Course Prefix and Number: EMS 141              Credits: 2

Course Title: Cardiovascular Care

Course Description: Focuses on assessment and management of cardiac-related emergencies. Covers basic dysrhythmia recognition and relates it to overall cardiac patient care. Prerequisites: EMS 121, EMS 123, EMS 125, EMS 126, EMS 127, EMS 128. Corequisite: EMS 142. Lecture 2 hours per week.

General Course Purpose: The purpose of this course is to teach the student principles of assessment and management of cardiac emergencies and to teach basic EKG recognition.

Course Prerequisites and Co-requisites:
Prerequisites: EMS 121, EMS 123, EMS 125, EMS 126, EMS 127, EMS 128
Corequisite: EMS 142

Student Learning Outcomes:
Upon completing the course, the student will be able to
a. Apply fundamental knowledge of anatomy and physiology of the cardiovascular system;
b. Identify the components and steps used in EKG interpretation;
c. Interpret basic EKG rhythms including variations in sinus, atrial, junctional, ventricular, and heart blocks;
d. Identify the correct pharmacological intervention for the cardiovascular patient based on patient presentation;
e. Differentiate various types of cardiovascular disorders; and
f. Apply fundamental knowledge to provide basic and selected advanced emergency care and transportation based on assessment findings for an acutely ill patient complaining of a cardiac-related emergency.

Major Topics to Be Included:

a. Anatomy of the Cardiovascular System Review
   - Cardiac layers
   - Cardiac chambers, valves, and cordae tendineae
   - Myocardial blood supply
   - Conduction system
   - Vascular system

b. Physiology of the Cardiovascular System
   - Cardiac cycle
   - Cardiac output
   - Electrophysiology
c. Assessment of the cardiovascular system
   ▪ Primary survey for cardiovascular assessment
   ▪ History and physical/sample format specific to the cardiovascular patient
   ▪ Secondary survey for cardiovascular assessment

d. Electrocardiographic (ECG) monitoring
   ▪ Electrophysiology and wave forms related to cardiac events
   ▪ Leads and electrodes—preparation and placement
   ▪ Standardization
   ▪ Wave form analysis
   ▪ Lead systems and heart surfaces
   ▪ 12 lead monitoring

e. Identification of Types of Rhythms
   ▪ Sinus rhythms
   ▪ Atrial rhythms
   ▪ Junctional rhythms
   ▪ Tachycardic rhythms
   ▪ Bradycardic rhythms
   ▪ Heart blocks
   ▪ Pulseless rhythms

f. Management of the patient with an arrhythmia
   ▪ Symptomatic and asymptomatic patients
   ▪ Non-invasive interventions
   ▪ Pharmacological interventions
   ▪ Electrotheraphy interventions

g. Cardiovascular specific pharmacology
   ▪ Gases
   ▪ Sympathomimetic
   ▪ Anticholinergic
   ▪ Antiarrhythmic
   ▪ Beta blocker
   ▪ Vasopressor
   ▪ Calcium channel blocker
   ▪ Purine nucleoside
   ▪ Platelet aggregate inhibitor
   ▪ Alkalining agents
   ▪ Cardiac glycoside
   ▪ Narcotic/analgesic
   ▪ Diuretic
   ▪ Nitrate
   ▪ Antihypertensive
h. Pathophysiological principles to the assessment of a patient with cardiovascular diseases
   - Acute coronary syndrome
   - Acute myocardial infarction/angina
   - Non-traumatic cardiac tamponade
   - Hypertensive emergencies
   - Cardiogenic shock
   - Cardiac arrest
   - Vascular disorders
   - Aortic aneurism/dissection
   - Infectious diseases of the heart
   - Cardiac myopathy
   - Specific hypertensive emergencies
   - Congenital abnormalities and age-related concerns

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