Cardiology (EMSP 2444_6A3)

CREDIT
4 Semester Credit Hours (3 hours lecture, 3 hours lab)

MODE OF INSTRUCTION
Hybrid

PREREQUISITES
EMT-Basic or Advanced
BIOL 2404 – Anatomy and Physiology
EMSP 1338 – Intro to Advanced Practice
EMSP 1356 – Patient Assessment, Airway
EMSP 2237 – Emergency Procedures II
EMSP 2206 – Emergency Pharmacology

CO-REQUISITES
EMSP 2262 – Clinical – Emergency Medical Technician-Paramedic
EMSP 1455 – Trauma Management

COURSE DESCRIPTION
Assessment and management of patients with cardiac emergencies; includes single and multi-lead ECG interpretation.

COURSE OBJECTIVES
Upon completion of this course, the student will be able to:

- Integrate assessment findings with principles of epidemiology and pathophysiology to formulate a field impression and implement a comprehensive treatment/disposition plan for a patient with a cardiovascular complaint.
- Integrate comprehensive knowledge of causes and pathophysiology into management of cardiac arrest and peri-arrest states.
- Integrate a comprehensive knowledge of the causes and pathophysiology into management of shock, respiratory failure or arrest with emphasis on early intervention to prevent arrest.
- Demonstrate knowledge of the main structures and functions of the cardiovascular system's anatomy and physiology.
- Summarize the general assessment of a patient with a cardiovascular emergency.
- Explain the phases that comprise the cardiac action potential.
- Identify the structure and course of all divisions and subdivisions of the cardiac conduction system.
- Identify the components of an ECG rhythm strip.
- Outline a systematic approach to the analysis and interpretation of cardiac dysrhythmias.
- Explain normal sinus rhythm and the ECG characteristics, possible causes, signs and symptoms, and initial emergency care of dysrhythmias.
- Explain the emergency medical care for the symptomatic adult patient with bradycardia.
- Explain the ECG characteristics, possible causes, signs and symptoms, and initial emergency medical care for dysrhythmias originating in the atria.

- Explain the ECG characteristics, possible causes, signs and symptoms, and initial emergency medical care for dysrhythmias originating in the atrioventricular (AV) junction.
- Explain the ECG characteristics, possible causes, signs and symptoms, and initial emergency medical care for dysrhythmias originating in the ventricles.
- Evaluate the dysrhythmias seen in cardiac arrest.
- Explain the emergency medical care of the adult patient with cardiac arrest.
- Describe the components of the post-cardiac arrest care.
- Explain the ECG characteristics, possible causes, signs and symptoms, and initial emergency medical care for AV blocks.
- Give examples of indications for using a 12-lead ECG.
- Indicate the placement of 12-lead ECG electrodes.

INSTRUCTOR CONTACT INFORMATION

Instructor:	Dustin Sites
Email:	dsites@lit.edu
Office Phone:	409-247-4833
Office Location:	MPC 243
Office Hours:	Upon Request

REQUIRED TEXTBOOK AND MATERIALS

EMS Program Student Handbook

EMS Program Clinical Handbook

Sterling Credentials LLC

Platinum Planner EMS Testing

Nancy Caroline's Emergency Care in the Streets 9th, ISBN: 9781284274004

EMS Testing ECG Interpretation made Incredibly Easy, Lippincott, Williams, And Wilkins 5th, ISBN 13-9781608312894

ATTENDANCE POLICY

Attendance is mandatory. If a student is tardy (2) times it constitutes (1) absence. Greater than (3) absences throughout the semester may result in a deduction in (3) points or greater to your final grade and will be determined at the time of occurrence(s). Any anticipated absences must be reported to the instructor as soon as possible via email. An excused absence should be arranged prior to absence, when possible. When it is not possible to give prior notification, an unexcused absence will be recorded. To change classification of an unexcused absence to

excused it will be on a case-by-case basis. Documentation for any excused absence will be required. Additionally, students with perfect attendance will have (10) additional points added to lowest Mid Term or Final test grade. Students with (1) absence will be eligible for (9) points added to their lowest Mid Term or Final test grade.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the Academic Calendar. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

STUDENT EXPECTED TIME REQUIREMENT

For every hour in class (or unit of credit), students should expect to spend at least two to three hours per week studying and completing assignments. For a 3-credit-hour class, students should prepare to allocate approximately six to nine hours per week outside of class in a 16- week session OR approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face- to-face class.

COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
6/2/2026	Cardiac Anatomy		
6/4/2026	Skills / Discussion		Discussion 1
6/9/2026	Cardiac Assessment and Basic Rhythms		
6/11/2026	Skills / Discussion		Discussion 2
6/16/2026	Atrial Rhythms & Early ACLS		
6/18/2026	Skills / Discussion		Discussion 3
6/23/2026	Bradycardia, Heart Blocks & Pacing		
6/25/2026	Skills / Discussion		Discussion 4
6/30/2026	Ventricular Rhythms & Cardiac emergencies		
7/2/2026	Skills / Discussion		Discussion 5
7/7/2026	Mid Term Review		
7/9/2026	Mid Term		Mid Term
7/14/2026	12-Lead EKG Basics & STEMI Introduction		
7/16/2026	Skills / Discussion		Discussion 6
7/21/2026	STEMI Recognition & Cardiac Emergencies		
7/23/2026	Skills / Discussion		Discussion 7
7/28/2026	Advanced ACS, CHF & Respiratory Cardiac Interface		
7/30/2026	Skills / Discussion		Discussion 8

8/4/2026	ACLS Integration & Mega Code Introduction		
8/6/2026	Skills / Discussion		Discussion 9
8/11/2026	Final Review		Cardiology Quizzes 1-3
8/13/2026	Final		Final

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Affective Evaluation	30%
Discussions	30%
Chapter Quizzes	10%
Mid-Term Exam	15%
Final Exam	15%

GRADE SCALE

90 – 100	A
84 – 89	B
75 – 83	C
70 – 74	D
0 – 69	F

ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Student Catalog & Handbook at http://catalog.lit.edu/content.php?catoid=3&navoid=80#academic-dishonesty.

TECHNICAL REQUIREMENTS

For the latest technical requirements, including hardware, compatible browsers, operating systems, etc., review the Minimum Computer and Equipment Requirements on the LIT Online Experience page. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resources at Special Populations -Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

1. No food, drinks, or use of tobacco products in class. Do not order from a food delivery service and have food and drink delivered to class outside of lunchtime hours.
2. Computers, telephones, headphones, and any other electronic devices may not be utilized while in class or used only with permission of the instructor. If a call is received and needs to be taken, please step out of the classroom and return promptly.
3. Do not bring children to class.
4. No late assignments will be accepted. If an assignment is late, please contact the instructor immediately.
5. Students that miss a test are not allowed to make up for the test. Students that miss a test will receive a grade of '0'. Mid Term and Final exams are proctored and will begin promptly at the time assigned. Unless prior arranged students will not be allowed to

enter late and begin a Mid Term or Final and a grade of '0' will be received.
6. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.
7. Additional class policies as defined by EMS Program Student Handbook.
8. Uniforms including authorized pants with black belt, black boots and a red polo tucked in and void of logos will be always worn while in class and attending a clinical. Refusal to comply with this policy may result in a reduction of grade points and or removal from class or clinical.

MY RESPONSE TIME

1. **I will respond withing 24 hours Monday-Friday**.
2. **The best way to reach your instructor is through LIT Email: dsites@lit.edu**

COURSE OUTLINE

A. Welcome to LIT EMS Program
   1. Introduction of EMS Staff, Instructors and students
   2. EMS program policies
B. Introduction to EGC
   1. Anatomy and Physiology, Review
   2. Lead Placement
   3. Introduction to ECG monitor functions
C. Waveform Dissection and Morphology
   1. Dissecting the waveform
   2. Understanding ECG paper, intervals, segments
   3. Basic rhythm identification
      i) Sinus node rhythms
D. Introduction to 12-lead interpretation
E. Cardiac Disease Processes
F. Atrial and Junctional rhythms
   1. Atrial fibrillation
   2. Atrial flutter
   3. Supraventricular tachycardia (SVT)
   4. Junctional rhythms
G. Ventricular rhythms
   1. Ventricular tachycardia (V-Tach)
   2. Ventricular fibrillation (V-Fib)
   3. Torsades de pointes
   4. Idioventricular rhythms (IVR)

H. Heart blocks
    1. First-degree heart block
    2. Second-degree heart block (Type I, Type II)
    3. Third-degree heart block (complete)
I. Advanced ECG Interpretation
    1. Bundle Branch Blocks
    2. Axis Deviation
    3. 15-lead
J. Advanced Cardiac Life Support
    1. Essentials of ACLS
        i) Managing a cardiac arrest
        ii) Teamwork
    2. Adjuncts for Airway Control, Ventilation, and Oxygenation
        i) Airway Management
        ii) Proper Ventilation techniques
        iii) Proper use of airway adjuncts
    3. Defibrillation
        i) The defibrillation function
            (1) Indications
            (2) Contraindications
            (3) Power settings
            (4) Different Defibrillation Devices
            (5) Safety in defibrillation
        ii) Cardiac Pacing
            (1) Indications
            (2) Contraindications
            (3) Power Settings
            (4) Rhythm Capture
            (5) Precautions
        iii) Cardiovascular Pharmacology
            (1) The heart's reaction to the actions of medications
    4. Myocardial Infarction
        i) Signs, Symptoms, and Treatment
        ii) Scenario Training for managing Cardiac Arrest
    5. Special Resuscitation Situations
        i) Resuscitation of the Pregnant patient
        ii) DNR Orders
    6. Adjuncts for Artificial Circulation
    7. Invasive Monitoring Techniques
    8. Invasive Therapeutic Techniques
    9. Cerebral Resuscitation: Treatment of the Brain after Cardiac Arrest
    10. Ethical Aspects of CPR