The Society for Cardiological Science and Technology

Certificate in Essential ECG Interpretation

The Society makes this award to candidates who can demonstrate the ability to recognise a broad range of clinically important electrocardiographic patterns under examination conditions.

Candidates will be expected to demonstrate the following knowledge and skills in a written multiple choice examination:

- Accurately measure standard ECG intervals and compare these with normal values
- Correctly identify normal and abnormal wave morphology and rhythms
- Identify the typical ECG features of a range of clinically important conditions
- Recognise all common and clinically important cardiac arrhythmias

Candidates should ensure that their preparation for the examination considers all points in the syllabus for the Foundation Course in Essential ECG Interpretation.

Foundation Course in Essential ECG interpretation

Syllabus

- **Normal ECG features, terminology and basic measurements**
  - Relationship of the electrocardiogram to the electrical events of the heart
  - Relationship of the electrical events to the mechanical events of the cardiac cycle
  - Waveform components (P, Q, R, S, T and U)
  - Definitions, measurement and normal ranges of heart rate, PR interval, QRS duration and QT interval
  - Calculation of corrected QT interval (QTc) by Bazett's formula
  - Appearance of the normal resting electrocardiogram including R wave progression in precordial leads
  - Identification of normal QRS axis, left axis deviation, right axis deviation and extreme axis

- **Normal variations of the electrocardiogram in relation to:**
  - Age
  - State of activity
  - Body build
  - Ethnic origin
  - Athletic training

- **Rhythms arising from the sinus node**
  - Normal sinus rhythm
  - Sinus arrhythmia
  - Sinus tachycardia
  - Sinus bradycardia

Electrocardiographic features of abnormal rhythms and conditions, including:

- **Supraventricular arrhythmias**
  - Atrial premature beats
  - Atrial flutter
  - Atrial fibrillation
  - 'SVT'

- **Bradyarrhythmias and conduction abnormalities**
  - Sinus pauses and sinus arrest
  - Left and right bundle branch block
  - 1^{st} degree AV block
  - 2^{nd} degree AV block: Mobitz I (Wenckebach), Mobitz II and 2:1 block
  - 3^{rd} degree (complete) AV block
  - Escape rhythms

- Ventricular standstill

- **Rhythms arising from the ventricles**
  - Ventricular premature beats
  - Accelerated idioventricular rhythm
  - Ventricular tachycardia
  - Ventricular flutter
  - Ventricular fibrillation

- **Artificial cardiac pacing**
  - Identification of pacemaker stimulus on the electrocardiogram
  - Unipolar and bipolar pacing
  - Differentiation between atrial and ventricular pacing

- **Coronary artery disease**
  - Myocardial ischaemia
  - ST elevation myocardial infarction
  - Non-ST elevation acute coronary syndrome

- **Non-ischaemic chest pain**
  - Pericarditis
  - Myocarditis
  - Massive pulmonary embolism

- **Morphological abnormalities**
  - Left ventricular hypertrophy
  - Right ventricular hypertrophy
  - Left atrial abnormality
  - Right atrial abnormality
  - Dextrocardia

- **Ventricular pre-excitation**
  - Wolff-Parkinson-White syndrome
  - Pre-excited atrial fibrillation

- **Abnormal metabolic and electrolyte states**
  - Hyperkalaemia
  - Hypokalaemia
  - Hyperventilation

- **Drug effects**
  - Digitalis therapy and toxicity
  - Beta-blocker therapy and overdose

- **Sudden cardiac death syndromes**
  - Long QT syndrome
  - Hypertrophic cardiomyopathy

- Arrhythmogenic RV cardiomyopathy
- Brugada syndrome
- 'Early repolarisation syndrome'

- **Potentially misleading errors and artefacts**
  - Reversed right arm and left arm connections
  - Somatic muscle noise vs AF
  - Parkinsonian tremor vs atrial flutter