

University of Florida Department of Physiology and Aging

GMS 6402 Medical Pulmonary Physiology - Course Syllabus

Course Number: GMS 6402

Credit Hours: 3

Format: Online, asynchronous

Instructor: Peter Sayeski, Ph.D., Professor, Department of Physiology and Aging

Course Coordinator: Taylor Greene, Academic Specialist III, Department of Physiology and Aging

Course Description: This course teaches the functions of the pulmonary system of the human body at a level required for clinical medicine and basic research in medical physiology. The course covers normal physiology, as well as selected diseases. Concepts are taught using a combination of lectures, online Research Assignments, and online problem sets. The Research Assignments are designed to help the student understand the integration of pulmonary physiology with genetics, genomics, molecular biology, and cellular physiology as a basis for a better understanding of human disease. The ultimate goal is for students to develop an understanding of the integrated functions of the normal body and “problem solving” and “critical thinking” skills in evaluating clinical situations. Each recorded lecture lasts between 20 and 30 min.

Course Objectives: After successfully completing this course, students will be able to:

1. Understand the structure and normal functions of the lung at a level required for an understanding of clinical medicine.
 2. Understand the uptake, transport, and utilization of oxygen and other blood gases at a level required for an understanding of clinical medicine.
 3. Understand acid-base physiology at a level required for an understanding of clinical medicine.
 4. Understand the mechanisms controlling pulmonary function at a level required for an understanding of clinical medicine.
 5. Understand how these systems act in an integrated manner to regulate overall body functions.
 6. Understand how failure of these normal physiologic functions and integrations are associated with some diseases.
 7. Demonstrate the ability to apply physiological principles of clinical and basic science relevancy by multiple choice examinations, research assignments, and problem sets.
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Prerequisites

BA/BS with at least five science courses in biology, chemistry, and/or physics; minimum GPA 2.0. Co-enrollment or prior completion of GMS 6440 required.

Course Contacts

Instructor: Peter Sayeski, Ph.D., Professor, (Email via Canvas, response in 1-2 business days)

Course Administrator: Taylor Greene (Email via Canvas, response 1-2 business days)

Schedule

Self-paced with weekly problem sets and three self-guided research assignments throughout the semester. Problem sets are designed to help the student master the course material and are graded.

Learning Resources

1. Recorded video lectures with PowerPoint presentations will be provided on the course website.
2. Recorded video clinical correlation(s) and/or case studies relating to the basic science material.
3. Lecture notes for each video lecture are available as PDF downloads enabled for direct note taking.

Recommended Text (not required, but highly recommended):

"Berne & Levy Physiology, 7th Edition" 2018. Author: Bruce M. Koeppen & Bruce A. Stanton. ISBN: 9780323393942

VPN: Important instructions for getting to the reading materials linked in the course:

Many of the links to the course readings are journal articles, books and other items held by the UF Libraries. To get to those materials you must first log into a secure connection called a virtual private network or VPN. Once you are logged into the UF VPN, go back into the course and click on the reading links.

How to install the UF VPN:

1. [Review the instructions](#) on how to install the VPN client for your computer.

2. [Download the latest Cisco Anyconnect client](#)Links to an external site. --- select from the list the one that's appropriate for your computer's operating system. You will be prompted to enter your Gatorlink login credentials (Once installed it will automatically update, so no need to do additional downloads).

3. Open the Anyconnect client and log in with your Gatorlink credentials whenever you need to get to readings. (It is preferred that you use the Anyconnect client you downloaded, but if you are ever in a pinch and can't get to the Anyconnect client, you can log into VPN from the web, at <https://vpn.ufl.edu>Links to an external site.)

4. Log into the course in Canvas at <http://elearning.ufl.edu>Links to an external site. and click on the links to the reading materials.

Borrowing from the UF Library: Distance learners may borrow materials from the UF Libraries. They may also borrow from associated non-UF libraries using Interlibrary Loan (ILL). See the main library site for distance learners at <http://guides.uflib.ufl.edu/distancelearners>Links to an external site.. See more on ILL -- including an FAQ specially for distance learners -- at <http://cms.uflib.ufl.edu/accesssupport/InterlibraryLoan>Links to an external site..

Course structure:

Self-paced with weekly problem sets and three research assignments throughout the semester.

Course Schedule

Unless otherwise noted, all problem sets, assignments and final exam are due on the dates specified in the course Assignment page.

Lecture 1: Introduction to Respiratory Physiology
Lecture 2: Functional Anatomy
Lecture 3: The Respiratory Pump and Lung Volumes
Problem Set 1: Lung Structure

Lecture 4: Lung Compliance I
Lecture 5: Lung Compliance II
Lecture 6: Airway Resistance I
Lecture 7: Airway Resistance II Problem
Set 2: Pulmonary Mechanics

Lecture 8: The Work of Breathing I
Lecture 9: The Work of Breathing II

Functional Genomics Research Assignment 1: Cystic Fibrosis

Lecture 10: Alveolar Ventilation and Gas Composition I
Lecture 11: Alveolar Ventilation and Gas Composition II
Problem Set 3: Alveolar Ventilation and Gas Composition

Lecture 12: Gas Diffusion I
Lecture 13: Gas Diffusion II
Problem Set 4: Gas Diffusion

Lecture 14: Oxygen Transport I
Lecture 15: Oxygen Transport II
Lecture 16: Oxygen Content I
Lecture 17: Oxygen Content II
Lecture 18: Clinical Correlation O₂ and CO₂ Assessment I
Lecture 19: Clinical Correlation O₂ and CO₂ Assessment II Problem
Set 5: Oxygen Transport and Carriage

Functional Genomics Research Assignment 2: Sickle Cell Anemia

Lecture 20: Pulmonary Circulation I
Lecture 21: Pulmonary Circulation II
Lecture 22: Clinical Correlation: Pulmonary Edema I
Lecture 23: Clinical Correlation: Pulmonary Edema II
Problem Set 6: Pulmonary Circulation

Lecture 24: Acid-Base I
Lecture 25: Acid-Base II
Problem Set 7: Acid-Base

Lecture 26: Respiratory Control I
Lecture 27: Respiratory Control II
Problem Set 8: Neural Respiratory Control Mechanisms

Lecture 28: High Altitude Respiration
Lecture 29: Clinical Correlation: Case Studies I
Lecture 30: Clinical Correlation: Case Studies II
Problem Set 9: Vascular Control Mechanisms

Lecture 31: Exercise Physiology and the Lung

Functional Genomics Research Assignment 3: Polycythemia Vera

Final Exam (multiple-choice; please schedule this with ProctorU)

Technical Requirements

To access the course and view the online videos, a high-speed internet connection is required, as well as a web browser with the latest Microsoft Silverlight plugin installed.

Technical Support: If you have technical difficulties with downloading and accessing course files or ProctorU scheduling, email the academic administrator, Taylor Greene by Canvas email with a detailed description of the problem. If your technical issues are trouble with accessing the VPN or your UF account, please contact the UF Help Desk at 352-392-4357.

Grade Breakdown:

- (3) Research Assignments: 30%
- (9) Problem Sets: 30%
- (1) Final Exam: 40%

Grading Scale:

A 93-100% | A- 90-92%

B+ 87-89% | B 83-86% | B- 80-82%

C+ 77-79% | C 73-76% | C- 70-72%

D+ 67-69% | D 63-66% | E <63%

Final Exam & ProctorU

The final exam consists of multiple-choice questions covering lecture material. It will be monitored by ProctorU, a UF-approved proctoring service allowing remote exams while ensuring academic integrity. The exam must be scheduled and started no later than 8:00 PM EST on the due date.

Important Notes:

- You will need a government issued photo ID, high-speed Internet connection, a webcam (internal or external), **Desktop or laptop computer running Windows 10 or later, Mac OS 11.0 or later. Tablets, including iPads, Chromebooks, and smartphones are not supported.**
- **Final exams must be scheduled at least 72 hours prior to the due date.** As a result, issues that arise on the day of the exam—such as delayed ProctorU account setup, limited time slot availability, or technical problems with Internet or computer access—will not be considered valid excuses for missing the exam deadline.

Exam Preparation Steps:

1. [Create your ProctorU account](https://go.proctoru.com/session/new) [Links to an external site.](#)(<https://go.proctoru.com/session/new>)
 2. [Review Equipment Requirements & Test your computer](https://support.proctoru.com/hc/en-us/articles/24692181239309-Equipment-Requirements)[Links to an external site.](#) (<https://support.proctoru.com/hc/en-us/articles/24692181239309-Equipment-Requirements>[Links to an external site.](#))
 3. [Schedule your exam](https://support.proctoru.com/hc/en-us/articles/25852622025741-How-to-Schedule-Reschedule-or-Cancel-an-Exam) [Links to an external site.](#)(<https://support.proctoru.com/hc/en-us/articles/25852622025741-How-to-Schedule-Reschedule-or-Cancel-an-Exam>)
 4. [Read the ProctorU Test Taker Library for more information and resources about what to expect for your text taking experience.](https://support.proctoru.com/hc/en-us/categories/115001818507-Test-Taker-Library)[Links to an external site.](#)(<https://support.proctoru.com/hc/en-us/categories/115001818507-Test-Taker-Library>)
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Late Work Policy

Assignments

For assignments that require manual grading (e.g., research papers, projects), the following will apply:

- Unless you have an approved excused absence, a 10% deduction will be applied for each week the assignment is late.

Final Exam

- Make-up exams will only be permitted with approval of an excused absence. **Failure to take the final exam without such approval will result in a score of zero.**
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Accommodations for Students with Disabilities

Students requesting accommodations must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student, who must then provide this documentation to the course director when requesting an accommodation. Contact the Disability Resources Center, <https://dso.ufl.edu/> for information about available resources for students with disabilities.

Using, Citing, and Formatting References

As you go through the course, you will consult with many different types of sources to obtain supporting data or information for any points or arguments you make in your assignments. You are required to cite your sources when you do the following:

1. Refer to facts or quantitative data
2. Paraphrase another author's view point, idea, or theory
3. Quote an author directly

Your sources may include your online lecture notes from within Canvas, academic or scholarly journals, print or online newspapers, magazines, books, videos, apps, blogs, podcasts online discussion forums such as Reddit's AMA, or personal communication with an expert or other person. When citing references, in each case you are required to do six things:

1. Include the source of the information you are presenting
2. Cite the source within body of your discussion, essay or other text (this is known as in-text citation)
3. Paraphrase where necessary (see note on paraphrasing below)
4. Put language taken word-for-word from another source in quotation marks or block quotes
5. List your references at the bottom of your discussion, essay or other text
6. Format the references (both the in-text citation and the reference list) according to the required style convention.

To properly cite and format a reference, find as many details about the source as possible and carefully consider the following (Paiz et al., 2015):

In-text citation: Sources must be cited within the body of the text for any information or data presented in support of arguments or examples given. In-text citations go at the end of a sentence. They generally include the author's last name, followed by a comma, and the year of publication, all enclosed in parentheses, e.g. (Goldman, 2012), but there is some variation depending on the type of source and the number of authors.

Paraphrasing: If you are referencing ideas or information from another work and you feel the need to cite or quote the author in each and every line of your body of text, stop! Instead, you should paraphrase the work and include an in-text citation the first time the work is mentioned. Paraphrasing means synthesizing an author's original statements and then saying them in your own words (Purdue Online Writing Lab [OWL], 2014). Visit the [Purdue OWL](#) for tips on effective paraphrasing.

Quoting: If you do have the need to take some language word-for-word from another source, put it in quotation marks or block quotes.

Reference list: This should be ordered alphabetically by the last name of the first person listed on the paper or other source material (APA, 2009).

Formatting: For instructions and detailed examples of how to format in-text citations and reference lists for a variety of source types, consult the [Purdue OWL APA style guide](#). You may also contact the UF reference librarian for assistance (see the library resources section in your course syllabus).

Academic Honesty

Online classes are subject to the same requirements of academic honesty as all on-campus classes. Please review and be familiar with the Student Conduct Code and Student Honor Code, which can be found at <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code> ([Links to an external site.](#)). 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 Student Honor Code specifies a number of behaviors that violate the code, and the possible sanctions. Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult the instructor or course coordinator.

Plagiarism

Plagiarism is presenting another person's work as your own. Cheating and plagiarizing are against the University of Florida Student Conduct Code. Submissions in this course are checked via Turnitin (<http://www.turnitin.com> ([Links to an external site.](#))), a service that compares documents with each other as well as with pages on the Internet and with other assignments previously submitted by other students. If portions of your document were directly copied and pasted from another student's assignment (past or present) or from the Internet, that constitutes plagiarism. Any form of plagiarism will be investigated as set out by the University of Florida Student Conduct Code. Procedures on investigations can be found at: <http://www.dso.ufl.edu/judicial/> ([Links to an external site.](#)). Students in this course caught cheating and plagiarizing, will be immediately given a failing grade, and may be prosecuted in the UF Honor Court. From your citations and references, the reader of your paper should be able to tell the source of all your outside information. It may be acceptable to place a few comments in quotes with a citation, but it is never acceptable to copy and paste a long string of text from a source, even if it is cited and even if you change a few words. Anything from another source that is not in quotations must be paraphrased. Also, please note that UF policies require that you create original work for each course. Thus, students are not permitted to submit papers they prepared previously outside of this class, such as for high school or other UF courses.

Artificial Intelligence (AI) Use Policy:

For this graduate level course, GMS6402 Medical Pulmonary Physiology, it is imperative that all work submitted is your own. The use of AI tools, including but not limited to, generative language models, code generation tools, and automated essay writer, is strictly prohibited for all assignments. Any work found to have been produced with the aid of such AI tools will result in a zero for that assignment. This policy is in place to ensure the integrity of your learning experience and to respect the academic standards of this course. If you have any questions about this policy or need assistance with your work, please do not hesitate to reach out to your instructor.

GatorEvals UF Faculty 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. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. 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 <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>

Professionalism Expectations: Maintain honesty, respect, responsibility, and integrity in all course interactions.

Course Disclaimer: This course (including all materials, ideas, research or clinical observations written or electronically conveyed) is for educational purposes only. The course does not substitute for and does not provide clinical or treatment recommendations or endorsements for the treatment of any individual person's condition.

Syllabus changes: You will be notified if there are major changes to the syllabus.

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