

## COURSE SYLLABUS

**Course Number:** EMSP 202  
**Section:** 40 & 70  
**Title:** Pathophysiology & Shock Trauma Resuscitation  
**Class Times:** Lectures/didactic sessions will be on Tuesday evenings from 6:05 PM to 8:45 PM  
**Class Location:** Blue Ridge Technical Center – Room #C03  
**Instructor(s):** Randy Spies, NREMT-P, rspiesctc@shepherd.edu  
**Office Hours:** By Appointment  
**Office Location:** C06  
**Telephone:** (304) 260-1477  
**Pre-corequisite:** EMSP 101, 102, 103, 104, 201, 203, 204, CAHS 120, 121, 122, 123  
**Semester/year:** Fall 2005  
**Text(s):** Sanders, Mick J., Mosby's Paramedic Textbook, 2<sup>nd</sup> edition, Mosby, 2000 (required)  
McKenna, Kim, Workbook to Accompany Mosby's Paramedic Textbook, Mosby, 2001 (optional)

**Course Description:** This course will review the pathophysiology, assessment and management of trauma patients with hemorrhage, shock, soft tissue, burns, head and facial, spinal, thoracic, abdominal, and musculo-skeletal injuries.

**Course Objectives:** At the completion of this course, the student will:

1. Describe the normal characteristics of the cellular environment and the key homeostatic mechanisms that strive to maintain a fluid and electrolyte balance.
2. Outline pathophysiologic alterations in water and electrolyte balance and their effect on body functions.
3. Describe treatment of patients who have selected fluid or electrolyte imbalances.
4. Describe the mechanisms within the body that maintain normal acid-base balance.
5. Outline pathophysiologic alterations in acid-base imbalance.
6. Describe the management of a patient with an acid-base imbalance.
7. Describe alterations in cells and tissues related to cellular adaptation, injury, neoplasia, aging, or death.
8. Outline the effects of cellular injury on local and systemic body functions.
9. Describe alterations in body functions related to genetic and familial disease factors.
10. Outline the causes, adverse systemic effects, and compensatory mechanisms associated with hypoperfusion.
11. Describe how the body's inflammatory and immune responses respond to cellular injury or antigenic stimulation.
12. Explain how alterations in immunity and inflammation can cause harmful effects on body functions.
13. Describe the impact of stress on the body's response to illness or injury.
14. Describe the incidence and scope of traumatic injuries and deaths.
15. Identify the role of each component of the trauma system.
16. Predict the patterns based upon knowledge of the laws of physics related to forces involved in trauma.
17. Describe injury patterns that should be suspected when injury occurs related to a specific type of blunt trauma.
18. Describe the role of restraints in injury prevention and injury patterns.
19. Discuss how organ motion may contribute to injury in each body region depending on the forces applied.
20. Identify selected injury patterns associated with motorcycle and all-terrain vehicle (ATV) collisions.
21. Describe the injury patterns associated with pedestrian collisions.
22. Identify injury patterns associated with sports injuries, blast injuries, and vertical falls.
23. Describe factors that influence tissue damage related to penetrating injuries.
24. Describe how to recognize signs and symptoms of internal or external hemorrhage.
25. Define shock.
26. Outline the factors necessary to achieve adequate tissue oxygenation.
27. Describe how the diameter of resistance vessels influences preload.
28. Describe the function of the components of the blood.
29. Outline the changes in microcirculation during the progression of shock.
30. List the causes of hypovolemic, cardiogenic, neurogenic, anaphylactic, and septic shock.

31. Describe pathophysiology as a basis for signs and symptoms associated with the progression through the stages of shock.
32. Describe key assessment findings to distinguish the etiology of the shock state.
33. Outline the prehospital management of the patient in shock based upon knowledge of the pathophysiology associated with each type of shock.
34. Discuss how to integrate the assessment and management of the patient in shock.
35. Describe the normal structure and function of the skin.
36. Describe the pathophysiology responses to soft tissue injuries.
37. Discuss pathophysiological as a basis for key signs and symptoms and describe the mechanism of injury and signs and symptoms of specific soft tissue injuries.
38. Outline management principles for prehospital care of soft tissue injuries.
39. Describe, in the correct sequence, patient management techniques for control of hemorrhage.
40. Identify the characteristics of general categories of dressings and bandages.
41. Describe prehospital management of specific soft tissue injuries not requiring closure.
42. Discuss factors that increase the potential for wound infection.
43. Describe the prehospital management of selected soft tissue injuries.
44. Describe the incidence, patterns, and sources of burn injury.
45. Describe the pathophysiology of local and systemic responses to burn injury.
46. Classify burn injury according to depth, extent, and severity bases on established standards.
47. Discuss the pathophysiology of burn shock as a basis for key signs and symptoms.
48. Outline the physical examination of a burned patient.
49. Describe the prehospital management of the patient who has sustained a burn injury.
50. Discuss pathophysiology as a basis for key signs, symptoms, and management of the patient with an inhalation injury.
51. Describe the prehospital management of the patient who has a chemical injury.
52. Describe complications and management techniques for selected chemical injuries.
53. Describe the physiological effects of an electrical injury as they relate to each body system based on an understanding of key principles of electricity.
54. Outline assessment and management of the patient with electrical injury.
55. Describe the distinguishing features of radiation injury and considerations in the prehospital management of these patients.
56. Describe the mechanism of injury, assessment, and management of maxillofacial injuries.
57. Describe the mechanism of injury, assessment, and management of ear, eye, and dental injuries.
58. Describe the mechanism of injury, assessment, and management of anterior neck trauma.
59. Describe the mechanism of injury, assessment, and management of injuries to the scalp, cranial vault, or cranial nerves.
60. Distinguish between types of traumatic brain injury based upon an understanding of pathophysiology and assessment findings.
61. Outline the prehospital management of the patient with cerebral injury.
62. Calculate a Glasgow coma scale, trauma score, revised trauma score, and pediatric trauma score when given appropriate patient information.
63. Describe the incidence, morbidity, and mortality related to spinal injury.
64. Predict mechanisms of injury that are likely to cause spinal injury.
65. Describe the anatomy and physiology of the spine and spinal cord.
66. Outline the general assessment of a patient with a suspected spinal injury.
67. Distinguish between the types of spinal injury.
68. Describe prehospital evaluation and assessment of spinal cord injury.
69. Identify prehospital management of the patient with spinal injuries.
70. Distinguish between spinal shock, neurogenic shock, and autonomic hyperreflexia syndrome.
71. Describe selected nontraumatic spinal conditions and the prehospital assessment and treatment of them.
72. Discuss the epidemiology and mechanisms of injury associated with thoracic trauma.
73. Describe the mechanisms of injury, signs and symptoms, and treatment of skeletal injuries to the chest.
74. Describe the mechanisms of injury, signs and symptoms, and prehospital treatment of pulmonary trauma.
75. Describe the mechanisms of injury, signs and symptoms, and prehospital treatment of injuries to the heart and great vessels.

76. Describe the mechanisms of injury, signs and symptoms, and prehospital care of the patient with esophageal and tracheobronchial injury and diaphragmatic rupture.
77. Identify the mechanisms of injury associated with abdominal trauma.
78. Describe the mechanisms of injury, signs and symptoms, and the complications associated with abdominal solid organ, hollow organ, retroperitoneal organ, and pelvic organ injuries.
79. Outline the significance of injury to intraabdominal vascular structures.
80. Describe the prehospital assessment priorities for the patient suspected to have an abdominal injury.
81. Outline the prehospital care of the patient with abdominal trauma.
82. Describe the features of each classification of the musculoskeletal injury.
83. Describe the features of bursitis, tendonitis, and arthritis.
84. Outline the prehospital assessment of the musculoskeletal system if given a specific patient scenario.
85. Outline general principles of splinting.
86. Describe the significance and prehospital treatment principles for selected upper-extremity injuries.
87. Describe the significance and prehospital treatment principles for selected lower-extremity injuries.
88. Identify prehospital treatment priorities for open fractures.
89. Describe principles for realignment of angular fractures and dislocations.
90. Outline the process for referral of patients with minor musculoskeletal injury.

**Course Requirements:** Attendance

Attendance at all lectures, field trips and other activities dealing with this course is required. There will be no mechanism for making-up missed lectures or practical labs. An attendance record will be kept and participation will be a factor in determining your grade for the course. If for any reason you must miss a class, prior notification of the instructor is required. Preferably this would be direct verbal communication, but at the very least a message must be left on my answering machine, which is time and date stamped, prior to the beginning of class. Without this notification the absence will be considered unexcused. Students who miss class, either excused or unexcused, are responsible for all material, quizzes, and activities covered in that class.

Inclement Weather Policy

The instructor follows the College's inclement weather decisions. In other words if the college is open the class will be held. Students may choose not to attend due to weather conditions but must notify the instructor according to the attendance policy.

**Grading Scale:**

The student's final percentage grade will be based on three areas. The average for exams (including a comprehensive final), paper, and attendance/participation will be determined by straight point systems and then weighted with the following scale. The instructor reserves the right to deduct points for assignments turned in late. Letter grades will be based on the following scale:

Quizzes/Assignments= 60%  
 Final Exam= 30%  
 Participation/ Attendance=10%

Student A  
 Test 1 95/100  
 Test 2 75/125  
 Test 3 78/85  
 Report 1 100/100  
 Total 348/410 = 80% x .60 = 48

Final Exam 95% x 30.0

Attendance/Participation  
 (Total Possible 28) 26/28 = 93% x .10 =  $\frac{9}{86}$  = B average

- Make-up Policy:** All students will turn in assignments and take exams on the dates listed in the syllabus. A zero will be awarded for any late assignments or missed exams unless prior arrangements have been made with the instructor(s).
- Academic Integrity:** Cheating and plagiarism are unacceptable behavior. Any student suspected of cheating or plagiarism will receive a zero for the assignment or exam in question.
- Program Assessment:** The faculty of the Emergency Medical Services Program is highly interested in assuring that each student meets the educational objectives of the program. The educational objectives have been developed and are planned to assure that the program is producing graduates who will be successful in obtaining and maintaining positions in the EMS System and who will provide quality patient care. To achieve this goal, the EMS faculty is committed to a systematic and comprehensive process of assessment of student learning.
- As part of this program assessment, students will from time to time be requested to participate in non-graded assessment activities which may include, but not be limited to participation in role-playing simulations, standardized written or practical examinations or completing pre and post-graduation surveys. The specific assessment activities that will be accomplished during this course will include:
1. Continuing the development of individualized student portfolios.
  2. Participation in simulated role-playing situations during the practical labs.
  3. Completion of written and practical evaluations for certification in Advanced Cardiac Life Support.

Community and Technical College at Shepherd  
 Emergency Medical Services Program  
 EMSP 202 – Section 40 & 70  
 Pathophysiology Shock & Trauma  
 Fall 2005 Syllabus

<b>Day Date</b>	<b>Time</b>	<b>Topic</b>	<b>Assignment</b>	<b>Instructor</b>
Tuesday 08/16/05	6:05 pm 8:45 pm	Introduction to Course Trauma Systems and Mechanism of Trauma	Course Syllabus Sanders Chapter 18	R. Spies
Tuesday 08/23/05	6:05 pm 8:45 pm	<b>Quiz 1</b> Hemorrhage and Shock	Sanders Chapter 19	R. Spies
Tuesday 08/30/05	6:05 pm 6:50 pm	Fluid Therapy Hemorrhage and Shock	Sanders Chapter 19	R. Spies
Tuesday 09/06/05	6:05 pm 8:45 pm	<b>Quiz 2</b> Soft Tissue Trauma	Sanders Chapter 20	TBA
Tuesday 09/13/05	6:05 pm 8:45 pm	<b>Quiz 3</b> Burns {Report 1 Due: Shock & Fluid Therapy}	Sanders Chapter 21	R. Spies
Tuesday 09/20/05	6:05 pm 8:45 pm	Burns	Sanders Chapter 21	R. Spies
Tuesday 09/27/05	6:05 pm 8:45 pm	<b>Quiz 4</b> Spinal Trauma	Sanders Chapter 23	TBA
Tuesday 10/04/05	6:05 pm 8:45 pm	Spinal Trauma	Sanders Chapter 23	R. Spies
Tuesday 10/11/05	6:05 pm 8:45 pm	<b>Quiz 5</b> Thoracic Trauma {Report 2 Due: The Golden Hour Concept}	Sanders Chapter 24	R. Spies
Tuesday 10/18/05	6:05 pm 8:45 pm	<b>Quiz 6</b> Abdominal Trauma	Sanders Chapter 25	TBA
Tuesday 10/25/05	6:05 pm 8:45 pm	Abdominal Trauma	Sanders Chapter 25	R. Spies R. Spies
Tuesday 11/01/05	6:05 pm 8:45 pm	<b>Quiz 7</b> Musculoskeletal Trauma	Sanders Chapter 26	R. Spies
Tuesday 11/08/05	6:05 pm 8:45 pm	Musculoskeletal Trauma	Sanders Chapter 26	TBA
Tuesday 11/15/05	6:05 pm 8:45 pm	Special Considerations in Trauma {Report 3 Due: Your Choice}		R. Spies

Tuesday 11/22/05	6:05 pm 8:45 pm	Thanksgiving Recess	N/A	N/A
Tuesday 11/29/05	6:05 pm 8:45 pm	<b>Practical Lab &amp; Review</b> Basic Trauma Life Support	Everything covered to date.	TBA
Tuesday 12/06/05	6:05 pm 8:45 pm	<b>Cumulative Final Exam</b>	Review all Material	R. Spies