

**Course Objectives/Course Outline**  
**Spokane Community College**

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**Course Title: Physical Science for Respiratory Care**

**Prefix and Course Number: RT 248**

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**Course Learning Outcomes:**

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

- Describe the structure and properties of matter
- State the gas laws and their application to respiratory care
- Describe the three laws of thermodynamics
- Apply the principles of fluid mechanics to problems solving in physiology and respiratory care
- Discuss the components in an electrical circuit
- Apply Ohm's law in the analysis of an electrical circuit
- Relate Ohm's law to fluid mechanics (flow, pressure and resistance)
- Explain the hazards associated with micro shock and macro shock in the clinical environment
- Describe how transducers work and their application in respiratory care
- Apply the principles learned in this class to physiological monitoring

**Course Outline:**

- I. States of mater
  - A. Characteristics of solids
  - B. Characteristics of liquids
  - C. Characteristics of gases
- II. Gas laws
  - A. Boyle's law
  - B. Charles' law
  - C. Henry's law
  - D. Combined gas law
  - E. Dalton's law
- III. Thermodynamics
  - A. Newton's first law
  - B. Newton's second law
  - C. Newton's third law
- IV. Fluid mechanics
  - A. Relationship of density, depth and pressure
  - B. Viscosity of fluids
  - C. Continuity equation
  - D. Bernoulli's theorem
  - E. Poiseulle's law
  - F. Reynold's number, laminar and turbulent flow
  - G. Moody diagram
- V. Electrical theory

- A. Components
  - 1. Battery
  - 2. Resistor
  - 3. Capacitor
- B. Ohm's law
- VI. Electrical safety
  - A. Macro shock
  - B. Micro shock
  - C. Current leakage
  - D. Electrical safety testing
- VII. Transducers
  - A. Temperature monitoring
  - B. Pressure monitoring
  - C. Flow measurement