and brain injuries 3.2. Specific neurologic injuries, including scalp injuries, facial fractures, epidural hematoma, subdural hematoma, and diffuse axonal injury	
4- Discuss the importance of cerebral perfusion pressure and mean arterial pressure	
5- Explain intracranial pressure (ICP) and pathophysiology and clinical manifestations of increased ICP and brain herniation	
6- Explain the concepts of ICP observing.	
7- Describe spinal cord injuries, including: 7.1. Primary and secondary spinal cord injuries 7.2. Complete and incomplete spinal cord injuries 7.3. Spinal and neurogenic shock	
8- Explain the assessment, management, and complications of spinal cord injuries	

Module 3: Critical Care Paramedics II	
9- Explain the various types of strokes, including assessment and management, as well as the use of thrombolytic therapy.	
10- Explain Intracerebral Hemorrhage, Subarachnoid Hemorrhage, and Guillain-Barré Syndrome and their management.	
11- Explain epilepsy and seizures and their transportation management	
12- Explain the considerations of transport during neurological injuries in patients, detailing pre-transport preparations, on-scene actions, and considerations during interhospital transfers.	
13- Explain consideration management of neurological emergencies during flight	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Perform the steps for ICP monitoring for critically ill patient	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Perform continues neurological assessment for critically ill patient	
3- Calculate cerebral perfusion pressure and mean arterial pressure to prevent further neurological complications	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	

Module 3: Critical Care Paramedics II	
1- Participate actively in demonstration and redemonstration for clinical practice and performing procedures.	○ Demonstration ○ Observation ○ Supervised practice
Topic 4: TRAUMA	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain how critical care transport professionals (CCTPs) can prevent trauma-related deaths by providing proper pre-hospital care and ensuring patients are transported to the appropriate trauma center.	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Explain the importance of managing trauma on morbidity and mortality rate	
3- Differentiate between the types of traumas.	
4- Discuss the concept of triage and standard triage systems (START and Jump START)	
5- Explain the different trauma scoring systems, including: the Glasgow Coma Scale, the trauma score, the revised trauma score, the Injury Severity Score, the Abbreviated Injury Scale, and the trauma injury severity score	
6- Discuss the classifications of trauma centers, defined by the American College of Surgeons' Committee on Trauma.	

Module 3: Critical Care Paramedics II	
7- Explain patient assessment process in a hospital setting prior to interfacility transport	
8- Discuss the elements of the hypothermia–acidosis–coagulopathy triad and management	
9- Differentiate between diagnostic imaging methods that are used, including standard radiographs, computed tomography, ultrasonography, transthoracic echocardiography, and transesophageal echocardiography and their implications	
10- Discuss the most prevalent thoracic trauma injuries	
11- Discuss the assessment and management for head, neck, throat, and thyroid trauma injuries	
12- Describe the signs and symptoms, and management for abdominal and pelvic injuries	
13- Describe the different types of fractures and appropriate management	
14- Explain the assessment and management of compartment syndrome, rhabdomyolysis, and crush syndrome	
15- Recognize the specific trauma considerations for special populations	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Demonstrate the steps for managing an Open Pneumothorax	○ Clinical rotation

Module 3: Critical Care Paramedics II	
2- Perform the steps for managing a Tension Pneumothorax (Needle Decompression)	○ Bedside teaching ○ Simulation ○ Lab practice
3- Perform the steps for inserting a chest tube	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Demonstrate teamwork during clinical practice and class activity	○ Demonstration ○ Observation ○ Supervised practice
Topic 5: BURNS	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
Upon completion of this module, the trainees should be able to:	
1- Discuss the various skin layers and their functions	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- List the main causes of burn injury	
3- Explain the anatomy of a burn and the systemic inflammatory response of the body to a burn injury	
4- Discuss the factors to classify burn injuries, including the body surface area and depth of the burn.	
5- Describe the classifications of burn injuries	
6- Discuss the rules used to calculate the total body surface area burned.	

Module 3: Critical Care Paramedics II	
7- Explain evaluation considerations for the airway, breathing, and circulation in a patient with burns	
8- Identify scenarios in which the CCTP should suspect an inhalation injury	
9- Explain the effects of edema and compartment syndrome related to burn injuries	
10- Discuss stopping a burn process	
11- Explain how to manage the respiration, circulation, and airway of a patient with burns	
12- Describe different fluid resuscitation formulas, including the Parkland formula	
13- Describe the parameters for adjusting the fluid infusion rate	
14- Discuss pain management of patient with burns	
15- Explain special circumstances associated with burn injuries, including hypothermia, the need for gastric decompression, rhabdomyolysis, and renal failure	
16- Recognize special considerations for managing burn injuries in specific cases such as ocular, facial, ear, circumferential, genitalia, hand and foot, pediatric, chemical, and electrical burns.	
17- Identify types of burns that might indicate possible child maltreatment	
Learning Domains: Skills	

Module 3: Critical Care Paramedics II	
After completion of this module, the trainees should be able to:	
1- Demonstrate wound care and dressing for patient with burns	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Calculate required fluid resuscitation applying Parkland formula	
3- Apply methods to calculate the total body surface area burned, like the rule of nines and the Lund-Browder chart.	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Provide adequate reassurance and emotional support for patient with burns	○ Demonstration ○ Observation ○ Supervised practice
Topic 6: INFECTIOUS AND COMMUNICABLE DISEASES	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Describe the various types of immunity and the components of both humoral and cell-mediated immunity.	○ Lectures ○ Case studies ○ Discussion
2- Discuss the types, signs, symptoms, and treatment of anaphylaxis	

Module 3: Critical Care Paramedics II	
3- Explain the considerations of immunodeficiencies during patients' transportation	○ Interactive games
4- Explain the virulence factors found in pathogenic organisms and spreading methods	
5- Describe the entry portals for infectious organisms and the infection process upon entry.	
6- Differentiate between the impacts of bacterial endotoxins and exotoxins.	
7- Describe epidemiology, including reservoirs and transmission of infectious disease	
8- Explain the defining conditions of acquired immunodeficiency syndrome (AIDS)	
9- Outline the guidelines for implementing standard precautions in all healthcare settings.	
10- Explain how antimicrobials contribute to the development of resistance against infectious organisms	
11- Explain universal precautions, including situations when they should be implemented	
12- Explain isolation, airborne, and droplet precautions, including the circumstances in which they should be implemented.	
13- Discuss the significance of handwashing in preventing contamination and the spread of infectious diseases by using of hand sanitizers and/or hand antiseptics	

Module 3: Critical Care Paramedics II	
14- Discuss the proper and accurate utilization of personal protective devices including both donning and doffing procedures. 15-	
16- Identify the required vaccinations for CCTPs and health care workers overall	
17- Explain the decontamination chemicals and methods suitable for cleaning up after transporting patients with various infectious diseases.	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Demonstrate proper hand hygiene and use of personal protective equipment (PPE) to prevent the spread of infectious diseases during patient care	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Apply appropriate isolation and barrier techniques in the pre-hospital environment to minimize the risk of infection transmission	
3- Employ aseptic techniques during medical procedures and interventions in the pre-hospital setting, minimizing the risk of introducing pathogens	
4- Apply standard precautions consistently in all pre-hospital interactions, adapting procedures to reduce the risk of infection transmission	

Module 3: Critical Care Paramedics II	
5- Collect relevant clinical specimens for laboratory testing, ensuring proper techniques and maintaining the integrity of the samples during transport	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Adhere to standard production in pre-hospital settings and during patient transportation	○ Demonstration observation and supervised practice

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
Module Description: This module aims to introduce the trainee to evidence-based practice (EBP) and integration of best current evidence with clinical expertise and patient preferences and values for the delivery of clinically effective paramedics' practice. This module will provide trainee with the knowledge and skills to emphasize life-long learning and understand the relationship between research evidence and paramedics' practice. This module will guide trainee decision making regarding every day practice supported with EBP.	
Topic 1: Introduction to Evidence-Based Practice	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Define EBP	○ Lectures ○ Discussion ○ In class activity
2- Explain the importance of EBP in paramedics' practice	
3- Recognize the role of EBP in improving patient outcomes	
4- Recognize the ethical issues related to EBP	
5- Distinguish between different types and sources of evidence	
6- Rank types of evidence in terms of quality in the evidence hierarchy	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Apply legal considerations when using evidence in healthcare decision-making	○ Reflective exercises ○ Assignment
Learning Domains: Attitude	

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
After completion of this module, the trainees should be able to:	
1- Demonstrate the ethical standards in the application of evidence	○ Assignment
Topic 2: Formulating Clinical Questions	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain the components of a well-formulated question (PICO: Patient/Population, Intervention, Comparison, Outcome).	○ Lectures ○ Case studies ○ Discussion
2- Differentiate between different types of clinical questions	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Construct clear and focused clinical questions using the PICO framework.	○ Reflective exercises ○ Assignment
2- Practice turning clinical scenarios into specific questions for seeking evidence	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Effectively communicate with colleagues and instructors in promoting EBP and formulating clinical questions	○ Discussion
Topic 3: Searching and Reviewing the Evidence	

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
5- **Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Identify appropriate databases and sources for evidence retrieval.	○ Lectures ○ Case studies ○ Discussion
2- Describe the step for selecting databases and identifying related search keywords	
3- Explain the implications of using filters and limits on the searches based on inclusion and exclusion criteria	
4- Distinguish between systematic reviews, meta-analyses, and narrative review or clinical topics	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Construct effective search strategies to select the highest level of evidence possible	○ Reflective exercises ○ Assignment ○ Group activity
2- Apply database searching strategy using the combination of keywords including Medical Subject Headings (MeSH) terms	
3- Demonstrate proficiency in using databases, search engines, and other sources to find evidence	
4- Demonstrate proficiency in using citation management tools to organize and manage search results systematically	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
1- Demonstrate the importance of rigor and precision in conducting literature searches and critically reviewing evidence	○ Discussion
Topic 4: Critical Appraisal of Research Studies	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain the levels of evidence for different study types	○ Lectures ○ Case studies ○ Discussion
2- Explain the systematic process of analyzing research to assess methods, validity, and reliability	
3- Distinguish between appraisal tools and evidence grading criteria to identify best evidence related to clinical practice	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Assess the quality and utility of the evidence for clinical practice using appropriate appraising tools	○ Reflective exercises ○ Assignment ○ Group activity
2- Critically appraise the design and methodology of research studies	
3- Interpret statistical information and evidence-based guidelines in clinical scenarios	
4- Assess the internal and external validity of studies and the potential for bias	
Learning Domains: Attitude	

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
After completion of this module, the trainees should be able to:	
1- Adhere to ethical guidelines regarding the use of information, attributing sources appropriately, and avoiding plagiarism in evaluating evidence	○ Assignment ○ Group activity
Topic 5: Applying Evidence in Clinical Decision-Making	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Identify barriers and facilitators to implementing EBPs	○ Lectures ○ Case studies ○ Discussion
2- Explain the importance of adapting EBPs to individual needs and circumstances of each patient which is essential in clinical decision-making	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Participate in the planning and implementation of evidence-based interventions	○ Reflective exercises ○ Assignment ○ Group activity
2- Apply evidence to inform patient assessment, diagnosis, and treatment plans	
3- Demonstrate the ability to integrate relevant and current evidence into clinical decision-making processes	
4- Demonstrate the ability to reassess and modify patient care plans as needed	
Learning Domains: Attitude	

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
After completion of this module, the trainees should be able to:	
1- Demonstrate ethical integrity in the use of information, giving credit to original authors and maintaining transparency in reporting	○ Assignment ○ Group activity
2- Incorporate ethical principles into clinical decision-making, ensuring that decisions align with ethical standards and respect patient autonomy	
Topic 6: Continuous Quality Improvement	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain the role of continuous quality improvement in healthcare	○ Lectures ○ Case studies ○ Discussion
2- Identify areas for improvement based on evidence and data to solve problems in clinical practice	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Contribute to ongoing monitoring and evaluation processes for quality improvement	○ Reflective exercises
2- Implement skills for continuous learning and improvement	
3- Recognize the importance of continuous monitoring of patient outcomes and adjust clinical decisions based on ongoing assessments and new evidence	

Module 4: Paramedic Research and Evidence-based Practice in Paramedic	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Demonstrate the value of teamwork and effective communication for quality improvement	○ Clinical rotation

Module 5: Special Considerations	
Module Description: This module is designed to provide specific topics or population that require unique consideration. The objectives for these chapters may vary based on the specific content being addressed including obstetric, neonatal, pediatric, and bariatric care.	
Topic 1: OBSTETRIC AND GYNECOLOGIC EMERGENCIES	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Explain the female reproductive system anatomy	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Recognize the physiological changes during pregnancy including cardiovascular, respiratory, gastrointestinal, renal, and endocrine systems	
3- Explore specific areas of concern for a pregnant patient when performing a critical care transport	
4- Explain the approach to managing a pregnant patient during cardiac arrest	
5- Explain potential cardiovascular complications that can be induced or exacerbated by pregnancy	
6- Discuss the mechanisms of fetal heart rate and oxygenation control as well as fetal distress conditions during labor	
7- Explain the assessment of fetus during a critical care transport	

Module 5: Special Considerations	
8- Describe various procedures of fetal monitoring during critical care transport of a pregnant patient, including electronic fetal monitoring	
9- Describe pregnancy complications, including spontaneous abortion, ectopic pregnancy, and bleeding	
10- Discuss the signs, symptoms, and treatment of abruptio placenta, placenta previa, and uterine rupture	
11- Explain medical conditions that can exist during pregnancy, including hypertension complicating pregnancy, eclampsia, preeclampsia and HELLP syndrome, preterm labor and premature delivery	
12- Identify fetal malpresentations during delivery such as frank breech, complete breech, incomplete breech, footling breech, and umbilical cord prolapse, and discuss their management.	
13- Describe shoulder dystocia and management during a critical care transport	
14- Explain the management of multiple-birth deliveries during critical care transport	
15- Recognize postpartum care, potential complications, and the management of both the mother and infant during critical care transport.	
16- Recognize gynecologic issues, emergencies, and management including pelvic inflammatory disease, toxic shock syndrome, pathologic cysts, ovarian cysts, ovarian torsion, and gynecologic trauma	

Module 5: Special Considerations	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
Perform the steps for fetal monitoring	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
1- Demonstrate the ability to safely transfer pregnant patients from the scene to the ambulance stretcher and vice versa	
2- Conduct a rapid and focused assessment of pregnant patients	
3- Stabilize patients experiencing obstetric and gynecologic emergencies	
4- Apply fetal monitoring devices when available	
5- Demonstrate proficiency in emergency obstetric interventions such as assisting with a precipitous delivery or managing obstetric hemorrhage during transport	
6- Use appropriate equipment and techniques for emergency obstetric care	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Respect cultural differences in obstetric and gynecologic care	○ Demonstration ○ Observation ○ Supervised practice
2- Work collaboratively with other healthcare providers during obstetric and gynecologic emergencies	
3- Maintain patient confidentiality and privacy	
Topic 2: NEONATAL EMERGENCIES	

Module 5: Special Considerations	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	
After completion of this module, the trainees should be able to:	
1- Define the terms newborn and neonate	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Recognize the distinct physiology and anatomy of a neonate, including variances in thermoregulation, respiratory structure and function, oxygen transport, renal function, cardiovascular function, central nervous system, fluid and electrolyte balance, and skeletal system	
3- Discuss the medical complications faced by late preterm infants	
4- Identify significant factors that may impact labor, delivery, and the neonate such as antepartum and intrapartum risk	
5- Explain the pathophysiology associated with antepartum and intrapartum factors that may affect labor, delivery, and the neonate	
6- Discuss neonatal assessment, stabilization, management, and resuscitation	
7- Explain techniques that can be employed to enhance airway and breathing in a neonate with insufficient respiration	
8- Explain the appropriate assisted ventilation for a neonate and appropriate airway management during neonatal transports	

Module 5: Special Considerations	
9- Explain indications for medications, dosages, and routes of administration for neonate	
10- Explain the pathophysiology, assessment findings, management, and treatment strategies for the following respiratory emergencies in a neonate: 10.1. Apnea 10.2. Meconium aspiration 10.3. Pneumonia 10.4. Respiratory distress syndrome 10.5. Pneumothorax 10.6. Respiratory acidosis	
11- Explain the pathophysiology, assessment findings, and management of the following cardiovascular emergencies in a neonate: 11.1. Cyanosis 11.2. Cyanotic congenital heart disease 11.3. Tachyarrhythmias 11.4. Brady arrhythmias 11.5. Cardiac arrest 11.6. Persistent pulmonary hypertension 11.7. Shock 11.8. Anemia	
12- Explain the pathophysiology, assessment findings, and management of the following gastrointestinal emergencies in a neonate:	

Module 5: Special Considerations	
12.1. Gastroschisis 12.2. Omphalocele 12.3. Gastrointestinal obstruction 12.4. Acute intestinal perforation 12.5. Hematemesis and bleeding from the rectum 12.6. Volvulus, intussusception, and diarrhea	
13. Explain the proper fluid selection for a neonate when vascular access is indicated	
13-Discuss management of the following conditions: 13.1. Infectious diseases and sepsis in the neonate 13.2. Hyperthermia and hypothermia in the neonate 13.3. Toxic exposure in neonates	
14-Explain the pathophysiology, assessment findings, and management of birth trauma injuries in the neonate	
15-Explain the pathophysiology, assessment findings, and management of the following: 15.1. Neonate neurologic conditions: seizures, lethargy, and hypoxic ischemic encephalopathy 15.2. Neonate metabolic conditions: metabolic acidosis, inborn errors of metabolism, hypocalcemia, and hypoglycemia	
16-Discuss the risks critical care transportation, including unique factors such as air transport of a neonate	
Learning Domains: Skills	

Module 5: Special Considerations	
After completion of this module, the trainees should be able to:	
1- Perform the steps for emergency intubation of a neonate	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Perform the steps for placing a nasogastric or an orogastric tube in the neonate	
3- Perform the steps for resuscitating a neonate	
4- Perform the steps for using an incubator	
5- Apply appropriate assessment technique when examining a neonate	
6- Demonstrate the proper technique for chest compressions and ventilations for a neonate	
7- Demonstrate proficiency in using portable ventilator for transporting neonate	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Recognize the emotional impact of a neonate's illness or injury, and provide information, empathy and compassion for the parent or guardian during a critical care transport	○ Demonstration ○ Observation ○ Supervised practice
Topic 3: PEDIATRIC EMERGENCIES	
6- **Learning Outcomes**	**Teaching/Learning Strategies**
Learning Domains: Knowledge	

Module 5: Special Considerations	
After completion of this module, the trainees should be able to:	
1- Explain the physiologic and anatomic differences between pediatric and adult patients	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Explain the physical and psychosocial growth and development of children	
3- Explain the variances in the overall approach to evaluating critical care transport patients, distinguishing between adult and pediatric cases	
4- Explain the administering of medication to pediatric patients during critical care transport, covering indications, dosage, and the route of administration	
5- Discuss the considerations of interfacility transport in pediatric critical care	
6- Discuss the considerations during transport when caregivers and parents accompany pediatric patients	
7- Explain common pediatric medical emergencies, including the assessment and management of critical care transport environment	
8- Explain common pediatric trauma emergencies, including how to assess and manage them in the critical care transport environment	
9- Explain management of critical care transportation of suspected abused or neglected pediatric patient	
10- Explain management of critical care transportation of a hypothermic pediatric patient	

Module 5: Special Considerations	
11- Explain management of critical care transportation of a drowning pediatric patient	
12- Describe the unique considerations that arise with the critical care transport of pediatric patients with special needs, including children with congenital heart disease; pediatric patients with hematological cancers; pediatric patients with venous access devices; and pediatric patients with respiratory, neurologic, and gastrointestinal disorders	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Prepare special pediatric equipment that may be needed in a critical care transport	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Demonstrate appropriate chest compression and ventilation technique for pediatric patient in critical care transport	
Learning Domains: Attitude	
After completion of this module, the trainees should be able to:	
1- Demonstrate sensitivity to the emotional impact of pediatric illness or injury through supportive interactions with parents or guardians during transport 2-	○ Demonstration observation and supervised practice
Topic 4: BARIATRIC AND SPECIAL SITUATIONS	
Learning Outcomes	**Teaching/Learning Strategies**
Learning Domains: Knowledge	

Module 5: Special Considerations	
After completion of this module, the trainees should be able to:	
1- Describe the five major types of bariatric surgery, including potential complications from those procedures	○ Lectures ○ Case studies ○ Discussion ○ Interactive games
2- Discuss considerations related to oxygen consumption in bariatric surgery patients	
3- Describe safe methods of moving bariatric surgery patients from the facility to the stretcher, and vice versa, and of moving the stretcher to and from the ambulance	
4- Discuss excited delirium syndrome, including its risk factors, pathophysiology, signs and symptoms, and treatment	
5- Discuss the elements of interfacility transport monitoring of patients with excited delirium syndrome	
Learning Domains: Skills	
After completion of this module, the trainees should be able to:	
1- Demonstrate proper techniques for lifting, transferring, and repositioning bariatric patients.	○ Clinical rotation ○ Bedside teaching ○ Simulation ○ Lab practice
2- Perform airway management procedures, considering the unique challenges posed by obesity.	
3- Conduct a thorough physical assessment of bariatric patients	
4- Use specialized equipment, such as bariatric stretchers and lifts, safely and efficiently.	
Learning Domains: Attitude	

Module 5: Special Considerations	
After completion of this module, the trainees should be able to:	
1- Recognize the importance of involving family members or social support in the care of bariatric patients	○ Demonstration ○ Observation ○ Supervised practice
2- Adapt communication and care approaches to respect the dignity of the patient	

Rotation Name: Paramedic Critical Care

Rotation Setting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	competency roles**
ER, Hajj, SRCA, EMS, MEDEVAC, ICU, RT, urgent care, CCU, OR, Pharm D Dep, RAD	Junior	1	19 W	Module 1: Foundation of Critical Care Paramedics	K, S, A
			29 W	Module 2: Critical Care Paramedics I	K, S, A
ER, ICU, CCU, Urgent care, MEDEVAC, Burn unit, Emergency of psychiatric	Senior	2	26 W	Module 3: Critical Care Paramedics II	K, S, A
			14 W	Module 4: Paramedic Research and Evidence- based Practice in Paramedic	K, S, A
			8 W	Module 5: Special Considerations	K, S, A

VIII. CONTINUUM OF LEARNING

This encompasses the education that ought to be provided at each pivotal stage of advancement within a specialty. Trainees are encouraged to recognize the concept of Continuous Professional Development (CPD) as a lifelong commitment. It is essential for trainees to understand the importance of CPD for any healthcare provider to fulfill the requirements of their critical profession. The table below outlines the expected progressive development of the role through the junior, senior, and consultant practice levels.

For General (board/diploma) programs:

Undergraduate	D1 (Basic Level/ Junior) B	D2 (Proficient Level/ Senior) P	Advanced level A
Non-practicing	Dependent/supervised practice	Minimum supervision and guidance, attaining competence in related knowledge /skills	Independent practice/provide supervision
Obtain basic health science and foundational level to core discipline knowledge	Obtain fundamental knowledge related to core clinical problems of the specialty	Demonstrate appropriate skills and interventions related to core paramedic clinical problems. Apply critical thinking in problem solving through analysis and evaluation of clinical situations	Demonstrate competent performance in clinical practice and apply advanced up-to-date knowledge and practice related to core clinical problems of the specialty
Internship to the practice of discipline	Apply clinical skills, such as physical examination and practical procedures, related to the core presenting problems and procedures of the specialty	Analyze and interpret the findings from clinical skills to develop appropriate differential diagnoses and management plan for the patient	Supervise and mentor juniors in a range of activities related to their scope of practice. Compare and evaluate challenging, contradictory findings and develop expanded plan to improve paramedic practice

(*Feel free to adjust the table of contents to suit your program's nature.)

IX. TEACHING METHODS

The educational approach of this diploma training program is grounded in the principles of adult learning theory. Trainees are expected to recognize the significance of their learning journey and take proactive stances in shaping both the substance and methodology of their education. The program adopts an adult learning framework across all aspects of its activities, placing the responsibility for meeting learning objectives squarely on the shoulders of the trainees. The structured training sessions encompassed the following key educational activities:

1. Activities Specific to the Program
2. Topics of Universal Interest
3. Broad Learning Opportunities
4. Simulation Exercises

1-Program-Specific Learning Activities:

The activities tailored to the program were educational initiatives crafted explicitly for the instruction of trainees throughout their training period. Attendance to these activities is mandatory for trainees, and failure to comply may result in disciplinary measures. It is the responsibility of the program's administration to facilitate these activities by ensuring that trainees have allocated the protected time to participate fully. For detailed information on competency expectations at the junior and senior levels, including the mapping of competencies, learning domains, and milestones, please refer to Appendices A and B.

1.1. Program Academic Half-Day:

Each week, students allocate 2–4 hours of structured educational time, often known as the academic half-day, for formal training. This designated time involves activities that are organized beforehand, including the selection of tutors, scheduling of timeslots, and booking of venues, and does not encompass bedside teaching or clinical rotations. The academic half-day is dedicated to covering essential topics within the specialty that are selected and sanctioned by the specialty's scientific council to align with specified competencies and pedagogical approaches. These core topics were chosen to ensure comprehensive coverage of the specialty's critical clinical issues, and were ideally delivered through interactive case-based discussions. Clear learning objectives should be established for each topic, with a preference for utilizing pre-learning materials. Where relevant, workshops, team-based learning (TBL), and simulations are encouraged to enhance procedural skills.

Coordination among regional supervisory committees, academic and training affairs, program directors, and chief residents is crucial for organizing and executing academic activities as outlined in the curriculum. Trainees should be actively involved in developing and presenting these topics under the guidance of faculty, potentially contributing through presentations, content creation, or research. Supervisors are tasked with ensuring that discussions on each topic are categorized into three learning domains: knowledge, skills, and attitudes, as appropriate.

It is recommended that 40 half-day academic sessions be conducted annually alongside other educational formats, such as journal clubs and clinical/practical instruction.

See Appendix D for an illustration of how an academic half-day might be structured.

1.2. Practice-Based Learning:

Learning opportunities present themselves in various forms, such as bedside, laboratory, and clinical rotations, and other professional activities such as workshops and courses on simulations, standardized patient interactions, and bedside instruction. The trainees were encouraged to enhance their skills through self-directed learning.

In contrast, practice-based learning enables educators to closely mentor trainees and guide them towards proficiency in the practical skills essential for the program. This method supports the development of knowledge, psychomotor skills, and positive attitudes.

2- Universal Topics

Universal topics consist of educational content designed by the SCFHS to benefit all specialties. These topics were selected based on the following criteria:

1. High relevance and value
2. Interdisciplinary nature and integrative approach
3. Necessity for expertise that may surpass what is available at local clinical training sites.

The SCFHS has made these universal topics accessible through e-learning, with each trainee receiving personalized login details to access the online modules. At the conclusion of each module, a self-assessment was conducted to reinforce learning. According to the "executive policies of formative assessment and annual promotion," the completion of universal topics is compulsory and plays a crucial role in the criteria for the annual advancement of trainees to the next level of their training. These topics will be spread throughout the entire duration of the training program, with a requirement set by the SCFHS for residency programs to complete 20 universal topics. For more information on Universal Topics, please refer to the appendix C.

UNIVERSAL TOPICS

Module 1: Medical Fundamentals (Introduction)

1. Blood transfusion and drug administration
2. Hospital acquired infections.
3. Sepsis; SIRS; DIC

Module 2: Diabetes and Metabolic Disorders

1. Diabetic Emergencies
2. Cardiovascular Risk

Module 3: Medical and Surgical Emergencies

1. Acute chest pain
2. Altered sensorium
3. Hypotension
4. Hypertension
5. Abnormal ECG

Module 4: Acute Care

1. Pre-hospital (on scene) management
2. Ongoing assessment and management care
3. Fluid Management in the Pre-hospital and Hospitalized Patient
4. Management of Electrolyte Imbalances

Module 5: Frail Older Population

1. Online medical direction (radio, telephone, satellite in MEDEVAC)
2. Offline medical direction (protocol)

Module 7: Ethics and Healthcare

1. Occupational Hazards of Healthcare Workers
2. Organ Transplantation
3. Autonomy and Treatment Refusal
4. Death and Dying

3- General Learning Opportunities:

Structured educational sessions should be enriched with additional practice-based learning (PBL) activities that can be tailored to meet specific needs, including

1. Journal Club
2. Maintaining a reflective journal
3. Participating in clinical rotations
4. Contributing to quality improvement initiatives through committee work and meetings

Engaging in approved health volunteering activities during Hajj

Volunteering with the Saudi Red Crescent Authority

Continuous professional development (CPD) activities are pertinent to specialties, such as attending workshops and conferences.

4- Simulation:

The SCFHS, which serves as the nation's oversight agency, has begun to emphasize the incorporation of simulations into training schemes.

Simulation of paramedics involves the creation of synthetic clinical settings that provide trainees with opportunities to learn. This technique offers significant educational benefits by enabling learners to encounter and manage infrequent and/or critical clinical situations and procedures in safe and regulated

environments. Providing prompt and effective feedback within this context greatly enhances learners' knowledge, skills, and attitudes.

The integration of simulations into training regimens is now deemed essential, particularly in competency-based educational frameworks. Modern training programs aim to produce paramedics who are not only skilled and competent, but also capable of working independently, while prioritizing quality care and patient safety. However, there is considerable variability in how simulations are used to deliver competency-based education, and the specific nature of the specialty further contributes to this diversity. Standardizing the assessment requirements for simulation across diverse and evolving postgraduate training programs presents a significant challenge for national regulatory bodies.

X. ASSESSMENT AND EVALUATION

1. Purpose of Assessment

Assessments play a vital role in the success of postgraduate training. This assessment guides trainees and trainers in achieving defined standards, learning outcomes, and competencies. Simultaneously, assessments provide feedback to learners and faculty regarding curriculum development and implementation, teaching methods, and the quality of the learning environment. A reliable and valid assessment is essential for examining curriculum alignment with respect to objectives, learning methods, and assessment tools. Finally, the assessment ensures patients and the public that health professionals are safe and competent.

Assessment serves the following purposes:

a. **Assessment for learning**: also known as formative assessment; trainers utilize information from trainees' performance to diagnose their learning needs and tailor instructions for improvement. This enables faculty members and educators to use information on the trainees' knowledge, understanding, and skills to deliver timely, specific, and constructive feedback. In addition, it fosters the development of trainees' metacognitive and practical skills, encourages reflection and self-regulated learning, and ultimately helps them become lifelong learners.

b. **Assessment of learning:** also referred to as summative assessment. This approach is designed to evaluate whether trainees have achieved their intended learning outcomes. It is typically scored and contributes to high-

stakes decisions including the progression, certification, and completion of training.

c. **System of assessment:** This represents the relationship between multiple collated assessment methods, where formative and summative assessments are integrated, complementary, and aligned throughout a specialty training program. It is blueprinted (mapped) against the curriculum roles, competencies, and outcomes. The overall system blueprint, which differs from the exam blueprint, articulates how diverse assessment tools collectively provide evidence of competence. It may include varying levels of detail according to its purpose and is also known as "assessment mapping." This mapping outlines the competencies to be assessed by all types of assessment methods to build a comprehensive, balanced, and fit-for-purpose assessment strategy, and helps identify areas where assessment is lacking or needs strengthening.

d. **Feedback and evaluation** as assessment outcomes will represent quality metrics that enhance the learning experience. Moreover, it can be utilized for training progression and for determining the suitability of undertaking different levels of summative assessment. High-quality feedback should be specific, actionable, longitudinal, and promote self-assessment. Narrative and meaningful feedback on trainees' performance in work-based assessments and evaluation forms should inform structured action plans, support deliberate practice, and facilitate trainee improvement and progression.

For the sake of organization, assessments will be further classified into two main categories: Formative and Summative.

2. Formative Assessment

2.1 General Principles

Formative assessment should be integrated into the curriculum design, grounded in best practices and evidence-based approaches, and aligned with stated competencies and appropriate tools.

Purpose of formative assessment:

Formative assessment aims to actively support trainees' growth by guiding learning, verifying progression, and ensuring that they acquire competencies essential for high-quality professional practice across all health disciplines.

- Enhance learning by offering trainees opportunities to practice, receive immediate feedback, measure their performance, and identify areas for further development and improvement.
- Drive learning and optimize the training process by clarifying the expectations of trainees and motivating them to actively pursue suitable training and experience.
- Provide robust and comprehensive evidence that trainees are progressing toward fulfilling curriculum standards throughout the training program.
- Ensure that trainees acquire the required competencies across all domains of effective healthcare practice.
- Verify that trainees possess the essential foundational knowledge, skills, and professional attitudes required for their specialties.
- Confirm that trainees are advancing appropriately in their performance relative to their training stage.

Trainees, as adult learners, should actively seek feedback and use it to develop their performance throughout their journey from "novice" to "mastery" levels of competence. Formative assessment (also referred to as continuous or ongoing

assessment) is a component of assessment deliberately distributed across the academic year to provide trainees with timely, meaningful, and actionable feedback that drives learning and improvement.

Specified time should be allocated for trainees to meet with their program director or to review performance reports and logs (e.g., ITER, logbook, and workplace-based assessment tools). Trainees are expected to assume ownership of their development through self-directed learning. The input from the formative assessment tools is integrated at the end of the year to inform decisions on whether individual trainees will advance to the next training level. The formative assessment instruments are periodically reviewed and updated as needed to ensure alignment with the SCFHS guidelines and standards.

Consistent with best practices in health profession education, formative assessment will have the following features tailored to the targeted competencies:

a. Multisource: select all appropriate tools, including relevant workplace-based assessments, according to competency, training level, and rotation.

b. Comprehensive: covering all learning domains (i.e., knowledge, skills, and attitude—professional behavior).

c. Relevant: focused on workplace-based observations for performance in authentic practice settings.

d. Milestone-oriented competency: reflecting the trainee's expected competencies that match their developmental level.

Learning Domain	Assessment Tools	Assessment Methods	D1	D2
Knowledge	○ Written Progress Test ○ Structured Academic Activities ○ Case-Based Discussion (CBD)	○ Exam ○ Structured Academic Activities Rubric ○ Case-Based Discussion Rubric	○ Exam Written Progress Test for all modules at end of D1 and will be conducted in each center. ○ Academic activity will be conducted weekly during class. ○ Case-Based Discussion will be conducted at the end of each topic.	○ Exam will be conducted at the end of each module. ○ Academic activity will be conducted weekly during class. ○ Case-Based Discussion will be conducted at the end of each topic.
Skills	○ Logbook ○ DOPS: Direct Observation for Procedural Skills ○ Mini-CEX: Mini-Clinical Evaluation Exercise ○ Research and EBP Activities ○ Community Activities	○ Lab skills checklist ○ Clinical evaluation rubric ○ Community activity evaluation rubric ○ Research and EBP assignment rubric	○ Lab skills checklist will be used at end of each clinical procedure. ○ Logbook will be checked by mentor at end of each clinical rotation.	○ Lab skills checklist will be used at end of each clinical procedure. ○ Logbook will be checked by mentor at end of each clinical rotation. ○ Research assignment will be completed each week during Module 4

Learning Domain	Assessment Tools	Assessment Methods	D1	D2
Attitude	○ ITER: In-Training Evaluation Report ○ Community services/ volunteering ○ DOPS: Direct Observation for Procedural Skills	○ In-Training Evaluation Report rubric ○ Community activity evaluation rubric ○ Checklist	○ Throughout the diploma, the instructors and clinical mentor will observe students' attitude and communication skills during community activity. ○ Teamwork and professionalism will also be observed.	○ Throughout the diploma, the instructors and clinical mentor will observe students' attitude and communication skills. ○ Teamwork and professionalism will also be observed

2.2 Formative Assessment Tools

2.2.1 Work-based assessment:

Work-based assessment (WBA) is occasionally used interchangeably with workplace-based assessment (WPBA), which refers to the direct observational assessment of a trainee in a real work environment. This has recently been referred to as a supervised learning event (SLE).

WBA is among the most recognized and widely utilized approaches for enhancing learning through formative assessment and feedback.

Numerous WBA tools assess a range of competencies, including communication and consultation skills, clinical decision-making and reasoning, and patient management in contexts where diagnostic uncertainty, resource constraints, and public health considerations may exist. Moreover, WBA tools facilitate the assessment of more complex domains, including professionalism, procedural

skills, and the ethical and legal aspects inherent to clinical practice, which may not be adequately evaluated using traditional assessment methods.

2.2.2 Educational Activity (Non-WBA assessment)

EA are a part of a trainee training program that involves teaching and learning activities to acquire specialty competencies. Examples of contributions to EA can be, but are not limited to, presenting in journal clubs, lectures, morbidity and mortality rounds, grand rounds, and research and scholarly activities.

All formative assessment tools used for formative assessment purposes MUST abide by the **Scoring Categories and Scaling Definitions** in the SCFHS policies.

Doesn't Meet Expectation	Borderline	Meets Expectation	Exceeds Expectation
(<50%)	(50–69.99%)	(>70–89.99%)	(>90%)

To attain the optimum training outcome, the candidate must complete the compulsory requisition of all selected formative assessment tools.

The following are examples of a summary table of tools and their descriptions for one of the specialties, which are for illustrative purposes and do not necessarily fulfill all quality standards: (Additional details on formative assessment and WBA are provided in the formative assessment documents included in the accompanying materials).

Formative Assessment

Learning Domain	Formative Assessment Tools	Important details (e.g., frequency, specifications related to the tool)
Knowledge	Written Progress Test (Promotion Exam)	Conducted at the end of D1 and D2. Evaluates theoretical understanding of critical care, emergency medicine, and pre-hospital protocols. Includes multiple-choice and short-answer questions with structured feedback.
	Structured Oral Examination (SOE)	Conducted annually to assess application of theoretical knowledge and reasoning through structured case-based questioning across four oral stations with immediate feedback.
	Case-Based Discussion (CBD)	Conducted monthly (minimum six per academic year) focusing on real or simulated cases encountered during hospital and pre-hospital rotations.
Skills	Direct Observation of Procedural Skills (DOPS)	Conducted throughout all rotations. Minimum 10 in D1 and 12 in D2. Evaluates procedural proficiency (airway management, vascular access, resuscitation, transport procedures). Immediate feedback required.
	Mini Clinical Evaluation Exercise (Mini-CEX)	Conducted monthly (minimum 10 per year) focusing on clinical encounters assessing patient assessment, intervention, and communication. Each Mini-CEX is followed by feedback discussion.
	Objective Structured Clinical Examination (OSCE)	Conducted at the end of D1 and D2 with 8–10 simulated stations covering critical procedures and communication skills. Each station uses a structured checklist with feedback.

Learning Domain	Formative Assessment Tools	Important details (e.g., frequency, specifications related to the tool)
	Logbook Review	Reviewed quarterly by program director/mentor to verify exposure and progression. Forms part of the trainee's e-Portfolio.
Attitude	In-Training Evaluation Report (ITER)	Completed at the end of each rotation (minimum 9 per year) to evaluate teamwork, professionalism, and communication.
	Community and Public Safety Activities	At least one community engagement activity per academic year (e.g. CPR training, Hajj volunteering). Evaluated using structured community activity evaluation rubrics and mentor feedback.

Gen./Sub	Level	Knowledge					Skills							Attitude
		SOE	EYPT- In' t	SAQ	CBD	EYPT- local	OSCE/OSPE	Research	DOPS	Logbook	Volunteering	Other	Min-CEX	ITERS
	D1	√	√	√	√	√	√		√	√	√		√	√
	D2	√	√	√	√	√	√	√	√	√	√		√	√

Note: SOE= structured oral examination; SAQ= short-answer questions; CBD= Case-Based Discussion; EYPT-local = progress test; OSCE= objective structured clinical examination; DOPS= direct observation of procedural skills; Min-CEX= mini-clinical evaluation exercise; ITERS= in-training evaluation report.

Important Notes:

All formative and work-based assessments should be performed according to the SCHFS definitions and methodologies. Not complying with these parameters will result in trainees facing disciplinary actions per the SCFHS bylaw.

3. Summative Assessment

3.1. General Principles

Summative assessment is a key component in evaluating trainees' competencies, and primarily facilitates informed decisions regarding their proficiency. Unlike formative assessment, summative assessment does not focus on offering feedback for improvement. For additional information, please consult the General Bylaws of Training in Postgraduate Programs and the General Assessment Bylaws available at www.scfhs.org. Trainees must successfully complete all training rotations to be eligible for final examinations and receive Certification of Training Completion.

3.2 Final In-training Evaluation Report (FITER)

In addition to the supervisory committee's approval of completed clinical requirements (documented in the trainee's logbook), a Final In-Training Evaluation Report (FITER) was compiled by the directors of the program for each trainee at the conclusion of their final training year. This report forms the foundation for awarding a certificate of training program completion and determining eligibility to undertake the final specialty examinations.

3.3 Certification of Training Completion

To qualify for the final specialty exams, trainees must secure a "Certification of Training Completion." According to the General Bylaws of Training in Postgraduate Programs and the executive policy accessible at www.scfhs.org, this certification was awarded upon meeting the following conditions:

a. Successful completion of all designated training rotations.

b. Fulfillment of specific training obligations (such as maintaining a logbook and conducting research) as specified in the Final In-Training Evaluation Report (FITER) and endorsed by the specialty scientific council/committee.

c. Clearance from the SCFHS training department, verifying adherence to tuition payments and completion of mandatory universal topics.

d. Achievement in passing the initial part of the examination, if required.

e. The "Certification of Training Completion" is then issued and validated by the supervisory committee or an equivalent body in alignment with the SCFHS regulations.

3.4 Final Specialty Examinations

The final specialty examination is a conclusive evaluative step that awards trainees with a specialty certification. This examination was comprised of two parts.

a. Final written exam: Eligibility for this exam requires trainees to have previously acquired a "Certification of Training Completion."

b. Final clinical/practical exam: To complete the final clinical/practical exam, including the Objective Structured Clinical Examinations (OSCE) and Structured Oral Examinations (SOE), the trainees must first pass the final written exam.Blueprint Outlines: The content provided in table are illustrative. Please refer to the SCFHS website for the most recent version. The blueprints for the final written and clinical/practical examinations are detailed in table below:

(Here, an example of the Written Exam Blueprint is typically shown, but please check the SCFHS website for the actual and updated content.)

Contents								
Categories	Proportions	Number of Questions	Knowledge	Comprehensive	Application	Analysis	Synthesis	Evaluation
Module 1: Foundation of Critical Care Paramedics	20%	20	5	10	5	0	0	0
Module 2: Critical Care Paramedics I	25%	25	5	10	5	5	0	0
Module 3: Critical Care Paramedics II	25%	25	5	10	5	5	0	0
Module 4: Paramedic Research and Evidence-based Practice in Paramedic	15%	15	5	0	2	2	3	3
Module 5: Special Considerations	15%	15	3	6	3	3	0	0
Total	100%	100	23	36	20	15	3	3

Example of Final Clinical Exam Blueprint

		DIMENSIONS OF CARE				
		Health Promotion & Illness Prevention	Acute	Chronic	Psychological Aspects	# Stations
DOMAINS FOR INTEGRATED CLINICAL ENCOUNTER	Patient Care			1		1
	Patient Safety & Procedural Skills	1				1
	Communication & Interpersonal Skills		1			1
	Professional Behaviors				1	1
	Total Stations	1	1	1	1	4

*Main blueprint framework adapted from the Medical Council of Canada Blueprint Project.

For further details on the final examinations, please refer to the General Bylaws of Training in Postgraduate Programs and General Assessment Bylaws (available online: www.scfhs.org).

Learning Domain	Summative Assessment Tools	Passing Score
Knowledge	- Final Written Examination	At least borderline pass in each tool in accordance with the standard setting method used by the executive administration of assessment
Skills	- Objective Structured Clinical Examinations (OSCE) - Structured Oral Examinations (SOE)	At least borderline pass in each tool in accordance with the standard setting method used by the executive administration of assessment
Attitude	- FITER: In-Training Evaluation Report	Successfully pass FITER

XI. PROGRAM AND COURSE EVALUATION

The SCFHS will implement various measures to assess the effectiveness. The program's training outcomes will be scrutinized within the quality assurance framework approved by the SCFHS Central Training Committee. The analysis includes both formative and summative assessment results of trainees aligned with the curriculum's content. Additional metrics to be considered include the following.

Feedback from the annual trainee satisfaction surveys.

Evaluations of faculty members by trainees.

Reviews of rotations by trainees.

Feedback from the annual surveys conducted with program directors.

Information derived from program accreditations.

Insights from direct communications with both trainees and trainers in the field.

A goal-based evaluation approach will be used, with the achievement of specific milestones assessed at the conclusion of each curriculum phase to gauge progress and address any shortcomings in the subsequent phase, particularly during the sessions chosen by trainees and professional development sessions.

Furthermore, in its curriculum revision efforts, the SCFHS will not only rely on domain-specific insights and international best practices but also employ a comprehensive strategy to incorporate all available data to ensure the curriculum's continuous improvement and relevance.

XII. POLICIES AND PROCEDURES

This curriculum offers resources and defines educational goals that guide interactions between trainees and trainers towards achieving predetermined educational outcomes. The SCFHS offers a comprehensive framework of "General Bylaws of Training in Postgraduate Programs" and "Executive Policies," available on its official website, which governs all aspects of training. These regulations cover a wide range of areas including training guidelines, assessment criteria, accreditation processes, policies on admission, registration, continuous assessment and progression, examinations, representation and support for trainees, work hours, and leave entitlements. Within the scope of this curriculum, it is mandatory for trainees, trainers, and supervisory personnel to adhere to the latest versions of these bylaws and policies, all of which are available online on the official SCFHS website.

XIII. APPENDICES

A. Junior-level Competency-Matrix

B. Senior-level Competency-Matrix

C. Universal Topics Modules

D. Examples of an Academic Half-Day Table

E. References

Appendix A and B

Junior-level (D1- Basic) Competency-Matrix and Senior-level (D2-Advanced) Competency-Matrix: to map competency, learning domain and milestones.

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Activities Related to Specialty				
		Integrate knowledge, clinical, behavioral, and social sciences in pre-hospital care practice.	Perform specific patient triage and assessment in pre-hospital and hospital care practice.	Perform specific clinical interventions and medication administration.	Respect the rules, regulations, and practice within the scope of practice for a critical care paramedic	Demonstrate skills to complete required documentation

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Activities Related to Specialty				
D1 & D2	**Professional Expert**	Utilize comprehensive knowledge regarding anatomy, physiology, and pathophysiology for presenting medical conditions. K,S,A	Utilize knowledge during assessment, including a complete, accurate, and relevant history to develop clinical reasoning, decision-making, and problem-solving skills K,S,A	Provide Independent Efficient, and holistic management for patient in pre-hospital and hospital care practice K,S,A	Apply rules, regulations, and practice within the scope of practice for a critical care paramedic. K,S,A	Documentation is complete, accurate and relevant for all patients, including pre-hospital critical care process, prescriptions, admission, and discharge K,S,A
	Communicator	Communicate effectively with patient and medical controllers during	Apply Appropriate interpersonal skills in communicating	Provide ongoing quality care to all patients and	Communicate effectively within the scope of critical care	Communicate findings clearly and succinctly to colleagues

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Activities Related to Specialty				
		interfacility transport. K,S,A	effectively with patient and families K,S,A	communicate with respect to all K,S,A	paramedics K,S,A	in reports and conferences K,S,A
	Collaborator	Collaborate effectively with medical team. K.S.A	Participates effectively as a member of the paramedics rendering holistic patient care S,A	Participates effectively as a member of the paramedics rendering holistic patient care S,A	Practice teamwork and inter-professional collaboration. K,S,A	Collaborate with appropriate experts and medical centers rendering holistic patient care S,A
	Advocate	Appy Medical-legal and Ethical Aspects. K,S,A	Respect patient rights K,S,A	Respect patient rights K,S,A	Protect patient rights and privacy K,S,A	Protect patient rights and privacy K,S,A

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Activities Related to Specialty				
	Leader	Works independently, acting as a role model for juniors in demonstrating competency K,S,A	Appy leadership skills in prioritizing patient needs K,S,A	Utilize available resources and Evidence-Based Systems (EBS) to provide up-to-date patient care K,S,A	Ensure the application of rules, regulations, and paramedics scope of practice K,S,A	Identify an area of research interest and a research supervisor in order to engage in the scholarship of scientific inquiry and dissemination K,S,A
	Scholar	Use EBP for clinical reasoning and problem solving. K,S,A	Apply a holistic approach to assess and prioritize patient needs K,S,A	Apply a holistic approach to patient management K,S,A	Self-directed learning, willing to continuously develop knowledge and skills K,S,A	Disseminate scholarly findings and EBP via publication and conference K,S,A

Appendix-C

UNIVERSAL TOPICS

Module 1: Medical Fundamentals (Introduction)

1. Blood transfusion and drug administration
2. Hospital acquired infections.
3. Sepsis; SIRS; DIC

Module 2: Diabetes and Metabolic Disorders

4. Diabetic Emergencies
5. Cardiovascular Risk

Module 3: Medical and Surgical Emergencies

6. Acute chest pain
7. Altered sensorium
8. Hypotension
9. Hypertension
10. Abnormal ECG

Module 4: Acute Care

11. Pre-hospital (on scene) management
12. Ongoing assessment and management care
13. Fluid Management in the Pre-hospital and Hospitalized Patient
14. Management of Electrolyte Imbalances

Module 5: Frail Older Population

15. Online medical direction (radio, telephone, satellite in MEDEVAC)
16. Offline medical direction (protocol)

Module 7: Ethics and Healthcare

17. Occupational Hazards of Healthcare Workers

18. Organ Transplantation

19. Autonomy and Treatment Refusal

20. Death and Dying

Appendix-D

The following is a table with example topics that illustrate the half-day activities as they span over the course of 1 year (or a cycle of teaching if more than 1 year is required to cover all topics).

Repeating sessions and topics in every training year was discouraged. Each half-day is dedicated to one theme.

Academic week	Section	Date	Time	Sessions	presenters
1	Module 1: Foundation of Critical Care Paramedics		08:00-09:00	Welcoming to the program	Program director
			09:00-10:00	Case base study	
			10:00-11:00	Topic 1	
2			08:00-09:00	Topic 2	
			09:00-10:00	Case base study	
			10:00-11:00		
3			08:00-09:00	Topic 2	
			09:00-10:00	Case base study	
			10:00-11:00		
4	Module 2: Critical Care Paramedic I		08:00-09:00	Topic 1	
			09:00-10:00		

Academic week	Section	Date	Time	Sessions	presenters
			10:00-11:00	Case base study	
5			08:00-09:00	Topic 1	
			09:00-10:00		
			10:00-11:00	Case base study	
6			08:00-09:00	Topic 2	
			09:00-10:00		
			10:00-11:00	Case base study	
7			08:00-09:00	Topic 2	
			09:00-10:00		
			10:00-11:00	Case base study	
8			08:00-09:00	Topic 3	
			09:00-10:00		
			10:00-11:00	Case base study	
9			08:00-09:00	Topic 3	
			09:00-10:00		

Academic week	Section	Date	Time	Sessions	presenters
			10:00-11:00	Case base study	
10			08:00-09:00	Topic 4	
			09:00-10:00		
			10:00-11:00	Case base study	
8			08:00-09:00	Topic 4	
			09:00-10:00		
			10:00-11:00	Case base study	
9			08:00-09:00	Topic 5	
			09:00-10:00		
			10:00-11:00	Interactive game	
10			08:00-09:00	Topic 6	
			09:00-10:00		
			10:00-11:00	Case-based study	
11			08:00-09:00	Topic 6	
			09:00-10:00		

Academic week	Section	Date	Time	Sessions	presenters
			10:00-11:00	Case-based study	
12	Module 3: Critical Care Paramedic II		08:00-09:00	Topic 1	
			09:00-10:00		
			10:00-11:00	Case-based study	
13			08:00-09:00	Topic 2	
			09:00-10:00		
			10:00-11:00	Case-based study	
14			08:00-09:00	Topic 3	
			09:00-10:00		
			10:00-11:00	Case-based study	
15			08:00-09:00	Topic 3	
			09:00-10:00		
			10:00-11:00	Case-based study	
16			08:00-09:00	Topic 4	
			09:00-10:00		

Academic week	Section	Date	Time	Sessions	presenters
			10:00-11:00	Case-based study	
17			08:00-09:00	Topic 4	
			09:00-10:00		
			10:00-11:00	Case-based study	
18			08:00-09:00	Topic 5	
			09:00-10:00		
			10:00-11:00	Case-based study	
19			08:00-09:00	Topic 6	
			09:00-10:00		
			10:00-11:00	Case-based study	
20	**Module 4: Paramedic Research and Evidence-based Practice in Paramedic**		08:00-09:00	Topic 1	
			09:00-10:00	In class activity	
			10:00-11:00		
21			08:00-09:00	Topic 2	
			09:00-10:00	Workshop	

Academic week	Section	Date	Time	Sessions	presenters
			10:00-11:00		
22			08:00-09:00	Topic 3	
			09:00-10:00	Workshop	
			10:00-11:00	Journal club	
23			08:00-09:00	Topic 3	
			09:00-10:00	Workshop	
			10:00-11:00	Journal club	
24			08:00-09:00	Topic 4	
			09:00-10:00	In class activity	
			10:00-11:00		
25			08:00-09:00	Topic 5	
			09:00-10:00	In class activity	
			10:00-11:00		
26	**Module 5: Special Considerations**		08:00-09:00	Topic 1	
			09:00-10:00		

Academic week	Section	Date	Time	Sessions	presenters
			10:00-11:00	Case-based study	
27			08:00-09:00	Topic 2	
			09:00-10:00		
			10:00-11:00	Case-based study	
28			08:00-09:00	Topic 2	
			09:00-10:00		
			10:00-11:00	Case-based study	
29			08:00-09:00	Topic 3	
			09:00-10:00		
			10:00-11:00	Case-based study	
30			08:00-09:00	Topic 4	
			09:00-10:00		
			10:00-11:00	Case-based study	

Appendix-E

NO	Specialty Procurers
1	Perform Packaging Procedure for an Interfacility Transport
2	Demonstrate emergency moves for endangered patients
3	Perform rapid extrication of patients
4	Performs simple patient assessments
5	Performs comprehensive patient assessments
6	Obtains vital signs manually
7	Obtains vital signs with electronic devices
8	Assist with triaging patients
9	Perform airway and breathing management
10	Demonstrate basic airway management
11	Demonstrate advanced airway management
12	Demonstrate skill for mechanical ventilation management
13	Perform suctioning in a patient with an endotracheal tube
14	Assist in orotracheal intubation, nasotracheal, and digital intubation
15	Assist in performing needle cricothyrotomy

NO	Specialty Procurers
16	Assist in performing surgical cricothyrotomy
17	Demonstrate proficiency in using a portable ventilator
18	Demonstrate proficiency in troubleshooting a ventilator pressure alarm
19	Perform manual external CPR
20	Use of an automated external defibrillator
21	Perform and interpret 12 leads ECG
22	Preform ECG electrode application and connect to cardiac monitor
23	Perform emergency cardioversion, including vagal maneuvers
24	Perform peripheral iv insertion, maintenance, and removal
25	Perform central line monitoring
26	Prepare medication per order
27	Administer medication and fluids with an infusion pump
28	Administer intramuscular, subcutaneous, and IV medications appropriately
29	Obtaining peripheral venous blood specimens
30	Obtaining an arterial blood sample
31	Administer blood and blood products

NO	Specialty Procurers
32	Perform a needle decompression for managing tension pneumothorax
33	Assist in chest tube insertion
34	Assist in pericardiocentesis
35	Perform ICP monitoring
36	Inserting an arterial line
37	Inserting a central venous line
38	Operate the IABP during transport
39	Insert a nasogastric tube in a conscious patient
40	Insert orogastric tube
41	Insert a female urinary catheter
42	Insert a male urinary catheter
43	Empty an ostomy pouch and place a new pouch
44	Perform trauma care skills include manual cervical stabilization and cervical collar use
45	Perform dressing and bandaging
46	Preform skills for hemorrhage control
47	Perform personal protective equipment

NO	Specialty Procurers
48	Demonstrate aseptic technique and appropriate infection control practices
49	Perform fetal monitoring
50	Demonstrate intubation of a neonate
51	Insert an orogastric tube in the neonate
52	Use an incubator
53	Assist in the normal delivery of a newborn
54	Assist in the complicated delivery of a newborn

Appendix-F

References:

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