

**MIDWESTERN STATE UNIVERSITY  
COLLEGE OF HEALTH SCIENCES AND HUMAN SERVICES  
RESPIRATORY CARE PROGRAM  
COURSE SYLLABUS**

**COURSE TITLE**

Pulmonary Diagnostics

**COURSE NUMBER**

RESP 4403

**COURSE DESCRIPTION**

This course is designed as an in-depth study of the standard testing methodologies employed to diagnose and monitor patients with cardiopulmonary disease. Emphasis is placed on the technical aspects as well as disease presentation. Topics include measurement and analysis of lung volumes, ventilation, pulmonary mechanics, gas distribution, diffusion testing, cardiac and pulmonary exercise testing, quality assurance, blood gas analysis and clinical assessment in the ICU.

**WEEKLY MEETING PATTERN**

Mon, Tues, Thurs 1pm-240pm Centennial 250

**CREDITS**

3 credits

**COURSE INSTRUCTOR**

Mary Sue Owen MS, RRT-NPS, ACCS, RPFT, AE-C  
Office: 397-4654  
Mary.owen@msutexas.edu

**OFFICE HOURS**

As posted, other hours by appointment Room 420F

**AUDIENCE**

Senior Respiratory Care Students

**GRADED ITEMS AND GRADE DETERMINATION      Lecture Exams**

Standard exams that may include multiple choice, short answer, fill in the blank, essay or Case Studies, designed to cover material from the lecture and text.

**Final Exam**

Standard exams that may include multiple choice, short answer, fill in the blank, essay or Case Studies, designed to cover material from the lecture and text. I reserve the right to make this exam cumulative.

## GRADE DETERMINATION

|                      |     |
|----------------------|-----|
| Lecture Examinations | 70% |
| Final Examination    | 20% |
| Homework             | 10% |

## MISSED EXAM, LABORATORY REPORT OR OTHER GRADED ITEM POLICY

A 15% per day reduction in your grade will occur when an exam or graded item is not done on time, weekends and holidays included.

## APPROXIMATE GRADING SCALE

|        |   |
|--------|---|
| >90%   | A |
| 80-89% | B |
| 75-79% | C |
| 61-74% | D |
| <60    | F |

**\*\*A minimum grade of 75 (C) is required in all respiratory courses. Failure to attain a minimum of a C will prevent the student from progressing in the program.**

## ADA Compliance

In accordance with the law, MSU provides students with documented disabilities academic Accommodations. If you are a student with a disability, please contact me.

DISABILITY SUPPORT SERVICES  
CLARK STUDENT CENTER, ROOM 168  
PHONE: 397-4140

## OBJECTIVES

1. Students can differentiate between volume sensing and flow sensing spirometers, citing strengths and weaknesses of each design.
2. The student can explain the instrumentation required to perform basic spirometry, lung volume determination, and diffusion tests.
3. The student can list the indications for pulmonary diagnostic testing.
4. The student can identify expected changes in pulmonary diagnostic tests based on specific lung pathology.
5. When given a set of basic spirometric data, the student can identify normal and abnormal results.
6. The student can evaluate a lung volume study and determine whether the results indicate pulmonary obstruction or restriction.
7. The student will identify normal and abnormal diffusion study data and can explain challenges relative to the use of DLCO testing.
8. When evaluating arterial blood gas values, the student will correctly identify conditions relating to respiratory and metabolic dysfunction.
9. Students will evaluate exercise tests identifying anaerobic threshold, limitations to exercise based on de-conditioning, pulmonary and cardiac sources.

10. Students can list pulmonary diagnostic tests that help identify abnormal responses to increased carbon dioxide and decreased oxygen levels.
11. The student can identify common mistakes in quality assurance testing relating to pulmonary diagnostic equipment.
12. The student can identify the components of oxygen transport /clinical evaluation of oxygenation and their significance.
13. Recognize how the following can be used to evaluate tissue oxygen delivery and utilization: oxygen delivery, oxygen consumption, mixed venous oxygen tension, venous saturation, A/V content difference, O<sub>2</sub> ER and blood lactate.

## LEARNING RESOURCES

### REQUIRED TEXTS

Mottram, C.D. Manual of Pulmonary Function Testing, 12<sup>th</sup> Edition. Mosby, 2022.

## LECTURE SCHEDULE

|         |         |                                            |
|---------|---------|--------------------------------------------|
| AUG. 24 | 1-240PM | INTRO/WELCOME/INDICATIONS (CHAP 1)         |
| AUG. 25 | 1-240PM | INDICATIONS/BASIC PATHOLOGY (CHAP 1)       |
| AUG 27  | 1-240PM | PFT EQUIPMENT (CHAP 11)                    |
|         |         |                                            |
| SEPT 28 | 1-240   | SPIROMETRY AND RELATED TESTS (CHAP 2)      |
| SEPT 29 | 1-240   | SPIROMETRY AND RELATED TESTS (CHAP 2)      |
| OCT 1   | 1-240   | <b>EXAM 1</b>                              |
| OCT 5   | 1-240   | LUNG VOLUMES (CHAP 4)                      |
| OCT 6   | 1-240   | LUNG VOLUMES (CHAP 4)                      |
| OCT 8   | 1-240   | VENTILATION AND CONTROL TESTS (CHAP 5)     |
|         |         |                                            |
| OCT. 12 | 1-240   | DIFFUSION CAPACITY (CHAP 3)                |
| OCT. 13 | 1-240   | DIFFUSION CAPACITY CONT. (review for exam) |
| OCT. 15 | 1-240   | CONT. AND REVIEW                           |
| OCT 19  | 1-240   | <b>EXAM 2</b>                              |
| OCT 20  | 1-240   | REVIEW EXAM                                |
| OCT 22  | 1-240   | BLOOD GAS AND RELATED (CHAP 6)             |

|         |        |                                           |
|---------|--------|-------------------------------------------|
| NOV. 9  | 1-240  | CONT                                      |
| NOV. 10 | 1-240  | EXERCISE (CHAP 7)                         |
| NOV. 12 | 1-240  | EXERCISE CONT.                            |
| NOV. 16 | 1-240  | FINISH AND REVIEW                         |
| NOV. 17 | 1-240  | <b>EXAM 3</b>                             |
| NOV. 19 | 1-240  | SPECIALIZED TESTS (CHAP 9 & 10)           |
| NOV. 23 | 1-240  | QUALITY ASSURANCE (CHAP 12)               |
| NOV. 24 | 1-240  | ATS-ERS STANDARDS FOR PATIENT PERFORMANCE |
| NOV. 30 | 1-240  | <b>EXAM 4</b>                             |
| DEC 1   | 1-240  | <b>REVIEW FOR FINAL</b>                   |
| DEC. 3  |        |                                           |
| DEC.    | 0900AM | FINAL EXAM                                |