

## **NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY EMS 141 – CARDIOVASCULAR CARE (2 CR.)**

### **Course Description**

Focuses on assessment and management of cardiac-related emergencies. Covers basic dysrhythmia recognition and relates it to overall cardiac patient care. Lecture 2 hours. Total 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/Corequisites**

Prerequisite: Current Virginia EMT and CPR certification as approved by the Virginia Office of EMS.

Corequisite: EMS 142.

### **Course Objectives**

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
- 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
  - a. Cardiac layers
  - b. Cardiac chambers, valves, and cordae tendineae
  - c. Myocardial blood supply
  - d. Conduction system
  - e. Vascular system
- b) Physiology of the Cardiovascular System
  - a. Cardiac cycle
  - b. Cardiac output
  - c. Electrophysiology
- c) Assessment of the cardiovascular system
  - a. Primary survey for cardiovascular assessment
  - b. History and physical/ SAMPLE format specific to the cardiovascular patient
  - c. Secondary survey for cardiovascular assessment
- d) Electrocardiographic (ECG) monitoring
  - a. Electrophysiology and wave forms related to cardiac events
  - b. Leads and electrodes - preparation and placement
  - c. Standardization
  - d. Wave form analysis
  - e. Lead systems and heart surfaces
  - f. 12 lead monitoring

- e) Identification of Types of Rhythms
  - a. Sinus rhythms
  - b. Atrial rhythms
  - c. Junctional rhythms
  - d. Tachycardic rhythms
  - e. Bradycardic rhythms
  - f. Heart blocks
  - g. Pulseless rhythms
- f) Management of the patient with an arrhythmia
  - a. Symptomatic and asymptomatic patients
  - b. Non-invasive interventions
  - c. Pharmacological interventions
  - d. Electrotherapy interventions
- g) Cardiovascular specific pharmacology
  - a. Gases
  - b. Sympathomimetic
  - c. Anticholinergic
  - d. Antiarrhythmic
  - e. Beta blocker
  - f. Vasopressor
  - g. Calcium channel blocker
  - h. Purine nucleoside
  - i. Platelet aggregate inhibitor
  - j. Alkalinizing agents
  - k. Cardiac glycoside
  - l. Narcotic/ analgesic
  - m. Diuretic
  - n. Nitrate
  - o. Antihypertensive
- h) Pathophysiological principles to the assessment of a patient with cardiovascular diseases
  - a. Acute coronary syndrome
  - b. Acute myocardial infarction/angina
  - c. Non-traumatic cardiac tamponade
  - d. Hypertensive emergencies
  - e. Cardiogenic shock
  - f. Cardiac arrest
  - g. Vascular disorders
  - h. Aortic aneurism/dissection
  - i. Infectious diseases of the heart
  - j. Cardiac myopathy
  - k. Specific hypertensive emergencies
  - l. Congenital abnormalities and age-related concerns