



# BROWARD COLLEGE COURSE OUTLINE

**LAST REVIEW: 2009-2010**

*(i.e. 2003-2004)*

**NEXT REVIEW: 2014-2015**

*(i.e. 2008-2009)*

**STATUS: A**

*(A, I, D)*

**COURSE TITLE:** Paramedic Science III – Trauma – Toxiology - Environmental

**COMMON COURSE NUMBER:** EMS 2634

**CREDIT HOURS: 3**

**CONTACT HOUR BREAKDOWN**

*(per 16 week term)*

**CLOCK HOURS:**

*(Voc. Course ONLY)*

Lecture: **48**

Lab: **0**

Clinic: **0**

Other: **0**

**PREREQUISITE(S):** EMS 2632, EMS 2633, EMS 2632L, EMS 2641, EMS 2651

**COREQUISITE(S):** EMS 2635, EMS 2634L, EMS 2642, EMS 2652

**PRE/COREQUISITE(S):**

**COURSE DESCRIPTION:** Topics deal with Trauma patient care including trauma systems/mechanisms of injury, hemorrhage and shock, soft tissue trauma, and burns. Trauma to the head and facial area, spinal, thoracic, abdominal and musculoskeletal system is also covered. Material includes 1998 U.S. Department of Transportation, (DOT), National Paramedic Curriculum objectives for Module 4 and Module 5, Units 8 and 10.

Content includes at least two hours of instruction in the trauma scorecard methodology as specified in section 401.2701 (5) (b), F.S.

## UNIT TITLES

### MODULE: TRAUMA

1. Trauma Systems/Mechanisms of Injury
2. Hemorrhage and Shock
3. Soft Tissue Trauma
4. Burns
5. Head and Facial Trauma
6. Spinal Trauma
7. Thoracic Trauma
8. Abdominal Trauma
9. Musculoskeletal Trauma

### MODULE: MEDICAL

10. Toxicology
11. Environmental Conditions

**EVALUATION:**

**Grading & Test Guidelines**

- Unit Tests must be passed with a minimum score of 80%.
- Students are allowed to retest on 2 separate Unit Tests.
- If the Student passes a given Retest, regardless of the actual points earned on the Retest, the minimum score of 80% will be entered into the gradebook.
- Failure of a retest results in a failing grade for the course and possible withdrawal from patient clinical contact areas.
- Failure of a 3<sup>rd</sup> Unit Test results in a failing grade for the course and possible withdrawal from patient clinical contact areas. No retest for 3<sup>rd</sup> test failure.
- To sit for the Comprehensive Final Exam, you must have a minimum 80% on your Overall Running Average.
- The Comprehensive Final Exam must be passed with a minimum score of 80%. No retests.
- By the end of the course, your Overall Running Average must be 80%. Homework, quizzes, etc. do not require a minimum of 80%, but they are factored into your course grade. Failure to complete homework, quizzes, etc. or scoring poorly on these items will likely pull your Overall Running Average below 80%, resulting in failure of the course.
- There is no specific “weight” given to any Unit Test, Quiz, Homework, or the Comprehensive Final Exam. For each evaluation device, a percentage is calculated based on “Points Possible” compared to “Points Earned”. The Overall Running Average is calculated in the same manner. Larger exams will affect your Overall Running Average more than smaller Quizzes, but **every point counts**.

Here are some examples of how the grading will be conducted:

Example #1 - This student below has passed each Unit Test with a minimum score of 80%, and has also passed their Comprehensive Final Exam with a minimum score of 80%. They will receive a passing grade for this course.

Example #1			Overall Running Average	Comp Final Exam	Units Tests for Course			
Course Name Listed Here	Final	Points Possible >> Points Earned >>			Test 1	Test 2	Test 3	Test 4
10-Jul-08			270	100	50	40	40	40
v Student Name v	Grade	%Score >	226	82	42	34	36	32
<b>MASTER</b>	C		83.7%	82.0%	84.0%	85.0%	90.0%	80.0%
Student - John Smith								

Example #2 - This student had to Retest Unit Tests #1 and #4. They passed each Retest and received the minimum score. They also passed their comprehensive Final Exam with a minimum score of 80%. They will receive a passing grade for this course.

Example #2			Overall	Comp				
<b>Course Name Listed Here</b>			Running	Final	Units Tests for Course			
10-Jul-08			Average	Exam	Test 1	Test 2	Test 3	Test 4
v Student Name v	Final	<b>Points Possible &gt;&gt;</b>	270	100	50	40	40	40
<b>MASTER</b>	Grade	<b>Points Earned &gt;&gt;</b>	224	83	40	36	33	32
Student - John Smith	C	%Score >	83.0%	83.0%	80.0%	90.0%	82.5%	80.0%
					Passed			Passed
					ReTest			ReTest

Example #3 - This student failed a 3<sup>rd</sup> Unit Test. They will not receive a passing grade for this course. They will not take any further tests or the Final Exam. They may be withdrawn from patient clinical contact areas.

Example #3			Overall	Comp				
<b>Course Name Listed Here</b>			Running	Final	Units Tests for Course			
10-Jul-08			Average	Exam	Test 1	Test 2	Test 3	Test 4
v Student Name v	Final	<b>Points Possible &gt;&gt;</b>	130		50	40	40	
<b>MASTER</b>	Grade	<b>Points Earned &gt;&gt;</b>	102		40	32	30	
Student - John Smith	D	%Score >	78.5%		80.0%	80.0%	75.0%	
					Passed	Passed	Failed	
					ReTest	ReTest	3rd Test	

Example #4 – This student failed to score 80% on their Comprehensive Final Exam. They will not receive a passing grade for this course. Even though their Overall Running Average was at least 80%, they failed their Comprehensive Final Exam, which shows they did not fully retain their knowledge for the course. They will have to retake this course.

Example #4			Overall	Comp				
<b>Course Name Listed Here</b>			Running	Final	Units Tests for Course			
10-Jul-08			Average	Exam	Test 1	Test 2	Test 3	Test 4
v Student Name v	Final	<b>Points Possible &gt;&gt;</b>	270	100	50	40	40	40
<b>MASTER</b>	Grade	<b>Points Earned &gt;&gt;</b>	217	78	41	33	32	33
Student - John Smith	D	%Score >	80.4%	78.0%	82.0%	82.5%	80.0%	82.5%
					Failed			
					Final		Passed	
					Exam		ReTest	

Example #5 – This student passed all the Unit Tests, but scored poorly on quizzes and did not complete the workbook as required by the instructor. Their Overall Running Average is below 80%. They will not be allowed to sit for the Comprehensive Final Exam, and they will not receive a passing grade for the course.

Example #5			Overall	Comp								
Course Name Listed Here			Running	Final	Units Tests for Course				Quizzes & Homework			
10-Jul-08			Average	Exam	Test 1	Test 2	Test 3	Test 4	Quiz 1	Quiz 2	Quiz 3	Work book
v Student Name v	Final	<b>Points Possible</b> >>>>	220		50	40	40	40	10	10	10	20
<b>MASTER</b> Student - <i>John Smith</i>	Grade	<b>Points Earned</b> >>>> %Score >>>	161		41	33	33	33	7	7	7	0
	D		73.2%		82.0%	82.5%	82.5%	82.5%	70.0%	70.0%	70.0%	0.0%

**GRADING:**

A = 94 - 100  
B = 87 - 93  
C = 80 - 86

D = 73 - 79  
F = 0 - 72

**Students must pass EMS 2634, 2635, 2634 L, 2642, 2652 with a grade of 'C' or better in order to enter PM 4.**

*\*\*\* Complete the following only if course is seeking general education status \*\*\**

**GENERAL EDUCATION Competencies and Skills\*:**

Please highlight in **green** font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

<b>1. Read with critical comprehension</b>	
<b>2. Speak and listen effectively</b>	
<b>3. Write clearly and coherently</b>	
<b>4. Think creatively, logically, critically, and reflectively</b> (analyze, synthesize, apply, and evaluate)	
<b>5. Demonstrate and apply literacy in its various forms:</b> (highlight in <b>green</b> ALL that apply) ( 1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental )	
<b>6. Apply problem solving techniques to real-world experiences</b>	
<b>7. Apply methods of scientific inquiry</b>	

<b>8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings</b>	
<b>9. Demonstrate an understanding of and appreciation for human diversities and commonalities</b>	
<b>10. Collaborate with others to achieve common goals.</b>	
<b>11. Research, synthesize and produce original work</b>	
<b>12. Practice ethical behavior</b>	
<b>13. Demonstrate self-direction and self motivation</b>	
<b>14. Assume responsibility for and understand the impact of personal behaviors on self and society</b>	
<b>15. Contribute to the welfare of the community</b>	

*\* General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*

**Common Course Number:**

## **UNITS**

### **UNIT TERMINAL OBJECTIVE: Trauma Systems / Mechanisms of Injury**

4-1 At the completion of this unit, the Paramedic student will be able to integrate the principles of kinematics to enhance the patient assessment and predict the likelihood of injuries based on the patient's mechanism of injury.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the Paramedic student will be able to:

- 4-1.1 List and describe the components of a comprehensive trauma system. (C-1)
- 4-1.2 Describe the role of and differences between levels of trauma centers. (C-3)
- 4-1.3 Describe the criteria for transport to a trauma center. (C-1)
- 4-1.4 Describe the criteria and procedure for air medical transport. (C-1)
- 4-1.5 Define energy and force as they relate to trauma. (C-1)
- 4-1.6 Define laws of motion and energy and understand the role that increased speed has on injuries. (C-1)
- 4-1.7 Describe each type of impact and its effect on unrestrained victims (e.g., "down and under," "up and over," compression, deceleration). (C-1)
- 4-1.8 Describe the pathophysiology of the head, spine, thorax, and abdomen that result from the above forces. (C-1)
- 4-1.9 List specific injuries and their causes as related to interior and exterior vehicle damage. (C-1)
- 4-1.10 Describe the kinematics of penetrating injuries. (C-1)
- 4-1.11 List the motion and energy considerations of mechanisms other than motor vehicle crashes. (C-1)
- 4-1.12 Define the role of kinematics as an additional tool for patient assessment. (C-1)

### **AFFECTIVE OBJECTIVES**

None identified for this section.

### **UNIT TERMINAL OBJECTIVE: Hemorrhage and Shock**

4-2 the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with shock or hemorrhage.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-2.1 Describe the epidemiology, including the morbidity/ mortality and prevention strategies, for shock and hemorrhage. (C-1)
- 4-2.2 Discuss the anatomy and physiology of the cardiovascular system. (C-1)
- 4-2.3 Predict shock and hemorrhage based on mechanism of injury. (C-1)

- 4-2.4 Discuss the various types and degrees of shock and hemorrhage. (C-1)
- 4-2.5 Discuss the pathophysiology of hemorrhage and shock. (C-1)
- 4-2.6 Discuss the assessment findings associated with hemorrhage and shock. (C-1)
- 4-2.7 Identify the need for intervention and transport of the patient with hemorrhage or shock. (C-1)
- 4-2.8 Discuss the treatment plan and management of hemorrhage and shock. (C-1)
- 4-2.9 Discuss the management of external hemorrhage. (C-1)
- 4-2.10 Differentiate between controlled and uncontrolled hemorrhage. (C-3)
- 4-2.11 Differentiate between the administration rate and amount of IV fluid in a patient with controlled versus uncontrolled hemorrhage. (C-3)
- 4-2.12 Relate internal hemorrhage to the pathophysiology of compensated and decompensated hemorrhagic shock. (C-3)
- 4-2.13 Relate internal hemorrhage to the assessment findings of compensated and decompensated hemorrhagic shock. (C-3)
- 4-2.14 Discuss the management of internal hemorrhage. (C-1)
- 4-2.15 Define shock based on aerobic and anaerobic metabolism. (C-1)
- 4-2.16 Describe the incidence, morbidity, and mortality of shock. (C-1)
- 4-2.17 Describe the body's physiologic response to changes in perfusion. (C-1)
- 4-2.18 Describe the effects of decreased perfusion at the capillary level. (C-1)
- 4-2.19 Discuss the cellular ischemic phase related to hemorrhagic shock. (C-1)
- 4-2.20 Discuss the capillary stagnation phase related to hemorrhagic shock. (C-1)
- 4-2.21 Discuss the capillary washout phase related to hemorrhagic shock. (C-1)
- 4-2.22 Discuss the assessment findings of hemorrhagic shock. (C-1)
- 4-2.23 Relate pulse pressure changes to perfusion status. (C-3)
- 4-2.24 Relate orthostatic vital sign changes to perfusion status. (C-3)
- 4-2.25 Define compensated and decompensated hemorrhagic shock. (C-1)
- 4-2.26 Discuss the pathophysiological changes associated with compensated shock. (C-1)
- 4-2.27 Discuss the assessment findings associated with compensated shock. (C-1)
- 4-2.28 Identify the need for intervention and transport of the patient with compensated shock. (C-1)
- 4-2.29 Discuss the treatment plan and management of compensated shock. (C-1)
- 4-2.30 Discuss the pathophysiological changes associated with decompensated shock. (C-1)
- 4-2.31 Discuss the assessment findings associated with decompensated shock. (C-1)
- 4-2.32 Identify the need for intervention and transport of the patient with decompensated shock. (C-1)
- 4-2.33 Discuss the treatment plan and management of the patient with decompensated shock. (C-1)
- 4-2.34 Differentiate between compensated and decompensated shock. (C-3)
- 4-2.35 Relate external hemorrhage to the pathophysiology of compensated and decompensated hemorrhagic shock. (C-3)
- 4-2.36 Relate external hemorrhage to the assessment findings of compensated and decompensated hemorrhagic shock. (C-3)
- 4-2.37 Differentiate between the normotensive, hypotensive, or profoundly hypotensive patient. (C-3)

**UNIT TERMINAL OBJECTIVE: Soft Tissue Trauma**

4-3 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and the assessment findings to formulate a field impression and implement the treatment plan for the patient with soft tissue trauma.

**COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-3.1 Describe the incidence, morbidity, and mortality of soft tissue injuries. (C-1)
- 4-3.2 Describe the layers of the skin, specifically: (C-1)
  - a. Epidermis and dermis (cutaneous)
  - b. Superficial fascia (subcutaneous)
  - c. Deep fascia
- 4-3.3 Identify the major functions of the integumentary system. (C-1)
- 4-3.4 Identify the skin tension lines of the body. (C-1)
- 4-3.5 Predict soft tissue injuries based on mechanism of injury. (C-1)
- 4-3.6 Discuss the pathophysiology of wound healing, including: (C-1)
  - 1. Hemostasis
  - 2. Inflammation phase
  - 3. Epithelialization
  - 4. Neovascularization
- Collagen synthesis
- 4-3.7 Discuss the pathophysiology of soft tissue injuries. (C-2)
- 4-3.8 Differentiate between the following types of closed soft tissue injuries: (C-3)
  - a. Contusion
  - b. Hematoma
  - c. Crush injuries
- 4-3.9 Discuss the assessment findings associated with closed soft tissue injuries. (C-1)
- 4-3.10 Discuss the management of a patient with closed soft tissue injuries. (C-2)
- 4-3.11 Discuss the pathophysiology of open soft tissue injuries. (C-2)
- 4-3.12 Differentiate between the following types of open soft tissue injuries: (C-3)
  - a. Abrasions
  - b. Lacerations
  - c. Major arterial lacerations
  - d. Avulsions
  - e. Impaled objects
  - f. Amputations
  - g. Incisions
  - h. Crush injuries
  - i. Blast injuries
  - j. Penetrations/ punctures
- 4-3.13 Discuss the incidence, morbidity, and mortality of blast injuries. (C-1)
- 4-3.14 Predict blast injuries based on mechanism of injury, including: (C-2)
  - a. Primary
  - b. Secondary
  - c. Tertiary

- 4-3.15 Discuss types of trauma including: (C-1)
- Blunt
  - Penetrating
  - Barotrauma
  - Burns
- 4-3.16 Discuss the pathophysiology associated with blast injuries. (C-1)
- 4-3.17 Discuss the effects of an explosion within an enclosed space on a patient. (C-1)
- 4-3.18 Discuss the assessment findings associated with blast injuries. (C-1)
- 4-3.19 Identify the need for rapid intervention and transport of the patient with a blast injury. (C-1)
- 4-3.20 Discuss the management of a patient with a blast injury. (C-1)
- 4-3.21 Discuss the incidence, morbidity, and mortality of crush injuries. (C-1)
- 4-3.22 Define the following conditions: (C-1)
- Crush injury
  - Crush syndrome
  - Compartment syndrome
- 4-3.23 Discuss the mechanisms of injury in a crush injury. (C-1)
- 4-3.24 Discuss the effects of reperfusion and rhabdomyolysis on the body. (C-1)
- 4-3.25 Discuss the assessment findings associated with crush injuries. (C-1)
- 4-3.26 Identify the need for rapid intervention and transport of the patient with a crush injury. (C-1)
- 4-3.27 Discuss the management of a patient with a crush injury. (C-1)
- 4-3.28 Discuss the pathophysiology of hemorrhage associated with soft tissue injuries, including: (C-2)
- Capillary
  - Venous
  - Arterial
- 4-3.29 Discuss the assessment findings associated with open soft tissue injuries. (C-1)
- 4-3.30 Discuss the assessment of hemorrhage associated with open soft tissue injuries. (C-1)
- 4-3.31 Differentiate between the various management techniques for hemorrhage control of open soft tissue injuries, including: (C-3)
- Direct pressure
  - Elevation
  - Pressure dressing
  - Pressure point
  - Tourniquet application
- 4-3.32 Differentiate between the types of injuries requiring the use of an occlusive versus non-occlusive dressing. (C-3)
- 4-3.33 Identify the need for rapid assessment, intervention and appropriate transport for the patient with a soft tissue injury. (C-2)
- 4-3.34 Discuss the management of the soft tissue injury patient. (C-2)
- 4-3.35 Define and discuss the following: (C-1)
- Dressings
    - Sterile
    - Non-sterile
    - Occlusive
    - Non-occlusive

5. Adherent
  6. Non-adherent
  7. Absorbent
  8. Non-absorbent
  9. Wet
  10. Dry
- Bandages
    1. Absorbent
    2. Non-absorbent
    3. Adherent
    4. Non-adherent
  - 2. Tourniquet

### **UNIT TERMINAL OBJECTIVE: Burns**

4-4 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and the assessment findings to formulate a field impression and implement the management plan for the patient with a burn injury.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-4.1 Describe the anatomy and physiology pertinent to burn injuries. (C-1)
- 4-4.2 Describe the epidemiology, including incidence, mortality/ morbidity, risk factors, and prevention strategies for the patient with a burn injury. (C-1)
- 4-4.3 Describe the pathophysiologic complications and systemic complications of a burn injury. (C-1)
- 4-4.4 Identify and describe types of burn injuries, including a thermal burn, an inhalation burn, a chemical burn, an electrical burn, and a radiation exposure. (C-1)
- 4-4.5 Identify and describe the depth classifications of burn injuries, including a superficial burn, a partial-thickness burn, a full-thickness burn, and other depth classifications described by local protocol. (C-1)
- 4-4.6 Identify and describe methods for determining body surface area percentage of a burn injury including the "rules of nines," the "rules of palms," and other methods described by local protocol. (C-1)
- 4-4.7 Identify and describe the severity of a burn including a minor burn, a moderate burn, a severe burn, and other severity classifications described by local protocol. (C-1)
- 4-4.8 Differentiate criteria for determining the severity of a burn injury between a pediatric patient and an adult patient. (C-3)
- 4-4.9 Describe special considerations for a pediatric patient with a burn injury. (C-1)
- 4-4.10 Discuss considerations which impact management and prognosis of the burn injured patient. (C-1)
- 4-4.11 Discuss mechanisms of burn injuries. (C-1)
- 4-4.12 Discuss conditions associated with burn injuries, including trauma, blast injuries, airway compromise, respiratory compromise, and child abuse. (C-1)

- 4-4.13 Describe the management of a burn injury, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, psychological support/ communication strategies, and other management described by local protocol. (C-1)
- 4-4.14 Describe the epidemiology of a thermal burn injury. (C-1)
- 4-4.15 Describe the specific anatomy and physiology pertinent to a thermal burn injury. (C-1)
- 4-4.16 Describe the pathophysiology of a thermal burn injury. (C-1)
- 4-4.17 Identify and describe the depth classifications of a thermal burn injury. (C-1)
- 4-4.18 Identify and describe the severity of a thermal burn injury. (C-1)
- 4-4.19 Describe considerations which impact management and prognosis of the patient with a thermal burn injury. (C-1)
- 4-4.20 Discuss mechanisms of burn injury and conditions associated with a thermal burn injury. (C-1)
- 4-4.21 Describe the management of a thermal burn injury, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, and psychological support/ communication strategies. (C-1)
- 4-4.22 Describe the epidemiology of an inhalation burn injury. (C-1)
- 4-4.23 Describe the specific anatomy and physiology pertinent to an inhalation burn injury. (C-1)
- 4-4.24 Describe the pathophysiology of an inhalation burn injury. (C-1)
- 4-4.25 Differentiate between supraglottic and infraglottic inhalation injuries. (C-3)
- 4-4.26 Identify and describe the depth classifications of an inhalation burn injury. (C-1)
- 4-4.27 Identify and describe the severity of an inhalation burn injury. (C-1)
- 4-4.28 Describe considerations which impact management and prognosis of the patient with an inhalation burn injury. (C-1)
- 4-4.29 Discuss mechanisms of burn injury and conditions associated with an inhalation burn injury. (C-1)
- 4-4.30 Describe the management of an inhalation burn injury, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, and psychological support/ communication strategies. (C-1)
- 4-4.31 Describe the epidemiology of a chemical burn injury and a chemical burn injury to the eye. (C-1)
- 4-4.32 Describe the specific anatomy and physiology pertinent to a chemical burn injury and a chemical burn injury to the eye. (C-1)
- 4-4.33 Describe the pathophysiology of a chemical burn injury, including types of chemicals and their burning processes and a chemical burn injury to the eye. (C-1)
- 4-4.34 Identify and describe the depth classifications of a chemical burn injury. (C-1)
- 4-4.35 Identify and describe the severity of a chemical burn injury. (C-1)
- 4-4.36 Describe considerations which impact management and prognosis of the patient with a chemical burn injury and a chemical burn injury to the eye. (C-1)
- 4-4.37 Discuss mechanisms of burn injury and conditions associated with a chemical burn injury. (C-1)
- 4-4.38 Describe the management of a chemical burn injury and a chemical burn injury to the eye, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, and psychological support/ communication strategies. (C-1)
- 4-4.39 Describe the epidemiology of an electrical burn injury. (C-1)
- 4-4.40 Describe the specific anatomy and physiology pertinent to an electrical burn injury. (C-1)
- 4-4.41 Describe the pathophysiology of an electrical burn injury. (C-1)
- 4-4.42 Identify and describe the depth classifications of an electrical burn injury. (C-1)

- 4-4.43 Identify and describe the severity of an electrical burn injury. (C-1)
- 4-4.44 Describe considerations which impact management and prognosis of the patient with an electrical burn injury. (C-1)
- 4-4.45 Discuss mechanisms of burn injury and conditions associated with an electrical burn injury. (C-1)
- 4-4.46 Describe the management of an electrical burn injury, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, and psychological support/ communication strategies. (C-1)
- 4-4.47 Describe the epidemiology of a radiation exposure. (C-1)
- 4-4.48 Describe the specific anatomy and physiology pertinent to a radiation exposure. (C-1)
- 4-4.49 Describe the pathophysiology of a radiation exposure, including the types and characteristics of ionizing radiation. (C-1)
- 4-4.50 Identify and describe the depth classifications of a radiation exposure. (C-1)
- 4-4.51 Identify and describe the severity of a radiation exposure. (C-1)
- 4-4.52 Describe considerations which impact management and prognosis of the patient with a radiation exposure. (C-1)
- 4-4.53 Discuss mechanisms of burn injury associated with a radiation exposure. (C-1)
- 4-4.54 Discuss conditions associated with a radiation exposure. (C-1)
- 4-4.55 Describe the management of a radiation exposure, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, and psychological support/ communication strategies. (C-1)
- 4-4.56 Integrate pathophysiological principles to the assessment of a patient with a thermal burn injury. (C-3)
- 4-4.57 Integrate pathophysiological principles to the assessment of a patient with an inhalation burn injury. (C-3)
- 4-4.58 Integrate pathophysiological principles to the assessment of a patient with a chemical burn injury. (C-3)
- 4-4.59 Integrate pathophysiological principles to the assessment of a patient with an electrical burn injury. (C-3)
- 4-4.60 Integrate pathophysiological principles to the assessment of a patient with a radiation exposure. (C-3)
- 4-4.61 Synthesize patient history information and assessment findings to form a field impression for the patient with a thermal burn injury. (C-3)
- 4-4.62 Synthesize patient history information and assessment findings to form a field impression for the patient with an inhalation burn injury. (C-3)
- 4-4.63 Synthesize patient history information and assessment findings to form a field impression for the patient with a chemical burn injury. (C-3)
- 4-4.64 Synthesize patient history information and assessment findings to form a field impression for the patient with an electrical burn injury. (C-3)
- 4-4.65 Synthesize patient history information and assessment findings to form a field impression for the patient with a radiation exposure. (C-3)
- 4-4.66 Develop, execute and evaluate a management plan based on the field impression for the patient with a thermal burn injury. (C-3)
- 4-4.67 Develop, execute and evaluate a management plan based on the field impression for the patient with an inhalation burn injury. (C-3)
- 4-4.68 Develop, execute and evaluate a management plan based on the field impression for the patient with a chemical burn injury. (C-3)

4-4.69 Develop, execute and evaluate a management plan based on the field impression for the patient with an electrical burn injury. (C-3)

4-4.70 Develop, execute and evaluate a management plan based on the field impression for the patient with a radiation exposure. (C-3)

### **AFFECTIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

4-4.71 Value the changes of a patient's self-image associated with a burn injury. (A-2)

4-4.72 Value the impact of managing a burn injured patient. (A-2)

4-4.73 Advocate empathy for a burn injured patient. (A-2)

4-4.74 Assess safety at a burn injury incident. (A-3)

4-4.75 Characterize mortality and morbidity based on the pathophysiology and assessment findings of a patient with a burn injury. (A-3)

4-4.76 Value and defend the sense of urgency in burn injuries. (A-3)

4-4.77 Serve as a model for universal precautions and body substance isolation (BSI). (A-3)

### **UNIT TERMINAL OBJECTIVE: Head and Facial Trauma**

4-5 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the trauma patient with a suspected head injury.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

4-5.1 Describe the incidence, morbidity, and mortality of facial injuries. (C-1)

4-5.2 Explain facial anatomy and relate physiology to facial injuries. (C-1)

4-5.3 Predict facial injuries based on mechanism of injury. (C-1)

4-5.4 Predict other injuries commonly associated with facial injuries based on mechanism of injury. (C-2)

4-5.5 Differentiate between the following types of facial injuries, highlighting the defining characteristics of each: (C-3)

- a. Eye
- b. Ear
- c. Nose
- d. Throat
- e. Mouth

4-5.6 Integrate pathophysiological principles to the assessment of a patient with a facial injury. (C-3)

4-5.7 Differentiate between facial injuries based on the assessment and history. (C-3)

4-5.8 Formulate a field impression for a patient with a facial injury based on the assessment findings. (C-3)

4-5.9 Develop a patient management plan for a patient with a facial injury based on the field impression. (C-3)

4-5.10 Explain the pathophysiology of eye injuries. (C-1)

4-5.11 Relate assessment findings associated with eye injuries to pathophysiology. (C-3)

- 4-5.12 Integrate pathophysiological principles to the assessment of a patient with an eye injury. (C-3)
- 4-5.13 Formulate a field impression for a patient with an eye injury based on the assessment findings. (C-3)
- 4-5.14 Develop a patient management plan for a patient with an eye injury based on the field impression. (C-3)
- 4-5.15 Explain the pathophysiology of ear injuries. (C-1)
- 4-5.16 Relate assessment findings associated with ear injuries to pathophysiology. (C-3)
- 4-5.17 Integrate pathophysiological principles to the assessment of a patient with an ear injury. (C-3)
- 4-5.18 Formulate a field impression for a patient with an ear injury based on the assessment findings. (C-3)
- 4-5.19 Develop a patient management plan for a patient with an ear injury based on the field impression. (C-3)
- 4-5.20 Explain the pathophysiology of nose injuries. (C-1)
- 4-5.21 Relate assessment findings associated with nose injuries to pathophysiology. (C-3)
- 4-5.22 Integrate pathophysiological principles to the assessment of a patient with a nose injury. (C-3)
- 4-5.23 Formulate a field impression for a patient with a nose injury based on the assessment findings. (C-3)
- 4-5.24 Develop a patient management plan for a patient with a nose injury based on the field impression. (C-3)
- 4-5.25 Explain the pathophysiology of throat injuries. (C-1)
- 4-5.26 Relate assessment findings associated with throat injuries to pathophysiology. (C-3)
- 4-5.27 Integrate pathophysiological principles to the assessment of a patient with a throat injury. (C-3)
- 4-5.28 Formulate a field impression for a patient with a throat injury based on the assessment findings. (C-3)
- 4-5.29 Develop a patient management plan for a patient with a throat injury based on the field impression. (C-3)
- 4-5.30 Explain the pathophysiology of mouth injuries. (C-1)
- 4-5.31 Relate assessment findings associated with mouth injuries to pathophysiology. (C-3)
- 4-5.32 Integrate pathophysiological principles to the assessment of a patient with a mouth injury. (C-3)
- 4-5.33 Formulate a field impression for a patient with a mouth injury based on the assessment findings. (C-3)
- 4-5.34 Develop a patient management plan for a patient with a mouth injury based on the field impression. (C-3)
- 4-5.35 Describe the incidence, morbidity, and mortality of head injuries. (C-1)
- 4-5.36 Explain anatomy and relate physiology of the CNS to head injuries. (C-1)
- 4-5.37 Predict head injuries based on mechanism of injury. (C-2)
- 4-5.38 Distinguish between head injury and brain injury. (C-3)
- 4-5.39 Explain the pathophysiology of head/ brain injuries. (C-1)
- 4-5.40 Explain the concept of increasing intracranial pressure (ICP). (C-1)
- 4-5.41 Explain the effect of increased and decreased carbon dioxide on ICP. (C-1)
- 4-5.42 Define and explain the process involved with each of the levels of increasing ICP. (C-1)

- 4-5.43 Relate assessment findings associated with head/ brain injuries to the pathophysiologic process. (C-3)
- 4-5.44 Classify head injuries (mild, moderate, severe) according to assessment findings. (C-2)
- 4-5.45 Identify the need for rapid intervention and transport of the patient with a head/ brain injury. (C-1)
- 4-5.46 Describe and explain the general management of the head/ brain injury patient, including pharmacological and non-pharmacological treatment. (C-1)
- 4-5.47 Analyze the relationship between carbon dioxide concentration in the blood and management of the airway in the head/ brain injured patient. (C-3)
- 4-5.48 Explain the pathophysiology of diffuse axonal injury. (C-1)
- 4-5.49 Relate assessment findings associated with concussion, moderate and severe diffuse axonal injury to pathophysiology. (C-3)
- 4-5.50 Develop a management plan for a patient with a moderate and severe diffuse axonal injury. (C-3)
- 4-5.51 Explain the pathophysiology of skull fracture. (C-1)
- 4-5.52 Relate assessment findings associated with skull fracture to pathophysiology. (C-3)
- 4-5.53 Develop a management plan for a patient with a skull fracture. (C-3)
- 4-5.54 Explain the pathophysiology of cerebral contusion. (C-1)
- 4-5.55 Relate assessment findings associated with cerebral contusion to pathophysiology. (C-3)
- 4-5.56 Develop a management plan for a patient with a cerebral contusion. (C-3)
- 4-5.57 Explain the pathophysiology of intracranial hemorrhage, including: (C-1)
- a. Epidural
  - b. Subdural
  - c. Intracerebral
  - d. Subarachnoid
- 4-5.58 Relate assessment findings associated with intracranial hemorrhage to pathophysiology, including: (C-3)
- a. Epidural
  - b. Subdural
  - c. Intracerebral
  - d. Subarachnoid
- 4-5.59 Develop a management plan for a patient with a intracranial hemorrhage, including: (C-1)
- a. Epidural
  - b. Subdural
  - c. Intracerebral
  - d. Subarachnoid
- 4-5.60 Describe the various types of helmets and their purposes. (C-1)
- 4-5.61 Relate priorities of care to factors determining the need for helmet removal in various field situations including sports related incidents. (C-3)
- 4-5.62 Develop a management plan for the removal of a helmet for a head injured patient. (C-3)
- 4-5.63 Integrate the pathophysiological principles to the assessment of a patient with head/ brain injury. (C-3)
- 4-5.64 Differentiate between the types of head/ brain injuries based on the assessment and history. (C-3)
- 4-5.65 Formulate a field impression for a patient with a head/ brain injury based on the assessment findings. (C-3)

4-5.66 Develop a patient management plan for a patient with a head/ brain injury based on the field impression. (C-3)

**AFFECTIVE OBJECTIVES**

None identified for this unit.

**UNIT TERMINAL OBJECTIVE: Spinal Trauma**

4-6 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with a suspected spinal injury.

**COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

4-6.1 Describe the incidence, morbidity, and mortality of spinal injuries in the trauma patient. (C-1)

4-6.2 Describe the anatomy and physiology of structures related to spinal injuries. (C-1)

- a. Cervical
- b. Thoracic
- c. Lumbar
- d. Sacrum
- e. Coccyx
- f. Head
- g. Brain
- h. Spinal cord
- i. Nerve tract(s)
- j. Dermatomes

4-6.3 Predict spinal injuries based on mechanism of injury. (C-2)

4-6.4 Describe the pathophysiology of spinal injuries. (C-1)

4-6.5 Explain traumatic and non-traumatic spinal injuries. (C-1)

4-6.6 Describe the assessment findings associated with spinal injuries. (C-1)

4-6.7 Describe the management of spinal injuries. (C-1)

4-6.8 Identify the need for rapid intervention and transport of the patient with spinal injuries. (C-1)

4-6.9 Integrate the pathophysiological principles to the assessment of a patient with a spinal injury. (C-3)

4-6.10 Differentiate between spinal injuries based on the assessment and history. (C-3)

4-6.11 Formulate a field impression based on the assessment findings. (C-3)

4-6.12 Develop a patient management plan based on the field impression. (C-3)

4-6.13 Describe the pathophysiology of traumatic spinal injury related to: (C-1)

- a. Spinal shock
- b. Spinal neurogenic shock
- c. Quadriplegia/ paraplegia
- d. Incomplete cord injury/ cord syndromes:
  1. Central cord syndrome

2. Anterior cord syndrome
3. Brown-Sequard syndrome

- 4-6.14 Describe the assessment findings associated with traumatic spinal injuries. (C-1)
- 4-6.15 Describe the management of traumatic spinal injuries. (C-1)
- 4-6.16 Integrate pathophysiological principles to the assessment of a patient with a traumatic spinal injury. (C-3)
- 4-6.17 Differentiate between traumatic and non-traumatic spinal injuries based on the assessment and history. (C-3)
- 4-6.18 Formulate a field impression for traumatic spinal injury based on the assessment findings. (C-3)
- 4-6.19 Develop a patient management plan for traumatic spinal injury based on the field impression. (C-3)
- 4-6.20 Describe the pathophysiology of non-traumatic spinal injury, including: (C-1)
- a. Low back pain
  - b. Herniated intervertebral disk
  - c. Spinal cord tumors
- 4-6.21 Describe the assessment findings associated with non-traumatic spinal injuries. (C-1)
- 4-6.22 Describe the management of non-traumatic spinal injuries. (C-1)
- 4-6.23 Integrate pathophysiological principles to the assessment of a patient with non-traumatic spinal injury. (C-3)
- 4-6.24 Differentiate between traumatic and non-traumatic spinal injuries based on the assessment and history. (C-3)
- 4-6.25 Formulate a field impression for non-traumatic spinal injury based on the assessment findings. (C-3)
- 4-6.26 Develop a patient management plan for non-traumatic spinal injury based on the field impression. (C-3)

### **AFFECTIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-6.27 Advocate the use of a thorough assessment when determining the proper management modality for spine injuries. (A-3)
- 4-6.28 Value the implications of failing to properly immobilize a spine injured patient. (A-2)

### **UNIT TERMINAL OBJECTIVE: Thoracic Trauma**

- 4-7 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for a patient with a thoracic injury.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-7.1 Describe the incidence, morbidity, and mortality of thoracic injuries in the trauma patient. (C-1)
- 4-7.2 Discuss the anatomy and physiology of the organs and structures related to thoracic injuries. (C-1)

- 4-7.3 Predict thoracic injuries based on mechanism of injury. (C-2)
- 4-7.4 Discuss the types of thoracic injuries. (C-1)
- 4-7.5 Discuss the pathophysiology of thoracic injuries. (C-1)
- 4-7.6 Discuss the assessment findings associated with thoracic injuries. (C-1)
- 4-7.7 Discuss the management of thoracic injuries. (C-1)
- 4-7.8 Identify the need for rapid intervention and transport of the patient with thoracic injuries. (C-1)
- 4-7.9 Discuss the pathophysiology of specific chest wall injuries, including: (C-1)
  - a. Rib fracture
  - b. Flail segment
  - c. Sternal fracture
- 4-7.10 Discuss the assessment findings associated with chest wall injuries. (C-1)
- 4-7.11 Identify the need for rapid intervention and transport of the patient with chest wall injuries. (C-1)
- 4-7.12 Discuss the management of chest wall injuries. (C-1)
- 4-7.13 Discuss the pathophysiology of injury to the lung, including: (C-1)
  - a. Simple pneumothorax
  - b. Open pneumothorax
  - c. Tension pneumothorax
  - d. Hemothorax
  - e. Hemopneumothorax
  - f. Pulmonary contusion
- 4-7.14 Discuss the assessment findings associated with lung injuries. (C-1)
- 4-7.15 Discuss the management of lung injuries. (C-1)
- 4-7.16 Identify the need for rapid intervention and transport of the patient with lung injuries. (C-1)
- 4-7.17 Discuss the pathophysiology of myocardial injuries, including: (C-1)
  - a. Pericardial tamponade
  - b. Myocardial contusion
  - c. Myocardial rupture
- 4-7.18 Discuss the assessment findings associated with myocardial injuries. (C-1)
- 4-7.19 Discuss the management of myocardial injuries. (C-1)
  - 4-7.20 Identify the need for rapid intervention and transport of the patient with myocardial injuries. (C-1)
- 4-7.21 Discuss the pathophysiology of vascular injuries, including injuries to: (C-1)
  - a. Aorta
  - b. Vena cava
  - c. Pulmonary arteries / veins
- 4-7.22 Discuss the assessment findings associated with vascular injuries. (C-1)
- 4-7.23 Discuss the management of vascular injuries. (C-1)
- 4-7.24 Identify the need for rapid intervention and transport of the patient with vascular injuries. (C-1)
- 4-7.25 Discuss the pathophysiology of diaphragmatic injuries. (C-1)
- 4-7.26 Discuss the assessment findings associated with diaphragmatic injuries. (C-1)
- 4-7.27 Discuss the management of diaphragmatic injuries. (C-1)
- 4-7.28 Identify the need for rapid intervention and transport of the patient with diaphragmatic injuries. (C-1)
- 4-7.29 Discuss the pathophysiology of esophageal injuries. (C-1)

- 4-7.30 Discuss the assessment findings associated with esophageal injuries. (C-1)
- 4-7.31 Discuss the management of esophageal injuries. (C-1)
- 4-7.32 Identify the need for rapid intervention and transport of the patient with esophageal injuries. (C-1)
- 4-7.33 Discuss the pathophysiology of tracheo-bronchial injuries. (C-1)
- 4-7.34 Discuss the assessment findings associated with tracheo-bronchial injuries. (C-1)
- 4-7.35 Discuss the management of tracheo-bronchial injuries. (C-1)
- 4-7.36 Identify the need for rapid intervention and transport of the patient with tracheo-bronchial injuries. (C-1)
- 4-7.37 Discuss the pathophysiology of traumatic asphyxia. (C-1)
- 4-7.38 Discuss the assessment findings associated with traumatic asphyxia. (C-1)
- 4-7.39 Discuss the management of traumatic asphyxia. (C-1)
- 4-7.40 Identify the need for rapid intervention and transport of the patient with traumatic asphyxia. (C-1)
- 4-7.41 Integrate the pathophysiological principles to the assessment of a patient with thoracic injury. (C-1)
- 4-7.42 Differentiate between thoracic injuries based on the assessment and history. (C-3)
- 4-7.43 Formulate a field impression based on the assessment findings. (C-3)
- 4-7.44 Develop a patient management plan based on the field impression. (C-3)

### **AFFECTIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-7.45 Advocate the use of a thorough assessment to determine a differential diagnosis and treatment plan for thoracic trauma. (A-3)
- 4-7.46 Advocate the use of a thorough scene survey to determine the forces involved in thoracic trauma. (A-3)
- 4-7.47 Value the implications of failing to properly diagnose thoracic trauma. (A-2)
- 4-7.48 Value the implications of failing to initiate timely interventions to patients with thoracic trauma. (A-2)

### **UNIT TERMINAL OBJECTIVE: Abdominal Trauma**

4-8 At the completion of this unit, the paramedic student will be able to integrate pathophysiologic principles and the assessment findings to formulate a field impression and implement the treatment plan for the patient with suspected abdominal trauma.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-8.1 Describe the epidemiology, including the morbidity/mortality and prevention strategies for a patient with abdominal trauma. (C-1)
- 4-8.2 Describe the anatomy and physiology of organs and structures related to abdominal injuries. (C-1)
- 4-8.3 Predict abdominal injuries based on blunt and penetrating mechanisms of injury. (C-2)
- 4-8.4 Describe open and closed abdominal injuries. (C-1)
- 4-8.5 Explain the pathophysiology of abdominal injuries. (C-1)

- 4-8.6 Describe the assessment findings associated with abdominal injuries. (C-1)
- 4-8.7 Identify the need for rapid intervention and transport of the patient with abdominal injuries based on assessment findings. (C-1)
- 4-8.8 Describe the management of abdominal injuries. (C-1)
- 4-8.9 Integrate the pathophysiological principles to the assessment of a patient with abdominal injury. (C-3)
- 4-8.10 Differentiate between abdominal injuries based on the assessment and history. (C-3)
- 4-8.11 Formulate a field impression for patients with abdominal trauma based on the assessment findings. (C-3)
- 4-8.12 Develop a patient management plan for patients with abdominal trauma based on the field impression. (C-3)
- 4-8.13 Describe the epidemiology, including the morbidity/ mortality and prevention strategies for solid organ injuries. (C-1)
- 4-8.14 Explain the pathophysiology of solid organ injuries. (C-1)
- 4-8.15 Describe the assessment findings associated with solid organ injuries. (C-1)
- 4-8.16 Describe the treatment plan and management of solid organ injuries. (C-1)
- 4-8.17 Describe the epidemiology, including the morbidity/ mortality and prevention strategies for hollow organ injuries. (C-1)
- 4-8.18 Explain the pathophysiology of hollow organ injuries. (C-1)
- 4-8.19 Describe the assessment findings associated with hollow organ injuries. (C-1)
- 4-8.20 Describe the treatment plan and management of hollow organ injuries. (C-1)
- 4-8.21 Describe the epidemiology, including the morbidity/ mortality and prevention strategies for abdominal vascular injuries. (C-1)
- 4-8.22 Explain the pathophysiology of abdominal vascular injuries. (C-1)
- 4-8.23 Describe the assessment findings associated with abdominal vascular injuries. (C-1)
- 4-8.24 Describe the treatment plan and management of abdominal vascular injuries. (C-1)
- 4-8.25 Describe the epidemiology, including the morbidity/ mortality and prevention strategies for pelvic fractures. (C-1)
- 4-8.26 Explain the pathophysiology of pelvic fractures. (C-1)
- 4-8.27 Describe the assessment findings associated with pelvic fractures. (C-1)
- 4-8.28 Describe the treatment plan and management of pelvic fractures. (C-1)
- 4-8.29 Describe the epidemiology, including the morbidity/ mortality and prevention strategies for other related abdominal injuries. (C-1)
- 4-8.30 Explain the pathophysiology of other related abdominal injuries. (C-1)
- 4-8.31 Describe the assessment findings associated with other related abdominal injuries. (C-1)
- 4-8.32 Describe the treatment plan and management of other related abdominal injuries. (C-1)
- 4-8.33 Apply the epidemiologic principles to develop prevention strategies for abdominal injuries. (C-2)
- 4-8.34 Integrate the pathophysiological principles to the assessment of a patient with abdominal injuries. (C-3)
- 4-8.35 Differentiate between abdominal injuries based on the assessment and history. (C-3)
- 4-8.36 Formulate a field impression based upon the assessment findings for a patient with abdominal injuries. (C-3)
- 4-8.37 Develop a patient management plan for a patient with abdominal injuries, based upon field impression. (C-3)

## **AFFECTIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-8.38 Advocate the use of a thorough assessment to determine a differential diagnosis and treatment plan for abdominal trauma. (A-3)
- 4-8.39 Advocate the use of a thorough scene survey to determine the forces involved in abdominal trauma. (A-3)
- 4-8.40 Value the implications of failing to properly diagnose abdominal trauma and initiate timely interventions to patients with abdominal trauma. (A-2)

**UNIT TERMINAL OBJECTIVE: Musculoskeletal Trauma**

- 4-9 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and the assessment findings to formulate a field impression and implement the treatment plan for the patient with a musculoskeletal injury.

**COGNITIVE OBJECTIVE**

At the completion of this unit, the paramedic student will be able to:

- 4-9.1 Describe the incidence, morbidity, and mortality of musculoskeletal injuries. (C-1)
- 4-9.2 Discuss the anatomy and physiology of the musculoskeletal system. (C-1)
- 4-9.3 Predict injuries based on the mechanism of injury, including: (C-3)
  - a. Direct
  - b. Indirect
  - c. Pathologic
- 4-9.4 Discuss the types of musculoskeletal injuries: (C-1)
  - a. Fracture (open and closed)
  - b. Dislocation/ fracture
  - c. Sprain
  - d. Strain
- 4-9.5 Discuss the pathophysiology of musculoskeletal injuries. (C-1)
- 4-9.6 Discuss the assessment findings associated with musculoskeletal injuries. (C-1)
- 4-9.7 List the six "P"s of musculoskeletal injury assessment. (C-1)
- 4-9.8 List the primary signs and symptoms of extremity trauma. (C-1)
- 4-9.9 List other signs and symptoms that can indicate less obvious extremity injury. (C-1)
- 4-9.10 Discuss the need for assessment of pulses, motor and sensation before and after splinting. (C-1)
- 4-9.11 Identify the need for rapid intervention and transport when dealing with musculoskeletal injuries. (C-1)
- 4-9.12 Discuss the management of musculoskeletal injuries. (C-1)
- 4-9.13 Discuss the general guidelines for splinting. (C-1)
- 4-9.14 Explain the benefits of cold application for musculoskeletal injury. (C-1)
- 4-9.15 Explain the benefits of heat application for musculoskeletal injury. (C-1)
- 4-9.16 Describe age associated changes in the bones. (C-1)
- 4-9.17 Discuss the pathophysiology of open and closed fractures. (C-1)
- 4-9.18 Discuss the relationship between volume of hemorrhage and open or closed fractures. (C-3)

- 4-9.19 Discuss the assessment findings associated with fractures. (C-1)
- 4-9.20 Discuss the management of fractures. (C-1)
- 4-9.21 Discuss the usefulness of the pneumatic anti-shock garment (PASG) in the management of fractures. (C-1)
- 4-9.22 Describe the special considerations involved in femur fracture management. (C-1)
- 4-9.23 Discuss the pathophysiology of dislocations. (C-1)
- 4-9.24 Discuss the assessment findings of dislocations. (C-1)
- 4-9.25 Discuss the out-of-hospital management of dislocation/ fractures, including splinting and realignment. (C-1)
- 4-9.26 Explain the importance of manipulating a knee dislocation/ fracture with an absent distal pulse. (C-1)
- 4-9.27 Describe the procedure for reduction of a shoulder, finger or ankle dislocation/ fracture. (C-1)
- 4-9.28 Discuss the pathophysiology of sprains. (C-1)
  
- 4-9.29 Discuss the assessment findings of sprains. (C-1)
- 4-9.30 Discuss the management of sprains. (C-1)
- 4-9.31 Discuss the pathophysiology of strains. (C-1)
- 4-9.32 Discuss the assessment findings of strains. (C-1)
- 4-9.33 Discuss the management of strains. (C-1)
- 4-9.34 Discuss the pathophysiology of a tendon injury. (C-1)
- 4-9.35 Discuss the assessment findings of tendon injury. (C-1)
- 4-9.36 Discuss the management of a tendon injury. (C-1)
- 4-9.37 Integrate the pathophysiological principles to the assessment of a patient with a musculoskeletal injury. (C-3)
- 4-9.38 Differentiate between musculoskeletal injuries based on the assessment findings and history. (C-3)
- 4-9.39 Formulate a field impression of a musculoskeletal injury based on the assessment findings. (C-3)
- 4-9.40 Develop a patient management plan for the musculoskeletal injury based on the field impression. (C-3)

### **AFFECTIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 4-9.41 Advocate the use of a thorough assessment to determine a working diagnosis and treatment plan for musculoskeletal injuries. (A-3)
- 4-9.42 Advocate for the use of pain management in the treatment of musculoskeletal injuries. (A-3)

### **UNIT TERMINAL OBJECTIVE: Toxicology**

- 5-8 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for the patient with a toxic exposure.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 5-8.1 Describe the incidence, morbidity and mortality of toxic emergencies. (C-1)
- 5-8.2 Identify the risk factors most predisposing to toxic emergencies. (C-1)
- 5-8.3 Discuss the anatomy and physiology of the organs and structures related to toxic emergencies. (C-1)
- 5-8.4 Describe the routes of entry of toxic substances into the body. (C-1)
- 5-8.5 Discuss the role of the Poison Control Center in the United States. (C-1)
- 5-8.6 List the toxic substances that are specific to your region. (C-1)
- 5-8.7 Discuss the pathophysiology of the entry of toxic substances into the body. (C-1)
- 5-8.8 Discuss the assessment findings associated with various toxidromes. (C-1)
- 5-8.9 Identify the need for rapid intervention and transport of the patient with a toxic substance emergency. (C-1)
- 5-8.10 Discuss the management of toxic substances. (C-1)
- 5-8.11 Define poisoning by ingestion. (C-1)
- 5-8.12 List the most common poisonings by ingestion. (C-1)
- 5-8.13 Describe the pathophysiology of poisoning by ingestion. (C-1)
- 5-8.14 Recognize the signs and symptoms related to the most common poisonings by ingestion. (C-1)
- 5-8.15 Correlate the abnormal findings in assessment with the clinical significance in the patient with the most common poisonings by ingestion. (C-1)
- 5-8.16 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by ingestion. (C-3)
- 5-8.17 Discuss the factors affecting the decision to induce vomiting in a patient with ingested poison. (C-1)
- 5-8.18 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by ingestion. (C-3)
- 5-8.19 Define poisoning by inhalation. (C-1)
- 5-8.20 List the most common poisonings by inhalation. (C-1)
- 5-8.21 Describe the pathophysiology of poisoning by inhalation. (C-1)
- 5-8.22 Recognize the signs and symptoms related to the most common poisonings by inhalation. (C-1)
- 5-8.23 Correlate the abnormal findings in assessment with the clinical significance in patients with the most common poisonings by inhalation. (C-1)
- 5-8.24 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by inhalation. (C-3)
- 5-8.25 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by inhalation. (C-3)
- 5-8.26 Define poisoning by injection. (C-1)
- 5-8.27 List the most common poisonings by injection. (C-1)
- 5-8.28 Describe the pathophysiology of poisoning by injection. (C-1)
- 5-8.29 Recognize the signs and symptoms related to the most common poisonings by injection. (C-1)
- 5-8.30 Correlate the abnormal findings in assessment with the clinical significance in the patient with the most common poisonings by injection. (C-3)

- 5-8.31 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by injection. (C-3)
- 5-8.32 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by injection. (C-3)
- 5-8.33 Define poisoning by surface absorption. (C-1)
- 5-8.34 List the most common poisonings by surface absorption. (C-1)
- 5-8.35 Describe the pathophysiology of poisoning by surface absorption. (C-1)
- 5-8.36 Recognize the signs and symptoms related to the most common poisonings by surface absorption. (C-1)
- 5-8.37 Correlate the abnormal findings in assessment with the clinical significance in patients with the most common poisonings by surface absorption. (C-3)
- 5-8.38 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by surface absorption. (C-3)
- 5-8.39 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients with the most common poisonings by surface absorption. (C-3)
- 5-8.40 Define poisoning by overdose. (C-1)
- 5-8.41 List the most common poisonings by overdose. (C-1)
- 5-8.42 Describe the pathophysiology of poisoning by overdose. (C-1)
- 5-8.43 Recognize the signs and symptoms related to the most common poisonings by overdose. (C-1)
- 5-8.44 Correlate the abnormal findings in assessment with the clinical significance in patients with the most common poisonings by overdose. (C-3)
- 5-8.45 Differentiate among the various treatments and pharmacological interventions in the management of the most common poisonings by overdose. (C-3)
- 5-8.46 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients with the most common poisonings by overdose. (C-3)
- 5-8.47 Define drug abuse. (C-1)
- 5-8.48 Discuss the incidence of drug abuse in the United States. (C-1)
- 5-8.49 Define the following terms: (C-1)
  - a. Substance or drug abuse
  - b. Substance or drug dependence
  - c. Tolerance
  - d. Withdrawal
  - e. Addiction
- 5-8.50 List the most commonly abused drugs (both by chemical name and street names). (C-1)
- 5-8.51 Describe the pathophysiology of commonly used drugs. (C-1)
- 5-8.52 Recognize the signs and symptoms related to the most commonly abused drugs. (C-1)
- 5-8.53 Correlate the abnormal findings in assessment with the clinical significance in patients using the most commonly abused drugs. (C-3)
- 5-8.54 Differentiate among the various treatments and pharmacological interventions in the management of the most commonly abused drugs. (C-3)

- 5-8.55 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients using the most commonly abused drugs. (C-3)
- 5-8.56 List the clinical uses, street names, pharmacology, assessment finding and management for patient who have taken the following drugs or been exposed to the following substances: (C-1)
3. Cocaine
  4. Marijuana and cannabis compounds
  5. Amphetamines and amphetamine-like drugs
  6. Barbiturates
  7. Sedative-hypnotics
  8. Cyanide
  9. Narcotics / opiates
  10. Cardiac medications
  11. Caustics
  12. Common household substances
  13. Drugs abused for sexual purposes / sexual gratification
  14. Carbon monoxide
  15. Alcohols
  16. Hydrocarbons
  17. Psychiatric medications
  18. Newer anti-depressants and serotonin syndromes
  19. Lithium
  20. MAO inhibitors
  21. Non-prescription pain medications
    - (1) Nonsteroidal anitnflammatory agents
    - (2) Salicylates
    - (3) Acetaminophen
  22. Theophylline
  23. Metals
  24. Plants and mushrooms
- 5-8.57 Discuss common causative agents, pharmacology, assessment findings and management for a patient with food poisoning. (C-1)
- 5-8.58 Discuss common offending organisms, pharmacology, assessment findings and management for a patient with a bite or sting. (C-1)
- 5-8.59 Integrate pathophysiological principles of the patient with a toxic substance exposure. (C-1)
- 5-8.60 Differentiate between toxic substance emergencies based on assessment findings. (C-3)
- 5-8.61 Correlate abnormal findings in the assessment with the clinical significance in the patient exposed to a toxic substance. (C-3)
- 5-8.62 Develop a patient management plan based on field impression in the patient exposed to a toxic substance. (C-3)

**AFFECTIVE OBJECTIVES**

None identified for this unit.

**UNIT TERMINAL OBJECTIVE: Environmental Conditions**

5-10 At the completion of this unit, the paramedic student will be able to integrate pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with an environmentally induced or exacerbated medical or traumatic condition.

### **COGNITIVE OBJECTIVES**

At the completion of this unit, the paramedic student will be able to:

- 5-10.1 Define "environmental emergency." (C-1)
- 5-10.2 Describe the incidence, morbidity and mortality associated with environmental emergencies. (C-1)
- 5-10.3 Identify risk factors most predisposing to environmental emergencies. (C-1)
- 5-10.4 Identify environmental factors that may cause illness or exacerbate a preexisting illness. (C-1)
- 5-10.5 Identify environmental factors that may complicate treatment or transport decisions. (C-1)
- 5-10.6 List the principal types of environmental illnesses. (C-1)
- 5-10.7 Define "homeostasis" and relate the concept to environmental influences. (C-1)
- 5-10.8 Identify normal, critically high and critically low body temperatures. (C-1)
- 5-10.9 Describe several methods of temperature monitoring. (C-1)
- 5-10.10 Identify the components of the body's thermoregulatory mechanism. (C-1)
- 5-10.11 Describe the general process of thermal regulation, including substances used and wastes generated. (C-1)
- 5-10.12 Describe the body's compensatory process for over heating. (C-1)
- 5-10.13 Describe the body's compensatory process for excess heat loss. (C-1)
- 5-10.14 List the common forms of heat and cold disorders. (C-1)
- 5-10.15 List the common predisposing factors associated with heat and cold disorders. (C-1)
- 5-10.16 List the common preventative measures associated with heat and cold disorders. (C-1)
- 5-10.17 Integrate the pathophysiological principles and complicating factors common to environmental emergencies and discuss differentiating features between emergent and urgent presentations. (C-3)
- 5-10.18 Define heat illness. (C-1)
- 5-10.19 Describe the pathophysiology of heat illness. (C-1)
- 5-10.20 Identify signs and symptoms of heat illness. (C-1)
- 5-10.21 List the predisposing factors for heat illness. (C-1)
- 5-10.22 List measures to prevent heat illness. (C-1)
- 5-10.23 Discuss the symptomatic variations presented in progressive heat disorders. (C-1)
- 5-10.24 Relate symptomatic findings to the commonly used terms: heat cramps, heat exhaustion, and heatstroke. (C-3)
- 5-10.25 Correlate the abnormal findings in assessment with their clinical significance in the patient with heat illness. (C-3)
- 5-10.26 Describe the contribution of dehydration to the development of heat disorders. (C-1)
- 5-10.27 Describe the differences between classical and exertional heatstroke. (C-1)
- 5-10.28 Define fever and discuss its pathophysiologic mechanism. (C-1)
- 5-10.29 Identify the fundamental thermoregulatory difference between fever and heatstroke. (C-1)

- 5-10.30 Discuss how one may differentiate between fever and heatstroke. (C-1)
- 5-10.31 Discuss the role of fluid therapy in the treatment of heat disorders. (C-1)
- 5-10.32 Differentiate among the various treatments and interventions in the management of heat disorders. (C-3)
- 5-10.33 Integrate the pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient who has dehydration, heat exhaustion, or heatstroke. (C-3)
- 5-10.34 Define hypothermia. (C-1)
- 5-10.35 Describe the pathophysiology of hypothermia. (C-1)
- 5-10.36 List predisposing factors for hypothermia. (C-1)
- 5-10.37 List measures to prevent hypothermia. (C-1)
- 5-10.38 Identify differences between mild and severe hypothermia. (C-1)
- 5-10.39 Describe differences between chronic and acute hypothermia. (C-1)
- 5-10.40 List signs and symptoms of hypothermia. (C-1)
- 5-10.41 Correlate abnormal findings in assessment with their clinical significance in the patient with hypothermia. (C-3)
- 5-10.42 Discuss the impact of severe hypothermia on standard BCLS and ACLS algorithms and transport considerations. (C-1)
- 5-10.43 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient who has either mild or severe hypothermia. (C-3)
- 5-10.44 Define frostbite. (C-1)
- 5-10.45 Define superficial frostbite (frostnip). (C-1)
- 5-10.46 Differentiate between superficial frostbite and deep frostbite. (C-3)
- 5-10.47 List predisposing factors for frostbite. (C-1)
- 5-10.48 List measures to prevent frostbite. (C-1)
- 5-10.49 Correlate abnormal findings in assessment with their clinical significance in the patient with frostbite. (C-3)
- 5-10.50 Differentiate among the various treatments and interventions in the management of frostbite. (C-3)
- 5-10.51 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with superficial or deep frostbite. (C-3)
- 5-10.52 Define near-drowning. (C-1)
- 5-10.53 Describe the pathophysiology of near-drowning. (C-1)
- 5-10.54 List signs and symptoms of near-drowning. (C-1)
- 5-10.55 Describe the lack of significance of fresh versus saltwater immersion, as it relates to near-drowning. (C-3)
- 5-10.56 Discuss the incidence of "wet" versus "dry" drownings and the differences in their management. (C-3)
- 5-10.57 Discuss the complications and protective role of hypothermia in the context of near-drowning. (C-1)
- 5-10.58 Correlate the abnormal findings in assessment with the clinical significance in the patient with near-drowning. (C-3)

- 5-10.59 Differentiate among the various treatments and interventions in the management of near-drowning. (C-3)
- 5-10.60 Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for the near-drowning patient. (C-3)
- 5-10.61 Define self contained underwater breathing apparatus (SCUBA). (C-1)
- 5-10.62 Describe the laws of gasses and relate them to diving emergencies. (C-1)
- 5-10.63 Describe the pathophysiology of diving emergencies. (C-1)
- 5-10.64 Define decompression illness (DCI). (C-1)
- 5-10.65 Identify the various forms of DCI. (C-1)
- 5-10.66 Identify the various conditions that may result from pulmonary over-pressure accidents. (C-1)
- 5-10.67 Differentiate between the various diving emergencies. (C-3)
- 5-10.68 List signs and symptoms of diving emergencies. (C-1)
- 5-10.69 Correlate abnormal findings in assessment with their clinical significance in the patient with a diving related illness. (C-3)
- 5-10.70 Describe the function of the Divers Alert Network (DAN) and how its members may aid in the management of diving related illnesses. (C-1)
- 5-10.71 Differentiate among the various treatments and interventions for the management of diving accidents. (C-3)
- 5-10.72 Describe the specific function and benefit of hyperbaric oxygen therapy for the management of diving accidents. (C-1)
- 5-10.73 Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a management plan for the patient who has had a diving accident. (C-3)
- 5-10.74 Define altitude illness. (C-1)
- 5-10.75 Describe the application of gas laws to altitude illness. (C-2)
- 5-10.76 Describe the etiology and epidemiology of altitude illness. (C-1)
- 5-10.77 List predisposing factors for altitude illness. (C-1)
- 5-10.78 List measures to prevent altitude illness. (C-1)
- 5-10.79 Define acute mountain sickness (AMS). (C-1)
- 5-10.80 Define high altitude pulmonary edema (HAPE). (C-1)
- 5-10.81 Define high altitude cerebral edema (HACE). (C-1)
- 5-10.82 Discuss the symptomatic variations presented in progressive altitude illnesses. (C-1)
- 5-10.83 List signs and symptoms of altitude illnesses. (C-1)
- 5-10.84 Correlate abnormal findings in assessment with their clinical significance in the patient with altitude illness. (C-3)
- 5-10.85 Discuss the pharmacology appropriate for the treatment of altitude illnesses. (C-1)
- 5-10.86 Differentiate among the various treatments and interventions for the management of altitude illness. (C-3)
- 5-10.87 Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for the patient who has altitude illness. (C-1)
- 5-10.88 Integrate the pathophysiological principles of the patient affected by an environmental emergency. (C-3)
- 5-10.89 Differentiate between environmental emergencies based on assessment findings. (C-3)

- 5-10.90 Correlate abnormal findings in the assessment with their clinical significance in the patient affected by an environmental emergency. (C-3)
- 5-10.91 Develop a patient management plan based on the field impression of the patient affected by an environmental emergency. (C-3)

**AFFECTIVE OBJECTIVES**

None identified for this unit.