

# Clinical Electrocardiography (ECG)

## Outline, Objectives & Credit Information

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### I. Cardiac Anatomy

- A. The Heart
- B. Arteries and Veins
- C. Chambers of the Heart
  - 1. Atria and Ventricles
  - 2. Sincytia
- D. The Heart Valves
- E. Papillary Muscles and Chordae Tendineae
- F. Sinoatrial Node
- G. AV Node and the His Bundle
- H. Bundle Branches

### II. Cardiac Electrophysiology

- A. Depolarization and Repolarization
- B. Conduction System
- C. ECG Components
  - 1. Electrocardiogram
    - a. What is an ECG?
    - b. ECG Paper
  - 2. ECG Complexes
    - a. Atrial Depolarization: The P Wave
    - b. PQ or PR Interval
    - c. QRS Complex
    - d. ST Segment
    - e. T Wave and STT Segment
  - 3. Determination of Heart Rate
  - 4. The Leads
    - a. Electrodes and Leads
    - b. Einthoven's Triangle

- c. The Augmented Limb Leads
    - d. The Precordial Leads
  - 5. The Electrical Heart Axis
    - a. What is the Electrical Heart Axis?
    - b. Variations in Electrical Heart Axis
    - c. Determination of the Electrical Heart Axis
- D. Sinus Rhythm
- E. Ectopic Pacemaker Structures

### III. Pathophysiology (ECG Abnormalities)

- A. Sinoatrial Block and Sinus Arrest
- B. Atrioventricular Blocks (AV Blocks)
  - 1. First Degree AV Block
  - 2. Second Degree AV Block
    - a. Mobitz Type I
    - b. Mobitz Type II
  - 3. Third Degree AV Block
- C. Premature Complexes
  - 1. Premature Atrial Complexes (PAC)
  - 2. Premature Junctional Complexes (PJC)
  - 3. Premature Ventricular Complexes (PVC)
    - a. Multiform and Uniform PVCs
    - b. Run of PVCs
    - c. PVC Patterns (Ventricular Bigeminy, Trigeminy, and Quadrigeminy)
  - 4. Aberrant Conduction Following a PAC
- D. Rhythm
  - 1. Idioventricular Rhythm
  - 2. Parasystole
  - 3. Junctional Rhythm
  - 4. Escape Complexes
  - 5. Dying or Agonal Rhythm
- E. Infarction and Ischemia
  - 1. Myocardial Infarction (MI)
  - 2. ECG Changes Associated with MI
    - a. Hyperacute T Waves

- b. T Wave Abnormalities
  - c. ST Elevation
  - d. ST Depression
  - e. Q Waves
  - f. R Wave Progression in the Precordial Leads
3. Subendocardial and Transmural Ischemia
- F. Localization of Infarction
- 1. Localization of Myocardial Injury
  - 2. Anterior MI
  - 3. Lateral MI
  - 4. Anterolateral MI
  - 5. Inferior MI
  - 6. Posterior MI
  - 7. Subendocardial MI
- G. Reentry
- 1. What is Reentry?
  - 2. Preexcitation
  - 3. Wolff-Parkinson-White (WPW) Syndrome
  - 4. Atrial Flutter
  - 5. Atrial Fibrillation
- H. Tachycardia
- 1. AV Nodal Reentrant Tachycardia (AVNRT)
  - 2. Atrial Tachycardia
  - 3. Ventricular Tachycardia (VT)
    - a. Monomorphic VT
    - b. Polymorphic VT
  - 4. Ventricular Fibrillation
- I. Bundle Branch Blocks
- 1. Left Bundle Branch Block (LBBB)
  - 2. Incomplete LBBB
  - 3. Left Anterior Fascicular Block (LAFB)
  - 4. Left Posterior Fascicular Block (LPFB)
  - 5. Right Bundle Branch Block (RBBB)
  - 6. Summary of Criteria for RBBB and LBBB
  - 7. Bifascicular and Trifascicular Block
  - 8. Using the ECG to Diagnose Acute MI in Patients with LBBB

#### J. Hypertrophy

1. Atrial Enlargement
2. Left Ventricular Hypertrophy (LVH)
3. Right Ventricular Hypertrophy (RVH)

#### K. Other Clinical Disorders with Associated ECG Changes

1. Pulmonary Embolism
2. Pericarditis

#### IV. Exercises

- A. Impulse and Conduction
- B. Reentry and SVT
- C. Preexcitation
- D. Rhythm Analysis II
- E. Hypertrophy
- F. Infarction Localization
- G. Fascicular Block
- I. Electrical Heart Axis II
- J. Other Diseases

## Course Objectives

At the conclusion of [Clinical Electrocardiography](#) the participant will be able to:

1. Understand the basic principles of ECG interpretation.
2. Detail the components of a standard 12-lead ECG tracing.
3. Recognize and diagnose the common and the complex ECG abnormalities encountered in clinical practice using a standard 12-lead ECG tracing.

## Course Credit

### CEUS

Students who complete the exercises with a 95% rating or higher will receive a certificate of completion and 1.7 Continuing Education Units (CEUs). Clinical ECG utilizes a nontraditional assessment mechanism. Ratings are determined by progress indicators and interactive assessments contained in the course. Ratings rise and fall as students respond to the exercise questions. If an answer is incorrect the courseware will return the correct response with detailed feedback. The student will be asked additional questions on that topic as they progress through the exercises. The courseware adjusts based on their knowledge level. Students can earn back your rating points by answering the questions correctly the next time.

Corexcel is accredited by the International Association for Continuing Education and Training (IACET) and is authorized to issue the IACET CEU.

1 CEU is equivalent to 10 hours of class time. Individual colleges and universities may accept CEUs. To determine an institution's policy, ask them if a course that is "accredited for CEUs by IACET (International Association for Continuing Education and Training)" can be translated into credit hours. They will often ask for objectives and a course outline, which are included in this packet.

**If you need additional information or have other questions please call 1-302-477-9730 or toll-free in the U.S. 1-888-658-6641.**