Course Information Form (CIF)

Course Code: RTT 130

Course Title: Respiratory Therapy I

Department: Allied Health
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 51.0908
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-3-4
Credit Hour Distribution:

Lecture: 3	Lab: 3	Clinical: 0	**Total: 4**

General Course Information

Catalog Description

Fundamentals of routine respiratory care: infection control, patient interviewing and physical assessment, body mechanics, oxygen delivery systems, cylinder safety, oxygen analyzers, oxygen therapy devices, aerosol devices, airway clearance and techniques, cardiopulmonary resuscitation.

General Course Objectives

- Demonstrate safe and appropriate fundamentals of routine respiratory care including patient assessment, oxygen therapy, specialty gas therapy, airway clearance therapies, administration of inhaled medications, resuscitation, and infection control.
- Monitor patient response to initiated therapies and adjust as indicated to meet physiologic needs.

Minimum Placement Levels

English	Reading	Math
Placement out of ENG 099	Placement out of CCS 099	Placement out of MAT 072

Prerequisites

Concurrent enrollment in RTT 131 and RTT 132
Credit or concurrent enrollment in BIO 121
Admission into the Respiratory Care program

Methods of Evaluation

3-5 course content exams, 10-12 quizzes, 11-13 written homework assignments, and a comprehensive final. Lab includes 5-6 additional unannounced equipment identification and medication quizzes and 10-12 skills demonstration videos. Exams, quizzes, and homework assignments will include objective questions, essays, patient case studies, and calculations where appropriate.

Instructional Materials and Additional Supplies

Egan's Fundamentals of Respiratory Care, current edition, Elsevier.; ISBN 9780323931991
Egan's Workbook, current edition, current edition; ISBN 9780323932004
Students may choose print or online instructional material.
Hunter green scrub top, black scrub pants, $50-$100 based on student preferences;
Camera, tablet, or phone with audio/visual recording capabilities for lab competency submissions.
Most students already own this item or may check out from Library.

Course Content

General Learning Outcomes (GLOs)

- Communication: Students will demonstrate the ability to read, write, listen, and speak effectively.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Infection Prevention and Control	1. Define health care acquired infections. 2. Identify the 3 elements needed for the transmission of infections. 3. Identify the factors associated with an increased risk of infection in patients. 4. Identify the 3 primary routes of infection transmission in a health care facility. 5. Demonstrate use of transmission-based precautions for a given clinical scenario. 6. Discuss and accurately display the role of the individual respiratory therapist in protecting self, patient, and other clinical staff from the spread of infection.	3	3	0
Patient Assessment: Chart Review, Patient Interview, Physical Assessment	1. Identify the common components of the patient record. 2. Discuss the application of HIPAA laws to learner access and utilization of the medical record. 3. Discuss and demonstrate effective patient interview techniques. Identify open and closed-ended questions, in order to select the appropriate questioning technique and to recognize and respect personal space of the subject. 4. Perform a visual assessment of the chest wall shape and movement. Display accurate use of appropriate terminology to describe chest wall configuration and breathing mechanics assessment. 5. Evaluate vital signs, including heart rate, respiratory rate, blood pressure, pulse oximetry, oxygen saturations, neurological responsiveness, and auscultation of the lungs. Explain the clinical significance of abnormal findings. 6. Discuss and demonstrate chest palpation and percussion procedures, and interpretation of findings. Use appropriate terminology to describe palpation and percussion assessment findings. 7. Review chest radiograph for major anomalies of the cardiopulmonary systems such as pneumothorax, epiglottitis, laryngotracheobronchitis, and pneumonia. Use appropriate clinical terminology to describe radiographic findings. 8. Identify basic lab reference range values including CBC, BUN, creatinine, lactate, and electrolytes. Discuss possible causes for abnormalities and the impact on the respiratory status of the subject. 9. Demonstrate and accurately display full respiratory assessment of a patient, including chart review, patient interview, chest assessment with auscultation of the lungs, obtaining vital signs, and interpreting findings. 10. Integrate findings of patient interview and physical assessment to document a complete respiratory assessment using appropriate clinical terminology. 11. Develop a respiratory care plan based on patient assessment findings and indications for chosen respiratory therapy procedures.	6	6	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Medical Gas Delivery Equipment: 1. Analyzers; 2. Gas distribution systems; 3. Pressure regulators; 4. Gas therapy; 5. Oxygen enrichers and concentrators, oxygen assessment, pulse oximetry	1. Describe the components and the principles of operation of an oxygen analyzer. 2. Identify the indications for analyzing the oxygen concentration of the delivered gas. 3. Demonstrate the calibration and use of the oxygen analyzer to verify the delivered oxygen percentage. 4. Identify the agencies that are responsible for regulating the safe production, packaging, and transport of medical gases. 5. Explain the indications for the use of an oxygen concentrator. 6. Describe and compare the two methods that are commonly used by an oxygen concentrator to separate oxygen from ambient air, including potential operational problems and corrections. 7. Describe the components of the central medical gas and vacuum systems common in hospitals, including the bulk system, the back-up supply, zone valves, station outlets, and couplers. 8. Identify and describe the use of equipment and devices used to administer medical gases including regulators, the Bourdon gauge, Thorpe tube flowmeters, quick connects, blenders, and flow restrictors. 9. Determine the expected duration of medical gas in a compressed gas cylinder in specified patient scenarios. 10. Accurately assemble and demonstrate the correct setup of all medical gas delivery equipment for use in specific patient scenarios. 11. Accurately assemble and evaluate medical gas delivery devices for correct function and correct any deficiencies noted.	6	6	0
Oxygen and Specialty Medical Gas Administration: Oxygen Administration Equipment, Equipment for Administration of Specialty Gases	1. Identify and explain the indications for supplemental oxygen therapy. 2. Identify and explain the potential complications of oxygen therapy. 3. Identify and explain the main components of the following oxygen administration devices: flow meter, humidifier, low and high flow nasal cannula, simple mask, partial rebreathe mask, non-rebreathe mask, reservoir nasal cannula, Oxymask (TM), oropharyngeal catheter, and oxygen tents or hoods. 4. Explain the function and demonstrate application of each of the oxygen devices. 5. Provide patient education, explaining the indication of the therapy and application of equipment to the patient and family, providing in terms appropriate for patient/family understanding. 6. Identify the correct liter flow range and approximate delivered oxygen percentage for each of the oxygen administration devices. 7. Analyze patient assessment findings to select the appropriate administration device in patient care situations, including adults, pediatrics, and infants. 8. Demonstrate the setup and manipulation of the various oxygen devices listed for the administration of oxygen. 9. Integrate knowledge of patient assessment findings and oxygen therapies to apply oxygen therapy protocols to specific patient case scenarios to determine the appropriate device, oxygen concentration, and/or flow rate for the patient clinical presentation. 10. Discuss the potential electrical safety and fire hazard concerns when supplemental oxygen is used and implement methods to mitigate the risks. 11. Identify the clinical indications and equipment needed for the administration of heliox. 12. Identify the clinical indications for the administration of nitric oxide.	9	9	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Resuscitation: A. Basic Life Support: 1. CPR sequence, 2. Manual resuscitation, 3. Airway adjuncts, 4. Mechanical compressors, 5. Gas-powered resuscitators; B. Introduction to Advanced Cardiac Life Support: 1. Airway adjuncts, 2. Shockable rhythms, 3. Initial drug therapy in resuscitation	1. Identify the risk factors for developing cardiovascular disease that may lead to a heart attack or myocardial infarction. 2. Demonstrate the correct technique and sequences of compressions and breaths for one- and two-rescuer initiation of CPR for adults, children, and infants. 3. Demonstrate use of the resuscitation bag to provide ventilations for adults, children, and infants. 4. Identify adjuncts that may be used during resuscitation including oropharyngeal and nasopharyngeal airways, Combitubes, laryngeal mask airways, King airways, automated chest compressors, CO2 detectors, end-tidal capnography adapters, the ResQPod, and other devices that may be introduced. 5. Identify electrocardiogram rhythms that are common in resuscitation and the indicated therapy including normal sinus rhythm with or without a pulse, ventricular fibrillation, ventricular tachycardia, and asystole. 6. Identify cardiac rhythms that require electrical therapy. 7. Differentiate between defibrillation and cardioversion. 8. Identify the indications for medications commonly delivered during resuscitation including epinephrine, atropine, amiodarone, lidocaine, adenosine, dopamine, and dobutamine. 9. Select the appropriate medication for a specific cardiac rhythm in cardiopulmonary resuscitation patient cases. 10. Describe intraosseous line placement and the indications for its use.	3	3	0
Airway Clearance Therapies and Adjunct Devices	1. List the indications for airway clearance therapies. 2. Describe the potential complications related to specific airway clearance therapies. 3. Develop patient instructions for positioning and providing chest physiotherapy with postural drainage. 4. Using the anatomical landmarks and positions of the lung segments in the thoracic cavity, explain the body positioning to provide drainage of secretions from the lung. 5. Demonstrate appropriate chest physiotherapy (CPT) and postural drainage positioning (PD) for the various lung segments using the manual technique. 6. Demonstrate the use of external percussive devices. 7. Modify airway clearance techniques to individual patient needs and clinical presentation. 8. Explain the theory for the use of positive expiratory pressure to aid in airway clearance. 9. Demonstrate the use of the specific proprietary devices that utilize the principles of positive expiratory pressure (PEP) and oscillating positive expiratory pressure (OPEP). 10. Compare and contrast the benefits of the various single patient use PEP and OPEP devices. 11. Compose instructions to provide patients information on the use and care of the various single patient use PEP and OPEP devices. 12. Explain the physiology of the high frequency chest wall oscillator for mobilizing and aiding in clearance of airway secretions. 13. Suggest the appropriate pulmonary hygiene therapy based on specific patient clinical presentation and assessment. 14. Provide patient instruction for each pulmonary hygiene/airway clearance modality at a level appropriate for the patient in each specific given patient case. 15. Describe and discuss the physiology of the intrapulmonary percussive device for airway clearance. 16. Demonstrate the initiation and assessment of the use of each of the identified devices/therapies. 17. Evaluate the effectiveness of airway clearance therapies using serial patient assessment and clinical data. 18. Adapt patient care plans to include airway clearance therapies based on evaluation of clinical indications and patient presentation.	6	6	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Introduction to Respiratory Medications	1. Identify the clinical indications and contraindications for bronchodilator medications. 2. Identify the common bronchodilators, comparing the specific characteristics of those common bronchodilators including albuterol, ipratropium bromide, levalbuterol, salmeterol, arformoterol, and formoterol. 3. Identify the common mucokinetic medications administered by the respiratory therapist including hyperosmolar saline, alpha dornase, and N-acetylcysteine. 4. Compare and contrast the characteristics of the common mucokinetic medications used to treat respiratory illness. 5. Identify the indications and contraindications for inhaled corticosteroids. 6. Identify the inhaled corticosteroids commonly administered by the respiratory therapist, including fluticasone, mometasone, and budesonide. 7. Compare and contrast the characteristics of the inhaled corticosteroids that are used to treat respiratory illness. 8. Discuss the use of adaptive devices, such as the holding chamber, to improve medication deposition. 9. Individualize patient instruction to include use of adaptive devices to improve deposition of medication. 10. Identify the most effective breathing pattern to improve medication deposition from a small volume nebulizer, a metered dose inhaler, and a dry powder inhaler. 11. Modify patient breathing pattern through coaching to achieve maximum medication deposition. 12. Propose the administration of inhaled corticosteroid medications based on patient assessment findings and clinical progression of the respiratory illness. 13. Adapt the patient care plan to achieve maximum benefit from the order in which medications are delivered when a patient is to receive multiple medications. 14. Discuss the difference between a fast acting "rescue" medication and a long acting "maintenance" medication for the asthma and COPD patient populations. 15. Identify the steps and progression of respiratory interventions based on clinical presentation and assessment findings as defined in the Global Initiative for Asthma (GINA) Guidelines. 16. Develop a patient care plan applying the standards for treatment and patient and family education as defined in the GINA Guidelines. 17. Demonstrate correct setup and manipulation of medication aerosol devices, including small volume nebulizer, MDI, DPI, and vibrating mesh. 18. Propose changes in aerosol generating device based on patient ability to comply with instruction.	3	3	0
Medication Aerosol Administration	1. Describe and explain how aerosols are generated. 2. Describe and explain how particle size, motion, and airway characteristics affect aerosol deposition. 3. List and explain common hazards associated with aerosol drug therapy. 4. Propose strategies to minimize exposure to medication aerosol hazards for patients and caregivers. 5. Identify the devices commonly used in medicine to generate and administer aerosolized medications, including the small volume nebulizer, the metered dose inhaler, the dry powder inhaler, the vibrating mesh nebulizer, and the small particle generator. 6. Compare and contrast the specifications and clinical applications of the medication aerosol generating devices including the small volume nebulizer, the metered dose inhaler, the dry powder inhaler, the vibrating mesh nebulizer, and the small particle generator. 7. Correctly assemble and manipulate settings to deliver aerosolized medications using the small volume nebulizer, metered dose inhaler, dry powder inhaler, and vibrating mesh nebulizer. 8. Propose the best aerosol drug delivery system for a patient: small volume nebulizer, metered dose inhaler, dry powder inhaler, and vibrating mesh nebulizer based on patient presentation and clinical assessment. 9. Demonstrate the correct setup and manipulation of the devices utilized to deliver aerosolized medications, including the small volume nebulizer, the metered dose inhaler, the dry powder inhaler, the vibrating mesh nebulizer, and the small particle generator.	6	6	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Medication Aerosol Administration (cont'd)	10. Identify the information that patients/caregivers will need to safely self-administer aerosolized medications at home, including indications, hazards of medications, setup, operation, and troubleshooting of aerosol generators. 11. Describe how to assess patient response to bronchodilator therapy at the point of care. 12. Analyze and interpret patient presentation and clinical assessment findings to evaluate patient response to aerosolized medications. 13. Propose strategies to administer aerosol therapy in special circumstances such as a noncompliant, ineffective breathing pattern, and limited cognition. 14. Adapt equipment and procedure to deliver aerosolized medications to infants, children, and special circumstances. 15. Describe methods to protect patients and caregivers from exposure to aerosolized drugs.			
Humidification of Breathing Gas	1. Define humidity, aerosol, partial pressure, absolute humidity, relative humidity, evaporation, humidity deficit, and condensation. List the normal values for temperature, relative humidity, absolute humidity, and water vapor pressure in the lung and airway. 2. Describe the clinical indications for humidification and warming of supplemental oxygen or humidity therapy. 3. Identify the recommended absolute/relative humidity and temperature ranges of gases for patients with an artificial airway. 4. Identify the variables that affect the performance of humidifiers. 5. Compare and contrast the performance characteristics of each of the bubble humidifier, the heat-moisture exchanger, and the pass-over humidifier. Address the principles of operation, safety features, and relative humidity provided of each. 6. Describe the characteristics of a high flow humidifier. Include principles of operation, safety features, relative humidity provided, and gas temperature at the patient's airway. 7. Describe the characteristics of a low flow humidifier. Include principles of operation, safety features, relative humidity provided, and gas temperature at the patient's airway. 8. Assemble and manipulate the bubble humidifier, the heat-moisture exchanger, and the pass-over humidifier to achieve optimal humidification of breathing gases. 9. Describe the function of servo-controlled humidifiers and heated wire circuits. 10. Explain the hazards of condensation and impact of nosocomial infection. 11. Propose alterations in therapy to minimize infection risks. 12. Compare and contrast the characteristics and operation of the HME and the HCH. 13. Describe and explain the rationale for the optimal placement of the HME in a ventilator circuit. 14. Identify the potential hazards and complications associated with the use of the HME in mechanical ventilation. 15. Discuss the indications and contraindications for bland aerosol therapy. 16. Explain the setup and function of large volume aerosol generators. 17. Identify common malfunctions of large volume aerosol generators and strategies to correct those problems. 18. Demonstrate the setup and manipulation of large volume aerosol generators. 19. Initiate humidification therapy in a patient care plan based on patient assessment and analysis of patient clinical data. 20. Alter use of humidification of breathing gases based on changes in the patient clinical presentation.	3	3	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0