Outline of Instruction

**Division:** Health Sciences  
**Area:** Respiratory Therapy

**Course Number:** RTH 212  
**Course Name:** Advanced Cardiopulmonary Anatomy & Physiology

**Prerequisite:** RTH 120 - Respiratory Care Techniques III

**Corequisite:**

**Hours Required:**  
**Class:** 60  
**Lab:** 0  
**Credits:** 4

**Course Description/Purpose**

This course advances the student's knowledge of cardiopulmonary physiology. The cardiac sections cover gross and histologic cardiovascular anatomy, neural/endocrinological control of cardiac function, hemodynamics, microcirculatory disorders, and a review of common cardiac arrhythmias. The pulmonary section covers bronchopulmonary anatomy, gas diffusion, blood flow, ventilation/perfusion relationships, gas transport, mechanics and control of ventilation, and lung responses to changing environments and conditions.

**Major Units**

1. Cardiovascular Anatomy/Physiology  
2. Hemodynamic Assessment & Cardiovascular Pathologies I  
3. Cardiovascular Pathologies II & Renal Physiology  
4. Pulmonary Anatomy  
5. Pulmonary Ventilation  
6. Pulmonary Perfusion & Gas Exchange I  
7. Gas Exchange II, Blood Acid-Base Physiology, & Control of Breathing

**Educational/Course Outcomes  RTH 212**

Student learning will be assessed by a variety of methods, including, but not limited to, quizzes and tests, homework assignments, and instructor observations.

**Cognitive**  
Each student will be expected to:
- describe the anatomic structures of the cardiac and renal system and describe the influence of these systems on respiratory function.
- state normal values for common clinical hemodynamic parameters.
- identify common cardiovascular disorders using assessment of hemodynamic data.
- identify the lymphatic and neural components of the pulmonary system.
- compare and contrast pulmonary to systemic vasculature.
- describe ventilation in terms of dynamic and static properties and normal distribution of ventilation.
- outline the components of gas exchange between the intra-alveolar and intracellular environments.
- identify and label blood acid-base disorders.
- describe neural and humoral components of respiratory regulation.

**Performance**  
Each student will be expected to:
- use mathematical formula to derive hemodynamic values.
- apply mathematical formula describing the inter-relationships between blood pH, PaCO$_2$, and HCO$_3^-$ values.
- apply mathematical formula relating normal and mechanical ventilation to acid-base conditions.

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