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Course Outline for EMS 12

PARAMEDIC LABORATORY 1

Effective: Fall 2019

I. CATALOG DESCRIPTION:

EMS 12 — PARAMEDIC LABORATORY 1 — 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: preparatory, anatomy and physiology, pharmacology, airway management, patient assessment, and trauma patient management.

4.00 Units Lab

Prerequisite

EMS 20 - Emergency Medical Technician
with a minimum grade of B

BIO 50 - Anatomy and Physiology
with a minimum grade of C

EMS 62 - Basic Medical Terminology
with a minimum grade of C

Corequisite

EMS 10 - Paramedic Theory 1

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. EMS20

1. Explain the roles and responsibilities of the EMT
2. Describe how an EMT functions within the Alameda County EMS System and the established policies, procedures, and protocols
3. Recognize conditions and situations that require pre-hospital care and/or stabilization
4. Perform rapid, comprehensive, and accurate patient assessments
5. Demonstrate psychomotor competencies of all skills and interventions within the EMT scope of practice according to the standards of the National Registry of Emergency Medical Technicians
6. Manage a multi-casualty incident
7. Demonstrate the proper use and maintenance of all biomedical equipment used by the EMT
8. Explain the medical/legal aspects of emergency care and issues related to proper documentation, confidentiality statutes such as HIPAA and ethics
9. Assist paramedics with the delivery of advanced life support within the EMT scope of practice
10. Prevent disease transmission through the use of body substance isolation principles
11. Discuss wellness issues such as stress management, body mechanics, lifting techniques, and use of personal protective equipment
12. Differentiate communication strategies for different ages, stage of development, patients with special needs, and diverse cultures
13. Demonstrate principles of safely and correctly administering medications within the EMT scope of practice and identifying those medications

B. BIO50

1. Explain basic structural organization and function of the major tissues, organs, and organ systems of the human body;
2. Relate structure to function in the organs and tissues;

3. Know the role of individual organs in maintaining homeostasis and predict the major effects of upsetting the function of each organ;
 4. Understand anatomical and physiological terminology;
 5. Make a cursory evaluation of pathological states;
 6. Solve conceptual and practical anatomy and physiology problems in the form of case studies;
 7. Develop necessary background for further health and medical science coursework.
- C. EMS62
1. Utilize components of medical terms
 2. Combine prefixes, word roots, and suffixes to create medical terms related to surgery
 3. Use anatomical, diagnostic, surgical and additional terms as they relate to each body system
 4. Construct and combine compound words
 5. Pronounce medical terms
 6. Write medical terms using correct spelling
 7. Use standard medical abbreviations appropriately

IV. MEASURABLE OBJECTIVES:

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

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.

V. CONTENT:

- A. Airway and breathing
1. BLS Airway and Oxygen Administration
 2. Esophageal-Tracheal Multi-Lumen Airways
 3. BiPAP/CPAP
 4. Needle Chest decompression
 5. Percutaneous cricothyroidotomy
 6. ETCO₂/Capnography
 7. Nasogastric/Orogastric Tube Placement
 8. Chest tube monitoring
 9. End tidal CO₂ monitoring
 10. Naso/orogastric tube insertion
 11. Oral and nasal endotracheal intubation
 12. Airway Obstruction removal by direct laryngoscopy
 13. Pulse oximetry devices
 14. Difficult airway techniques
 15. PEEP
- B. Patient assessment
1. Scene management/leadership
 2. History/Physical examination
 3. Field Impression
 4. Health screening and referrals
 5. Use of mechanical monitors
 - a. End Tidal CO₂ monitors
 - b. Pulse oximetry monitors
 6. Blood chemistry analysis
- C. Communication

1. Therapeutic communications
2. Culturally sensitive
3. Documentation
4. EMS system communications
- D. Pharmacologic interventions
 1. Intraosseous insertion
 - a. Adult
 - b. Pediatric
 2. Enteral and parenteral administration of medications
 3. Administration techniques of medications
 - a. Intramuscular
 - b. Subcutaneous
 - c. Sublingual
 4. Access indwelling catheters and implanted central IV ports
 5. Maintain infusion of blood or blood products
 6. Blood sampling
 7. Thrombolytic initiation
 8. Administer physician approved medications
- E. Trauma patient care
 1. Rapid extrication techniques
 2. ABCDE assessment
 3. Spinal immobilization
 4. Splinting and bandaging
 5. Morgan lens
- F. Simulated Patient Encounters:
 1. Trauma Patients
 2. Burn Patients

VI. METHODS OF INSTRUCTION:

- A. **Classroom Activity** -
- B. **Discussion** -
- C. **Lab** -
- D. **Written exercises and case studies** -
- E. **Student Presentations** -
- F. **Observation and Demonstration** -
- G. **Simulations** -
- H. **Audio-visual Activity** -

VII. TYPICAL ASSIGNMENTS:

- A. Textbook readings
 1. Read Chapter 11, Medication Administration
- B. Written reports
 1. Complete practice activities for Chapt. 11 Medication Administration
- C. Oral presentations
 1. Prepare a class presentation for the instructor and classmates regarding the proper method of injecting a medication into an intramuscular site.
- D. Manipulative demonstrations
 1. Demonstrate the safe and proper technique for inserting an intravenous cannulation
- E. Skills practice
 1. Practice insertion of intravenous cannulas on classmates in a 1-1 setting.

VIII. EVALUATION:

Methods/Frequency

- A. Exams/Tests
 - Modular Exams on Cardiology, Medical, OB/GYN, & EMS Operations
- B. Quizzes
 - 25
- C. Class Participation
 - Weekly Quizzes
- D. Class Work
 - Group study on paramedic case studies

IX. TYPICAL TEXTS:

1. Andrew Pollak MD FAAOS - Series Editor. *Emergency Care in the Streets*. 8th ed., JB Learning, 2018.
2. National Association of Emergency Medical Technicians. *Prehospital Trauma Life Support - Military Edition*. 9th ed., JB Learning, 2018.
3. FISDAP. Headwaters Software Inc., (2.0).

X. OTHER MATERIALS REQUIRED OF STUDENTS:

- A. Personal Protective Equipment including proper footwear, pants, and shirt.
- B. Access to a computer with an internet connection