

AHS 60A: CARDIOLOGY FOR ALLIED HEALTH

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Units:	2
Hours:	2 lecture per week (24 total per quarter)
Advisory:	Not open to students with credit in RSPT 60A.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Student Learning Outcomes

- Discuss the electrophysiology of the heart and relate it to the electrocardiogram.
- Identify normal and abnormal readings from pulmonary artery catheters, central venous pressure lines and arterial lines.

Description

Electrocardiogram and rhythm recognition. Invasive and non-invasive hemodynamic monitoring; cardiac diagnostic and therapeutic procedures; and fluid balance.

Course Objectives

The student will be able to:

1. Identify and describe anatomic and physiologic features of the heart
2. Identify the components of the electrocardiogram
3. Identify graph paper parameters
4. Describe the electrocardiogram: normal
5. Describe the electrocardiogram: abnormal
6. Identify hemodynamic monitoring
7. Identify measured hemodynamic parameters
8. Understand cardiac output monitoring

Course Content

1. The heart
 - a. Anatomy of the heart
 - b. Anatomy of the conduction system
 - c. Normal values for SA node, junctional and ventricle pacing
 - d. Electrophysiology of the heart
2. The electrocardiogram
 - a. Multichannel vs. single channel ECG machine
 - b. The 12 lead ECG
 - c. The 3 limb leads and the 3 augmented limb leads
 - d. The precordial leads
 - e. Modified chest and limb leads

- f. Lead placement
 - g. Lead correlation to ECG strip
3. Graph paper parameters
 - a. Paper speed
 - b. Small and large box parameters
 - c. Vertical parameter, voltage
 - d. Horizontal parameter, time
 4. The electrocardiogram: normal
 - a. The five waves (P, Q, R, S, T)
 - b. P-R interval
 - c. QRS complex
 - d. ST segment
 - e. Assessment of rhythm
 - f. Calculating cardiac rate
 - g. How to read an ECGs
 - h. Artifact
 5. The electrocardiogram: abnormal
 - a. Causes of abnormal patterns
 - b. Sinus bradycardia
 - c. Sinus tachycardia
 - d. Ventricular asystole and agonal rhythms
 - e. Premature ventricular contraction
 - f. Premature atrial contraction
 - g. Atrial flutter and fibrillation
 - h. Atrioventricular block
 - i. First-degree AV block
 - ii. Second-degree AV block
 - iii. Type 1 (Wenckebach)
 - iv. Type 2
 - v. Third-degree AV block
 - i. Junctional complexes
 - i. Premature junctional
 - ii. Junctional escape complexes and rhythms
 - j. Tachycardia
 - i. Paroxysmal supraventricular
 - ii. Wide-complex tachycardia of uncertain type
 - iii. Ventricular tachycardia
 - k. Axis deviation
 - i. ST segment elevation and depression
 - m. T wave inversion
 - n. Q wave enlargement
 - o. P wave abnormalities
 - p. U waves
 - q. Abnormalities associated with bundle branch block
 6. Hemodynamic monitoring
 - a. Purpose and indications for use
 - b. PAC vs. CVP vs. arterial line
 - c. Normal wave forms
 - d. Insertion techniques
 - e. Side effects and hazards
 - f. Troubleshooting lines
 7. Measured hemodynamic parameters

- a. Heart rate
 - i. Systolic blood pressure
 - ii. Diastolic blood pressure
 - iii. Systolic pulmonary artery pressure
 - iv. Diastolic pulmonary artery pressure
 - v. Pulmonary artery occlusion pressure
 - vi. Central venous pressure
 - vii. Cardiac output
 - viii. Ejection fraction
 - ix. Body surface area
- b. Calculated hemodynamic parameters
 - i. Mean arterial pressure
 - ii. Mean pulmonary artery pressure
 - iii. Cardiac index
 - iv. Stroke volume
 - v. Systemic vascular resistance
 - vi. Pulmonary vascular resistance
 - vii. Coronary perfusion pressure
 - viii. Cerebral perfusion pressure
- c. Abnormal hemodynamic parameters
 - i. Abnormal arterial pressure waveforms and values
 - ii. Abnormal CVP waveforms and values
 - iii. Abnormal PAC waveforms and values
 - iv. Pathophysiology causing abnormal readings
 - v. Relating patient condition and pathophysiology to abnormal readings
 - vi. Effects of mechanical ventilation
 - vii. Patient treatment options
- d. Cardiovascular diagnostic tests
 - i. Cardiac catheterization
 - ii. Echocardiography and vascular ultrasound
 - iii. Transthoracic electrical bioimpedance
 - iv. Radionuclide cardiac imaging
 - v. Lipid testing
 - vi. Holter monitor
 - vii. Cardiac event detection
 - viii. Pacemaker monitoring
 - ix. Heart sounds
 - x. Stress testing
 - xi. Thallium stress testing
 - xii. Doppler testing
- e. Cardiac therapeutic procedures
 - i. Balloon angioplasty
 - ii. Intracoronary stent
 - iii. Coronary artery bypass graft
 - iv. Intraaortic balloon pump
 - v. Implanted defibrillators
 - vi. Pacemakers
 - vii. Heart transplantation
 - viii. New treatments
- f. Effects of aging on the cardiovascular system
- g. Fluid balance

- i. Fluid intake and output
- ii. Dehydration
- iii. Fluid challenge
- iv. Fluid overload

8. Cardiac output monitoring
 - a. Fick principle and formula for measuring cardiac output
 - b. Thermal dilution measurement of cardiac output
 - c. NICO

Lab Content

Not applicable.

Special Facilities and/or Equipment

1. When taught on campus: classroom with computer and internet access, document camera and DVD/CD player. For online work, must have access to a computer with internet.
2. When taught via Foothill Global Access: must have access to a computer with internet.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Quizzes
Midterm
Final examination

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Demonstration

Representative Text(s) and Other Materials

Kacmarek, Stoller, and Heuer. [Egan's Fundamentals of Respiratory Care, 12th ed.](#). 2019.

Beachey. [Respiratory Care Anatomy and Physiology, 4th ed.](#). 2016.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Reading assignments related to course content. Approximately 30 pages of assigned reading per week.

Discipline(s)

Diagnostic Medical Technology or Radiological Technology or Respiratory Technologies