

Course Objectives/Course Outline
Spokane Community College

Course Title: Interpretation of Arterial Blood Gases

Prefix and Course Number: RT 256

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Understand the principles of arterial blood gas interpretation.
- Demonstrate arterial blood gases collection
- Describe proper sampling and handling during blood gas collection and analysis
- Describe the relationship between PaCO₂ and ventilation
- Interpret acid-base status
- Interpret oxygenation, V/Q mismatching and shunt
- Describe the regulation of acids, bases and electrolytes
- Perform differential diagnosis of acid-base disturbances
- Describe the operation of blood gas analyzers and co-oximeters
- Describe the operation pulse oximetry and capnography
- Discuss the purpose of quality control and demonstrate correct documentation
- Demonstrate arterial blood gases collection
- Discuss sampling and handling errors during blood gas collection and analysis
- Demonstrate and apply anion gap, Winter's Formula and the bicarbonate gap
- Perform a differential diagnosis of acid-base disturbances

Course Outline:

- I. Blood gas instrumentation
 - A. Values measured
 - B. Co-Oximetry
- II. Blood gas collection
 - A. Sites for arterial puncture
 - B. Drawing from an arterial line
 - C. Sample handling
- III. PaCO₂ and alveolar ventilation
 - A. PaCO₂ equation
 - B. Relationship of PaCO₂ and pH
- IV. Relationship of PaO₂ and alveolar gas
- V. Oxygen content
- VI. Oxygen saturation, hemoglobin and the oxyhemoglobin dissociation curve
- VII. pH, PaCO₂, electrolytes and acid-base status
- VIII. Primary and mixed acid-base disorders
- IX. Interpretation of metabolic acidosis
- X. Blood gas instrumentation construction, calibration and quality control