

Course Objectives/Course Outline
Spokane Community College

Course Title: Fundamentals of Spirometry

Prefix and Course Number: RT 254

Course Learning Outcomes:

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

- Describe the indications for spirometry
- Describe the equipment used for spirometry
- Describe how the equipment is calibrated
- Measure and calculate the component parts of a spirogram
- Describe forced spirometry and calculate:
 - Forced vital capacity (FVC)
 - Forced expired volume in the first second (FEV1)
 - Calculate the FVC/FEV1
 - Forced Expiratory Flow between 200 – 1200 mL (FEF200-1200)
 - Forced Expiratory Flow between 25 – 75% (FEF25-75%)
- From memory, state the ATS standards that apply to:
 - Non-forced spirometry
 - Forced spirometry
 - Maximum voluntary ventilation (MVV)
- Explain the significance of the MVV test and how it is measured
- Describe what normals are and how they are used
- Describe the indications for measuring flow-volume loops
- Identify and calculate the components of a flow-volume loop
- Given a flow-volume loop evaluate it for:
 - Artifact
 - Back extrapolation
 - Variable intrathoracic obstruction
 - Variable extrathoracic obstruction
 - Fixed obstruction
- Correctly interpret a flow-volume loop and volume-time curve for forced spirometry

Course Outline:

- I. Indications for spirometry
 - A. American thoracic society (ATS) indications
- II. Spirometry equipment
 - A. Primary flow measuring devices
 - B. Primary volume measuring devices
 - C. Calibration of spirometers (ATS standards)
- III. Non-forced spirometry
 - A. Static lung volumes
- IV. Forced Spirometry

- A. FVC
- B. FEV1
- C. FEV1/FVC
- D. FEF200-1200
- E. FEF25-75%
- V. Maximal voluntary ventilation (MVV)
- VI. Predicted normal equations
 - A. Development
 - B. Selection
- VII. Flow-Volume loop
 - A. Anatomy
 - B. Characteristics in disease
 - C. Technical quality
 - 1. Back extrapolation
 - 2. Artifact
 - 3. Patient effort
 - 4. Tongue/denture obstruction
 - D. Airflow obstruction
 - 1. Variable extra-thoracic
 - 2. Variable intra-thoracic
 - 3. Fixed
- VIII. Spirometry interpretation