

Cardiology (EMSP 2444)

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.



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- 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:	Jolene Thompson
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Office Phone:	409-247-5090
Office Location:	MPC 245
Office Hours:	Upon Request
Instructor:	Tammie Hollaway
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Office Phone:	409-247-4851
Office Location:	MPC 244
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

Three absences are allowed. If a student is tardy to class or departs early two (2) times, it will be equal to one (1) absence. Each absence beyond three absences will result in a 5-point deduction from your final grade.

DROP POLICY

If you wish to drop a course, you are 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.

COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
6/4/2024	Introduction to ECG		
6/6/2024	Introduction to ECG		
6/11/2024	Waveform Morphology		
6/13/2024	Basic Rhythm Recognition		
6/18/2024	12-lead Interpretation		
6/20/2024	12-lead Interpretation		
6/25/2024	12-lead Interpretation		
6/27/2024	12-lead Interpretation		
7/2/2024	Mid Term		
7/9/2024	Cardiac Disease Process		
7/11/2024	Cardiac Disease Process		
7/16/2024	Atrial, Junctional Rhythms		
7/18/2024	Atrial, Junctional Rhythms		
7/23/2024	Ventricular Rhythms		
7/25/2024	Ventricular Rhythms		
7/30/2024	Heart Blocks		
8/1/2024	Bundle Branch Blocks, Axis Deviation, 15-lead		
8/6/2024	ACLS, REVIEW		
8/8/2024	Final		

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Affective Evaluation	20%
Chapter Quizzes	30%
Mid-Term Exam	25%
Final Exam	25%

GRADE SCALE

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

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. 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 resource 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. Computers, telephones, headphones, and any other electronic devices must be turned off while in class or used only with permission of the instructor.
2. Do not bring children to class.
3. Late assignments will be accepted on a case by case basis.
4. Tests. Students that miss a test are not allowed to make up the test. Students that miss a test will receive a grade of '0'.
5. 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.
6. Additional class policies as defined by the EMS Program Student Handbook.

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
- 11. ACLS Written Test
 - i) Remediation (for those that score less than 84%).