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**Course Outline for EMS 13**

**PARAMEDIC LABORATORY 2**

**Effective: Fall 2019**

I. CATALOG DESCRIPTION:
EMS 13 — PARAMEDIC LABORATORY 2 — 4.00 units

Provides the skills portion of the current Department of Transportation National Emergency Services Education Standards (NEMSES) and California Code of Regulations, Title 22. Includes psychomotor skills associated with: medical patient management, cardiac patient management, special populations, EMS operations, and simulated patient encounters.

4.00 Units Lab

**Prerequisite**
EMS 10 - Paramedic Theory 1
with a minimum grade of C

EMS 12 - Paramedic Laboratory 1
with a minimum grade of C

**Corequisite**
EMS 11 - Paramedic Theory 2

**Grading Methods:**
Pass/No Pass

**Discipline:**
- Emergency Medical Technologies

| | MIN |
|---|---|
| **Lab Hours:** | 216.00 |
| **Total Hours:** | 216.00 |

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

**Before entering the course a student should be able to:**

A. EMS10
1. Integrate comprehensive knowledge of EMS systems, the safety/well-being of the paramedic, and medical/legal and ethical issues which is intended to improve the health of EMS personnel, patients, and the community.
2. Integrate a complex depth and comprehensive breadth of knowledge of the anatomy and physiology of all human systems
3. Integrate comprehensive anatomical and medical terminology and abbreviations into the written and oral communication with colleagues and other health care professionals.
4. Integrate comprehensive knowledge of pathophysiology of major human systems
5. Integrate comprehensive knowledge of life span development.
6. Apply fundamental knowledge of principles of public health and epidemiology including public health emergencies, health promotion, and illness and injury prevention.
7. Integrate comprehensive knowledge of pharmacology to formulate a treatment plan intended to mitigate emergencies and improve the overall health of the patient.
8. Integrate complex knowledge of anatomy, physiology, and pathophysiology into the assessment to develop and implement a treatment plan with the goal of assuring a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.
9. Integrate scene and patient assessment findings with knowledge of epidemiology and pathophysiology to form a field impression. This includes developing a list of differential diagnoses through clinical reasoning to modify the assessment and formulate a treatment plan.
10. Integrate assessment findings with principles of epidemiology and pathophysiology to formulate a field impression to implement a comprehensive treatment/disposition plan for an acutely injured patient
11. Integrate comprehensive knowledge of causes and pathophysiology into the management of cardiac arrest and peri-arrest states.
12. Integrate a comprehensive knowledge of the causes and pathophysiology into the management of shock, respiratory failure or arrest with an emphasis on early intervention to prevent arrest.

B. EMS12
1. Relate assessment findings to underlying pathological and physiological changes in the patient’s condition.

2. Integrate and synthesize the multiple determinants of health and clinical care.
3. Perform psychomotor skills within the National EMS Scope of Practice Model and state scope of practice including: airway and breathing, patient assessment, pharmacologic interventions, and trauma patient management.
4. Formulate a field impression based on an analysis of comprehensive assessment findings, anatomy, physiology, pathophysiology, and epidemiology.
5. Perform a comprehensive history and physical examination to identify factors affecting the health and health needs of a patient.
6. Communicate in a manner that is culturally sensitive and intended to improve the patient outcome.
7. Create a treatment plan intended to mitigate emergencies and improve the overall health of the patient using knowledge of emergency medical pharmacology.
8. Compare and contrast the names, mechanism of action, indications, contraindications, complications, routes of administration, side effects, interactions, dose, and any specific administration considerations, for all of the emergency medications and intravenous fluids utilized by the local training institution. Individual training programs have the authority to add any medication used locally by paramedic providers.
9. Apply to patient assessment and management, a fundamental knowledge of the medications carried by paramedics that may be administered to a patient during an emergency.
10. Demonstrate knowledge of the following topics:, Medication safety, medication legislation, medication naming, classifications and schedules; give various examples of medication interactions and medication toxicity.
11. Identify medication routes of administration.
12. Calculate and regulate the flow rate for an IV infusion given the volume, drop factor, and time frame.
13. Perform the following tasks according to the NREMT ALS Psychomotor Skill Sheet Standards: withdraw solutions from ampoules and vials with an appropriately sized syringe, assemble a preloaded syringe (e.g., Bristoject, Abbojet, preload cartridges, etc.), administer an IV push medication, administer IM injections via the: dorsogluteal, ventrogluteal, vastus lateralis, and deltoid sites, administer subcutaneous injections, calculate, mix, and administer an IV medication infusion using microdrip Tubing.
14. Using a comprehensive knowledge of anatomy, physiologies, and pathophysiology of the respiratory system, construct an assessment to develop and implement a treatment plan with the goal of assuring a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.
15. Demonstrate knowledge of the following topics: Anatomy of the respiratory system, physiology, and pathophysiology of respiration of pulmonary ventilation, oxygenation and respiration, assessment and management of adequate and inadequate respiration, supplemental oxygen therapy.
16. Discuss the assessment and management of adequate and inadequate ventilation.
17. Describe In step-by-step fashion, the generic procedure of rapid sequence intubation.
18. Perform the suctioning technique in the following situations: Oropharyngeal, Endotracheal, Nasopharyngeal, Tracheotomy.
19. Secure a patent airway using an endotracheal tube, King LT airway or other supraglottic airway device.
20. Perform the following procedures under the guidance of a clinical laboratory instructor Intraosseous insertion of an IO needle, enteral and parenteral administration of approved prescription medications, Access indwelling catheters and implanted central IV ports, administer medications by IV infusion, Maintain infusion of blood or blood products, perform blood sampling, thrombolytic initiation, administer physician approved medications, place a Morgan Lens.
21. Identify assessment findings of a simulated patient presentation and formulate a field treatment plan for a patient with a major traumatic systems and minor traumatic injuries.
22. Formulate a comprehensive treatment/disposition plan for an acutely injured patient.

## IV. MEASURABLE OBJECTIVES:

**Upon completion of this course, the student should be able to:**

1. Perform a comprehensive history and physical examination to identify factors affecting the health and health needs of a patient
2. Formulate a field diagnosis based on an analysis of comprehensive assessment findings, anatomy, physiology, pathophysiology, and epidemiology
3. Relate assessment findings to underlying pathological and physiological changes in the patient's condition.
4. Integrate and synthesize the multiple determinants of health and clinical care.
5. Perform all psychomotor skills within the National EMS Scope of Practice Model and state scope of practice including: medical patient management, cardiac patient management, special population patients, and simulated patient encounters.
6. Communicate in a manner that is culturally sensitive and intended to improve the patient outcome.

## V. CONTENT:

A. Medical Patient Management
   1. Initial assessment
   2. Focused physical examination
   3. Transport and destination decision
   4. Turnover to hospital staff

B. Medical Patient Care
   1. Pharmacologic interventions
      a. Paramedic scope of practice medications
      b. Recognition and identification of prescribed medications
   2. Non-pharmacologic interventions
      a. Use of Continuous Positive Airway Pressure ventilation (CPAP)
   3. Multi-lead EKG acquisition
   4. Rhythm interpretation
      a. Heart blocks
      b. Atrial dysrythmias
      c. Ventricular dysrhythmias
   5. Electrical therapy
      a. defibrillation
      b. synchronized cardioversion
      c. transcutaneous pacing
   6. Carotid massage
   7. Blood chemistry analysis
   8. Central line monitoring
   9. IO insertion
   10. IV insertion
   11. Venous blood sampling

C. Special Population (OB, neonate, pediatric, geriatrics, patients with special challenges)
   1. Initial assessment
   2. Focused physical examination
   3. Pharmacologic interventions
      a. Use of Broselow Tape medication administration system
   4. Non-pharmacologic interventions

a. High risk childbirth conditions
5. Transport and destination decision
6. Turnover to hospital staff

D. Simulated patient encounters
1. Medical
a. Cardiac Arrest patient scenarios
b. Critical cardiac patient scenarios
c. Critical respiratory patient scenarios

## VI. METHODS OF INSTRUCTION:

A. **Demonstration** -
B. **Critique** -
C. **Student Presentations** -
D. **Written exercises and case studies** -
E. **Observation and Demonstration** -
F. **Simulations** -
G. **Lab** -

## VII. TYPICAL ASSIGNMENTS:

A. Textbook readings
1. Read Chapter 17, Cardiovascular Emergencies
B. Written reports
1. Prepare a written report on the proper medical treatment of an inferior myocardial infarction including the dangers of nitroglycerin administration.
C. Oral presentations
1. Present a simulated patient case suffering from an inferior wall M.I. and discuss with the instructor and students the pitfalls of administering NTG and the benefit of a fluid bolus with analgesia.
D. Manipulative demonstrations
1. Demonstrate how to safely and properly locate patient electrodes on the chest for the acquisition of a 12 lead ECG
E. Skills practice
1. Acquire 12 lead ECG's from each other in the laboratory setting.

## VIII. EVALUATION:

**Methods/Frequency**

A. Simulation
Scenarios
B. Class Participation
Weekly group practice of psychomotor skills and scenario evolutions
C. Lab Activities
Weekly skills Labs
D. Final Class Performance
Final Scenarios evaluation

## IX. TYPICAL TEXTS:

1. American Heart Association - Emergency Care Commitee. *Advanced Cardiac Life Support.* 15th ed., American Heart Association, 2015.
2. Andrew Pollak MD FAAOS - Series Editor. *Emergency Care in the Streets.* 8th ed., JB Learning, 2018.
3. Jones and Bartlett . *Sanders Paramedic Textbook .* 5th ed., JB Learning, 2019.
4. FISDAP. Headwaters Software Inc., (2.0).

## X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Access to a computer with an internet connection.
B. Personal protective equipment including proper footwear, pants, and shirt.