

Emergency Medical Technician III

8335 36 weeks

Table of Contents

Acknowledgments.....	1
Course Description.....	2
Task Essentials Table.....	3
Assisting an Advanced Life Support (ALS) Provider with Advanced Procedures.....	4
Using Medical Mathematics	8
Exploring Professional Development in Emergency Medical Services (EMS).....	11
Examining Certification/Recertification of EMT Credentials	17
SOL Correlation by Task	19
Teacher Resources	20
Appendix: Credentials, Course Sequences, and Career Cluster Information	21

Acknowledgments

The components of this instructional framework were developed by the following curriculum development panelists:

- Sandra Bailey, The Specialty Center at Hanover High School, Hanover County Public Schools
- Jefferson Brittingham, New Horizons Regional Education Center, Hampton City Public Schools
- Johnna Chandler, ACE Center at Hermitage High School, Henrico County Public Schools
- Craig Evans, Executive Director, Virginia EMS Council, Gainesville
- William Fritz, BLS Training Specialist, Virginia Department of Health, Richmond
- Roxann Gabany, Training Center Coordinator, Peninsula Center for Life Support, Bena
- Catherine Gardner, Charlottesville-Albemarle Technical Education Center (CATEC), Charlottesville
- Jackie Guilliams, William Fleming High School, Roanoke City Public Schools
- Rogger James, Richmond Technical Center, Richmond City Public Schools
- Danny Jarrell, Hopewell High School, Hopewell City Public Schools
- James N. Jones, Industry Expert/Business Partner, Dale City Volunteer Fire Department, Dale City

Jake Miller, Chesapeake Career Center, Chesapeake City Public Schools
Sandra Sokol, Stone Bridge High School, Loudoun County Public Schools

Correlations to the Virginia Standards of Learning were reviewed and updated by:

Leslie R. Bowers, English Teacher (ret.), Newport News Public Schools
Vickie L. Inge, Mathematics Committee Member, Virginia Mathematics and Science Coalition
Anne F. Markwith, New Teacher Mentor (Science), Gloucester County Public Schools
Michael L. Nagy, Social Studies Department Chair, Rustburg High School, Campbell County Public Schools

Jane Best, Virginia HOSA State Advisor, reviewed and updated the HOSA correlations.

The framework was edited and produced by the CTE Resource Center:

Heather A. Widener, Writer/Editor
Kevin P. Reilly, Administrative Coordinator

Virginia Department of Education Staff

Michele Green-Wright, Specialist, Health and Medical Sciences Education and Related Clusters
Dr. Tricia S. Jacobs, CTE Coordinator of Curriculum and Instruction
Dr. David S. Eshelman, Director, Workforce Development and Initiatives
George R. Willcox, Director, Operations and Accountability

Office of Career, Technical, and Adult Education
Virginia Department of Education

Copyright © 2019

Course Description

Suggested Grade Level: 12 or 13

Prerequisites: 8334

This course is intended for students who have completed Emergency Medical Technician (EMT) I and II, obtained instructor approval, and who may have obtained EMT certification from the Virginia Office of Emergency Medical Services (OEMS). Students will strengthen the skills mastered in the basic courses as they acquire skills to assist advanced life support (ALS) providers, build on the foundations of emergency medical services (EMS) education, and meet education requirements for certification or recertification. Students also learn to coordinate with other public health and safety services, such as fire control, law enforcement, and emergency

management. The course includes mentored as well as instructional experiences. Students must complete a minimum of 85 percent of the didactic and lab aspects of the course.

NOTE: Only students who have obtained EMT certification from the Virginia OEMS can be utilized as a lab assistant (to meet the 6:1 ratio requirement).

This course has specific state laws and regulations from a governing medical board or agency. Please contact the Virginia Department of Education, Office of Career and Technical Education Services prior to implementing this course. All inquiries may be sent to cte@doe.virginia.gov.

The Virginia Department of Education, in collaboration with the Virginia Department of Health, is pleased to provide the [High School Based Emergency Medical Technician \(EMT\) Educational Program Guidelines](#). The guidelines are based on the newly revised state and national standards for emergency medical technician programs. This document serves as a guide to school divisions for implementing the revised EMT program standards consistently in all high schools and technical centers statewide.

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

8335	Tasks/Competencies
○	Demonstrate the assessment and management of the advanced airway.
⊕	Demonstrate cricoid pressure.
○	List the equipment required for intubation.
○	Discuss intubation of patients.
⊕	Demonstrate the function of a continuous positive airway pressure (CPAP) device.
○	Identify the equipment necessary to gain intravenous (IV) or intraosseous (IO) access.
⊕	Describe the anatomy and physiology of the cardiovascular system.
○	Discuss an electrocardiogram (ECG).
⊕	Demonstrate placement of leads for an ECG.
⊕	Calculate an oral and a parenteral dosage for a patient.
⊕	Calculate a weight-based dosage for a patient.
○	Calculate an IV drip dosage for a patient.
○	Calculate IV drug concentrations and solutions.
○	Demonstrate principles of effective instruction.
○	Identify the characteristics of an adult learner.
○	Explain theories of adult education.
○	Identify instructional methods used to meet the needs of students.
○	Identify use of instructional technology.
○	Identify types of student assessments and their purposes.

<input type="radio"/>	Compare teaching strategies and their effects on student learning.
<input type="radio"/>	Demonstrate teaching strategies.
<input type="radio"/>	Identify classroom management strategies that promote positive student behavior.
<input checked="" type="radio"/>	Demonstrate skills necessary for EMT certification.
<input checked="" type="radio"/>	Research career opportunities in emergency medicine, public safety, or health care.
<input checked="" type="radio"/>	Research certification or recertification requirements for the EMT.
<input checked="" type="radio"/>	Meet certification or recertification requirements for Category 1 topics.
<input checked="" type="radio"/>	Meet certification or recertification requirements for Category 2 topics.

Legend: Essential Non-essential Omitted

Assisting an Advanced Life Support (ALS) Provider with Advanced Procedures

Task Number 39

Demonstrate the assessment and management of the advanced airway.

Definition

Demonstration should include

- anatomy and physiology of patients of all ages
- signs and symptoms of adequate vs. inadequate breathing
- indications for advanced airway management
- complications associated with advanced airway management
- airway assessment
- techniques within the emergency medical technician (EMT) scope of practice for assuring a patent airway.

Process/Skill Questions

- What are the differences between adult and child respiratory anatomy?
- What are indications that the patient needs an advanced airway?
- What are the complications associated with advanced airway management?

Task Number 40

Demonstrate cricoid pressure.

Definition

Demonstration should include

- locating the cricoid cartilage
- applying appropriate pressure.

Process/Skill Questions

- How does an EMT locate the cricoid cartilage?
 - How can an EMT ensure the appropriate amount of pressure is being applied on the cricoid cartilage?
-

Task Number 41

List the equipment required for intubation.

Definition

List should include

- curved or straight blade
- stylet
- endotracheal or supraglottic tubes and holders
- tube placement confirmation devices
- bag-valve-mask
- suction unit or catheter
- endotracheal tube inducer.

Process/Skill Questions

- How is the technique used for a curved laryngoscope blade different from that used for a straight blade?
- What are the possible complications that could result from improper tube placement?
- What are the similarities and differences among adult, child, and infant bag-valve-masks?

Task Number 42

Discuss intubation of patients.

Definition

Discussion should include the steps in the intubation procedure for patients of all ages.

Process/Skill Questions

- Why must an EMT *not* advance the endotracheal tube (ET) down the center of the laryngoscope blade?
- What volume of air is used to inflate the balloon cuff for an adult?
- What are the steps for intubating a patient without a spinal cord injury?

Task Number 43

Demonstrate the function of a continuous positive airway pressure (CPAP) device.

Definition

Demonstration should include the

- physiology of the respiratory interactions with a CPAP device
- indications and contraindications for the use of a CPAP device.

Process/Skill Questions

- Why is a patient's respiration improved with the combination of positive inspiratory and expiratory pressure?
 - Why is it important to explain the administration of a CPAP device to a patient before its use?
 - Why might a patient's blood pressure drop while using a CPAP device?
-

Task Number 44

Identify the equipment necessary to gain intravenous (IV) or intraosseous (IO) access.

Definition

Identification should include

- alcohol swabs or Betadine

- IV catheters or IO devices (of various sizes)
- IV tubing
- IV fluids
- securing devices.

Process/Skill Questions

- What are the implications for an EMT's scope of practice, related to IV and IO access?
 - What are the steps in assembling IV equipment?
 - What are differences in normal saline and lactated Ringer's solutions?
-

Task Number 45

Describe the anatomy and physiology of the cardiovascular system.

Definition

Description should include

- mechanical and electrical cardiac physiology
- cardiac pathophysiology.

Process/Skill Questions

- How does the electrical conduction system produce a coordinated contraction?
- What components are in the electrical conduction system?
- What is cardiac output?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology
 - Knowledge Test: Pathophysiology
-

Task Number 46

Discuss an electrocardiogram (ECG).

Definition

Discussion should include explanation of waveforms.

Process/Skill Questions

- How does an ECG work?
- When is an ECG indicated for a patient?
- What are the differences between ventricular tachycardia and ventricular fibrillation?

HOSA Competitive Events (High School)

Emergency Preparedness Events

- Emergency Medical Technician
-

Task Number 47

Demonstrate placement of leads for an ECG.

Definition

Demonstration should include advanced acquisition of ECGs and placement of leads.

Process/Skill Questions

- What are the consequences of improper placement of leads?
- How might having the ability to acquire an ECG affect patient outcome?
- What is the procedure for lead attachment to a diaphoretic patient?

HOSA Competitive Events (High School)

Emergency Preparedness Events

- Emergency Medical Technician
-

Using Medical Mathematics

Task Number 48

Calculate an oral and a parenteral dosage for a patient.

Definition

Calculation should include the identification and use of metric measurements and conversions.

Process/Skill Questions

- What are the basic metric units of measure related to drug dosage?
- How can an EMT ensure appropriate drug dosage?
- How many ounces are contained in five tablespoons?

HOSA Competitive Events (High School)

Health Science Events

- Medical Math
-

Task Number 49

Calculate a weight-based dosage for a patient.

Definition

Calculation should include the use of metric measurements and conversions.

Process/Skill Questions

- How many pounds are there in a kilogram?
- What are the steps used to calculate a weight-based dosage problem?
- How might common household measures be misapplied when converting to metric?

HOSA Competitive Events (High School)

Health Science Events

- Medical Math
-

Task Number 50

Calculate an IV drip dosage for a patient.

Definition

Calculation should include the use of metric measurements and conversions.

Process/Skill Questions

- What steps are needed to calculate the infusion time of an IV solution?
- What steps are needed to calculate IV flow rates, based on weight?
- What are the steps necessary to calculate pediatric IV infusions?

HOSA Competitive Events (High School)

Health Science Events

- Medical Math
-

Task Number 51

Calculate IV drug concentrations and solutions.

Definition

Calculation should include the use of metric measurements and conversions.

Process/Skill Questions

- What are the steps used to determine the amount of drug a patient will receive in an IV per minute and per hour?
- How does one determine the concentration of a drug if it has been added to a solution?

HOSA Competitive Events (High School)

Health Science Events

- Medical Math
-

Exploring Professional Development in Emergency Medical Services (EMS)

Task Number 52

Demonstrate principles of effective instruction.

Definition

Demonstration should include

- communicating effectively
- using differentiated instructional methods (e.g., small-group, cooperative and collaborative, lecture, scenario-based)
- providing content to help students strengthen their critical-thinking skills and application of knowledge
- reteaching, as needed.

Process/Skill Questions

- How may knowledge of differing student learning styles be used to achieve a varied learning climate?
- What techniques can assist students with strengthening their critical-thinking skills?
- What are the specific roles of an EMS educator?

HOSA Competitive Events (High School)

Leadership Events

- Prepared Speaking

Teamwork Events

- Health Education
-

Task Number 53

Identify the characteristics of an adult learner.

Definition

Identification could include

- perceived need for learning about the topic
- desire for validation of self-concept
- desire for self-direction
- need to use prior knowledge to stimulate learning and put existing skills to work
- internal motivation to grow and develop.

Process/Skill Questions

- What are the characteristics of adult learners?
- How can one help the adult learner set goals for EMS learning?
- What are three strategies used to foster a safe learning environment?

HOSA Competitive Events (High School)

Teamwork Events

- Health Education
-

Task Number 54

Explain theories of adult education.

Definition

Explanation should include

- the differences between pedagogy and andragogy (i.e., the method and practice of teaching adult learners)
- orientation to learning (e.g., subject-centered vs. application of newly acquired skills to a task)
- ownership of learning.

Process/Skill Questions

- What are the differences between pedagogy and andragogy?
- How does a lesson written in a subject-centered format differ from one in a problem-centered format?
- What does *relevancy-oriented* mean in terms of adult education?

HOSA Competitive Events (High School)

Teamwork Events

- Health Education
-

Task Number 55

Identify instructional methods used to meet the needs of students.

Definition

Identification should include

- describing selected learning theories
- explaining differentiation
- explaining Dr. Howard Gardner's theory of multiple intelligences.

Process/Skill Questions

- What are the strengths of self-directed learning?
- How does transformational learning affect the adult learner?
- Why might it be necessary to use various methods of evaluation to ensure needed competencies are verified?

HOSA Competitive Events (High School)

Teamwork Events

- Health Education
-

Task Number 56

Identify use of instructional technology.

Definition

Identification should include

- applications of technology in teaching and learning
- acceptable-use policies and their importance
- the digital divide
- the Children’s Internet Protection Act (CIPA)
- cybersecurity concerns.

Process/Skill Questions

- What is instructional technology?
- What are the advantages of using smartphone apps for ECG interpretation?
- Why must an EMS instructor learn to use both high-tech and low-tech devices?
- How should an instructor present resource materials available to an EMS student?

HOSA Competitive Events (High School)

Teamwork Events

- Health Education

Task Number 57

Identify types of student assessments and their purposes.

Definition

Identification should include brief descriptions and the purpose(s) of assessments such as

- formal
- informal
- formative
- summative
- diagnostic
- authentic
- portfolio.

Process/Skill Questions

- Why is the concept of purpose important in constructing an evaluation strategy?
- How does one calculate the difficulty index on written assessments?
- What materials should be included in an EMT portfolio competency package?

HOSA Competitive Events (High School)

Teamwork Events

- Health Education
-

Task Number 58

Compare teaching strategies and their effects on student learning.

Definition

Comparison should be made among strategies such as

- lectures and illustrated lectures
- role-plays
- demonstrations
- case studies
- scenarios
- simulations and experiential learning
- alternative presentation formats (e.g., flipped classroom)
- integration of co-curricular organizations
- Marzano's instructional strategies.

Process/Skill Questions

- What benefits can be achieved through simulation?
- What are some strategies an instructor can use to make the classroom into a simulation lab?
- Why is debriefing beneficial to students?
- What are the advantages of self-reflection?

Task Number 59

Demonstrate teaching strategies.

Definition

Demonstration should include

- identifying teaching strategies

- presenting a lesson plan that includes objective(s), materials, set, process, questioning, accommodations, closure, and assessment
- modeling the identified teaching strategies during the presentation of the lesson(s)
- evaluating instructional effectiveness.

Process/Skill Questions

- What teaching strategies can be used in a presentation?
- How can an instructor evaluate himself/herself?

Task Number 60

Identify classroom management strategies that promote positive student behavior.

Definition

Identification should include

- arranging the physical space to promote learning
- adhering to accessibility requirements
- ensuring a nurturing and respectful classroom climate
- enforcing student discipline, including behavioral consequences
- maintaining teacher presence and involvement
- building teacher-student relationships
- stressing positive reinforcement
- providing motivation
- providing instructional transitions.

Process/Skill Questions

- What are the floor space requirements for teaching practical skills?
- What are the strengths and weaknesses of a traditional theater classroom setup?
- What are the three steps of effective classroom management when confronted with a conflict?
- What are the three phases of team development?

HOSA Competitive Events (High School)

Teamwork Events

- Creative Problem Solving

Examining Certification/Recertification of EMT Credentials

Task Number 61

Demonstrate skills necessary for EMT certification.

Definition

Demonstration includes skills required for [Virginia Office of Emergency Medical Services \(OEMS\) EMT certification testing](#).

Process/Skill Questions

- What skills are required to become an EMT in Virginia?
 - What is the critical criteria for each required skill on the EMT test?
-

Task Number 62

Research career opportunities in emergency medicine, public safety, or health care.

Definition

Research should include local, state, national, and global opportunities for employment and career growth, including opportunities as an EMS educator.

Process/Skill Questions

- What are the implications of the Patient Protection and Affordable Care Act (ACA) for EMS?
- Which companies are hiring EMS providers on a global scale?
- What are the legal implications of extending the EMT scope of practice?

Task Number 63

Research certification or recertification requirements for the EMT.

Definition

Research should include

- determining the fees to be paid
- reviewing the [Virginia OEMS](#) education and certification continuing education requirements
- reviewing the [National Registry of Emergency Medical Technicians \(NREMT\) Recertification Guide](#).

Process/Skill Questions

- What are recertification requirements in Virginia and for the NREMT?
- Where can one locate EMT continuing education requirements in Virginia?
- When does an EMT have to recertify? What are the fees associated with recertification?
- Where can an EMT obtain continuing education credits for recertification?
- How is an EMS report/portal located and interpreted?
- What is the recertification process once all EMS requirements have been met?
- What is the recertification process if one's EMT certification expires before he/she meets recertification requirements?

Task Number 64

Meet certification or recertification requirements for Category 1 topics.

Definition

Meeting requirements includes the completion of Category 1 refresher training as specified by the Virginia OEMS (EMS.TR.53A).

Process/Skill Questions

- What is the difference between the expectations for a newly certified EMT and those for a recertifying EMT?
- What are the implications for an EMS provider who does not meet recertification criteria?
- How are continuing education credits logged onto one's report with the Virginia OEMS?

Task Number 65

Meet certification or recertification requirements for Category 2 topics.

Definition

Meeting requirements includes the completion of Category 2 refresher training as specified by the Virginia OEMS (EMS.TR.53A) and should include continuing EMS-related medical education.

Process/Skill Questions

- Why do the courses have to be taken through certain agencies?
- What is the time limit to complete and submit documentation of the courses?

SOL Correlation by Task

39	Demonstrate the assessment and management of the advanced airway.	English: 12.1
40	Demonstrate cricoid pressure.	
41	List the equipment required for intubation.	English: 12.6
42	Discuss intubation of patients.	English: 12.1
43	Demonstrate the function of a continuous positive airway pressure (CPAP) device.	
44	Identify the equipment necessary to gain intravenous (IV) or intraosseous (IO) access.	
45	Describe the anatomy and physiology of the cardiovascular system.	English: 12.5 Science: BIO.4
46	Discuss an electrocardiogram (ECG).	English: 12.1
47	Demonstrate placement of leads for an ECG.	
48	Calculate an oral and a parenteral dosage for a patient.	Mathematics: A.1, A.4
49	Calculate a weight-based dosage for a patient.	Mathematics: A.1, A.4
50	Calculate an IV drip dosage for a patient.	Mathematics: A.1, A.4
51	Calculate IV drug concentrations and solutions.	Mathematics: A.1, A.4
52	Demonstrate principles of effective instruction.	English: 12.1
53	Identify the characteristics of an adult learner.	
54	Explain theories of adult education.	English: 12.5 History and Social Science: WHI.5
55	Identify instructional methods used to meet the needs of students.	English: 12.5

56	Identify use of instructional technology.	English: 12.5 History and Social Science: VUS.14, WG.17, WHII.14
57	Identify types of student assessments and their purposes.	English: 12.5
58	Compare teaching strategies and their effects on student learning.	English: 12.5
59	Demonstrate teaching strategies.	English: 12.1, 12.5
60	Identify classroom management strategies that promote positive student behavior.	English: 12.5
61	Demonstrate skills necessary for EMT certification.	
62	Research career opportunities in emergency medicine, public safety, or health care.	English: 12.8
63	Research certification or recertification requirements for the EMT.	English: 12.8 History and Social Science: GOVT.8
64	Meet certification or recertification requirements for Category 1 topics.	History and Social Science: GOVT.8
65	Meet certification or recertification requirements for Category 2 topics.	History and Social Science: GOVT.8

Teacher Resources

- [Virginia Department of Health, Office of Emergency Medical Services \(OEMS\)](#)
- [High-School-Based Emergency Medical Services \(EMS\) Educational Programs Guide \(2019\)](#)
- [Initial BLS Training Programs: First Class Paperwork, Virginia OEMS](#) (as of 2019; to access the most recent version of this document, please visit the [Virginia OEMS website](#))
- [Initial BLS Training Programs: Last Class Paperwork, Virginia OEMS](#) (as of 2019; to access the most recent version of this document, please visit the [Virginia OEMS website](#))

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- Certified EKG Technician (CET) Examination (AAH)
- Certified EKG Technician (CET) Examination (NHA)
- College and Work Readiness Assessment (CWRA+)
- Emergency and Fire Management Services Assessment
- National Career Readiness Certificate Assessment
- Nationally Registered Certified EKG Technician (NRCEKGT) Examination
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Emergency Medical Technician II (8334/36 weeks)

Career Cluster: Health Science	
Pathway	Occupations
Therapeutic Services	Emergency Medical Technician, Paramedic