

AHS 60A: CARDIOLOGY FOR ALLIED HEALTH

Foothill College Course Outline of Record

| Heading | Value |
|------------------------------------|---|
| 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:

- Identify and describe anatomic and physiologic features of the heart
- Identify the components of the electrocardiogram
- Identify Graph paper parameters
- Describe the electrocardiogram: normal
- Describe the electrocardiogram: abnormal
- Identify Hemodynamic monitoring
- Identify Measured hemodynamic parameters
- Cardiac output monitoring

Course Content

- The heart
 - Anatomy of the heart
 - Anatomy of the conduction system
 - Normal values for SA node, junctional and ventricle pacing
 - Electrophysiology of the heart
- The electrocardiogram
 - Multichannel vs single channel EKG machine
 - The 12 lead EKG
 - The 3 limb leads and the 3 augmented limb leads
 - The precordial leads
 - Modified chest and limb leads
 - Lead placement
 - Lead correlation to EKG strip
- Graph paper parameters
 - Paper speed
 - Small and large box parameters

- Vertical parameter, voltage
 - Horizontal parameter, time
- The electrocardiogram: normal
 - The five waves (P, Q, R, S, T)
 - P-R interval
 - QRS complex
 - ST segment
 - Assessment of rhythm
 - Calculating cardiac rate
 - How to read an EKGs
 - Artifact
 - The electrocardiogram: abnormal
 - Causes of abnormal patterns
 - Sinus bradycardia
 - Sinus tachycardia
 - Ventricular asystole and agonal rhythms
 - Premature ventricular contraction
 - Premature atrial contraction
 - Atrial flutter and fibrillation
 - Atrioventricular Block
 - First-degree AV block
 - Second-degree AV block
 - Type 1 (Wenckebach)
 - Type 2
 - Third-degree AV block
 - Junctional Complexes
 - Premature junctional
 - Junctional escape complexes and rhythms
 - Tachycardia
 - Paroxysmal supraventricular
 - Wide-complex tachycardia of uncertain type
 - Ventricular tachycardia
 - Axis deviation
 - ST segment elevation and depression
 - T wave inversion
 - Q wave enlargement
 - P wave abnormalities
 - U waves
 - Abnormalities associated with bundle branch block
 - Hemodynamic monitoring
 - Purpose and indications for use
 - PAC vs CVP vs arterial line
 - Normal wave forms
 - Insertion techniques
 - Side effects and hazards
 - Troubleshooting lines
 - Measured hemodynamic parameters
 - Heart rate
 - Systolic blood pressure
 - Diastolic blood pressure
 - Systolic pulmonary artery pressure
 - Diastolic pulmonary artery pressure
 - Pulmonary artery occlusion pressure
 - Central venous pressure
 - Cardiac output
 - Ejection fraction
 - Body surface area
 - Calculated hemodynamic parameters
 - Mean arterial pressure
 - Mean pulmonary artery pressure
 - Cardiac index
 - Stroke volume

- e. Systemic vascular resistance
- f. Pulmonary vascular resistance
- g. Coronary perfusion pressure
- h. Cerebral perfusion pressure
- 3. Abnormal hemodynamic parameters
 - a. Abnormal arterial pressure waveforms and values
 - b. Abnormal CVP waveforms and values
 - c. Abnormal PAC waveforms and values
 - d. Pathophysiology causing abnormal readings
 - e. Relating patient condition and pathophysiology to abnormal readings
 - f. Effects of mechanical ventilation
 - g. Patient treatment options
- 4. Cardiovascular diagnostic tests
 - a. Cardiac catheterization
 - b. Echocardiography and vascular ultrasound
 - c. Transthoracic electrical bioimpedance
 - d. Radionuclide cardiac imaging
 - e. Lipid testing
 - f. Holter monitor
 - g. Cardiac event detection
 - h. Pacemaker monitoring
 - i. Heart sounds
 - j. Stress testing
 - k. Thallium stress testing
 - l. Doppler testing
- 5. Cardiac therapeutic procedures
 - a. Balloon angioplasty
 - b. Intracoronary stent
 - c. Coronary artery bypass graft
 - d. Intraaortic balloon pump
 - e. Implanted defibrillators
 - f. Pacemakers
 - g. Heart transplantation
 - h. New treatments
- 6. Effects of aging on the cardiovascular system
- 7. Fluid balance
 - a. Fluid intake and output
 - b. Dehydration
 - c. Fluid challenge
 - d. Fluid overload
- H. Cardiac output monitoring
 - 1. Fick principle and formula for measuring cardiac output
 - 2. Thermal dilution measurement of cardiac output
 - 3. NICO

Lab Content

Not applicable.

Special Facilities and/or Equipment

None.

Method(s) of Evaluation

Methods of evaluation may include:

- A. Quizzes
- B. Midterm
- C. Final Examination

Method(s) of Instruction

Lecture, Demonstration.

Representative Text(s) and Other Materials

Klabunde. Cardiovascular Physiology Concepts. 2nd ed. Lippincott Williams & Wilkins, 2012. ISBN: 978-1451113846
Kacmarek, Stoller, and Heuer. Egan's Fundamentals of Respiratory Care. 10th ed. St Louis: Mosby-Year Book, Inc., 2013. ISBN: 978-0323-08203-7

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

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

Discipline(s)

Diagnostic Medical Technology, Radiological Technology, Respiratory Technologies