# Course Information Form (CIF)

**Course Code:** RTT 151

**Course Title:** Respiratory Therapy V

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

**Effective Date:** Summer 2026

## Credit Hours

**Catalog Notation:** 3-0-3
**Credit Hour Distribution:**

| Lecture: 3 | Lab: 0 | Clinical: 0 | **Total: 3** |
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## General Course Information

### Catalog Description

Anatomical changes and pathophysiology of common cardiopulmonary disease requiring respiratory treatment. Physical assessment findings, diagnostic testing indicated, and abnormal results associated with respiratory illness. Recommended general treatment and application of Respiratory Therapy Protocols for each disease studied.

### General Course Objectives

Upon completion of this course, the student will be able to identify the anatomical changes and pathophysiologic responses in cardiopulmonary disease; to identify the diagnostic studies to establish definitive diagnoses; to identify the normal findings and the significance of abnormal findings for these diagnostic studies; and to recommend appropriate respiratory therapy interventions for the specific clinical manifestations presented by a patient.

### Minimum Placement Levels

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

### Prerequisites

Credit in RTT 117, RTT 130, RTT 131, RTT 132, and BIO 121
Credit or concurrent enrollment in RTT 133, RTT 134, RTT 135, and BIO 122
Admission into the Respiratory Care program

### Methods of Evaluation

3-5 exams including objective and essay questions, 5-8 patient assessment notes, 12-15 objective and essay quizzes (approximately 1 per week), and 1 patient case study (narrative, 3-5 pages) with an oral presentation of 5-10 minutes.

### Instructional Materials and Additional Supplies

Clinical Manifestations and Assessment of Respiratory Disease, DesJardins, T. and Burton, G. current edition, Mosby. 978-0-323-55369-8

Internet access for the online components of the course.

## Course Content

### General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- Global Awareness and Cultural Reasoning: Students will demonstrate their understanding of global issues, gender and sexual orientation, and multicultural perspectives.

### Course Segments and Student Learning Outcomes

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Patient Assessment: Interview, Physical Findings, Chart Review | 1. Identify techniques for communicating with patients and their families to obtain information needed to provide safe and effective treatment.<br>2. Identify normal ranges for vital signs and discuss causes of abnormal findings.<br>3. Discuss the significance of abnormal chest wall form including increased anterior-posterior diameter, scoliosis, kyphosis, kyphoscoliosis, pectus excavatum, and pectus carinatum.<br>4. Describe the clinical significance of alterations in breath sounds including fine crackles, coarse crackles, wheezes, stridor, pleural friction rub, and diminished and absent breath sounds.<br>5. Suggest additional diagnostic studies based on patient physical findings.<br>6. Identify the indications for obtaining a sputum culture and sensitivity. Discuss the significance of sputum color, consistency, and volume.<br>7. Evaluate pulmonary function tests. Discuss the differences in obstructive and restrictive findings. Correlate pulmonary function testing results with patient clinical presentation.<br>8. Identify normal ranges for oxygenation assessments and correlate findings to changes in patient clinical presentation.<br>9. Integrate patient interview and clinical assessment findings to identify underlying anatomical alterations of the lung that may be manifested in the clinical presentation, and recommend further diagnostics or treatment when indicated. | 6 | 0 | 0 |
| Radiographic Imaging Studies: A. Standard radiographs, B. CAT scans, C. PET scans, D. MRI, E. Angiography | 1. Discuss the clinical indications for chest radiographic imaging.<br>2. Identify the standard positions and techniques of chest radiography.<br>3. Identify key landmarks on the standard chest radiograph.<br>4. Discuss the criteria used to evaluate the quality of a chest radiograph.<br>5. Describe the clinical significance of common radiographic findings, including but not limited to: densities, effusions, honeycombing, bronchogram, cavities, lesions, density, opacity, pulmonary nodules, radiodensity, radiolucency, and translucency.<br>6. Discuss the indications for CAT scan, PET scan, MRI, and angiography. Discuss the significance of abnormal findings.<br>7. Recommend radiologic studies appropriate to further differentiate the diagnosis based on initial patient clinical presentation.<br>8. Apply knowledge of the common radiologic findings, including but not limited to: densities, effusions, honeycombing, bronchogram, cavities, lesions, density, opacity, pulmonary nodules, radiodensity, radiolucency, and translucency, to identify possible anatomic alterations and specific disease pathology, and to recommend respiratory interventions when appropriate. | 3 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Therapist Driven Protocols | 1. Discuss the knowledge base that the respiratory therapist must possess to be safe and effective in the application of respiratory therapy protocols. Include anatomical alterations in common diseases, the pathophysiologic mechanisms activated by the anatomic changes, the common clinical manifestations associated with the changes, and the various respiratory therapy modality indications and contraindications.<br>2. Identify the primary respiratory therapy protocols and the indications for the implementation of each protocol. Include oxygen, inhaled medications, airway clearance, lung expansion, and mechanical ventilation.<br>3. Discuss the use of the severity score to determine the frequency of repetitive scheduled treatments. Identify the scoring criterion and the rationale. Include history, vitals, mentation, chest radiograph, activity level, oxygen use, cough, and mucus production.<br>4. Identify the indications for implementing the oxygen protocol.<br>5. Identify the indications for implementation of the airway clearance protocol.<br>6. Identify the indications for the lung expansion protocol.<br>7. Identify the indications for the aerosolized medication protocol.<br>8. Identify the indications for the initiation of the mechanical ventilation protocol.<br>9. Initiate respiratory protocols to recommend indicated respiratory care in patient case studies and for patients directly treated in the clinical. Include the information obtained, the assessment to identify problems, and a specific plan. Include liter flows/FIO2, medication if indicated, and frequency.<br>10. Document patient assessment and rationale for implementation of protocol therapy in a SOAPIER format (Subjective Objective Assessment Planning Implementing Evaluating Reassessing).<br>11. Discuss the advantages and disadvantages of protocol-based respiratory practice. | 3 | 0 | 0 |
| Asthma | 1. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of asthma. Identify the primary differences in asthma and other obstructive diseases.<br>2. Describe the common signs and symptoms of patients with asthma during an exacerbation or "asthma attack."<br>3. Discuss the incidence and impact of asthma in the United States.<br>4. Identify risk factors associated with the development of asthma. Include host factors, environmental factors, and other associated factors.<br>5. Discuss the diagnostic testing to differentiate asthma from other obstructive lung disease. Include the use of FeNO, allergy testing, and bronchial provocation testing.<br>6. Identify the components of the Global Initiative for Asthma (GINA) Step-Wise asthma management program.<br>7. Identify and discuss the medications used to treat asthma. Include long and short bronchodilators, inhaled corticosteroids, leukotriene inhibitors, xanthine derivatives, and immunoglobins.<br>8. Integrate the GINA guidelines for asthma management in specific patient cases. Include initiation of the GINA-based care plan, adaptations for maintenance, and adjustments in therapy as needed for patients with asthma exacerbation.<br>9. Describe bronchial thermoplasty and identify the indications for its use.<br>10. Classify the severity of an asthma exacerbation based on the clinical assessment and interpretation of clinical data.<br>11. Based on patient age, development, severity of disease and comorbidities, use the GINA guidelines to create a personal asthma management plan with the patient, including self-monitoring for symptoms, self-administration of medications, identification and avoidance of triggers, exercise, and establishing healthy life styles. | 2 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
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| Obstructive Pulmonary Diseases: Emphysema, Chronic bronchitis, Bronchiectasis | 1. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of COPD.<br>2. Describe the common signs and symptoms of patients with obstructive lung disease.<br>3. Recommend appropriate diagnostic studies to differentiate asthma, emphysema, chronic bronchitis, and bronchiectasis. Discuss the abnormal findings in chest radiography, pulmonary function testing, and blood studies that provide the differential diagnosis for the chronic obstructive lung diseases. Include blood gases and alpha-1 antitrypsin deficiency testing.<br>4. Describe the combination of more than one obstructive lung disease, asthma, emphysema, and chronic bronchitis, known as Chronic Obstructive Pulmonary Disease.<br>5. Using spirometry results, classify the severity of obstructive lung disease; using symptoms, categorize the risk of exacerbation for a given patient case.<br>6. Discuss the use of the breathlessness scale in the assessment of patients with obstructive lung disease.<br>7. Describe the primary components of the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines.<br>8. Identify the common medications prescribed to treat patients with COPD. Include long and short acting bronchodilators, inhaled corticosteroids, and antibiotics.<br>9. Discuss the role of pulmonary rehabilitation and smoking cessation in the care of patients with COPD.<br>10. Based on the patient history, clinical presentation, and diagnostic information presented, develop a treatment plan for a patient with emphysema, chronic bronchitis, and bronchiectasis using the GOLD guidelines. | 6 | 0 | 0 |
| Cystic Fibrosis (CF) | 1. Identify the cause of cystic fibrosis and describe how it is inherited.<br>2. Describe the anatomic alterations that occur in cystic fibrosis and the effect of disease progression on the development of secondary lung disease. Explain why it is an obstructive lung disease.<br>3. Discuss other organ system dysfunctions associated with cystic fibrosis, including gastrointestinal-nutritional and nasal/sinuses.<br>4. Discuss the clinical signs and symptoms that would justify a full cystic fibrosis evaluation.<br>5. Identify the tools available for newborn screening and definitive diagnostic testing for CF. Include immunoreactive trypsin level (IRT), sweat test, genetic testing, and stool fecal fat testing.<br>6. Discuss the common clinical signs and symptoms and abnormalities in chest radiograph, pulmonary function, sputum culture, and blood gases that develop in patients with cystic fibrosis.<br>7. Discuss the general management of cystic fibrosis including nutrition, infection prevention, and treatment.<br>8. Discuss the respiratory medications indicated in the treatment of cystic fibrosis, including bronchodilators, muco-active medications, wetting agents, antibiotics, and CFTR modulators such as ivacaftor, or Trikafta.<br>9. Discuss the respiratory treatment indicated for maintenance patients with cystic fibrosis. Include medications, airway clearance, and oxygenation. Include the specific medications, dosage, and frequency. Include the selection of an airway clearance therapy.<br>10. Create a respiratory care plan for the patient with cystic fibrosis. Include maintenance care and care for an acute exacerbation based on the clinical assessment findings and history. | 1 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Tuberculosis | 1. Identify the primary characteristics of tuberculosis, differentiating primary tuberculosis, reactivation tuberculosis, and disseminated tuberculosis. Include common signs and symptoms.<br>2. Identify and describe the pathologic and structural changes that develop in the lung in tuberculosis.<br>3. Discuss the incidence of tuberculosis in the United States and the risks of spread. Include the risks for healthcare workers and methods of mitigation.<br>4. Identify and describe the tests available for the diagnosis of tuberculosis, including the Mantoux tuberculin skin test, acid-fast staining, sputum culture, QuantiFERON-Gold test, Xpert MTB/RIF Assay, and chest radiograph.<br>5. Identify the abnormalities that may occur in blood gases, pulmonary function testing, and chest radiograph.<br>6. Discuss the isolation and medication protocols that are recommended in the treatment of tuberculosis and tuberculosis exposure.<br>7. Based on clinical presentation and indications for specific respiratory treatment modalities, recommend a respiratory treatment plan to support a patient diagnosed with tuberculosis. Include the infection control measures needed to protect the respiratory therapist. | 1 | 0 | 0 |
| Infectious Diseases: Pneumonia, Lung abscess, Fungal diseases | 1. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of specific disease processes.<br>2. Recommend appropriate diagnostic studies to provide the differential diagnosis.<br>3. Identify the abnormal pulmonary function test, radiographic, and clinical laboratory studies that characterize infectious lung diseases including pneumonia, lung abscess, fungal lung disease (histoplasmosis, coccidioidomycosis, blastomycosis, necrotizing pneumonia, BOOP, COP.<br>4. Identify the non-respiratory interventions needed for the treatment of specific infectious diseases such as tuberculosis, fungal pneumonia, and bacterial pneumonia, BOOP and COP.<br>5. Recommend respiratory supportive care as indicated by the patient clinical presentation using respiratory protocol indications. Alter care plan in response to changes in patient clinical presentation. | 4 | 0 | 0 |
| Pulmonary Edema | 1. Identify the pathologic conditions and anatomical changes that occur as a result of pulmonary edema.<br>2. Discuss the common causes of cardiogenic pulmonary edema.<br>3. Discuss the common causes of noncardiogenic pulmonary edema.<br>4. Identify the risk factors for coronary heart disease.<br>5. Discuss the characteristic findings in the chest radiograph, clinical presentation, blood gases, and lab data in patients with pulmonary edema.<br>6. Discuss the general management of pulmonary edema including the administration of diuretic and inotropic agents.<br>7. Discuss the respiratory treatment of patients with pulmonary edema, including the use of oxygen, CPAP, intubation, and mechanical ventilation.<br>8. Based on the clinical presentation, chest radiograph, and blood gases, recommend appropriate respiratory interventions to support the patient with pulmonary edema. | 1 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Pulmonary Vascular Diseases: Pulmonary emboli, Pulmonary infarction, Pulmonary hypertension | 1. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of pulmonary embolism.<br>2. Identify the risk factors associated with the development of pulmonary embolism. Identify the common risk factors for the development of deep vein thrombosis.<br>3. Discuss strategies to reduce the risk of the development of pulmonary embolism.<br>4. Identify the common signs and symptoms of pulmonary embolism.<br>5. Identify the various tests for the diagnosis of pulmonary emboli, including chest radiograph, D-dimer blood test, ultrasound, computed tomography, pulmonary angiogram, ventilation-perfusion scan, and magnetic resonance imaging.<br>6. Discuss the general treatment of pulmonary emboli, including anti-coagulants and thrombolytic agents.<br>7. Discuss the supportive respiratory care indicated for a patient with pulmonary embolism.<br>8. Recommend supportive respiratory therapy for the patient who has pulmonary emboli.<br>9. Define pulmonary hypertension.<br>10. Identify the clinical signs and symptoms in the patient with right-sided heart failure and left-sided heart failure.<br>11. Describe the five clinical classifications of pulmonary hypertension.<br>12. Discuss the general management of pulmonary hypertension, including medications, oxygen and inhaled nitric oxide, activity, life style changes, and heart transplant based on the severity of the disease.<br>13. Recommend appropriate protocol-based supportive respiratory treatment interventions for pulmonary emboli and pulmonary hypertension. Alter the care plan based on changes in patient clinical intervention. | 2 | 0 | 0 |
| Environmental Lung Diseases, Chronic Non-infectious Parenchymal Lung Diseases: A. Sarcoidosis, B. Allergic, C. Alveolitis, D. Wegener's, E. Granulomatosis, F. Hypersensitivity, G. Pneumoconiosis | 1. Identify the term interstitial lung disease and cite several examples of this condition.<br>2. Discuss the interstitial diseases associated with occupational, medical treatment, or environmental exposures, specific systemic diseases, idiopathic interstitial pneumonias, and those associated with a specific pathology. Include asbestosis, coal worker's pneumoconiosis, silicosis, medications, radiation therapy, scleroderma, Sjogren syndrome, sarcoidosis, idiopathic pulmonary fibrosis, COP, BOOP, Wegner's, granulomatosis, Goodpasture syndrome, idiopathic pulmonary hemosiderosis, and chronic eosinophilic pneumonia.<br>3. Discuss the importance of patient interview and history in the diagnosis of interstitial lung diseases.<br>4. Identify the anatomical and pathologic changes that cause the signs and symptoms associated with interstitial lung diseases.<br>5. Identify the common signs and symptoms in a patient who presents with an interstitial lung disease.<br>6. Discuss the diagnostic testing indicated for the definitive diagnosis and staging of interstitial lung disease, including pulmonary function, imaging, and blood gases.<br>7. Discuss the general treatment for the patient with an inflammatory interstitial lung disease.<br>8. Suggest appropriate diagnostic studies to establish the differential diagnosis for each disease.<br>9. Identify the clinical signs and symptoms, abnormal pulmonary function test, radiographic, and clinical laboratory studies that differentiate the neoplastic and noninfectious parenchymal lung diseases.<br>10. Recommend appropriate protocol-based supportive respiratory treatment interventions for the noninfectious parenchymal lung diseases. Alter the care plan in response to changes in clinical presentation. | 3 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Lung Cancer | 1. Identify cancer. Differentiate benign and malignant tumors.<br>2. Discuss the common causes of lung cancer.<br>3. Discuss the pathologic or structural changes that are associated with lung cancer.<br>4. Describe the two main types of lung cancer: non-small cell lung carcinoma and small cell carcinoma. Include the distinguishing characteristics and outcomes for each.<br>5. Describe the less common types of lung cancer including large and small lung carcinoid tumors, large neuroendocrine tumors, and cancers that spread from other body sites.<br>6. Identify the various tests that may be indicated to diagnose cancer including chest radiograph, CT scan, MRI, PET scan, bone scan, bronchoscopy, mediastinoscopy, sputum cytology, thoracentesis.<br>7. Discuss the staging criteria of lung cancers.<br>8. Discuss the survival rate of lung cancer, including the effects of stage when found, treatment, and smoking cessation when a factor.<br>9. Discuss the general management strategies for lung cancer, including surgical removal, radiation, radiofrequency ablation, and chemotherapy.<br>10. Develop a respiratory care treatment for a patient with lung cancer that provides symptom relief and supports oxygenation and ventilation, and supports the patient's desired level of supportive care. | 2 | 0 | 0 |
| Diffuse Alveolar Disease: Acute Respiratory Distress Syndrome | 1. Define ARDS using the Berlin criteria.<br>2. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of ARDS.<br>3. Identify common causes of ARDS.<br>4. Suggest appropriate diagnostic studies to establish the differential diagnosis for ARDS, including chest radiograph and cardiac echo. Evaluate results of diagnostic studies. Classify the severity of ARDS using the Pa02/FIO2.<br>5. Identify the clinical signs and symptoms, abnormal pulmonary function test, radiographic, and clinical laboratory studies that characterize ARDS.<br>6. Apply clinical data to determine the presence of ARDS and classify the degree of severity.<br>7. Discuss the general management of the patient with ARDS, including the use of corticosteroids, antibiotics, and prone positioning.<br>8. Discuss ventilation strategies to avoid the development of ARDS and minimize damage to the lung in the presence of ARDS.<br>9. Based on patient presentation, recommend appropriate protocol treatment of ARDS, including the implementation of low tidal volume ventilation or unconventional ventilation modes. | 3 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Neurologic Disorders: A. Myasthenia Gravis, B. Guillain-Barre, C. Sleep disorders, D. spinal cord injuries, E. Amyotrophic Lateral Sclerosis (ALS), F. Muscular Dystrophies, G. Stroke | 1. Identify the causes and anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of neuromuscular weakness requiring respiratory interventions.<br>2. Identify the specific clinical signs and symptoms and clinical laboratory studies that differentiate myasthenia gravis, Guillain-Barre, ALS, and muscular dystrophy.<br>3. Recommend appropriate monitoring and diagnostic studies to establish the differential diagnosis for the conditions causing neuromuscular weakness that impairs breathing, including myasthenia gravis, Guillain-Barre, ALS, and muscular dystrophy.<br>4. Identify the clinical measurements and the limits that are used to determine indications to provide mechanical ventilation to patients presenting with neuromuscular weakness, including FVC < MIP, MEP, PaCO2, and pH.<br>5. Recommend protocol-based respiratory treatment for neuromuscular compromise that impairs breathing, including oxygen support, ventilation support, and airway clearance.<br>6. Identify the primary risk factors and epidemiology of stroke in the United States.<br>7. Describe the clinical presentation and diagnostic tools essential for a diagnosis of stroke.<br>8. Discuss the respiratory and nonrespiratory therapeutic interventions for supporting a patient who has experienced a stroke.<br>9. Identify the etiology and epidemiology of spinal cord injury.<br>10. Discuss the impact of spinal cord injuries on respiratory function. Include the variations based on level of injury.<br>11. Recommend respiratory interventions to treat the complications associated with spinal cord injuries.<br>12. Identify potential respiratory complications associated with traumatic brain injuries, including ability to protect the airway.<br>13. Explain the role of carbon dioxide tension on cerebral blood flow and intracerebral blood pressure.<br>14. Recommend ventilation strategies to maximize cerebral blood flow while maintaining a safe intracerebral blood pressure.<br>15. Identify the risk factors for the development of obstructive sleep apnea. Distinguish between obstructive apneas and central apneas.<br>16. Identify diagnostic tests to evaluate obstructive and central apneas. Interpret the findings of sleep studies.<br>17. Recommend mechanical, surgical, and pharmacologic treatment strategies for sleep disorders. | 2 | 0 | 0 |
| Other Conditions That May Cause Respiratory Failure: A. Near-drowning, B. Smoke inhalation, C. Post-operative hypoventilation and atelectasis | 1. Identify the anatomical changes present in near-drowning victims, differentiating between wet and dry near-drowning.<br>2. Discuss potential respiratory complications for the victim of near-drowning.<br>3. Recommend appropriate protocol-based supportive respiratory treatment interventions for near-drowning victims.<br>4. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of smoke inhalation and thermal lung injury victims.<br>5. Recommend appropriate protocol-based respiratory treatment interventions for smoke inhalation and thermal lung injuries.<br>6. Discuss the potential complications for victims of smoke/thermal injuries and respiratory strategies to minimize the harm to the patient.<br>7. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of post-operative atelectasis.<br>8. Identify the clinical signs and symptoms, abnormal pulmonary function test, radiographic, and clinical laboratory studies that reflect a diagnosis of atelectasis.<br>9. Identify the risk factors that increase the potential for a patient to develop asthma. Discuss the proactive strategies to minimize the development of atelectasis.<br>10. Recommend appropriate protocol-based respiratory treatment interventions to prevent and treat post-operative atelectasis. | 3 | 0 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Diseases and Injuries to the Chest Wall and Pleura: A. Flail chest, B. Pneumothorax, C. Pleural effusion, D. Kyphoscoliosis | 1. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of specific chest wall injuries including flail chest or pneumothorax.<br>2. Identify the specific clinical signs and symptoms and clinical laboratory studies associated with a flail chest or pneumothorax.<br>3. Recommend appropriate respiratory protocol treatment interventions for flail chest or pneumothorax. Discuss other treatments indicated for flail chest and/or pneumothorax.<br>4. Identify the common causes of pleural effusion.<br>5. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of pleural effusion.<br>6. Identify the specific clinical signs and symptoms and clinical laboratory studies associated with pleural effusion. Include the differentiation of a transudate and exudative pleural effusion.<br>7. Recommend appropriate respiratory protocol treatment interventions for pleural effusion. Identify the treatment indicated to treat the pleural effusion.<br>8. Describe an empyema, including the common causes.<br>9. Suggest appropriate respiratory interventions and curative treatment of an empyema.<br>10. Identify the anatomical alterations that cause the pathophysiologic changes responsible for the clinical presentation of kyphoscoliosis.<br>11. Identify the specific clinical signs and symptoms and clinical laboratory studies associated with kyphoscoliosis.<br>12. Recommend appropriate respiratory protocol treatment interventions for complications associated with kyphoscoliosis. | 3 | 0 | 0 |

**Total Contact Hours**

| Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|
| 45 | 0 | 0 |