EMS 413: 12-LEAD ECG INTERPRETATION II: ACUTE CORONARY SYNDROMES & CONDUCTION ABNORMALITIES

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

- Differentiate STEMI, NSTE-ACS, STEMI mimics, and STEMI equivalents using 12-lead ECG findings to support accurate clinical assessment.
- Identify and interpret conduction abnormalitiesÑincluding bundle branch blocks and fascicular blocksÑand explain their impact on diagnosing acute coronary syndromes.

Description

The second in a three-course 12-lead electrocardiogram (ECG) interpretation series. Building on the principles introduced in EMS 412, this course focuses on recognizing and interpreting ECG changes associated with acute coronary syndromes (ACS) and conduction system abnormalities. Students will develop the skills to differentiate ST-segment elevation myocardial infarction (STEMI) from non-ST-elevation acute coronary syndromes (NSTE-ACS) and identify bundle branch and fascicular blocks. Additional leads and STEMI equivalents will also be explored to enhance accuracy in patient assessment and management.

Course Objectives

The student will be able to:

1. Interpret ECG changes associated with ST-elevation myocardial infarctions (STEMI).
2. Differentiate bundle branch blocks and fascicular blocks on a 12-lead ECG.
3. Analyze ECG features of non-ST-elevation acute coronary syndromes (NSTE-ACS).
4. Apply knowledge of STEMI equivalents and additional lead placements in diagnosis.

Course Content

1. ST-segment elevation myocardial infarction (STEMI)
   a. ST elevation in anterior, inferior, and posterior leads
   b. Reciprocal changes and regional correlation
   c. Early vs. evolving infarction patterns
2. Left and right bundle branch blocks and fascicular blocks
   a. ECG features of LBBB and RBBB
   b. Left anterior and posterior hemiblocks
   c. Impact on STEMI recognition and clinical interpretation
3. Non-ST-elevation acute coronary syndromes (NSTE-ACS)
   a. ST depression and T-wave inversion
   b. Dynamic changes in serial ECGs
   c. Clinical correlation and risk stratification
4. STEMI equivalents and additional leads
   a. aVR elevation with diffuse ST depression
   b. Wellens syndrome and de Winter's pattern
   c. Use of posterior and right-sided leads

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