



ANTELOPE VALLEY COLLEGE

Academic Affairs Office
Course Outline of Record

COURSE SUBJECT & NUMBER: RT 101 RT 101CL
COURSE NAME: Fundamentals of Respiratory Care
COURSE UNITS: 6
COURSE HOURS: 5 hours lecture and 3 hours lab per week

COURSE REQUISITES: *(Follow format of similar courses found in the college catalog.)*

Limitation on Enrollment: Formal admission to Respiratory Therapy program.

Prerequisite: Completion of BIOL 101, BIOL 201 and CHEM 101 with a grade of "C" or better, and Completion of BIOL 202 or concurrent enrollment, and Eligibility for ENGL 101 and MATH 102.

Corequisite: Concurrent enrollment in RT 102.

Advisory: Eligibility for College Level Reading.

COURSE DESCRIPTION: *(Write a short paragraph providing an overview of topics covered. Be sure to identify target audience--transfer, major, GE, degree/certificate, etc. If repeatable, state the number of times at end of description).*

This course introduces students to atmospheric physics, cardiopulmonary anatomy and physiology, blood gas chemistry, and ventilatory dynamics. Basic concepts of health and disease with emphasis on cardiopulmonary disorders, fundamentals of problem solving techniques, and safe handling of medical gases and equipment are studied. Students are introduced to selected respiratory care and diagnostic equipment, respiratory care techniques, and common problems encountered with respiratory care equipment.

COURSE OBJECTIVES: *(Should be stated as performance-based, measurable expected student outcomes. Use Bloom's taxonomy to formulate clear and concise objectives. These objectives are common to all students; they must be clearly related to course content, assignments, and methods of evaluation.)*

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

1. Identify the composition and behavior of the atmosphere as it relates to the physiology of human respiration.
2. Identify structures and functions of the human cardiopulmonary system.
3. *Distinguish changes in the cardiopulmonary system from conception to old age.
4. *Compare and contrast signs and symptoms of various cardiopulmonary diseases.
5. *Use medical equipment and devices commonly used in the diagnosis and care of patients with cardiopulmonary diseases.
6. *Demonstrate skills in clinical therapeutic and diagnostic problem solving with instructor assistance.

* Denotes SCANS competencies.

COURSE CONTENT: *(Enter course content in terms of specific topics or a specific body of knowledge that each instructor must cover. Put topics in outline form with major and minor headings. Title 5 requires that each instructor covers all material listed here.)*

- I. Atmospheric physics
 - a. Measurement and nomenclature
 - b. Mathematical operations
 - c. States of matter
 - d. Mass, weight and density
 - e. Basic electrical theory
 - f. Light
 - g. Fluid physics
 - h. Gas laws
 - i. Surface tension
 - j. Thermodynamics
- II. Anatomy & physiology of the respiratory system
 - a. Structure and function of upper airway
 - b. Structure and function of lower airway
 - c. Diffusion of pulmonary gases
- III. Ventilation
 - a. Control of ventilation
 - b. Ventilation-perfusion relationships
- IV. Pulmonary function measurement
- V. Anatomy & physiology of the circulatory system
 - a. Structure and function of the heart
 - b. Structure and function of the vessels
- VI. Oxygen transport and acid-base balance
- VII. Effects of renal failure on the cardiopulmonary system
- VIII. Effects of growth and development on the cardiopulmonary system
 - a. fetus and newborn
 - b. infancy
 - c. childhood
 - d. school age
 - e. adulthood
 - f. older adulthood
- IX. Asepsis and decontamination
 - a. Handwashing
 - b. Gloving
 - c. Isolation techniques
 - d. Sterilization techniques
- X. Medical gases and oxygen supply systems
 - a. Medical gas and delivery systems
 - b. Types of oxygen delivery devices
- XI. Medical gas analysis
 - a. Arterial gas analysis
 - b. Techniques for obtaining specimens
- XII. Spirometry and Pulmonary function measurement
 - a. Spirometry equipment and its use
 - b. PFT equipment and its use
- XIII. Humidity therapy
- XIV. Aerosol therapy
- XV. Environmental therapy
- XVI. Incentive spirometry

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TYPICAL READING, WRITING, AND COMPUTATIONAL ASSIGNMENTS

This material is necessary for all credit courses. Assignments should be clearly related to course objectives, content, and methods of evaluation. (See sample of a "Model Outline" in the AP&P Standards & Practices handbook.) Include a range of assignments (minimum of three) from which faculty may choose when designing their syllabus.

1. *Describe nature and frequency of typical reading assignments if applicable; note if any are required:*
30-50 pages per week from the assigned texts and ancillary readings

2. *Describe nature and frequency of typical writing assignments if applicable; note if any are required:*
one 5 page paper related to respiratory disease and requiring ancillary readings

3. *Describe nature and frequency of typical computational assignments if applicable; note if any are required:*
Calculation of mass, weight and density weekly during the first four weeks of the course

4. *If course is degree applicable/transfer, describe those critical thinking skills that are required; be sure that they reflect course objective. (Title 5 requirements can be found in the AP&P Standards and Practices book.)*

problem solving determining relationships between anatomy and physiology and cardiopulmonary diseases weekly

5. *Describe other types of assignments that students may be asked to complete:*
computer assisted instructional programs biweekly

6. *For each of the above categories, describe the estimated time per week it would take a student to complete typical out-of-class assignments. Title 5 uses the Carnegie formula for establishing units using a 2:1 ratio as follows: 1 hr. lecture = 2 hrs. homework; 2 hrs. lecture = 4 hrs. homework; etc. For example: reading text—2 hours; writing reports—3 hours*

Reading: 8 hr per week from the assigned text and other readings

Writing: 2 hrs per week for assigned paper

Computational: 2 hrs per week

Other: Computer-assisted instructional programs: 1 hr per week

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METHODS OF INSTRUCTION: *(Methods must be consistent with content and appropriate to objectives; state in terms of what instructor will be doing in order to present course content to students.)*

Lecture, discussion, demonstration and return demonstration, computer assignments, instructor-facilitated role play

METHODS OF EVALUATION: *(These must be clearly related to course content, assignments, and objectives, in order to comply with Title 5 requirements. Describe what instructor will be looking for when evaluating assignments and tests in order to determine whether students have met course objectives. Grades must be based on demonstrated proficiency in subject matter and determined, where appropriate, by essays, objective and essay tests, research papers, problem solving exercises, or skills' demonstrations.)*

Multiple choice, short answer and essay questions to determine students' knowledge of atmospheric physics, structure and function of the cardiopulmonary system, signs and symptoms of cardiovascular disease. Lab practical exams to determine competency in use of equipment. Paper to determine ability to compare and contrast cardiopulmonary diseases.

Suggested Texts or other Instructional Materials (include title, author, publisher, date, and edition):

Cario, J.M. and Pilbeam, S. Mosby's Respiratory Care Equipment, 7th Ed. Mosby, 2004.

DesJardins, T. Cardiopulmonary Anatomy & Physiology: The Essentials for Respiratory Care, 4th ed. Delmar, 2002.

Scanlon, C.L. Spearman, C.B. & Sheldon, R.L. Egan's Fundamentals of Respiratory Care, 8th Ed., Mosby, 2003.

Effective Date: Fall 2006

(date course can first be offered to be filled in by Office of Academic Affairs)