

# El Paso Community College

## Syllabus

### Part II

## Official Course Description

SUBJECT AREA	<u>Respiratory Care Technology</u>		
COURSE RUBRIC AND NUMBER	<u>RSPT 1429</u>		
COURSE TITLE	<u>Respiratory Care Fundamentals I</u>		
COURSE CREDIT HOURS	<u>4</u>	<u>2</u>	<u>6</u>
	Credits	Lec	Lab

### I. Catalog Description

Provides an introduction to respiratory care fundamentals. A grade of "C" or better is required in this course to take the next course. **Corequisites: RSPT 1360 and RSPT 1307. (2:6). Lab fee.**

### II. Course Objectives

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

- A. Unit I. History of Respiratory Care, Ethics and Infection Control
  1. Identify and recall events leading up to the clinical use of oxygen.
  2. Identify and recall events leading up to the clinical use of mechanical ventilation.
  3. Identify and recall events leading up to the development of respiratory care services.
  4. Identify and describe elements of contemporary Respiratory Care service.
  5. Identify and discuss the importance and rationale behind professional organizations such as the AARC, TSRC, NBRC and state licensing boards.
  6. Identify and discuss events leading up to the development of respiratory care education and school accreditation and its history.
  7. Recognize the following regarding ethics in the practice of respiratory care:
    - a. Code of Ethics
    - b. Ethical theories and principles
    - c. Ethical viewpoints and decision making, including Francoer's ethical decision making model
    - d. Legal issues in Respiratory Care including systems of law and scope of practice.
    - e. Interaction of law and ethics of health care changes in the United States and the world in general.
  8. Recognize and evaluate the ways that infections are spread.
  9. Identify source, transmission route and host as necessary to the spread of infection.
  10. Discuss the spread of infection to lungs.
  11. Identify and explain similarities and differences between various means of infection control strategies.
  12. Recall and explain rationale for decreasing host susceptibility.
  13. Recall and explain rationale for eliminating source of pathogens.
  14. Recall and explain rationale for interruption of the route of transmission.

15. Define and explain the differences between cleaning, disinfection and sterilization.
16. Recall and explain different procedures of infection control for various types of equipment.
17. Recall and explain rationale for different measures of barriers and isolation precautions.
18. Recall and explain rationale for different measures of surveillance and monitoring of equipment processing quality control, sampling of in-use equipment and microbiological identification.
19. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.

B. Unit II. Assessment, physical principles, gas and humidity therapy

1. Recall and describe in detail rationale and importance of interviewing the patient. And describe the format for assessment of medical history.
2. Define and explain cardiopulmonary symptoms such as dyspnea, cough, sputum chest pain and fever.
3. Insure patient safety by recalling practices and performance in the lab of:
  - a. Methods of proper identification of the patient
  - b. Identification of known drug and food allergies.
4. Recall and list the items that are part of the patient physical examination to include general appearance, level of consciousness, vital signs, examination of the head and neck, examination of the thorax and lungs, examination of the heart, examination of the abdomen and examination of the extremities.
5. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation
6. Compare and contrast differing types of storage and delivery of medical gases.
7. Explain the different characteristics of medical gases.
8. Compare the storage of gases in cylinders and bulk systems.
9. Compare and contrast the types of distribution and storage of medical gases such as central piping systems, safety indexed connector systems, control and regulation of gas pressures and flows, differences between reducing valves and flowmeters.
10. Demonstrate proper calibration of various types of oxygen analyzers and monitor precise  $F_{I}O_2$ .
11. Be able to perform various calculations regarding the use of cylinders and delivery of medical gases.
12. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.
13. Identify and discuss the concepts concerning states of matter including the internal energy of matter, the relationship between internal energy and temperature, heat and laws governing thermodynamics and the principles of heat transfer.
14. Discuss the change of state of matter in regards to liquid-solid phase changes, properties of liquids, liquid-vapor phase changes and properties of gases.
15. Discuss and explain the behavior of gases in changing conditions of volume, temperature and pressure.
16. Define and discuss the gas laws, effects of water vapor on gases, properties of gases at extremes of temperature and pressure.

17. Recall and discuss properties and characteristics of fluid dynamics in various states and patterns such as pressures in flowing fluids, patterns of flow, effects on fluid flow in regards to cross-sectional area, the Bernoulli effect, fluid entrainment, the Venturi effect and fluidics and the Coanda effect.
18. Define and discuss basic electrical circuitry including Ohm's law.
19. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.
20. Recall and discuss various goals and objectives of oxygen therapy.
21. Recognize the need for assessment of oxygen therapy.
22. List and discuss the precautions and hazards surrounding use of oxygen.
23. Recall, identify and discuss different oxygen delivery systems such as low flow systems, reservoir systems and high flow systems.
24. Recommend and explain rationale for various delivery approaches.
25. Discuss the protocol based system of oxygen therapy.
26. Recall and discuss the physiological effects, methods of administration, indications for, complications of and troubleshooting of Hyperbaric oxygen therapy.
27. Identify, compare and contrast the characteristics and indications of various other medical gases used in respiratory therapy including nitric oxide and helium, carbogen, and evaluate their efficacy.
28. Explain the rationale for various concentrations of oxygen.
29. Select, calibrate, and set up various oxygen analyzers.
30. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.
31. Explain the rationale for humidity therapy including physiological control of heat and moisture exchange, indications for humidification and warming of medical gases, description of various types of equipment used in humidity therapy.
32. List and discuss the different types of equipment used in humidity therapy including aerosol generators, differing types of delivery systems, sputum induction modes and troubleshooting and selection of these devices.
33. Set up and monitor tent therapy, to include mist and pup tents, and oxyhoods.
34. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.

C. Unit III. Aerosol drugs, hyperinflation and thoracic imaging

1. Discuss the characteristics of therapeutic aerosols as regards to output, particle size, deposition, and aging.
2. Recall, identify and discuss the hazards of use of aerosolized drugs in respiratory care such as infection, airway reactivity, local pulmonary and systemic side effects and phenomena such as drug reconcentration.
3. Recall, identify and discuss the various drug delivery systems to include metered dose inhalers, dry powder inhalers, small volume nebulizers, large volume nebulizers, ultrasonic nebulizers, hand-bulb atomizers and their relative advantages and disadvantages.
4. Identify and discuss the process in selecting various drug delivery systems.
5. Discuss the assessment-based protocol for bronchodilator use.

6. Discuss the special conditions requiring continuous nebulization therapy and use of protective equipment when delivering certain types of drugs.
7. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.
8. Recall, identify and discuss the rationale for hyperinflation therapy such as atelectasis and other non-traditional uses of hyperinflation therapy.
9. Discuss how lung expansion works with various modes of hyperinflation therapy such as incentive spirometry and intermittent positive pressure breathing (IPPB).
10. Identify and discuss the rationale, indications, contraindications, hazards of hyperinflation therapy.
11. Explain and discuss the various modalities used in hyperinflation therapy and the equipment necessary for each.
12. Recall and discuss the planning, implementation and assessment of each of the modes of hyperinflation therapy.
13. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation.
14. Compare and contrast the various types of thoracic imaging used in respiratory care such as X-ray, computerized tomography (CT or CAT scan) and magnetic resonance imaging (MRI).
15. Recall and discuss the methodology, rationale and interpretation of the chest radiograph (X-ray).
16. Recall and discuss the evaluation of the pleura and problems associated with pathological conditions such as pneumothorax and hydrothorax.
17. Recall and discuss the evaluation of the lung parenchyma and problems associated with pathological conditions such as pulmonary nodules, problems associated with lung volumes and identification of lung landmarks including placement of catheters, lines and tubes.
18. Recall and discuss the evaluation of the mediastinum and problems associated with pathological conditions such as pneumomediastinum and others.
19. Recognize and discuss normal and pathological characteristics visible in various forms of thoracic imaging modalities.
20. Perform in laboratory and clinical setting all tasks related to patient care, preparation and evaluation

### **III. THECB Learning Outcomes (WECM)**

1. Utilize data related to patient assessment.
2. Prepare equipment for function, operation, and cleanliness.
3. Perform infection control, vital signs, physical assessment, medical gas therapy, and humidity/aerosol therapy.
4. Identify equipment malfunctions.
5. Maintain patient records.

### **IV. Evaluation**

- A. Evaluation Weighs

3 Unit Tests	60%
1 Final	20%
Homework, Quizzes	20%
	100%

93 to 100%	A
86 to 92%	B
78 to 85%	C
70 to 77%	D
69 or below	I or F

A minimum grade of "C" or 78% is necessary for successful completion of this course.

#### B. Unit Assignments

1. The course will consist of lecture and practical lab when applicable. Student participation during the lecture and laboratory portion of the course is mandatory and strongly encouraged. Several lecture and laboratory exercises and homework assignments will be required during the semester. Course presentation will include demonstrations, lectures, slides, videos, overhead transparencies and power point presentations. Supplemental handouts will be given out prior to selected units. Several reading, written and homework assignments will be required for the lecture and lab.

#### V. Disability Statement (American with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

#### VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.