COWLEY COLLEGE
& Area Vocational Technical School

COURSE PROCEDURE FOR

ECG INTERPRETATION
ALH5251 3 Credit Hours

Student Level:
This course is open to students on the college level in either the freshman or sophomore year.

Catalog Description:

ALH5251 - ECG INTERPRETATION (3 hrs)
The purpose of this class is to provide students with the basic principles of electrocardiography and ECG interpretation. It gives students a functional knowledge of the principals of ECG interpretation, to include localization of myocardial infarctions. If you have ever wanted to learn how to interpret ECG tracings, this class is for you.

Prerequisites:
None.

Controlling Purpose:
This course is designed to provide students with the basic principles of electrocardiography and ECG interpretation. It gives students a functional knowledge of the principals of ECG interpretation, to include localization of myocardial infarctions. Students will be introduced to the standard limb and 12-lead electrocardiogram.

Learner Outcomes:
Upon completion of the course, the student will develop competencies in interpreting ECG rhythms and localizing myocardial infarction sites.

Units Outcomes and Criterion Based Evaluation Key for Core Content:
The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:

A	=	All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.
B	=	All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.

C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.

D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.

F = Failing, will be computed in GPA and hours attempted.

N = No instruction or training in this area.

UNIT 1: CARDIAC ANATOMY AND ELECTROPHYSIOLOGY

Outcomes: The student will gain an understanding of cardiac anatomy and electrophysiology.

A	B	C	D	F	N	Specific Competencies The student will demonstrate the ability to:
						List the risk factors of cardiovascular disease.
						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.
						Identify the structure and course of all divisions and subdivisions of the cardiac conduction system.
						Identify and describe how the heart's pacemakers control rate and rhythm, and how this is determined.
						Explain the physiological basis of conduction delay in the AV node.
						Define the events comprising the electrical action potential.
						List the most important ions involved in the myocardial action potential and their primary function in this process.
						Describe the events involved in the steps from excitation to contraction of cardiac muscle fibers.
						Identify the structures of the autonomic nervous system (ANS).
						Identify the effect of the ANS on heart rate, rhythm and contractility.

UNIT 2: INTRODUCTION TO ECG INTERPRETATION

Outcomes: The student will study the basics of ECG interpretation and gain a working knowledge of how to systematically diagnose cardiac dysrhythmias.

A	B	C	D	F	N	Specific Competencies The student will demonstrate the ability to:

						Explain the purpose of ECG monitoring.
						Describe how ECG wave forms are produced.
						Use the ECG graph to identify and measure wave forms.
						Measure time and plot out wave forms and complexes.
						Correlate the electrophysiological and hemodynamic events occurring throughout the entire cardiac cycle with the various ECG wave forms, segments and intervals.
						Identify how heart rates, durations, and amplitudes may be determined from ECG recordings.
						Relate the cardiac surfaces or areas represented by the ECG leads.
						Determine heart rate and rhythm.
						Begin a systematic approach to ECG rhythm analysis
						Given an ECG, identify the dysrhythmia.
						Identify the limitations to the ECG.
						Differentiate among the primary mechanisms responsible for producing cardiac dysrhythmias.
						Describe a systematic approach to the analysis and interpretation of cardiac dysrhythmias.
						Identify the major classifications of pediatric cardiac rhythms.
						Identify the ECG changes characteristically produced by electrolyte imbalances and specify the clinical implications.
						Identify patient situations where ECG rhythm analysis is indicated.
UNIT 3: ECG INTERPRETATION Outcomes: Students will correctly interpret limb-lead ECG tracings.						
A	B	C	D	F	N	Specific Competencies The student will demonstrate the ability to:
						Describe the dysrhythmias originating in the sinus node, the AV junction, the atria, and the ventricles.
						Identify the ECG characteristics of the atrial mechanisms.
						Differentiate atrial from junctional ectopics.
						Recognize the change in direction of the P wave.
						Differentiate between sinus and junctional P waves.

						Differentiate between ectopic and escape junctional mechanisms.
						Identify the causes for the junctional mechanisms.
						Describe the dysrhythmias originating or sustained in the AV junction.
						Describe the abnormalities originating within the bundle branch system.
						Describe the process of differentiating wide QRS complex tachycardias.
						Recognize the pitfalls in the differentiation of wide QRS complex tachycardias.
						Differentiate aberrantly conducted supraventricular tachycardia from ventricular tachycardia.
						Describe the conditions of pulseless electrical activity.
						Describe the phenomena of reentry, aberration and accessory pathways.
						Describe the incidence, morbidity and mortality associated with myocardial conduction defects.
						Identify pacemaker rhythms.
						List the causes and implications of pacemaker failure.
						Identify additional hazards that interfere with artificial pacemaker function.
						Recognize the complications of artificial pacemakers as evidenced on ECG.
						Given ECG tracings, correctly diagnose the rhythm.

Projects Required:
Projects may vary according to the instructor.

Textbook:
Contact Bookstore for current textbook.

Materials/Equipment Required:
Computers and printers.
Internet.
ECG calipers

Attendance Policy:
Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:
The grading policy will be outlined by the instructor in the course syllabus.

Maximum class size:

Based on classroom occupancy

Course Time Frame:
The U.S. Department of Education, Higher Learning Commission and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:

402.00 Academic Code of Conduct
263.00 Student Appeal of Course Grades
403.00 Student Code of Conduct

Disability Services Program:
Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability which may impact work in this class and which requires accommodations, contact the Disability Services Coordinator.