

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: EMS 221 **Credits:** 3

Course Title: Paramedic Cardiovascular Care

Course Description:

Covers in-depth assessment and management of cardiovascular conditions, as outlined by the National Emergency Medical Service Education Standards (NEMSES) for Paramedics.
Lecture 3 hours. Total 3 hours per week.

General Course Purpose:

The purpose of this course is to provide students with a comprehensive understanding of the principles involved in the assessment and management of cardiac emergencies.

Course Prerequisites and Co-requisites:

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

Corequisite: [EMS 222](#): Paramedic Cardiovascular Care Laboratory

Student Learning Outcomes:

Upon completing the course, the student will be able to

- Integrate knowledge of the anatomy, physiology, and pathophysiology of the cardiovascular system to the assessment and treatment of patients.
- Integrate knowledge of scene safety and situational awareness, scene management, impact of the environment on patient care, tactics to address hazards and violence, recognizing the need for additional or specialized resources, standard precautions, and multiple patient situations to effectively guide emergency management.
- Integrate primary assessment information, including age-related variations in pediatric and geriatric patients, with the treatment and procedures needed to preserve life.
- Integrate the assessment of vital signs and pain, techniques of physical examination (respiratory system including breath sound quality, cardiovascular system, neurological system, musculoskeletal system, and major anatomical regions), and monitoring devices (pulse oximetry, non-invasive blood pressure, cardiac monitoring- 12 lead acquisition and transmission, blood glucose determination, end-tidal CO₂ monitoring and interpretation of waveform capnography, and venous blood sampling) including age-related variations in pediatric and geriatric patients to guide patient care.
- Integrate the knowledge of the principles of pharmacology, including medication safety, interactions, reactions, pharmacokinetics, pharmacodynamics, and schedules to the management of patients.
- Integrate knowledge of medication administration, including use of medication cross-check procedures, the use of autoinjectors, the use of unit-dose, premeasured intranasal devices, routes of administration, resources for safe administration of weight-based medications, and ethical and safety considerations for pain management to the management of patients.
- Integrate knowledge of cardiac anatomy, physiology, and electrophysiology into the interpretation of cardiac rhythms.

- Integrate assessment findings with principles of epidemiology and pathophysiology, including age-related assessment and treatment modifications for pediatric and geriatric patients, to formulate a field impression and implement a treatment plan for a patient with various cardiovascular emergencies:
 - Acute coronary syndrome
 - Cardiac dysrhythmias
 - Cardiac arrest
 - Hypertensive emergencies
 - Aortic aneurysm/ dissection
 - Thromboembolism
 - Heart Failure
 - Non-traumatic cardiac tamponade
 - Cardiogenic shock
 - Vascular disorders
 - Conditions that predispose patients to cardiac rhythm disturbances
 - Infectious diseases of the heart- endocarditis, myocarditis, and pericarditis
 - Congenital heart disease
 - Hypertrophic cardiomyopathy

Major Topics to Be Included:

None

Effective Date/Updated: June 5, 2024