RESP 120 - Respiratory Care Theory I Course Outline

Approval Date: 12/19/2021
Effective Date: 08/12/2022

SECTION A

Unique ID Number	CCC000310650
Discipline(s)	Respiratory Technologies
Division	Health Occupations
Subject Area	Respiratory Care
Subject Code	RESP
Course Number	120
Course Title	Respiratory Care Theory I
TOP Code/SAM Code	1210.00 - Respiratory Care Therapy/Therapist* / C - Occupational
Rationale for adding this course to the curriculum	Add language to clarify prerequisite math course
Units	6
Cross List	*N/A*
Typical Course Weeks	18

Total Instructional Hours

	Contact Hours
Lecture	108.00
Lab	0.00
Activity	0.00
Work Experience	0.00
Outside of Class Hours	216.00

Total Contact Hours	108
Total Student Hours	324
Open Entry/Open Exit	No
Maximum Enrollment	30
Grading Option	Letter Grade Only
Distance Education Mode of Instruction	Hybrid

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description Students will receive instruction in the theoretical foundations of respiratory care. The course will cover the anatomy and physiology of the respiratory system, the mechanics of breathing, and acid-base balance.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s)

- CHEM 110 with a minimum grade of C or better
- BIOL 218 with a minimum grade of C or better
- BIOL 219 with a minimum grade of C or better
- BIOL 220 with a minimum grade of C or better
- MATH 232 with a minimum grade of C or better or
- MATH 106 with a minimum grade of C or better or
- Other transferable math with a minimum grade of C

1b. Corequisite(s): *None*

1c. Recommended

- HEOC 171
- PHYS 110

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

A. Analyze and describe cardiopulmonary structures, lung mechanics and gas exchange.

2. Course Objectives: Upon completion of this course, the student will be able to:

A. Describe the gas exchange unit of the lung.
B. Discuss the indications and hazards of oxygen therapy.
C. Calculate blood oxygen content given the necessary data.
D. Explain how oxygen and carbon dioxide are transported in the blood.
E. Describe how pulmonary diseases affect lung volumes and capacities.
F. Perform and interpret basic pulmonary function tests.
G. Explain the ways that oxygen and carbon dioxide diffuse across the alveolar-capillary membrane.
H. Perform calculations using Boyle's, Charles's, and Gay-Lussac's laws.
I. Discuss the pressure changes that occur during inspiration and expiration.
J. Analyze arterial blood gas values, including oxygenation and acid-base status.
K. Evaluate respiratory and metabolic acid-base disturbances
L.

3. Course Content

A. Anatomy of the Respiratory System
    a. Common causes of respiratory system derangement
    b. Implications for respiratory care techniques

B. Oxygen Therapy
    a. Indications for oxygen therapy
    b. Hazards of oxygen therapy
C. Oxygen Transport
    a. Oxygen dissolved in plasma
    b. Oxygen bound to hemoglobin
    c. Oxy-hemoglobin dissociation curve
    d. Oxygen content calculation
D. Carbon Dioxide Transport
    a. Six ways in which carbon dioxide is carried in the blood
    b. Bohr and Haldane effects
E. Lung Volumes and Capacities
    a. Four lung volumes and four lung capacities
    b. Pulmonary diseases' affects on lung volumes and capacities
F. Introduction to Pulmonary Function Testing
    a. Basic pulmonary spirometry
    b. Interpretation of basic pulmonary function results
G. Behavior and Diffusion of Gases
    a. Diffusion of gases across the alveolar-capillary membrane
    b. Gas law calculations
H. Mechanics of Breathing
    a. Pressure changes during inspiration and expiration
    b. Effect of common pulmonary diseases on mechanics of breathing
I. Chemical Concepts/Acid Base
    a. Henderson-Hasselbalch equation
    b. Interpretation of arterial blood gases
    c.

4. Methods of Instruction:

Activity:
Lecture:
Observation and Demonstration:
Other: Lecture - Instructor relays information on a given subject. Demonstration - Instructor displays respiratory care equipment and techniques. Group activities - Students collaborate to solve simulated patient problems.

5. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests --
Quizzes --

Additional assessment information:

1. Completion of computer programs, internet research assignments, and other homework assignments (10% of final grade)
2. Quizzes

Example of a quiz question: Given the required data, calculate the oxygen content of the blood in grams/deciliter. Determine whether or not it falls within the normal range.

3. Midterm exam to include both multiple choice and essay questions.

Example of a mid-term question: As the patient/s lung compliance improved, would the pressure needed to ventilate them change? Explain.

4. Final exam, to include both multiple choice and essay questions.

Quizzes, midterm, and final exams constitute 90% of final grade.

Letter Grade Only

6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments
Assigned readings from textbooks and medical journals.
Examples:
1. Read pages 236-244 in Egan's Fundamentals of Respiratory Care on the ways that oxygen is transported in the blood.
2. Read pages 391-425 in Egan's Fundamentals of Respiratory Care covering the eight lung volumes and capacities and basic pulmonary function testing.

B. Writing Assignments
Examples of homework/class work assignments:
1. Perform spirometry on a partner and have your partner perform spirometry on you. Submit the results with interpretations.
2. Complete the worksheet on arterial blood gas interpretations. Determine whether each of the ten patients has a problem with oxygenation, ventilation, or both, and develop a care plan.

C. Other Assignments
None.

7. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:	
Author:	Des Jardins
Title:	Cardiopulmonary Anatomy and Physiology
Publisher:	Delmar
Date of Publication:	2013
Edition:	6th
Book #2:	
Author:	Kacmarek, et al.
Title:	Egan's Fundamentals of Respiratory Care
Publisher:	Mosby Elsevier
Date of Publication:	2016
Edition:	11th Ed.
Book #3:	
Author:	Wilkins, Robert
Title:	Mosby's Respiratory Care Online for Egan's Fundamentals of Respiratory Care,
Publisher:	Mosby Elsevier
Date of Publication:	2012
Edition:	2nd

B. Other required materials/supplies.