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Course Outline for EMS 10

PARAMEDIC THEORY 1

Effective: Fall 2016

I. CATALOG DESCRIPTION:
EMS 10 — PARAMEDIC THEORY 1 — 6.00 units

General paramedic didactic education and training following the current Department of Transportation National Emergency Services Education Standards (NEMSES) and California Code of Regulations, Title 22. Includes cognitive content associated with: preparatory, anatomy and physiology, pharmacology, airway management, patient assessment, and trauma patient management.

6.00 Units Lecture

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 12 - Paramedic Laboratory 1

Grading Methods:
Letter Grade

Discipline:

	MIN
Lecture Hours:	108.00
Total Hours:	108.00

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 HIIPAA 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 organs 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

IV. MEASURABLE OBJECTIVES:

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

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.

V. CONTENT:

A. Preparatory
   1. EMS Systems
      a. Continuous quality improvement
   2. Research
      a. Statistics
      b. Peer reviewed literature
      c. Types of research studies
      d. Evidence based medicine
   3. Workforce Safety and Wellness
      a. Blood borne pathogens
      b. Personal protective equipment
      c. Stress management
      d. Proper patient handling techniques
   4. Documentation
      a. Electronic charting
   5. EMS System Communication
   6. Therapeutic Communication
   7. Medical/Legal and Ethics
      a. HIPAA
      b. FMLA
      c. Mandatory reporting of elder and child Abuse
      d. Paramedic scope of practice
      e. Advance Directives

B. Anatomy and Physiology
   1. Basic cellular review
   2. The cellular environment
      a. Osmosis
      b. Diffusion
      c. Mediated transport
   3. The immune system
      a. Humoral immune response
      b. Cell mediated immune response
      c. Fetal and neonatal immune function
   4. Inflammation
      a. Mast cells
      b. Cellular components of inflammation
      c. Systemic responses of acute imflammation
   5. Variances in inflammation and the immune system
      a. Hypersensitivity
      b. allergy
      c. autoimmunity
      d. isoimmunity
   6. Medical Terminology
   7. Pathophysiology

C. Life span Development
   1. Infancy
   2. Toddler
   3. School Age
   4. Adolescence
   5. Early Adulthood
   6. Middle Adulthood
   7. Late Adulthood
   8. End of Life Issues

D. Public Health
E. Pharmacology
    1. Principles of Pharmacology
        a. Pharmacokinetics
    2. Medication Administration
        a. Intravenous
        b. Intramuscular
        c. Subcutaneous
        d. Sublinqual
        e. Transdermal
    3. Emergency Medications
        a. Adenosine
        b. Albuterol
        c. Amiodarone
        d. Amyl Nitrite
        e. Aspirin
        f. Atropine
        g. Dextrose (50%, 25%, 10%)
        h. Diazepam
        i. Diltiazem
        j. Diphenhydramine HCl
        k. Dopamine
        l. Epinephrine
        m. Fentanyl
        n. Glucagon
        o. Glucose
        p. Intravenous Fluids
            1. Normal saline
            2. Dextrose 5% in water
        q. Ipatropium
        r. Lidocaine
        s. Lorazepam
        t. Magnesium
        u. Midazolam
        v. Morphine
        w. Naloxone
        x. Nitroglycerin
        y. Odansetron
        a`. Oxygen
        aa. Oxytocin
        ab. Promethazine HCl
        ac. Thiamine
F. Airway management, Respirations and Artificial Ventilation
    1. Basic and Advanced Airway Management
        a. Oropharyngeal airway
        b. Orotracheal intubation
        c. Retrograde intubation
        d. Video assisted intubation
        e. Percutaneous crichothyrotomy
    2. Respiration
        a. Gas exchange at the cellular level
        b. Pathophysiology of emphysema
        c. Pathophysiology of ventilation perfusion mismatch
    3. Artificial Ventilation
        a. Bag valve mask
        b. BiPAP
        c. CPAP
        d. PEEP
G. Patient Assessment
    1. Scene Size-up
    2. Primary Assessment
    3. History Taking
    4. Secondary Assessment
    5. Monitoring Devices
    6. Reassessment
    7. Diagnosis and treatment of traumatic disorders
H. Trauma Overview
    1. Bleeding
    2. Chest Trauma
    3. Abdominal and Genitourinary Trauma
    4. Orthopedic Trauma
    5. Soft Tissue Trauma
    6. Head, Face, Neck and Spinal Trauma
    7. Nervous System Trauma
    8. Special Considerations in Trauma
    9. Environmental Emergencies
    10. Multi-System Trauma
I. Shock and Resuscitation
    1. Fluid resuscitation
    2. Permissive hypotension
    3. Wound control

VI. METHODS OF INSTRUCTION:
A. **Projects** -
B. **Lecture** -
C. **Student Presentations** -
D. **Discussion** -

E. **Audio-visual Activity** -
F. **Classroom Activity** -
G. **Written exercises and case studies** -

VII. TYPICAL ASSIGNMENTS:
A. Textbook readings
1. Read Chapter 4 Medical, Ethical, Legal Issues
B. Homework questions
1. Complete Practice Activities Chapter 4
C. Written reports
1. Prepare 1 page patient care report on a simulated patient case
D. Oral presentations
1. Present patient care report at next class meeting and field questions from instructor and fellow classmates.

VIII. EVALUATION:
A. **Methods**

1. Exams/Tests
2. Quizzes
3. Papers
4. Oral Presentation
5. Class Participation
6. Class Work
7. Home Work

B. **Frequency**

1. Weekly readings with corresponding homework assignments.
2. Weekly quizzes culminating in a Final Examination at the end of the semester
3. 1 - 2 papers
4. 1 - 2 brief oral presentations
5. Daily class participation
6. Daily class work
7. Daily home work

IX. TYPICAL TEXTS:
1. Andrew Pollak MD FAAOS - Series Editor. *Emergency Care in the Streets.* 7th ed., JB Learning, 2013.
2. National Association of Emergency Medical Technicians. *Prehospital Trauma Life Support - Military Edition.* 8th ed., JB Learning, 2015.
3. Garcia MD, Tomas. *Introduction to 12 Lead ECG-The Art of Interpretation.* 2nd ed., JB Learning, 2015.

X. OTHER MATERIALS REQUIRED OF STUDENTS:
A. Access to a computer with an internet connection.