



Course Number and Title: RCT 242 Pulmonary Pathophysiology II

Campus Location:

Georgetown, Wilmington

Effective Date:

2020-51

Prerequisite:

RCT 241

Co-Requisites:

none

Course Credits and Hours:

4.00 credits

4.00 lecture hours/week

0.00 lab hours/week

Course Description:

This course introduces patterns of restrictive lung disease. Topics include pneumonias, fibrotic lung disease, pulmonary neoplasms, disorders of pulmonary circulation, diseases of the pleura and thoracic wall, neuromuscular disease, aspiration, trauma, and acute respiratory distress syndrome (ARDS). Care, assessment, and decisions 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:

Instructor handouts All program and policy manuals/handbooks

Schedule Type:

Classroom Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Examine the nature, causal factors, and implications of selected pulmonary diseases of infectious origin. (CCC 1, 2; PGC 1, 2)
2. Describe and contrast the nature, causal factors, and implications of pulmonary neoplasms. (CCC 1, 2; PGC 1, 2)
3. Explain the nature, causal factors, and implications of selected diseases of the pulmonary circulation. (CCC 1, 2; PGC 1, 2)
4. Discuss the nature, causal factors, and implications of selected diseases of the pleura and pleural space. (CCC 1, 2; PGC 1, 2)
5. Compare and contrast the nature, causal factors, and implications of selected disorders of the thoracic wall. (CCC 1, 2; PGC 1, 2)
6. Describe and contrast the nature, causal factors, and pulmonary implications of selected diseases of the central and peripheral nervous system. (CCC 1, 2; PGC 1, 2)
7. Summarize and discuss the nature, causal factors, and implications of selected pulmonary aspiration syndromes. (CCC 1, 2; PGC 1, 2)
8. Examine the nature, causal factors, and implications of thoracic trauma and surgery. (CCC 1, 2; PGC 1, 2)
9. Explain the nature, causal factors, and implications of acute respiratory distress syndrome (ARDS). (CCC 1, 2; 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 nature, causal factors, and implications of selected pulmonary diseases of infectious origin.
 1. Define *infection*.
 2. Describe the primary defense mechanisms of the lower respiratory tract, and discuss factors that impair their effectiveness.
 3. Describe pneumonia in terms of:
 1. Portion of the airway affected
 2. Abnormal physical findings
 3. Effect on gas exchange
 4. Effect on pulmonary mechanics
 4. Explain the rationale for the following modalities in patients with pneumonia:
 1. Antibiotic therapy
 2. Oxygen therapy

3. Bronchial hygiene therapy
4. Fiberoptic bronchoscopy
5. Mechanical ventilation
5. Differentiate among community-acquired pneumonia, hospital-acquired pneumonia, and pneumonia in immunocompromised patients.
6. Define *standard precautions*, and explain the elements of such a plan.
2. Describe and contrast the nature, causal factors, and implications of pulmonary neoplasms.
 1. Define *bronchogenic carcinoma*.
 2. Describe the four histologic types of bronchogenic carcinoma with emphasis on cause and prognosis.
 3. Describe three common pulmonary and non-pulmonary symptoms of bronchogenic carcinoma.
 4. Discuss the role of each of the following in the diagnosis of lung cancer:
 1. Radiograph (X-ray)
 2. Sputum for cytology
 3. Bronchoscopy
 4. Mediastinoscopy
 5. Needle biopsy
 5. Discuss the role of each of the following in the treatment of pulmonary neoplasms:
 1. Surgery
 2. Radiation therapy
 3. Chemotherapy
 4. Oxygen therapy
 5. Bronchial hygiene
3. Explain the nature, causal factors, and implications of selected diseases of the pulmonary circulation.
 1. Describe the normal pressure, flow, and resistance relationships in the pulmonary and systemic circulation.
 2. Explain how pressure, flow, and resistance relationships may be altered by disease states causing pulmonary edema.
 3. Discuss pulmonary edema in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
 4. Describe right ventricular failure in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
 5. Describe fat embolism in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
4. Discuss the nature, causal factors, and implications of selected diseases of the pleura and pleural space.
 1. Define *pleural effusion*, and differentiate between exudative and transudative effusions.
 2. Describe pleural effusions in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
 3. Define *pneumothorax*, and differentiate between simple pneumothorax and tension pneumothorax.
 4. Describe pneumothorax in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
5. Compare and contrast the nature, causal factors, and implications of selected disorders of the thoracic wall.
 1. Describe each of the following deformities of the thoracic wall:
 1. Pectus excavatum
 2. Pectus carinatum
 3. Kyphosis
 4. Scoliosis
 5. Kyphoscoliosis
 2. Discuss the effect of each of the thoracic deformities listed in objective 5.1 in terms of physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
 3. Define *simple obesity*, *sleep apnea syndrome*, and *obesity hypoventilation syndrome*, and differentiate among them.
 4. Describe the effect of each term listed in objective 5.3 in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.
6. Describe and contrast the nature, causal factors, and pulmonary implications of selected diseases of the central and peripheral nervous system.
 1. Compose the normal range of pressures for intracerebral pressure (ICP), and explain how it is regulated in normal individuals.
 2. Discuss the ways in which trauma and disease are related to pathological increases in ICP.
 3. Examine four medical methods used to reduce ICP, and explain the rationale for each.
 4. Describe rationale and method for the use of mechanical ventilation in the regulation of ICP.
 5. Explain the adverse effect of spinal cord injury on ventilation based on the level of injury.
 6. Discuss spinal cord injury in terms of monitoring needs, effect on ventilatory pattern, and respiratory care plan.
 7. Explain the primary effect of narcotic overdose on ventilatory status, and describe normal management of these patients.
 8. Describe normal impulse transmission at the myoneural junction, and explain how it is altered in myasthenia gravis.
 9. Discuss myasthenia gravis in terms of mode of onset, muscle groups affected, diagnostic testing, monitoring, and patient management.
 10. Identify the site of nerve damage in patients with Guillain-Barre` syndrome.
 11. Discuss Guillain-Barre` syndrome in terms of mode of onset, muscle groups affected, progression of weakness, monitoring, and patient management.
7. Summarize and discuss the nature, causal factors, and implications of selected pulmonary aspiration syndromes.
 1. Describe aspiration of gastric contents in terms of:

1. Predisposing factors
2. Site of injury
3. Signs and symptoms
4. Effect on gas exchange
5. Strategies for prevention
6. Treatment
2. Define *drowning*, *near drowning*, and *anoxic encephalopathy*.
3. Describe the respiratory management of near-drowning victims.
4. Explain the elements of cerebral resuscitation for near-drowning victims.
8. Examine the nature, causal factors, and implications of thoracic trauma and surgery.
 1. Differentiate between the terms simple rib fractures and flail chest.
 2. Describe the effect of rib fractures and flail chest on each of the following:
 1. Physical assessment
 2. Gas exchange
 3. Pulmonary mechanics
 3. Differentiate between respiratory management of patients with simple rib fractures and those with flail chest.
 4. Discuss pulmonary contusion in terms of:
 1. Time of onset
 2. Signs and symptoms
 3. Effect on gas exchange
 4. Effect on pulmonary mechanics
 5. Management
 5. Explain the significance of expected reduction in ventilatory reserve following each of the following types of surgery:
 1. Upper abdominal
 2. Mid-sternal
 3. Lower abdominal
 4. Thoracotomy
 6. Explain the relationship between ventilatory failure and thoracic/abdominal surgery.
 7. Discuss methods of predicting pulmonary complications following thoracic/abdominal surgery.
 8. Given an example or clinical simulation of a post operative patient, design a respiratory care plan.
9. Explain the nature, causal factors, and implications of acute respiratory distress syndrome (ARDS).
 1. Discuss five (5) conditions that can lead to the development of ARDS, and explain the common pathway.
 2. Discuss ARDS in terms of etiology, physical findings, effect on gas exchange, effect on pulmonary mechanics, diagnostic tests, and treatment.

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 (6) (equally weighted)	75%
Summative: Research paper/project	15%
Formative: Quizzes (equally weighted)	10%
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.