# EMSP 2544 Cardiology Comprehensive Final Exam Blueprint & Study Guide

| Topic | Questions |
|---|---|
| Multiple Choice | ~25 |
| Rhythm Interpretation | ~10 |
| Drugs | ~10 |
| Short Answer | ~4 |
| Comprehensive Scenario w/12 Lead ECG Analysis | ~6 |
| **Total** | **~55** |

## Study Guide

- The multiple choice and short answer questions will be drawn from the following objectives:

**a) Cardiac A&P**

**i) Anatomy**

(1) Define the intrinsic firing rates for each pacemaker site
(2) Identify each component of the conduction system, including fasicles.
(3) Identify the pathway of blood through the heart.
(4) Identify the 4 valves and component parts (tendons and muscles).
(5) Describe the parasympathetic innervation of the heart. (what parts does it affect?).
(6) Describe the affect of parasympathetic stimulation on the heart.
(7) Describe the three main coronary arteries and the parts of the heart they perfuse. Include sections of ventricular wall and parts of the conduction system.
(8) Be able to predict the effects of occlusion of any of the three main coronary arteries.
(9) Identify the neurotransmitters involved in both sympathetic and parasympathetic nervous systems as well as effects of stimulating each receptor type.

**ii) Physiology**

(1) Describe the flow of ions during each of the 4 phases of the fast potentials.
(2) Describe the relationship between diastolic filling time and heart rate.
(3) Define the components of blood pressure.
  (a) Describe how each component can be manipulated to effect blood pressure.

**b) Principles of electrocardiography**

i) Locate the positive electrodes for each of the 12 leads
ii) Locate the negative electrode for leads I, II and III.
iii) Locate the position of alternative leads (right sided and posterior)
iv) Describe the relationship between QRS deflection and the positive electrode position
v) Differentiate limb leads from chest leads.
vi) Differentiate bipolar leads from unipolar leads.
vii) Identify the P, Q,R,S and T waves, as well as PR and ST segments.
viii) Locate the J point.
ix) Describe the point at which ST segment elevation or depression should be measured.

x) Describe the significance of ST segment elevation and depression.
xi) Describe the significance of a pathologic Q wave.
xii) Describe the significance of an inverted T wave.
xiii) List the causes of an upright QRS in lead aVR.
xiv) Justify the use of prehospital 12 lead ECGs.
xv) List 4 conditions which could imitate the ECG characteristics of injury.
xvi) Describe the characteristics of left & right bundle branch block.
xvii) Describe the characteristics of anterior and posterior fascicular block.

**c) Cardiac pathophysiology**

i) Describe the pathophysiology of left heart failure.
   (1) List the signs and symptoms of left heart failure, including ECG characteristics.
   (2) Describe the appropriate interventions for a patient in left heart failure.
ii) Describe the pathophysiology of right heart failure.
   (1) List the signs and symptoms of right heart failure, including ECG characteristics.
   (2) Describe the appropriate interventions for a patient with right heart failure.

**d) Drugs**

i) Describe the indications, contraindications, trade name, dosing and general mechanism for the following medications:
   (1) lidocaine
   (2) epinephrine
   (3) atropine
   (4) dopamine
   (5) bretyllium
   (6) adenosine
   (7) aspirin
   (8) procainamide
   (9) morphine
   (10) promethazine
   (11) furosemide
   (12) nitroglycerin
   (13) magnesium sulfate
   (14) amiodarone

- **For each 12 Lead ECG, you will need to provide the following information:**

1. Rate & Underlying Rhythm
2. Axis (by Quadrant is sufficient)
3. Conduction defects (bundle branch block or hemiblock)
4. Ischemia, injury or infarction.
5. Imitators
6. Coronary artery involved

- The rhythm strips will be lead II and will only require identification of rhythm.

- The scenarios will be comprehensive meaning you'll be expected to apply everything you've learned so far in the program. You'll be given a scenario with vital signs, patient presentation and ECG and you'll be asked to justify your diagnosis and describe your treatment plan.