Print Date: 7/30/14

Course Objectives/Course Outline
Spokane Community College

Course Title: **General Cardiology**
Prefix and Course Number: **EMS 212**

Course Learning Outcomes:
By the end of this course, a student should be able to:

- Integrate pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with cardiovascular disease.

Course Outline: Cardiology

I. Describe the incidence, morbidity and mortality of cardiovascular disease. (C-1)
II. Discuss prevention strategies that may reduce the morbidity and mortality of cardiovascular disease. (C-1)
III. Identify the risk factors most predisposing to coronary artery disease. (C-1)
IV. Describe the anatomy of the heart, including the position in the thoracic cavity, layers of the heart, chambers of the heart, and location and function of cardiac valves. (C-1)
V. Identify the major structures of the vascular system. (C-1)
VI. Identify the factors affecting venous return. (C-1)
VII. Identify and define the components of cardiac output. (C-1)
VIII. Identify phases of the cardiac cycle. (C-1)
IX. Identify the arterial blood supply to any given area of the myocardium. (C-1)
X. Compare and contrast the coronary arterial distribution to the major portions of the cardiac conduction system. (C-3)
XI. Identify the structure and course of all divisions and subdivisions of the cardiac conduction system. (C-1)
XII. Identify and describe how the heart's pacemaking control, rate, and rhythm are determined. (C-2)
XIII. Explain the physiological basis of conduction delay in the AV node. (C-3)
XIV. Define the functional properties of cardiac muscle. (C-1)
XV. Define the events comprising electrical potential. (C-1)
XVI. List the most important ions involved in myocardial action potential and their primary function in this process. (C-2)
XVII. Describe the events involved in the steps from excitation to contraction of cardiac muscle fibers. (C-1)
XVIII. Describe the clinical significance of Starling's law. (C-3)
XIX. Identify the structures of the autonomic nervous system (ANS). (C-1)
XX. Identify the effect of the ANS on heart rate, rhythm and contractility. (C-1)
XXI. Define and give examples of positive and negative inotropism, chronotropism and dromotropism. (C-2)
XXII. Discuss the pathophysiology of cardiac disease and injury. (C-1)
XXIII. Identify and describe the details of inspection, auscultation and palpation specific to the cardiovascular system. (C-1)
XXIV. Define pulse deficit, pulsus paradoxus and pulsus alternans. (C-1)
XXV. Identify the normal characteristics of the point of maximal impulse (PMI). (C-1)

XXVI. Identify and define the heart sounds. (C-1)
XXVII. Relate heart sounds to hemodynamic events in the cardiac cycle. (C-2)
XXVIII. Describe the differences between normal and abnormal heart sounds. (C-2)
XXIX. Identify and describe the components of the focused history as it relates to the patient with cardiovascular compromise. (C-1)
XXX. Explain the purpose of ECG monitoring. (C-1)
XXXI. Describe how ECG wave forms are produced. (C-2)
Correlate the electrophysiological and hemodynamic events occurring throughout the entire cardiac cycle with the various ECG wave forms, segments and intervals. (C-2)
XXXII. Identify how heart rates, durations, and amplitudes may be determined from ECG recordings. (C-3)
XXXIII. Relate the cardiac surfaces or areas represented by the ECG leads. (C-2)
XXXIV. Given an ECG, identify the arrhythmia. (C-3)
XXXV. Identify the limitations to the ECG. (C-1)
XXXVI. Differentiate among the primary mechanisms responsible for producing cardiac arrhythmias. (C-1)
XXXVII. Describe a systematic approach to the analysis and interpretation of cardiac arrhythmias. (C-2)
XXXVIII. Describe the arrhythmias originating in the sinus node, the AV junction, the atria, and the ventricles. (C-3)
XXXIX. Describe the arrhythmias originating or sustained in the AV junction. (C-3)
XL. Describe the abnormalities originating within the bundle branch system. (C-3)
XLI. Describe the process of differentiating wide QRS complex tachycardias. (C-3)
XLII. Recognize the pitfalls in the differentiation of wide QRS complex tachycardias. (C-1)
XLIII. Describe the conditions of pulseless electrical activity. (C-3)
XLIV. Describe the phenomena of reentry, aberration and accessory pathways. (C-1)
XLV. Identify the ECG changes characteristically produced by electrolyte imbalances and specify the clinical implications. (C-2)
XLVI. Identify patient situations where ECG rhythm analysis is indicated. (C-1)
XLVII. Recognize the changes on the ECG that may reflect evidence of myocardial ischemia and injury. (C-1)
XLVIII. Recognize the limitations of the ECG in reflecting evidence of myocardial ischemia and injury. (C-1)
XLIX. Correlate abnormal ECG findings with clinical interpretation. (C-2)
L. Identify the major therapeutic objectives in the treatment of the patient with any arrhythmia. (C-1)
LI. Identify the major mechanical, pharmacological and electrical therapeutic interventions. (C-3)
LII. Based on field impressions, identify the need for rapid intervention for the patient in cardiovascular compromise. (C-3)
LIII. Describe the incidence, morbidity and mortality associated with myocardial conduction defects. (C-1)
LIV. Identify the clinical indications for transcutaneous and permanent artificial cardiac pacing. (C-1)
LV. Describe the components and the functions of a transcutaneous pacing system. (C-1)
LVI. Explain what each setting and indicator on a transcutaneous pacing system represents and how the settings may be adjusted. (C-2)

LVII. Describe the techniques of applying a transcutaneous pacing system. (C-1)
LVIII. Describe the characteristics of an implanted pacemaking system. (C-1)
LIX. Describe artifacts that may cause confusion when evaluating the ECG of a patient with a pacemaker. (C- 2)
LX. List the possible complications of pacing. (C-3)
LXI. List the causes and implications of pacemaker failure. (C-2)
LXII. Identify additional hazards that interfere with artificial pacemaker function. (C-1)
LXIII. Recognize the complications of artificial pacemakers as evidenced on ECG. (C-2)
LXIV. Describe the epidemiology, morbidity and mortality, and pathophysiology of angina pectoris. (C-1)
LXV. List and describe the assessment parameters to be evaluated in a patient with angina pectoris. (C-1)
LXVI. Identify what is meant by the OPQRST of chest pain assessment. (C-3)
LXVII. List other clinical conditions that may mimic signs and symptoms of coronary artery disease
and angina pectoris. (C-1)
LXVIII. Identify the ECG findings in patients with angina pectoris. (C-3)
LXIX. Based on the pathophysiology and clinical evaluation of the patient with chest pain, list the
anticipated clinical problems according to their life-threatening potential. (C-3)
LXX. Describe the epidemiology, morbidity and mortality of myocardial infarction. (C-1)
LXXI. List the mechanisms by which an MI may be produced by traumatic and non-traumatic events. (C-2)
LXXII. Identify the primary hemodynamic changes produced in myocardial infarction. (C-1)
LXXIII. List and describe the assessment parameters to be evaluated in a patient with a suspected myocardial infarction. (C-1)
LXXIV. Identify the anticipated clinical presentation of a patient with suspected acute myocardial infarction. (C-3)
LXXV. Differentiate the characteristics of the pain/ discomfort occurring in angina pectoris and acute myocardial infarction. (C-2)
LXXVI. Identify the ECG changes characteristically seen during evolution of an acute myocardial infarction. (C-2)
LXXVII. Identify the most common complications of an acute myocardial infarction. (C-3)
LXXVIII. List the characteristics of a patient eligible for thrombolytic therapy. (C-2)
LXXIX. Describe the "window of opportunity" pertains to reperfusion of a myocardial injury or infarction. (C-3)
LXXX. Based on the pathophysiology and clinical evaluation of the patient with a suspected acute myocardial infarction, list the anticipated clinical problems according to their life-threatening
potential. (C-3)
LXXXI. Specify the measures that may be taken to prevent or minimize complications in the patient
suspected of myocardial infarction. (C-3)
LXXXII. Describe the most commonly used cardiac drugs in terms of therapeutic effect and dosages,
routes of administration, side effects and toxic effects. (C-3)
LXXXIII. Describe the epidemiology, morbidity and mortality of heart failure. (C-1)