

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: RTH 223

Credits: 2

Course Title: Cardiopulmonary Science III

Course Description: Continues the exploration of topics discussed in RTH 121 and RTH 222.
Prerequisites: Successful completion of all curriculum courses offered during the first three semesters of the AAS degree in Respiratory Therapy. Lecture 2 hours per week.

General Course Purpose: Patients treated in an intensive care environment are like to have derangements in the cardioavascular system, pulmonary system or both. Students must be able to evaluate on multiple levels the interplay between the cardiac and pulmonary systems and to apply mechanical ventilatory support in a safe and efficacious fashion.

Course Prerequisites and Co-requisites:

Prerequisites: Successful completion of all curriculum courses offered during the first three semesters of the AAS degree in Respiratory Therapy

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Describe the function of the cardiovascular system using both non-invasive and invasive methods of monitoring;
- b. Identify mainstream modes of mechanical ventilatory support. Understand basic concepts surrounding the application of mechanical ventilation to meet physician/practitioner orders and to apply such therapies in a safe and efficacious manner;
- c. To differentiate between conventional and nonconventional modes of ventilatory support. Be able to understand the application of both high frequency jet and oscillatory ventilation in the treatment of patients with respiratory failure; and
- d. Apply adjunctive therapies safely, including tracheal gas insufflation, prone positioning, inhaled nitric oxide and permissive hypercapnea. Understand the concepts of "open lung" ventilation and how following these established guidelines will help improve the outcomes of ventilated patients who have acute respiratory distress syndrome.

Major Topics to Be Included:

- a. Anatomy and physiology review of heart and lungs
- b. Invasive hemodynamic monitoring
- c. Mechanical ventilation
- d. Tracheal gas insufflation
- e. Prone positioning during mechanical ventilation
- f. Invasive and non-invasive monitoring techniques in the critical care environment
- g. Inhaled nitric oxide
- h. Permissive hypercapnia
- i. "Open lung" ventilation
- j. High frequency jet ventilation
- k. Oscillatory ventilation

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