EMS 412: 12-LEAD ECG INTERPRETATION I: INTRODUCTION

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Winter 2026
Units:	0
Hours:	0.5 lecture per week (6 total per quarter)
Advisory:	EMT or higher level health care provider.
Degree & Credit Status:	Non-Degree-Applicable Non-Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Non-Credit Course (Receives no Grade)
Repeatability:	Unlimited Repeatability

Student Learning Outcomes

- Identify and interpret supraventricular rhythms, wide-complex arrhythmias, and atrioventricular (AV) blocks using a 12-lead ECG.
- Explain and apply foundational 12-lead ECG concepts, including cardiac conduction pathways and proper lead placement, to support clinical decision-making in emergency care.

Description

The first in a three-course 12-lead electrocardiogram (ECG) interpretation series, this course introduces emergency care providers to the foundational principles of 12-lead ECG interpretation. Students will explore the history and fundamentals of electrocardiography, gain proficiency in recognizing supraventricular and wide complex arrhythmias, and learn to identify atrioventricular (AV) blocks. Through interactive lectures and practical exercises, students will develop essential ECG analysis skills crucial for clinical decision-making in emergency settings.

Course Objectives

The student will be able to:

1. Describe the history and foundational principles of 12-lead ECG interpretation.
2. Explain the components of the cardiac conduction system and proper lead placement.
3. Identify supraventricular and wide complex arrhythmias on a 12-lead ECG.
4. Classify atrioventricular (AV) blocks using ECG criteria.

Course Content

1. History and basics of interpreting the 12-lead ECG
   a. Historical context and evolution of ECG use
   b. Introduction to the 12-lead format and waveforms
   c. Clinical significance in emergency care
2. Cardiac conduction system and lead placement
   a. Overview of the cardiac conduction system
   b. Standard lead placement for a 12-lead ECG
   c. Vector principles and electrical pathways
3. Supraventricular and wide complex arrhythmias
   a. Supraventricular arrhythmias: atrial fibrillation, flutter, and SVT
   b. Ventricular arrhythmias: VT, VF, and torsades de pointes
   c. Identification and differentiation of wide versus narrow QRS rhythms
4. Atrioventricular blocks (first, second, and third degree AV blocks)
   a. First-degree AV block
   b. Mobitz I and II second-degree AV blocks
   c. Third-degree (complete) heart block

Lab Content

Not applicable.

Special Facilities and/or Equipment

1. Smart classroom with audio visual equipment.
2. Emergency medical equipment.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Written tests
Case studies
Class participation

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Interactive lecture/presentations
In-class reading assignments, including but not limited to handout material relative to class lecture
In-class projects (e.g., scenarios for critical thinking)

Representative Text(s) and Other Materials

Garcia, Tomas. 12-Lead ECG: The Art of Interpretation, 2nd ed.. 2013.

Although this text is older than the suggested "5 years or newer" standard, it remains a seminal text in this area of study.

Handout materials and online resources (documents, presentation slides, web links, images, videos) will be provided by the instructor and/or presenter(s).

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Reading assignments from online sources, class handouts, and other various sources, ranging from 5-15 pages per week.
2. Written short answer essay questions and take home assignments.

Discipline(s)

Emergency Medical Technologies