

University of Florida Department of Physiology and Aging

GMS 6400C Distance Principles of Medical Physiology - Course Syllabus

Course Number: GMS 6400C Distance

6 credit comprehensive package:

GMS6400C (GMS6400C = GMS6405+6406+6411+6408+6415 + Integrative module)

1 credit modules:

GMS6405 Fundamentals of Endocrine Physiology

GMS6406 Fundamentals of Pulmonary/Respiratory Physiology

GMS6408 Fundamentals of Renal Physiology

GMS6411 Fundamentals of Cardiovascular & Muscle Physiology

GMS6415 Fundamentals of Gastrointestinal Physiology

Credit Hours: 6

Format: Online, asynchronous

Course Director: Jaya Kolli, MD, Lecturer, Department of Physiology and Aging

Instructors: Jaya Kolli, MD, Lecturer, Department of Physiology and Aging, Shi Jin, Ph.D., Lecturer, Department of Physiology and Aging, Peter Sayeski, Ph.D., Professor, Department of Physiology and Aging

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

Course Description

This course covers the functions of the human body at a level required for clinical medicine. Concepts are organized by systems: Endocrine, Cardiovascular, Respiratory, Renal, and Gastrointestinal. Additional content includes final Integrative Physiology section which applies the learned physiological principles to special situations (Pregnancy, Aging, Exercise, Stress). The courses covers normal physiology, as well as selected diseases.

Learning Outcomes

By course completion, students will:

1. Demonstrate knowledge of the following individual physiological systems at a level required for an understanding of clinical medicine: 1) Endocrinology, (2) Gastrointestinal, (3) Cardiovascular, (4) Respiration, and (5) Renal.
2. Demonstrate comprehensive knowledge of the integration of these systems in the body, including cellular events, acid/base physiology, and muscle physiology.
3. Understand how these systems act in an integrated manner to regulate overall body
4. Understand how failure of these normal physiologic functions and integrations are associated with some diseases.

Course Goals

Physiology is the science of how the body functions, and is the basis for understanding modern clinical medicine and the biomedical sciences. This course will provide: 1) a foundation understanding of the basic functions of the human body; 2) knowledge of the physiology of the major systems: endocrine, cardiovascular, muscle, respiratory, renal, and gastrointestinal, as well as selected diseases that affect these systems; 3) integration of these individual facts in order to understand how organ systems work independently and interdependently in the body. One example of this integration is in the control of acid base balance. Other examples covered in this course are in the integrated responses to pregnancy and exercise as well as pathophysiologic responses to aging.

Course Calendar and Recommended Time Management

Please review the recommended time management calendar below. The videos and corresponding PDF notes are available throughout the entire time the course is open, from the first day through the end of the course on the day the grades are reported to the Registrar. For each module the course content lecture titles should be viewed in the order shown later in this syllabus.

GMS6400C Distance Fall 2025	Recommended duration of study for this Block	Duration of discussion between faculty and students	Exam
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Block 1	Foundational Basics Endocrine Part 1	August 21- August 31 Sept 1- Sept 7	Aug 21 - Sept 7	Exam 1 Sept 8
Block 2	Endocrine Part 2	Sept 9 - Sept 26	Sept 9 - Sept 26	Exam 2 Sept 27
Block 3	Muscle & Cardiovascular	Sept 28-Oct 17	Sept 28 - Oct 27	Exam 3 Oct 18
Block 4	Respiratory	October 19- Nov 7	Oct 19 - Nov 7	Exam 4 Nov 8
Block 5	Renal	Nov 9 - Nov 28	Nov 9 - Nov 28	Exam 5 Nov 29
Block 6	Gastrointestinal Integrated	Nov 30 - Dec 3 Dec 4 - Dec 7	Nov 30 - Dec 7	Exam 6 Dec 7

Target Audience

Designed for students pursuing careers in medicine or biomedical research. This course will provide a foundation for students who have not met the entry requirements for medical school and for those wishing to enhance their applications into Masters and PhD programs in the medical sciences.

Prerequisites

BA/BS with at least five science courses in biology, chemistry, and/or physics; minimum GPA 2.0. Graduate student faculty advisors must email the course director a short note affirming their student's qualification to take the course.

Course Contacts

Course Director: Jaya Kolli, MD, (Email via Canvas, response in 1-2 business days)

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

Course Structure

Unless otherwise noted, assignments and exams are due on the dates specified in the course Assignment page.

Syllabus Quiz - This is a required **ungraded** assignment that ensures you have read the syllabus in its entirety and understand what is required of you as a student in this course. You will not be able to access the rest of the course assignments until you have successfully completed the syllabus quiz.

Learning Resources

- Recorded video lectures with PowerPoint presentations will be provided on the course
- Recorded video clinical correlation(s) and/or case studies relating to the basic science
- Lecture notes for each video lecture are available as PDF downloads enabled for direct note taking
- Syllabus quiz (not for grade) to test knowledge of procedures and policies for the
- Practice on-line quizzes (not for grade) to advance the understanding of the material provided in
- Mock exams (not for grade) to test knowledge and prepare for each

Recommended Texts(not required, but highly recommended):

1. "*Ganong's Review of Medical Physiology, 26th Edition*" 2019. Authors: Kim E. Barrett, Susan M. Barman, Heddwen L. Brooks, & Jason X.J. Yuan. ISBN: 9781260122404. Free online: <https://accessmedicine.mhmedical.com/book.aspx?bookid=2525>.

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

3. "*Medical Physiology: The Big Picture*". Authors: Johnathan Kibble & Colby Halsey. ISBN: 9780071485678. Free online: <https://accessmedicine.mhmedical.com/book.aspx?bookid=1291>.

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 Schedule/ Section Coordinators/ Lecture Topics

Each recorded content block is roughly 25 minutes; a 'standard' 50-minute lecture is broken up into two 25 minute parts.

| **ENDOCRINE PHYSIOLOGY (GMS 6405)** | Jaya Kolli, M.D. (jkolli@ufl.edu) | Introduction to Endocrinology, Receptors and Signaling Part I & II, Hypothalamus and Pituitary Part I & II, Adrenal Medulla Part I & II, Adrenal Cortex Part I & II, Thyroid Hormones Part I & II, Clinical Correlation: Thyroid Part I & II, Calcium/Phosphate Regulation Part I-IV, Fluid Balance & Cardiovascular Control Quiz 1, Growth Hormone Part I & II, Blood Glucose Regulation Part I-III, Reproduction (Sexual Differentiation Parts I & II), Reproduction Male Parts I & II, Reproduction Female Parts I-IV, Reproduction Pregnancy Parts I-IV, Special Topic: Carbohydrate Metabolism in Pregnancy, Clinical Correlation: Assisted Reproductive Technologies Parts I & II, Multiple Choice Exam, Essay Exam. |

| **MUSCLE AND CARDIOVASCULAR (GMS6411)** | Peter Sayeski, Ph.D. (psayeski@ufl.edu) | The Structure of Muscle (Skeletal, Cardiac, and Smooth), The Molecular Structure of Muscle, Muscle Function and Regulation – Activation & Force Modulation Parts I & II, Comparing Skeletal and Cardiac Muscle, Comparing Skeletal, Cardiac and Smooth Muscle, Clinical Correlation: Muscular Dystrophy, Introduction to Cardiovascular Physiology, Cardiac Cycle, Electrocardiogram Parts I-III, Cardiac Ion Channels Parts I & II, Quiz 1, Hemodynamics

(Arteries Parts I & II), Venous Return, Fetal Circulation, Pulmonary Circulation Parts I & II, Neural Control Parts I-III, Local Control of Blood Flow, Regulation of Arterial Pressure, Microcirculation, Integrated Control of Cardiovascular System Parts I & II, Clinical Correlation: Shock and Heart Failure, Quiz 2, Multiple Choice Exam

| **RESPIRATORY PHYSIOLOGY (GMS 6406)** | Peter P. Sayeski, Ph.D. (psayeski@ufl.edu) | Introduction to Respiratory Physiology, Functional Anatomy, The Respiratory Pump and Lung Volumes, Lung Compliance Parts I & II, Airway Resistance Parts I & II, The Work of Breathing Parts I & II, Alveolar Ventilation and Gas Composition Parts I & II, Gas Diffusion Parts I & II, Oxygen Transport Parts I & II, Quiz 1, Oxygen Content Parts I & II, CO₂ Transport and Content, Clinical Correlation: O₂ Assessment, Clinical Correlation: CO₂ Assessment, Pulmonary Circulation Parts I & II, Clinical Correlation: Pulmonary Edema Parts I & II, Acid-Base Parts I & II, Respiratory Control Parts I & II, High Altitude Respiration, Quiz 2, Clinical Correlation: Case Studies Parts I & II, Multiple Choice Exam

| **RENAL (GMS 6408)** | Jaya P. Kolli, M.D. (jkolli@ufl.edu) | Introduction to Renal Physiology, Body Fluids I & II, General Functions of the Kidney, Renal Anatomy, Clearance Parts I & II, Renal Hemodynamics Parts I-IV, Renal Epithelial Sodium Transport, Control of Sodium Balance Parts I-IV, Quiz 1, Renal Handling of Calcium, Phosphate, and Potassium, Concentration and Dilution Parts I-IV, Acid/Base Balance Parts I-III, Kidney Diseases, Clinical Correlation: Volume Crises Parts I & II, Quiz 2, Multiple Choice Exam

| **GASTROINTESTINAL (GMS 6415)** | Shi Jin, Ph.D. (shijin2015@ufl.edu) | Introduction to Gastrointestinal Physiology, Gastrointestinal Nervous System & Motility Parts I-IV, Phases of Digestion and Salivary Gland Physiology, Exocrine Pancreas, Gastric Physiology Parts I & II, Small Intestine Epithelium and Protein Digestion/Absorption, Carbohydrate Digestion/Absorption, Liver and Gallbladder Parts I & II, Lipid Digestion and Absorption Parts I & II, GI Electrolytes and Fluids Parts I & II, Summary Map of Digestion and Absorption, Study Guides (GI Hormones and GI Regulators), Gastrointestinal Commensal Microbiota Parts I & II, Quiz, Multiple Choice Exam

| **INTEGRATED PHYSIOLOGY** | Peter Sayeski, Ph.D. (psayeski@ufl.edu) | Introduction to Integrated Physiology, Pregnancy Physiology: Maternal Parts I & II, Pregnancy Physiology: View from the Fetus, Aging Physiology (Kidney and Cardiovascular), Integration: Muscle and the Cardiovascular System, Exercise Physiology and Cardiovascular Parts I & II, Exercise Physiology and Lungs, Stress Physiology, Quiz, Multiple Choice Exam.

Note: The last multiple-choice exam covers both GI and Integrated Physiology material.

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:

- (6) MCQ Final Exams: 100% (Lowest exam score will be dropped.)

Grading Scale:

A 93-100% | A- 90-92.99%

B+ 87-89.99% | B 83-86.99% | B- 80-82.99%

C+ 77-79.99% | C 73-76.99% | C- 70-72.99%

D+ 67-69.99% | D 63-66.99% | E <63%

Final Exam & ProctorU

The final exams 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.

In addition to typed text, answers to questions might require any or all of the following: drawing diagrams, tables, graph functions, calculations, etc. The technology in these cases is low-tech: you will draw with a pencil on blank sheets of paper. You should clearly label your papers with your name and also the question number. At the end of the exam period (designated as 2 hours, unless otherwise stated in advance by the instructor), you can either take a photo of your scratch paper or scan your scratch paper and upload it to the corresponding scratch paper assignment for that exam. Be sure to draw legibly, as if your grade depended on it.

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

Final Exams

- 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.

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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code>. 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>), 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. 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.

AI Use Acknowledgment: For this graduate level course, GMS6400C Distance Principles of 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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