

## ***Laboratory Assessments for Fundamentals of Respiratory Physiology***

VME 6200L: Class 30523

***Credits:*** 2

***Class Periods:*** 6, 7 and 8 (12:50 – 3:50)

***Location:*** B2-28 and B3-13

***Academic Term:*** Fall, 2023

### ***Instructor:***

Paul W. Davenport, PhD

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(352) 294-4025

Office Hours: Tuesday and Thursday, by appointment, B3-29, BSB

### ***Teaching Assistants:***

- None

### ***Course Description***

Introduces and applies essential concepts and methods of respiratory physiology measurements and assessments to graduate students including an understanding of to calibrate instruments, how to measure physiological parameters, how to determine lung volumes, breathing patterns, respiratory gases and apply these measurements to human and animal assessments. Students will learn the types of equipment that are used for respiratory physiological assessments and the application to humans and animals.

### ***Course Pre-Requisites / Co-Requisites***

Permission of the program, BCH 3025 Fundamentals of Biochemistry or equivalent

Permission of the program, MAC 2233 Survey of Calculus 1 or equivalent

Permission of the program, PHY 2020 Introduction to Principles of Physics or equivalent

Permission of the program, VME 6200 Fundamentals of Respiratory Physiology

### ***Course Objectives***

The course objectives will be accomplished by learning the types of equipment that are used for respiratory physiological assessments. Students will also be provided with an opportunity to apply respiratory assessments to humans and animals. The expected outcome of the course is that students will obtain new knowledge about respiratory physiology measurements, assessments and data interpretation. Based on this new knowledge it is expected that the student will have sufficient understanding to apply the techniques to address research and clinical respiratory system studies. It is also expected that the students will be able to identify the appropriate assessment to identify the responses that occur when the system is disturbed. Successful mastering of these expectations will provide a strong foundation for successful understanding of the methods used for understanding the fundamentals of respiratory physiology.

### ***Student Learning Outcomes***

After successful completion of this course, students will be able to:

1. To develop an understanding and apply methods of how to measure oxygen and carbon dioxide, air pressure, airflow, lung volumes and muscle activity.
2. To develop an understanding and apply methods of how measure respiratory mechanics.
3. To develop an understanding and apply methods of how to determine breathing pattern and respiratory reflex responses.
4. To develop an understanding and apply methods of the techniques used to determine respiratory sensations.
5. To develop an understanding and apply methods for respiratory rehabilitation.

### ***Materials and Supply Fees***

None

### **Required Textbooks and Software**

No required textbooks, all class material will be provided on Canvas, Lecture Slides and Laboratory Assessments for Fundamentals of Respiratory Physiology notes developed by the instructor.

### **Recommended Materials**

1. Respiratory Physiology - the essentials, John B. West (this is the recommended text), Publisher: LWW; Tenth edition (2015) or most recent edition.
2. Lung Function: Physiology, Measurement and Application in Medicine, J.E. Cotes, D.J. Chinn, M.R. Miller, Publisher: Wiley-Blackwell, 6th Edition (2009) or most recent edition.
3. Applied Respiratory Physiology: Edition 3, John F Nunn, Publisher: Butterworth-Heinemann, 3rd Edition (2013) or most recent edition.

### **Course Schedule**

	<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
Thursday	8/24/2023	Respiratory Pressures	Davenport
Thursday	8/31/2023	Respiratory Airflow and Volume	Davenport
Thursday	9/7/2023	Respiratory Muscle EMG	Smith
Thursday	9/14/2023	Pleural/Esophageal Pressure (Quiz)	Smith
Thursday	9/21/2023	Spirometry	Davenport
Thursday	9/28/2023	FRC and Dead Space	Davenport
Thursday	10/5/2023	Measurement of Resistance and Compliance	Davenport
Thursday	10/12/2023	Impulse Oscillometry (Quiz)	Davenport
Thursday	10/19/2023	Work of Breathing	Davenport
Thursday	10/26/2023	O <sub>2</sub> and CO <sub>2</sub> Analyzers and End-Tidal Gas	Davenport
Thursday	11/2/2023	CO <sub>2</sub> Sensitivity, Rebreathing Method	Davenport
Thursday	11/9/2023	Blood Gases, Pulse Oximetry and O <sub>2</sub> Sat (Quiz)	Davenport
Thursday	11/16/2023	Breathing Pattern, Load Compensation	Davenport
Thursday	11/30/2023	Respiratory Psychophysics (Quiz)	Davenport
Wednesday	12/6/2023	Class Project Due	Davenport

### **Attendance Policy, Class Expectations, and Make-Up Policy**

Attendance is expected. Use of laptop or computer notebook for class notes and slides is expected. Use of cell phones for class notes and slides is acceptable but must be silenced. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Excused absences must be consistent with university policies in the [Graduate Catalog](#) and require appropriate documentation. Additional information can be found in [Attendance Policies](#).

### **Evaluation of Grades**

<b>Assignment</b>	<b>Total Points</b>	<b>Percentage of Final Grade</b>
Quizzes (4)	40	25%
Final Class Project	100	75%
		100%

## **Grading Policy**

The following is given as an example only.

<b>Percent</b>	<b>Grade</b>	<b>Grade Points</b>
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 - 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 - 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)  
[Grades and Grading Policies](#)

### **Students Requiring Accommodations**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### **Course Evaluation**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via [ufl.bluera.com/ufl/](http://ufl.bluera.com/ufl/). [Summaries of course evaluation results are available to students here](#).

### **University Honesty Policy**

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### **Software Use**

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

### **Student Privacy**

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

### *In-Class Recording*

•Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

### **Campus Resources:**

#### Health and Wellness

##### **U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

**Counseling and Wellness Center:** [counseling.ufl.edu/cwc](http://counseling.ufl.edu/cwc), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

##### **Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or [police.ufl.edu](http://police.ufl.edu).

#### Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu).

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling.

**Library Support**, Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

**Writing Studio**, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

**[Student Complaints Campus](#)**

**[On-Line Students Complaints](#)**