J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: RTH 223 **Credits: 2**

Course Title: Cardiopulmonary Science III

Course Description (including lecture hours, lab hours, total contacts:

Continues the exploration of topics discussed in RTH 121 and 222. RTH 223 explores the intricate relationships between the cardiac and pulmonary systems. Introduces cardiac anatomy and physiology, including invasive hemodynamic monitoring and the incorporation of multiple facets of mechanical ventilation, currently applied modes of ventilation, adjunctive therapies, such as tracheal gas insufflation, and prone positioning with advanced techniques of ventilatory support. The subject areas in this course reflect the entry-level and advanced practice matrices and provide students the ability to integrate montoring of the cardiovascular system with application of both conventional and non-conventional methods of ventilatory support. Prerequisite: successful completion of required coursework in the first three semesters of the Respiratory Therapy degree program. Lecture 2 hours per week.

General Course Purpose:

Patients treated in an intensive care environment are like to have derangements in the cardiaovacular 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/Corequisites:

Successful completion of required coursework in the first three semesters of the Respiratory Therapy degree program.

Course Objectives (Each item should complete the following sentence.)

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.
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

Anatomy and Physiology review of heart and lungs
Invasive hemodynamic monitoring
Mechanical Ventilation
Tracheal Gas Insufflation
Prone Positioning during mechanical ventilation
Invasive and non-invasive monitoring techniques in the critical care environment
Inhaled nitric oxide
Permissive hypercapnia
“Open Lung” ventilation
High Frequency Jet Ventilation
Oscillatory ventilation

Effective Date of Course Content Summary (Month, Date Year): October 22, 2008