HSCI 0051 - ADVANCED EMERGENCY MEDICAL TECHNICIAN (AEMT) DIDACTIC

Catalog Description

Prerequisite: Current AHA Healthcare Provider CPR certification and current California State EMT certification required
Advisory: Completion of HSCI 3, HSCI 30, HSCI 50, and BIOL 55 with grades of "C" or better; eligibility for ENGL 11
Hours: 144 (90 lecture, 54 laboratory)
Description: Provides academic preparation and psychomotor skills training to prepare the student for HSCI 52, the Advanced Emergency Medical Technician (AEMT) clinical and field Internship. Successful completion of HSCI 51 and HSCI 52 make the student eligible to take the National Registry of EMTs (NREMT) Advanced EMT certification exam. Topics include Limited Advanced Life Support (LALS) knowledge, application and problem solving skills necessary to work as an AEMT in the Emergency Medical Services (EMS) field for an ambulance service, fire department, hospital emergency department or other specialized service. A "C" letter grade, as well as successful completion of the HSCI 51 exit exam and psychomotor skills test, are required to be eligible for HSCI 52. This course conforms to the National EMS Scope of Practice Model and the EMS National Education Standards, complies with Title 22, Division 9, Chapter 3 of the California State Code of Regulations, and is approved by the Sierra Sacramento-Valley Emergency Medical Services Agency. Field trips or off-campus lab assignments are required. (not transferable)

Course Student Learning Outcomes

- CSLO #1: Demonstrate appropriate assessment, field management and transportation of a patient with severe respiratory distress secondary to acute pulmonary edema.
- CSLO #2: Demonstrate an appropriate patient history and assessment, and rapidly implement a treatment plan for a patient with an allergic reaction and symptomatic anaphylaxis.
- CSLO #3: Explain the requirement for communicating the transfer of care and providing proper written documentation for any patient receiving advanced life support procedures.
- CSLO #4: Demonstrate the proper technique and sequence for establishing intravenous (IV) and intraosseous (IO) catheterization for administering fluid therapy in the unstable medical or trauma patient.
- CSLO #5: Perform primary and secondary patient assessment in an environmentally-induced or exacerbated emergency; interpret assessment findings to formulate a field impression and treatment plan for the patient.

Effective Term

Fall 2023

Course Type

Credit - Degree-applicable

Contact Hours

144

Outside of Class Hours

180

Total Student Learning Hours

324

Course Objectives

Lecture Objectives:
1. Identify the roles and responsibilities of an Advanced EMT level practitioner.
2. Describe the role of the Advanced EMT in the local EMS System.
3. Identify the Advanced EMT protocols included in this program.
4. Explain the components of wellness for the EMS provider.
5. Describe personal protection from airborne and blood borne pathogens.
6. Explain the legal issues that impact decisions made in the pre-hospital setting.
7. Define anatomy, physiology, and pathophysiology.
8. Review the anatomy and function of the major body systems.
9. Differentiate between the chemical, generic, official, and trade names of drugs.
10. List and describe the general properties of drugs.
11. List and differentiate routes of drug administration.
12. List the drugs the Advanced EMT may administer according to local protocol.
13. Given patient scenarios, identify correct medications and dosages per local protocol.
14. Identify the different routes that medications can be delivered.
15. Explain the possible complications and absorption rates for medications.
16. Discuss formulas as a basis for performing drug calculations.
17. Calculate doses for oral, sublingual, subcutaneous, intramuscular, and intravenous routes.
18. Discuss legal aspects and medical control regarding drug administration.
19. Describe universal precautions and body substance isolation when administering medications.
20. Describe the indications, precautions, and general principals of peripheral IV cannulation.
21. Describe the indications and general principal for obtaining a blood sample.
22. Explain the importance of evaluating a patient's response to medications.
23. Describe the proper procedure for cannulation of peripheral veins.
24. Describe Oral, Nebulized, Sublingual, Subcutaneous, IM, IO and IV medication routes.
25. Identify the anatomy and describe the functions of the upper airway.
26. Describe the indications and technique for using the dual lumen airway.
27. Describe considerations in airway management for patients with facial trauma.
28. Describe special considerations in airway management for pediatric patients.
29. Discuss the components of the initial assessment.
30. Describe the steps of the focused history and physical exam.
31. Describe the techniques of physical examination to the trauma patient.

32. Describe when to perform a rapid trauma assessment and anatomical zones included.
33. Discuss the components of the detailed physical exam and when it is performed.
34. Discuss the areas of the body that are evaluated during the detailed physical exam.
35. Distinguish a physical exam performed on the trauma patient and medical patient.
36. Describe the components of the on-going patient assessment and secondary exam.
37. Discuss the reasons for repeating the initial assessment as part of the reassessment.
38. Discuss special considerations when performing physical examinations on a pediatric patient.
39. Differentiate critical, potentially, and non-life threatening findings.
40. Define components, stages, and sequences of critical thinking in performing patient assessment.
41. Develop strategies for effective thinking under pressure.
42. Discuss the "six R's" of putting it all together during a patient assessment.
43. Describe the need for maintaining a professional attitude when performing a patient assessment.
44. Describe a caring attitude when performing a patient assessment.
45. Explain a physical exam including initial, history, focused, detailed, and on-going assessments.
46. Explain the techniques for assessing a patient with an altered mental status.
47. Explain the assessment of a trauma patient.
48. Explain a rapid trauma assessment used to assess a patient based on mechanism of injury.
49. Perform a focused history and physical exam on a patient with life-threatening injuries.
50. Describe factors that may influence the Advanced EMT's ability to collect a medical history.
51. List the components of a history on a patient.
52. Describe the techniques of history taking.
53. Discuss strategies and special challenges in obtaining a medical history.
54. Defend the importance of empathy when obtaining a patient history.
55. Practice the importance of confidentiality when obtaining a patient history.
56. Review the importance of scene size-up and scene safety.
57. Discuss the common mechanisms of injury/nature of illness for medical and trauma patients.
58. Discuss the components of the initial assessment.
59. Describe the steps of the focused history and physical exam.
60. State the areas of the body evaluated in the focused history and physical exam.
61. Discuss the reason and importance of performing the focused history and physical.
62. Apply the techniques of physical examination to the medical patient.
63. Differentiate the assessment performed on a patient with an altered mental status.
64. Apply the techniques of physical examination to the trauma patient.
65. Describe a rapid trauma assessment and the regions included in the assessment.
66. Discuss the components of the detailed physical and when it is performed.
67. State the areas of the body that are evaluated during the detailed physical exam.
68. Distinguish a detailed physical exam performed on the trauma patient and medical patient.
69. Describe the components of the on-going assessment.
70. Discuss the reasons for repeating the initial assessment as part of the on-going assessment.
71. Discuss special considerations when performing a physical exam on a pediatric patient.
72. Differentiate between critical, potential, and non-life threatening patient presentations.
73. Define the components and sequences of critical thinking in performing patient assessment.
74. Develop strategies for effective thinking under pressure.
75. Explain the techniques for assessing a patient with an altered mental status.
76. Explain the assessment of a critical and unstable trauma patient.
77. Explain the assessment of a non-critical and stable trauma patient.
78. Explain a rapid trauma assessment on a patient based on mechanism of injury.
79. Identify the importance of effective communication when providing EMS.
80. Identify the role of verbal, written, and electronic communications in providing EMS.
81. Identify the importance of proper terminology when communicating during an EMS event.
82. Identify the importance of proper verbal and written communication during an EMS event.
83. Identify the components of an EMS communications system, function and use.
84. Describe the functions and responsibilities to the Federal Communications Commission.
85. Describe the role of the EMS Dispatcher as part of the EMS team.
86. Describe the procedure for verbal communication of patient information to the hospital.
87. Describe patient information included in a verbal report to medical direction.
88. Discuss the local policy/procedure addressing radio contact with a base hospital.
89. Demonstrate an appropriate call-in to a base hospital, and required pertinent information.
90. Identify the general principals of EMS documentation and ways in which documentation is used.
91. Discuss the importance of using appropriate and accurate medical abbreviations and acronyms.
92. Explain the pertinent patient information needed for documentation.
93. Describe the elements of a properly written report.
94. Describe the required information for each section of the patient care report.
95. Discuss the potential consequences of illegible, incomplete, or inaccurate documentation.
96. Explain the special considerations concerning patient refusal of transport.
97. Describe special considerations concerning mass casualty incident documentation.
98. Discuss state and/or local record and reporting requirements.
99. Explain proper completion of a patient care report used locally.
100. Describe the components of a comprehensive trauma system.
101. Describe the role and differences between levels of trauma centers.
102. Discuss the criteria for transport to the trauma center per local protocol.
103. Describe the kinematics of blunt, penetrating, and blast injuries.
104. Discuss the various types and degrees of hemorrhage and shock.
105. Discuss the assessment findings associated with hemorrhage and shock.
106. Describe the body's physiological response to changes in perfusion.

107. Discuss indications, contraindications, complications, and interventions for shock.
108. Discuss fluid resuscitation for the trauma patient.
109. Discuss local protocols for the management of shock in trauma patients.
110. Explain the assessment of a patient with signs and symptoms of shock.
111. Explain the management of a patient with signs and symptoms of shock.
112. Identify the structures of the upper and lower airway.
113. Identify common pathological events that affect the pulmonary system.
114. Discuss abnormal findings associated with pulmonary diseases and conditions.
115. Discuss the pharmacological characteristics for inhaled beta-2 agonists and epinephrine.
116. Describe the pathophysiology, assessment, and management of respiratory conditions.
117. Describe the assessment of a patient with a respiratory disease and conditions.
118. Explain the assessment and field management of a patient with acute respiratory failure.
119. Describe the cardiovascular system, including the anatomy and physiology.
120. Identify and describe the assessment components of the cardiovascular patient.
121. Discuss the pathophysiology of angina pectoris and acute myocardial infarction.
122. List pertinent questions (OPQRST) and physical exam for a chief complaint of chest pain.
123. List clinical presentation of a patient with angina or acute myocardial infarction (AMI).
124. Describe the initial assessment of a patient with angina and myocardial infarction.
125. Describe the pharmacological characteristics and actions of nitroglycerin and aspirin.
126. Describe treatment for patient with ischemic chest pain associated as an AMI.
127. Discuss the pathophysiology of congestive heart failure / edema.
128. List the clinical presentation of a patient with acute pulmonary edema.
129. Describe the actions for nitroglycerine when applied to pulmonary edema.
130. Discuss treatment plan for a patient with acute pulmonary edema.
131. Discuss the assessment and management of a patient in cardiac arrest.
132. Identify other types of non-cardiac causes of ischemic type chest pain.
133. Describe appropriate assessment and intervention of a cardiac patient.
134. Describe the pathophysiology of diabetes mellitus.
135. Describe assessment findings and care of a patient with diabetic emergency.
136. Discuss the assessment and management for a patient with hypoglycemia.
137. Discuss the assessment and management for a patient with hyperglycemia.
138. Differentiate between diabetic emergencies based on assessment and history.
139. Describe pharmacological characteristics and actions of 50% Dextrose and Glucagon.
140. Explain assessment and management of a patient with a diabetic emergency.
141. Discuss the pathophysiology of allergic reactions and anaphylaxis.
142. Describe the common methods of entry of substances into the body.
143. List the common antigens associated with anaphylaxis.
144. List the signs and symptoms of an allergic reaction, including localized and systemic.
145. Discuss the signs and symptoms of anaphylaxis.
146. Discuss the drug characteristics and actions of epinephrine and inhaled beta-2 agonists.
147. List pertinent history and physical exam of patient with anaphylaxis.
148. Explain the importance of prompt medical treatment in anaphylaxis.
149. Explain the treatment plan for a patient with a severe allergic reaction and anaphylaxis.
150. Discuss the different types of toxicological emergencies.
151. List four methods by which poisons can enter the body.
152. Discuss the pathophysiology, signs and symptoms, and treatment for a toxic ingestion.
153. Discuss pathophysiology, signs and symptoms, and treatment for a narcotic overdose.
154. Discuss the drug characteristics and actions of activated charcoal and naloxone.
155. Develop a treatment plan for patient with most common types of poisonings/overdoses.
156. Explain the psychological needs of victims of drug abuse or overdose.
157. Describe the patient assessment and management of a toxic ingestion or overdose.
158. Define an "environmental emergency."
159. Identify the risk factors predisposing to environmental emergencies.
160. Discuss pathophysiology, predisposing factors, signs and symptoms of a heat illness.
161. Define how to differentiate between heat cramps, heat exhaustion, and heat stroke.
162. Differentiate treatments and interventions of heat disorders based on assessment.
163. Discuss pathophysiology, predisposing factors, signs and symptoms of hypothermia.
164. List the appropriate measures to prevent hypothermia.
165. Identify the differences between mild and severe hypothermia.
166. Discuss the differences between chronic and acute hypothermia.
167. Utilize assessment to form an impression and treatment plan for severe hypothermia.
168. Discuss the pathophysiology, signs and symptoms, and treatment for near drowning.
169. Discuss trauma considerations to be taken with a near-drowning episode.
170. Describe post-resuscitation complications associated with a near-drowning episode.
171. Explain treatment for a heat related, hypothermic, and a near-drowning patient.

Laboratory Objectives:

1. Demonstrate how to prepare for administrating medications from medicine vials.
2. Demonstrate how to prepare for administrating medications from medicine Ampules.
3. Demonstrate how to prepare for administrating medications from a preloaded medicine syringe.
4. Demonstrate the proper procedure for cannulation of peripheral veins.
5. Demonstrate the proper procedure for cannulation of external jugular veins.

6. Demonstrate the proper procedure for cannulation for interosseous access.
7. Demonstrate the proper technique of disposing sharps and use of sharps containers.
8. Demonstrate the proper procedure for administering medications orally.
9. Demonstrate the proper procedure for administering medications by a nebulizer.
10. Demonstrate the proper procedure for administering medications by sublingual.
11. Demonstrate the proper procedure for administering medications by nasal injection.
12. Demonstrate the proper procedure for administering medications by subcutaneous.
13. Demonstrate the proper procedure for administering medications by intramuscular.
14. Demonstrate the proper procedure for administering fluids through intravenous route.
15. Demonstrate the proper procedure for administering fluids through intraosseous route.
16. Demonstrate the proper technique of ventilating a patient with a bag-valve-mask.
17. Demonstrate the proper technique of ventilating a patient with a bag-valve-mask.
18. Demonstrate the proper technique for using CPAP to assist patient in respiratory distress.
19. Demonstrate the proper technique of suctioning a patient with a stoma.
20. Demonstrate the proper technique of inserting an oropharyngeal airway.
21. Demonstrate the proper technique of inserting a nasopharyngeal airway.
22. Demonstrate the proper technique for positive pressure ventilation of a pediatric patient.
23. Demonstrate the proper technique for positive pressure ventilation of an adult patient.
24. Demonstrate the proper technique to insert a dual lumen airway.
25. Perform an assessment to confirm correct placement of a dual lumen airway.
26. Given a medical and trauma scenario, obtain a complete patient history.
27. Demonstrate the techniques for performing a primary assessment on a trauma patient.
28. Demonstrate the techniques for performing a primary assessment on a medical patient.
29. Demonstrate the techniques for performing a focused trauma assessment and medical history.
30. Demonstrate the techniques for performing a focused medical assessment and medical history.
31. Demonstrate the techniques for performing a proper detailed physical exam.
32. Demonstrate the techniques for performing a proper on-going assessment.
33. Demonstrate the techniques for assessing a patient with an altered mental status.
34. Demonstrate the primary assessment of a multi-system trauma patient.
35. Demonstrate the techniques for performing a focused assessment on a trauma patient.
36. Demonstrate a rapid trauma assessment based on mechanism of injury.
37. Perform a focused physical assessment and physical exam on a non-critical trauma patient.
38. Perform a focused physical assessment on a patient with life-threatening injuries.
39. Communicate an appropriate transfer of care to medical personnel in a prehospital setting.
40. Demonstrate an appropriate call-in to the base hospital, providing a complete radio report.
41. Communicate an appropriate transfer of care to medical personnel in the hospital setting.
42. Demonstrate proper completion of a patient care report used in the local EMS system.
43. Demonstrate the assessment and management of a patient with signs and symptoms of shock.
44. Demonstrate an assessment, treatment, and transport of a patient with non-life-threatening injuries.
45. Demonstrate assessment, treatment, and transport of a patient with life-threatening injuries.
46. Demonstrate appropriate assessment, management and transport of a patient with respiratory difficulty.
47. Demonstrate the proper technique of application and operation of an automatic external defibrillator.
48. Given scenarios, demonstrate a patient assessment and management of a patient with a cardiac emergency, including cardiac arrest and use of an automatic defibrillator.
49. Given scenarios, perform the appropriate assessment and management of a diabetic emergency.
50. Given scenarios, perform an appropriate patient history and assessment and implement a treatment plan for a patient with a severe allergic reaction and anaphylaxis.
51. Given scenarios, perform an appropriate patient assessment and field management of a patient with a toxic ingestion or drug overdose.
52. Given scenarios, demonstrate an appropriate patient assessment and treatment plan for a patient in acute respiratory failure.
53. Given scenarios, demonstrate an appropriate patient assessment and treatment plan for a medical patient in hemodynamic instability.
54. Given scenarios, demonstrate an appropriate patient assessment and treatment plan for a trauma patient in hemodynamic instability.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- Not Transferable

Methods of Evaluation

- Objective Examinations
  - Example: Through weekly quizzes and examinations, Student will demonstrate ability to correctly analyze medical and trauma scenarios and use critical thinking skills to select the appropriate intervention for providing patient care. Example: Which of the following is a possible cause of PEA? A. Hypovolemia B. Massive Pulmonary Embolism C. Cardiac Tamponade D. All of the Above
- Problem Solving Examinations
  - Example: The student will be given a practical emergency medical scenario with minimal information on patient history. Using advanced assessment interventions learned in the course, the

student will utilize subjective and objective components of the primary assessment to demonstrate ability to select appropriate limited advanced life support skills for patient care. Instructor will utilize the NREMT (National Registry of Emergency Medical Technicians) standardized Medical Patient Assessment skills sheet for Limited Advanced Life Support to record and grade the scenario performance. The student will be provided copies of their performance for personal improvement and future reference.

- Skill Demonstrations
  - Example: Student will demonstrate the ability to perform a primary patient assessment of circulatory, respiratory , and neurological systems to successfully establish an intravenous (IV) line for fluid and medication administration. . Instructor will utilize the NREMT (National Registry of Emergency Medical Technicians) standardized Medical Patient Assessment skills sheet for Limited Advanced Life Support to record and grade the scenario performance. The student will be provided copies of their performance for personal improvement and future reference.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. During a practical skills lab, the Instructor will demonstrate on a manikin the proper technique for Intraosseous (IO) cannulization to establish a route of administration for volume expanding fluids and medication administration. The instructor will guide each individual student through every required step of the IO procedure, allowing the student to perform the psychomotor skill on their own and be allowed the experience the actual hands-on of patient care.

Lecture:

1. During a lecture presentation, the instructor will explain the pathology of a severe allergic reaction, the signs and symptoms of anaphylactic shock, the proper administration and use of epinephrine, and the benefit of intravenous fluid administration when following national and local treatment protocols. The instructor will demonstrate the assessment and intervention skills required for an anaphylactic reaction, and the student will perform the patient assessment and psychomotor skills on their own, and be allowed to experience the actual hands-on of patient care for anaphylactic shock.

Distance Learning

1. During a distant learning (DL) slide show presentation, the AEMT instructor will discuss the pathophysiology of hypovolemic shock, including the clinical differences of hemorrhagic and non-hemorrhagic shock, and the physiological presentation of a patient in the compensated and non-compensated stages. (Lecture Objectives 105, 106, 107, 110, and 111). The AEMT student will respond to the presentation by identifying what Advanced EMT (AEMT) intervention protocols will be the appropriate intervention for a rapid patient stabilization through Intravenous (IV) and Intraosseous (IO) routes of fluid administration.

Typical Out of Class Assignments
Reading Assignments

1. Read the lesson plans on Allergic Reaction Emergencies and explain the physiological changes that occur within the body during an anaphylactic reaction. Describe the basic and advanced interventions needed for this condition including intravenous and pharmacological interventions allowed within the Advanced EMT scope of practice. 2. Read the lesson plans on trauma and explain the pathology of traumatic injuries. Describe the signs and symptoms of perfusion compromise and the physiological effects on the body. Explain the benefit of intravenous volume replacement for patient stabilization

Writing, Problem Solving or Performance

1. Given a detailed trauma scenario, student will ask patient questions to pertinent injuries, and perform a proper primary assessment of body systems and vital signs. Student will select the appropriate treatment including Limited Advanced Life Support procedures and advanced interventions. Student will provide a verbal transfer of care report on the patient condition to the receiving medical facility. 2. Given a detailed medical scenario, student will ask patient questions pertaining to certain signs and symptoms of specific injuries. Student will assess the body systems response to the injury, and develop a patient treatment plan utilizing the appropriate protocol. 3. Given a realistic medical scenario, the student will physically demonstrate the safe and proper way to establish an intravenous (IV) access for the use of and fluid replacement and medication administration

Other (Term projects, research papers, portfolios, etc.)
Required Materials

- Advanced Emergency Care and Transportation of the Sick and Injured
  - Author: American Academy of Orthopaedic Surgeons (AAOS), Rhonda Beck, NREMT-P
  - Publisher: Jones and Bartlett
  - Publication Date: 2023
  - Text Edition: 4th
  - Classic Textbook?: No
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.

Clinical Uniforms; Stethoscope and B/P Cuff; Identification name tag; Safety glasses and respiratory protection mask.