

**Midland College
Respiratory Care
Master Syllabus
RSPT 2358
Respiratory Care Patient Assessment
Core Curriculum Course*

Course Description:

Integration of patient examination techniques, including patient history and physical exam, lab studies, x-ray, pulmonary function, arterial blood gases, and invasive and noninvasive hemodynamics.

End-of-Course-Outcomes

Interpret patient history and physical exam; evaluate lab studies, x-ray, pulmonary function, arterial blood gases, and invasive and noninvasive hemodynamics

Text, References, and Supplies:

Egan's Fundamentals of Respiratory Care, 12th ed., Craig Scanlan, Mosby

Cardiopulmonary Anatomy & Physiology 7th Ed., Des Jardins

Integrated Cardiopulmonary Pharmacology 5th Edition, Colbert, Gonzales

Disclaimer

The instructor reserves the right to make modifications to this course throughout the semester.

Students MUST actively participate by completing an academic assignment required by the instructor by the official census date. Students who do not actively participate in an academically-related activity will be reported as never attended and dropped from the course.

Course Objectives and Student Learning Outcomes

- I. The student will explain the use of pulmonary function equipment
 - A. Describe the operation and use of primary volume measuring spirometers
 - B. Describe the operation and use of primary flow measuring spirometers
 - C. Describe the operation and use of plethysmographs
 - D. Explain how the computer interfaces are used for pulmonary function testing
- II. The student will discuss pulmonary function testing associated with the FVC maneuver, MVV, airway resistance, and compliance
 - A. Determine whether spirometry is acceptable and reproducible
 - B. Select appropriate FVC and FEV1 for reporting from a series of spirometry maneuvers
 - C. Identify airway obstruction using FVC and FEV1
 - D. Differentiate between obstruction and restriction as causes of reduced vital capacity
 - E. Apply volumes and capacities to the flow-volume loop
 - F. Distinguish between large and small airway obstruction by evaluating flow-volume curves
 - G. Determine whether there is a significant response to bronchodilators

- H. Identify at least two pathophysiologic conditions in which maximal inspiratory or expiratory pressures might be abnormal
 - I. Recognize abnormal values for airway resistance
 - J. Describe the techniques for measuring pulmonary compliance and disease states associated with abnormal values
- III. The student will describe pulmonary function testing related to lung volumes
- a. Describe the measurement of lung volumes using the open and closed-circuit methods
 - b. Explain the advantages of measuring lung volumes using the body plethysmograph
 - c. Calculate residual volume, total lung capacity, and related lung volumes from simple spirometric measures and functional residual capacity
 - d. Identify uneven distribution of gas in the lungs by either the single or multiple breath nitrogen techniques
 - e. Describe the correct technique for measuring VTG
 - f. Identify air trapping and hyperinflation using measured lung volumes
 - g. Identify uneven distribution of gas in the lungs by single breath technique
- IV. The student will describe the electrophysiology of normal ECG tracings
- a. Describe properties of the cardiac tissue
 - b. Identify major components of the conductive system of the heart
 - c. Describe the electrophysiology of the heart at the cellular level.
 - d. Describe the components of the action potential
 - e. Explain the two refractory periods of the heart
- V. The student assesses the electrocardiogram as it pertains to ECG electrodes and leads
- A. Differentiate between limb leads and chest leads
 - B. Explain electrical activity as recorded by limb leads and chest leads
 - C. Describe normal electrocardiogram configurations and their expected measurements
 - D. Explain the specifics of ECG graph paper
 - E. Calculate heart rate using ECG strips
- VI. The student will identify common dysrhythmias
- a. List the steps for ECG interpretation.
 - b. Identify the criteria for each of the following abnormalities and general treatment for each
 1. Sinus bradycardia
 2. Sinus tachycardia
 3. Sinus dysrhythmia
 4. Premature atrial contraction
 5. Atrial flutter
 6. Atrial fibrillation
 7. Premature ventricular contraction
 8. Ventricular tachycardia
 9. Ventricular fibrillation
 10. Asystole
 11. First, second-, and third-degree AV block
- VII. The student will identify pharmacological agents and their influence on hemodynamic parameters
- a. Define terminology of cardiovascular agents
 - b. Discuss factors affecting cardiac output and blood pressure
 - c. Differentiate between mechanism of action of different cardiovascular medications
 - d. Give examples of proper antiarrhythmic drug therapy
 - e. Discuss the following intravenous medications commonly used for hemodynamic support of critically ill patients:

1. Hypertensive agents
 2. Vasodilator agents
 3. Vasopressor agents
 4. Anti-anginal agents
 5. Antithrombotic agents
 6. Inotropic drugs
 7. Antiarrhythmic drugs
- VIII. The student will summarize the technical aspects of equipment utilized during hemodynamic monitoring
- a. Describe the function of a transducer
 - b. Describe the function of an amplifier
 - c. Describe the function of display devices and give examples of different types
 - d. Describe the procedure for calibration of the transducer
 - e. Discuss the significance of resonant frequency and describe methods used to regulate it
 - f. Describe normal electrical current
 - g. Describe the safety precautions used with electrical current
- IX. The student will evaluate arterial pressure monitoring and the clinical significance of its results
- a. Recognize and explain the following regarding arterial pressure cannulation and monitoring
 1. Indications
 2. Cannulation sites
 3. Possible complications
 4. Normal pressure and their significance
 5. Pressure waveforms
 - b. Identify conditions which result in an elevation of the arterial pressure
 - c. Identify conditions which result in a decrease of the arterial pressure
 - d. Describe factors which can result in inaccurate arterial pressure results
 - e. Calculate mean arterial pressure and state normal values
- X. The student will evaluate the measurement of CVP and the clinical significance of its results
- a. Recognize and explain the following regarding central venous pressure monitoring
 1. Indications
 2. Cannulation sites
 3. Possible complications
 4. Normal pressure and their significance
 5. Pressure waveforms
 6. Significance of respiratory variation in the pressure waveform
 7. Methods of direct aortic pressure measurement and its significance
 - b. Identify conditions that may cause increase and decreased in CVP
- XI. The student will evaluate the measurement of PAP and the clinical significance of its results
- a. Recognize and explain the usage of pulmonary artery pressure monitoring
 - b. Identify the systolic pressure, dicrotic notch and diastolic pressure
 - c. Identify the conditions which may cause the elevation of PAP
- XII. The student will evaluate the measurement of cardiac output and discuss the advantages and disadvantages of each method
- XIII. The student will describe the techniques used to monitor oxygenation and explain its significance

Evaluation of Students

Attendance 5%

Quizzes 15%

- 6 Quizzes

6 Major Exams 50%

- Exam 1 (Course Objective I, II)
- Exam 2 (Course Objective I, II, III)
- Exam 3 (Course Objective IV, V)
- Exam 4 (Course Objective VI)
- Exam 5 (Course Objective VII)
- Exam 6 (Course Objective VIII, IX, X)

Laboratory exercises and competencies: 10%

- NIOSH Manual Exercises
- **PFT**
- **TMC 1**
- ECG I (Computer Simulation)
- ECG II (Computer Simulation)
- **TMC 2**
- Online Hemodynamics Exercise
- Hemodynamics I (Computer Simulation)
- Hemodynamics II (Computer Simulation) or
- Hemodynamics III (Computer Simulation)
- **TMC 3**

Final Exam (Course Objective VIII-XIII) 20%

The above competencies must have three "Assisted" or "Performed" documented in Trajecsyst, prior to the instructor evaluation for competency. During the instructor evaluation the student must satisfactorily PASS the competency evaluation items, including core components. At that time APPROVE will be documented in Trajecsyst and the student will receive a 100% for the competency evaluation. If the student does not satisfactorily PASS the competency evaluation items, including core components, the competency will be documented as NOT APPROVED in Trajecsyst, the student will receive a 50% for that attempt, and may have one attempt at re-evaluation after approved remediation. Upon re-evaluation, the student must satisfactorily PASS the competency evaluation items, including core components; however an average of the two attempts (75%) will be recorded in the grade book. If the student is unsuccessful on the re-evaluation, they will be removed from the course.

Test/exam questions will come from lecture, reading assignments and homework assignments. Most tests will be objective in nature. All students must take the final exam (failure to do so can result in the inability to proceed to the next semester within the program).

Final exams must be taken at the scheduled time without exception.

All final exams must be taken to proceed within the respiratory care program.

Grading Standards:

- A 90-100%
- B 80-89%
- C 70-79%
- F <70%

Student Contributions, Responsibilities and Class Policies:

Each student will spend at least 4 hours per week preparing for class. Attendance is critical in this class and is a predictor of your success. The college attendance policy will be followed.

Class Policies

All classroom performance and behavior will be considered academic.

Advising

Any student that scores below a 70 on an exam is responsible for emailing the instructor and scheduling an advising session within 24 hours of the exam review. All students must achieve a 70 or higher to pass this course.

Make Up exam Policy

Each student is expected to take exams as scheduled. If an exam is missed for any reason, the student must take the exam on the student's first day back on campus or a grade of "0" will be recorded for the missed exam. Ten percent will automatically be deducted from the make-up exam score. No more than two exams per semester may be made-up (for each course). Exams may not be taken early in any class.

All personal communication devices are to be placed on silence/vibrate during class time. If you must answer your device, please leave the immediate area.

No personal communication devices allowed in testing areas (including watches).

Scholastic Dishonesty and Academic Misconduct

The Midland College Policy will be followed.

Course Schedule:

This class meets Tuesday 9:00-11:50 and Thursday 9:00-11:50.

Division Information:

Division Chairman: Miranda Poage, PhD

Division Office Location and Telephone: 208, 685-4600

AMERICANS WITH DISABILITIES ACT (ADA) Statement:

Midland College provides services for students with disabilities through Student Services. In order to receive accommodations, students must visit www.midland.edu/accommodation and complete the Application for Accommodation Services located under the Apply for Accommodations tab. Services or accommodations are not automatic, each student must apply and be approved to receive them. All documentation submitted will be reviewed and a "Notice of Accommodations" letter will be sent to instructors outlining any reasonable accommodations.

NON-DISCRIMINATION STATEMENT:

Midland College does not discriminate on the basis of race, color, national origin, sex, disability or age in its program and activities. The following individuals have been designated to handle inquiries regarding the non-discrimination policies:

Wendy A. Kane

Dean of Student Life

Midland College

Title IX Coordinator/Compliance Officer

3600 N. Garfield, SSC 131

Midland, TX 79705

(432) 685-4781

Title9@midland.edu

For further information on notice of non-discrimination, visit the ED.gov Office of Civil Rights website, or call 1 (800) 421-3481.

Students are encouraged to contact the instructor at any time; however, making an appointment will guarantee the instructor's availability at a specific time.

Licensure Eligibility Notification

Completion of Midland College degrees and/or certificates does not guarantee eligibility to take a certification/registry/licensure examination. The eligibility of each person is determined on an individual basis by the regulatory body of the specific discipline. If you have a conviction of a crime other than a minor traffic violation, physical or mental disability/illness, hospitalization/treatment for chemical dependency within the past five years, current intemperate use of drugs or alcohol or a previous denial of a licensure or action by a licensing authority, you will need to contact the specific regulatory body for an individual ruling. Some programs require a criminal background check and urine and drug screen.