



**LAMAR INSTITUTE  
OF TECHNOLOGY**

Respiratory Care Sciences (RSPT 1325)

**INSTRUCTOR CONTACT INFORMATION**

Instructor: Stacey Hall

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Office Phone: 409-247-4838

Office Location: Gateway Room 107

Office Hours: Posted on door

**CREDIT**

3 Semester Credit Hours (3 hours lecture, 1 hours lab)

**MODE OF INSTRUCTION**

Face to Face

**PREREQUISITE/CO-REQUISITE:**

Pre-requisites: RSPT 1201, RSPT 1213

Co-requisites: RSPT 1310, RSPT 1240, RSPT 1160

**COURSE DESCRIPTION**

Physics, mathematics, and chemistry as related to respiratory care.

**COURSE OBJECTIVES**

Upon completion of this course, the student will be able to

- Relate mathematics to perform various functions commonly used in respiratory Care

1. Identify a basic understanding of microbiology needed for the Respiratory care practitioner including collection of sputum samples, the treatment of patients having bacterial, viral, or fungal diseases, the disinfection and sterilization of respiratory care equipment, the adherence to and the utilization of appropriate isolation procedures and the prevention of nosocomial infections.
2. Relate basic concepts of chemistry to clinical respiratory care and pulmonary physiology
3. Apply a variety of physical principles to respiratory care equipment and cardiopulmonary physiology.

### **Course Outline**

- I. Relating Math
  1. L. to ml
  2. ml to L
  3. g to Mg
  4. Mg to g
  5. ml to cc
  6. gtts to ml
  7. cc to ml
  8. L/min to L/sec
  9. L/sec to L/min
  10. lbs to kg
  11. Kg to lbs
  12. Calculating ideal body weight
  13. Calculate TCT, Rate, I:E ratios
  14. % solutions
- II. Microbiology
  1. Classification
  2. Morphology and staining
    - A. Gram + and Gram –
    - B. Acid Fast
  3. Structure

4. Growth
  5. Control of growth
  6. Fungi
  7. Viruses
  8. Spread of Infection
    - A. Hosts and Modes
      1. Contact
      2. Droplet
      3. Airborne
      4. Misc. types of modes
    - B. Infection control strategies
      - a. PPE
      - b. Disease Specific Isolations
      - c. Causative agent
    - C. Equipment
      - a. Disinfection
      - b. Processing
      - c. Surveillance
    - D. Vaccinations
- III. Chemistry
1. Kinetic theory of matter
  2. Pressure
  3. Gas Laws
  4. Chemical Laws
  5. Density and specific gravity
  6. Temperature scales
  7. Unit conversions
  8. Electrochemistry

#### IV. Physics

1. Work
2. Energy
3. Fluid dynamics
4. Mechanics of ventilation
5. Starlings law of capillaries
6. Physical and electrical analyzers

#### V. Graph Interpretation

1. Types of graphs
  - a. Volume- time
  - b. Pressure- time
  - c. Volume- Pressure
  - d. Flow- time

### **REQUIRED TEXTBOOK AND MATERIALS**

Respiratory Care Sciences: An Integrated Approach 5<sup>th</sup> Edition by William Wojciechowski ISBN# 978-1-133-59477-2

Egan's Fundamentals of Respiratory Care 13<sup>th</sup> Edition ISBN# 978-0-323-93199-1

### **ATTENDANCE POLICY**

#### **Attendance/Class policy:**

It is the student's responsibility to familiarize his or herself with the LIT Student Handbook and the Respiratory Care program student handbook.

Violation of the policies listed in the LIT Student Handbook and/or the Respiratory Care program student handbook will result in appropriate action being taken.

**Attendance:** Attendance is expected. Students are allowed 2 absences per semester, with or without a Dr.'s excuse. Each absence in excess of the 2 allotted absences will result in a 10% reduction, per absence, in the student's final class grade. Example: 3 absences = 10% reduction in final class grade, 4

absences = 20% reduction in final class grade, etc. Deductions as a result of excessive absences, will be applied to the student's final class grade at the end of the semester.

Your attendance is the biggest predictor of your success. If you do not attend class, you are missing very valuable information. Attendance will be recorded both in the classroom and in the lab. Absences in lab will result in a grade of 0 for that lab day. Tests will include both textbook material and material presented in class.

If absences seriously interfere with performance, the instructor may recommend, to the Department Chair, that the student be dropped from the course.

Absences resulting from extenuating circumstances will be evaluated by the program Director and/or Director of Clinical Education on a case by case basis. Proper documentation will be required to demonstrate the nature of the extenuating circumstance.

Examples of extenuating circumstances, and documentation, include:

-Hospitalization of an immediate family member (Hospital/Physician documentation must be provided)

-Death of an immediate family member (Memorial Pamphlet must be provided)

**Tardiness:** Punctuality is expected. 3 tardies in a semester will be considered as a 1 day absence.

**You must notify the instructor via phone call, prior to missing an exam.** Failure to notify instructor of an absence prior to the start of the exam will result a grade of 0 will be assigned for the missed exam. There will be no makeup exams or lab assignments if you fail to notify the instructor prior to a missed exam.

**Make-Up Exams:** Make up exams will be taken the first class day that the student returns following an absence. Make-up exams will be administered immediately at the beginning of the class on the day of return.

**Homework Assignments:** Homework assignments will be due immediately at the start of class. Late work (work turned in after the start of class) will not be accepted. If you are absent on the day a homework assignment is due, it is your responsibility to ensure that your work is emailed to the instructor prior to the start of class on the day of your absence.

**Pop Quizzes:** Pop Quizzes will be administered at the start of class. Any student who arrives tardy to class, after the Pop Quiz has been distributed, will receive a 0 grade for that pop quiz.

## **DROP POLICY**

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the [Academic Calendar](#). If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

## STUDENT EXPECTED TIME REQUIREMENT

For every hour in class (or unit of credit), students should expect to spend at least two to three hours per week studying and completing assignments. For a 3-credit-hour class, students should prepare to allocate approximately six to nine hours per week outside of class in a 16- week session OR approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

## COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS Lab
1	Application of Math Concepts. Volume and Pressure measurements	RC Sciences Chapter 1	Changing units of volume
2	I:E ratios/Flows (L/min, L/sec)	RC Sciences Chapter 1	Changing units of weight
3	Exam #1/Physics- Work		I:E ratio calculations
4	Physics- Matter	RC Sciences Chapter 4 Egan's Ch. 6	Demo of atmospheric pressure. Gas laws
5	Physics- Gas laws /Sterling's law	RC Sciences Chapter 4 Egan's Ch. 6	Alveolar air equation.
6	Physics- Temperature scales	RC Sciences Chapter 4 Gan's Ch. 6	BTPS & ATPS
7	Pressure/volume/flow graphic interpretation	RC Sciences Chapter 4 Egan's Ch. 6	Air/O <sub>2</sub> ratios with total flow
8	Exam #2/ Chemistry		O <sub>2</sub> analyzers
9	Elements Compounds/ Basic Chemistry	RC Science Chapter 3 Egan's Ch 14 & 17	Chemical reaction of the HGB
10	Fluid balance	RC Science Chapter 3	Strong & weak acids

		Egan's 14 & 17	
11	Acids and Bases	RC Science Chapter 3 Egan's 14 & 17	Continue with total flow, ph scale
12	Classification of microbes	RC Science Chapter 6 Egan's Ch. 4	Fluid Dynamics, Air- Oxygen ratios
13	Bacterial growth/ Disinfestation and sterilization  Exam #3	RC Science Chapter 6 Egan's Ch. 4	Basic techniques in the Microbiology Lab/Bioterrorism Looking at Microbes
14	Interpretation of graphics and scalers	RC Science Chapter 4	Graph Interpretation
15	Interpretation of graphics	RC Science Chapter 4	Graph Interpretation
16	Exam #4		Review

### COURSE EVALUATION

Final grades will be calculated according to the following criteria:

4 – 5 exams	80%
Lab/Homework/pop quiz/ assignment	20%

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### GRADING SCALE

90 – 100	A
80 – 89	B
77 – 79	C
68 – 76	D
0 – 67	F

LIT does not use +/- grading scales

### **ACADEMIC DISHONESTY**

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Student Catalog & Handbook at

<http://catalog.lit.edu/content.php?catoid=3&navoid=80#academic-dishonesty>.

### **TECHNICAL REQUIREMENTS**

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

### **DISABILITIES STATEMENT**

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email [specialpopulations@lit.edu](mailto:specialpopulations@lit.edu). You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

### **STUDENT CODE OF CONDUCT STATEMENT**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu). Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.



## **AI Statement**

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI / ChatGPT in their courses

## **STARFISH**

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

## **ADDITIONAL COURSE POLICIES/INFORMATION**

1. No food or drink, or use of tobacco products in class
2. Cheating of any kind will not be tolerated.
3. beepers, telephones, headphones, and other electronic devices must be turned off while in class. No cell phones during exams. You are not allowed to utilize a calculator that is within a cell phone or electronic device. All personal items will be placed at the front of the classroom and cell phones will be placed on presentation desk.
4. No children allowed in the classroom
5. No late assignments will be accepted
6. Abide by LIT policies
7. Abide by policies within the Respiratory Care Handbook
8. Abide by instructor specific policies; this will be distributed on the first class day.
9. Exam dates will be distributed the first class day.
10. Electronic communication will be thru your LIT email account.
11. Homework assignments: will be given periodically with due dates. No late homework assignments are accepted.