

J. Sargeant Reynolds Community College
Course Content Summary

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

- Apply fundamental knowledge of anatomy and physiology of the cardiovascular system;
- Identify the components and steps used in EKG interpretation;
- Interpret basic EKG rhythms including variations in sinus, atrial, junctional, ventricular, and heart blocks;
- Identify the correct pharmacological intervention for the cardiovascular patient based on patient presentation;
- Differentiate various types of cardiovascular disorders; and
- 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
 - Electrotherapy interventions
- g. Cardiovascular specific pharmacology
 - Gases
 - Sympathomimetic
 - Anticholinergic
 - Antiarrhythmic
 - Beta blocker
 - Vasopressor
 - Calcium channel blocker
 - Purine nucleoside
 - Platelet aggregate inhibitor
 - Alkalinizing 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

Effective Date/Updated: September 21, 2018