



Course Number and Title: RCT 241 Pulmonary Pathophysiology I

Campus Location:

Georgetown, Wilmington

Effective Date:

2020-51

Prerequisite:

RCT 140, BIO 121

Co-Requisites:

none

Course Credits and Hours:

3.00 credits

3.00 lecture hours/week

0.00 lab hours/week

Course Description:

This course introduces the student to evaluation of the patient with pulmonary disease. Evaluation includes signs and symptoms, physical assessment, chest radiography, pulmonary function, and pertinent laboratory tests. Assessment and decisions for care of patients with obstructive lung diseases are emphasized.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

None

Schedule Type:

Classroom Course

Hybrid Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Examine the relationship of the primary symptoms of pulmonary disease to alterations in normal human pulmonary physiology. (CCC 1, 2, 6; PGC 1, 2, 3)
2. Discuss and interpret the relationship of the primary and secondary signs of pulmonary disease to alterations in normal human pulmonary physiology. (CCC 1, 2, 4, 6; PGC 1, 2, 3)
3. Summarize and interpret the significance of the role of laboratory testing in the assessment of patients with pulmonary disease. (CCC 1, 4, 5, 6; PGC 1, 2, 3)
4. Explain and differentiate the principles, techniques, and interpretation of radiographs of the chest. (CCC 1, 3; PGC 1, 2)
5. Summarize and apply the principles, techniques, and interpretation of selected pulmonary function tests. (CCC 1, 2, 5, 6; PGC 1, 2, 3)
6. Describe and classify the nature, causal factors, and implications of selected forms of obstructive lung disease. (CCC 4, 5, 6; PGC 1, 2)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Examine the relationship of the primary symptoms of pulmonary disease to alterations in normal human pulmonary physiology.
 1. Define *symptom*, and describe the six primary symptoms of pulmonary disease.
 2. Explain the significance of the five required characteristics of an effective cough.
 3. List and describe the significance of four observations the respiratory care provider (RCP) should make when sputum is produced.
 4. Define *hemoptysis*, and describe its diagnostic significance.
 5. Define *dyspnea*, and differentiate among the factors that produce it.
 6. Differentiate between pleuritic and anginal chest pain.
2. Discuss and interpret the relationship of the primary and secondary signs of pulmonary disease to alterations in normal human pulmonary physiology.
 1. Describe the role of each of the following assessment techniques in physical assessment of the chest: observation, palpation, percussion, and auscultation.
 2. Using a lab partner, demonstrate correct technique for physical assessment of the chest.
 3. Define each of the following pathologic states, and describe the pertinent physical findings: atelectasis, pneumothorax, pleural effusion, consolidation, and hyperinflation.
 4. Define each of the following terms, and describe the mechanism of production of each of the following adventitious breath sounds: *rales*, *wheezes*, *rhonchi*, and *friction rubs*.
 5. Explain the secondary or non-pulmonary signs and symptoms of pulmonary disease.
3. Summarize and interpret the significance of the role of laboratory testing in the assessment of patients with pulmonary disease.
 1. Describe the correct technique for sputum induction and collection.
 2. Differentiate the significance among four common microbiological tests performed on sputum specimens in the lab.
 3. Describe the procedure, and discuss the significance of obtaining samples of pleural fluid.
 4. Explain three techniques used to obtain tissue samples for biopsy of lung tissue.
 5. Discuss the principles, techniques, and interpretation of radiographs of the chest.
4. Explain and differentiate the principles, techniques, and interpretation of radiographs of the chest.
 1. Define *radiograph* (x-ray).
 2. Describe the radiographic density of gas, fat, water, bone, and metal.
 3. Differentiate among the following standard positions for chest radiographs: posteroanterior (PA), lateral, and anteroposterior (AP).
 4. Given a normal chest x-ray, identify the primary structures of the thorax.
 5. Describe and demonstrate a systematic approach for inspection of chest x-rays.
 6. Given a series of chest x-rays, differentiate between those that are grossly normal and those that are grossly abnormal.
5. Summarize and apply the principles, techniques, and interpretation of selected pulmonary function tests.
 1. Describe five basic types of flow and volume measuring devices used in assessment of pulmonary function.
 2. Explain the application of the ideal gas laws to pulmonary function testing.
 3. Describe the technique and discuss the significance of each of the lung volume and lung capacity measured in a pulmonary function test.
 4. Describe each of the flow-related tests obtained from a forced vital capacity, and discuss the diagnostic significance of each.
 5. Given a selection of pulmonary function tests, correctly interpret the results.
6. Describe and classify the nature, causal factors, and implications of selected forms of obstructive lung disease.
 1. Explain three mechanisms by which the bronchial lumen may be narrowed.
 2. Characterize obstructive lung disease in terms of pulmonary function abnormalities.
 3. Differentiate between the signs of extrathoracic and intrathoracic airway obstruction, and give an example of a disease process that is associated with each.
 4. Describe the signs and symptoms, etiology, and treatment of acute bronchitis.
 5. Explain the social and economic impact of chronic obstructive pulmonary disease (COPD).
 6. Discuss six factors known to play a role in the development of COPD.
 7. Using the American Thoracic Society standards, list and describe four disease entities that are grouped under the heading of COPD.
 8. Describe the typical physical findings in COPD.
 9. 6.9 Describe the pathophysiologic effect of COPD on each of the following: gas exchange, pulmonary mechanics, work of breathing, and pulmonary vascular resistance.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Final Course Grade:

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Summative: Unit Exams (4) (equally weighted)	65%
Formative: Summary essays (equally weighted)	15 %
Formative: Quizzes (equally weighted)	5%
Summative: Cumulative Final Exam	15%
TOTAL	100%

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**AHTAASRCT**

1. Apply theoretical information that leads to an appropriate action in the application or delivery of respiratory care procedures.
2. Perform technical skills in the implementation of respiratory care procedures within a plan of care.
3. Practice behaviors that are consistent with professional and employer expectations/requirements of their employees.

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.