RESP 1193 - Cardiopulmonary Anatomy and Physiology (version 201512L)

Course Title	Course Development	Learning Support
Cardiopulmonary Anatomy and Physiology	Standard	No

Course Description

Provides an in-depth study of cardiac and pulmonary anatomy and physiology, and the diagnostic procedures commonly used in the hospital to evaluate these systems. Emphasizes the heart-lung relationship and clinical applications of these phenomena in the cardiopulmonary system. Topics include: respiratory function; ventilatory mechanisms; gas transport; laboratory analysis; natural and chemical regulation of breathing; circulation, blood flow and pressure, and cardiac function; renal physiology and related topics.

Pre-requisites

Pre-requisites Prerequisites are Program Admission, BIOL 2114, BIOL 2114L and completion of either MATH 1101 or MATH 1111.

Program Admission
BIOL 2114 - Anatomy and Physiology II (201003L)
BIOL 2114L - Anatomy and Physiology Lab II (201003L)
MATH 1101 - Mathematical Modeling (201003L)
MATH 1111 - College Algebra (201003L)

Regstr. Co-requisites

Regstr. Co-requisites: None

True Co-requisites

True Co-requisites: None

Course Length

	Lecture Contact Time	Regular Lab Type	Reg. Lab Contact Time	Other Lab Type	Oth. Lab Contact Time	Total Contact Hrs
Contact Hours Per Week	**2 hrs**	**Lab**	**4 hrs**	**N/A**	**0 hrs**	**6 hrs**
Contact Min/Hrs Per Semester	**1500 min**		**3000 min**		**0 min**	**90 hrs**

	Lecture Credit Hours	Lab Credit Hours	Total Credit hours	WLU
Semester Credit Hours	**2**	**2**	**4**	**142.5**

Competencies & Outcomes

Order Description

1 **Respiratory Function**

Order	Description	Learning Domain	Level of Learning
1	Describe the anatomy of the respiratory system.	Cognitive	Knowledge
2	Describe internal and external respiration.	Cognitive	Knowledge
3	Explain the oxygenation process including inspired and alveolar oxygen levels, ventilation and perfusion matching, and diffusion.	Cognitive	Comprehension
4	Describe non-respiratory functions of the lung.	Cognitive	Knowledge

2 **Ventilation Mechanisms**

Order	Description	Learning Domain	Level of Learning
1	Define the terms used to describe ventilation.	Cognitive	Knowledge
2	Describe the dynamic characteristics of the lung.	Cognitive	Knowledge
3	Explain the relationship among compliance, elastance, and surface tension.	Cognitive	Comprehension
4	Explain basic pulmonary function including lung volumes and capacities.	Cognitive	Comprehension
5	Contrast pulmonary function findings associated with restrictive and obstructive abnormalities.	Cognitive	Analysis
6	Overview simple tests of lung mechanics.	Cognitive	Knowledge
7	Describe briefly other pulmonary function tests.	Cognitive	Knowledge

3 **Gas Transport**

Order	Description	Learning Domain	Level of Learning
1	Explain factors which determine oxygen transport.	Cognitive	Comprehension
2	Describe factors that impact oxygen delivery to the tissues.	Cognitive	Knowledge
3	List common causes of hypoxia.	Cognitive	Knowledge
4	Perform calculations to determine shunt.	Cognitive	Synthesis
5	Explain carbon dioxide removal including tissue production and carbon dioxide transport.	Cognitive	Comprehension
6	Explain the relationship among ventilation, carbon dioxide production, and arterial PaCO2.	Cognitive	Comprehension
7	Describe oxygen consumption and carbon dioxide production.	Cognitive	Knowledge

4 **Laboratory Analysis**

Order	Description	Learning Domain	Level of Learning
1	Describe acid-base chemistry.	Cognitive	Knowledge
2	Explain factors associated with metabolic acid-base balance.	Cognitive	Comprehension
3	Explain factors associated with respiratory acid-base balance.	Cognitive	Comprehension
4	Interpret arterial blood gases.	Cognitive	Comprehension
5	Explain quality control as used in the blood gas laboratory.	Cognitive	Comprehension
6	Explain blood sampling techniques and sampling analysis.	Cognitive	Comprehension
7	Describe routine hematology, blood chemistry, and electrolytes.	Cognitive	Knowledge

5 **Natural and Chemical Regulation of Breathing**

Order	Description	Learning	Level of

		Domain	Learning
1	Describe control and peripheral ventilatory control mechanisms.	Cognitive	Knowledge

6 **Circulation, Blood Flow and Pressure, and Cardiac Function**

Order	Description	Learning Domain	Level of Learning
1	Describe the basic anatomy of the circulatory system.	Cognitive	Knowledge
2	Contrast pulmonary and systemic vascular systems.	Cognitive	Analysis
3	Describe the distribution of pulmonary blood flow.	Cognitive	Knowledge
4	Outline common abnormalities.	Cognitive	Analysis
5	Review the cardiac cycle and the impact on blood pressure.	Cognitive	Comprehension
6	List normal values for hemodynamic measurements.	Cognitive	Knowledge
7	Describe common abnormalities.	Cognitive	Knowledge
8	Describe the conduction system of the heart.	Cognitive	Knowledge
9	Recognize normal and abnormal EKG findings.	Cognitive	Analysis

7 **Renal Physiology and Related Topics**

Order	Description	Learning Domain	Level of Learning
1	Describe renal function.	Cognitive	Knowledge
2	Overview of fetal lung development and circulation.	Cognitive	Knowledge
3	The effects of altitude on respiratory function.	Cognitive	Knowledge
4	The effects of aging on respiratory function.	Cognitive	Knowledge