

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

RT 110 - Fundamentals of Respiratory Care

7 Unit(s)

Prerequisite(s): Admission to the RT Program

Recommended Prep: NONE

Transfer Status: NT

102 hours Lecture

51 hours Lab

This course is designed to introduce the student to basic atmospheric physics, cardiopulmonary anatomy and physiology, blood gas chemistry, and ventilatory dynamics. The student will be introduced to basic concepts of health and disease with emphasis on cardiopulmonary disorders, fundamentals of problem solving techniques and safe handling of medical gases and equipment. Selected respiratory care and diagnostic equipment, techniques and problems will be introduced in the laboratory. Graded only.

II. OBJECTIVES

Upon successful completion of this course, the student will be able to:

- A. Identify the composition and behavior of the atmosphere as it relates to the physiology of human respiration.
- B. Identify the structures and functions of the human cardiopulmonary system.
- C. Demonstrate skills in basic clinical therapeutic and diagnostic problem solving.
- D. Demonstrate the proper use of medical equipment and devices routinely used in the diagnosis and care of patients with cardiopulmonary disease.
- E. Identify the major concepts related to growth and development of the cardiopulmonary system from conception through old age.
- F. Identify the basic signs and symptoms of cardiopulmonary disease.

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

Lecture	
<u>Topics</u>	<u>Hours</u>
1. Atmospheric Physics	12.00
2. Anatomy of the Respiratory System	16.00
3. Ventilation	6.00
4. Diffusion of Pulmonary Gases	6.00
5. Pulmonary Function Measurement	12.00
6. Circulatory System	10.00
7. O ₂ Transport and Acid-Base Balance	10.00
8. Ventilation-Perfusion Relationships	4.00
9. Control of Ventilation	6.00
10. Cardiopulmonary Physiology of the Fetus and Newborn	10.00
11. Renal Failure and its Effects on the Cardiopulmonary System	4.00
12. Aging and its Effects on the Cardiopulmonary System	6.00
Total Hours	102.00

<u>Topics</u>	<u>Hours</u>
1. Asepsis and Decontamination	3.00
2. Medical Gases and Oxygen Supply Systems	9.00
3. Medical Gas Analysis	3.00
4. Medical Gas Therapy and Delivery Devices	9.00
5. Spirometry and Pulmonary Function Measurement	6.00
6. Humidity Therapy	3.00
7. Aerosol Therapy	12.00
8. Environmental Therapy	3.00
9. Incentive Spirometry	3.00
Total Hours	51.00

IV. **METHODS OF INSTRUCTION**

- A. Lecture
- B. Instructor Demonstrations
- C. Group Discussions
- D. Guest Speakers
- E. Collaborative Group Work
- F. Class Activities
- G. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- H. Laboratory Experiments

V. **METHODS OF EVALUATION**

- A. Exams/Tests
- B. Quizzes
- C. Homework
- D. Class participation
- E. Lab Projects
- F. Written Assignments
- G. Written Examinations
- H. Mid-term and final examinations

VI. **EXAMPLES OF ASSIGNMENTS**

- A. Reading Assignments
 - 1. Read the assigned, required readings for Atmospheric Physics. Be prepared to discuss and solve Gas Law problems.
 - 2. Read the assigned, required reading for Anatomy of the Respiratory System. Be prepared to contribute to classroom discussion on the topic.
- B. Writing Assignments
 - 1. After completing the assigned reading and classroom presentations on Anatomy of the Respiratory System, answer each item listed under the Anatomy of the Respiratory System Learning Objectives.
 - 2. After completing the assigned reading and classroom presentations on Atmospheric Physics, answer each item listed under the Atmospheric Physics Learning Objectives.
- C. Out-of-Class Assignments
 - 1. Review the handouts on the Alveolar Air equation, Oxygen Content equation, $\dot{V}O_2$, and

- D02 and solve the assigned problems for each equation.
2. Review the handouts on the 4 Gas Laws discussed in class and solve the assigned Gas Law problems.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

- A. Cairo, J.M., . Pilbeam, S. Mosby's Respiratory Care Equipment. 8th Edition. Mosby, 2010.
- B. Des Jardins, T. Cardiopulmonary Anatomy & Physiology: The Essentials for Respiratory Care. 6th Edition. Cengage Learning, 2012.
- C. Scanlan CL, Spearman CB, Sheldon, RL. Sheldon, RL. Egan's Fundamentals of Respiratory Care. 10th Edition. Mosby, 2012.

Materials Other Than Textbooks:

- A. American Association for Respiratory Care, Clinical Practice Guidelines, current editions on Web
- B. Selected references from medical periodicals

Created/Revised by: Donna Davis

Date: 12/02/2013