University of Florida Department of Physiology and Aging

GMS 6401 Medical Renal Physiology - Course Syllabus

Course Number: GMS 6401

Credit Hours: 2

Format: Online, asynchronous

Instructor: Peter Sayeski, PhD, Department of Physiology and Aging

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

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Course Description

This course covers the functions of the renal system of the human body and renal physiology essential for clinical medicine and biomedical research. Topics include normal functions, disease mechanisms, and clinical problem-solving through lectures, research tasks, and problem sets.

Learning Outcomes

By course completion, students will:

1. Understand kidney physiology for medical applications.

2. Describe hormonal, vascular, and neural controls of renal function.

3. Identify physiological failures linked to diseases.

4. Apply learned concepts through exams, assignments, and problem sets.

Course Goals

Students will understand kidney functions and related regulatory mechanisms, learn integrated organ system functions, and develop problem-solving and critical-thinking skills for clinical contexts.

Target Audience

Designed for students pursuing careers in medicine, biomedical research, or teaching renal physiology.

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, PhD, (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 multiple choice quizzes and two self-guided research assignments throughout the semester. There are seven timed and graded multiple-choice quizzes throughout the course, designed to reinforce and assess mastery of the course material.

Learning Resources

- Recorded lectures and notes (PDF) (Each recorded lecture lasts between 20-30 minutes)
- Clinical case studies

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.

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 clientLinks 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.eduLinks 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/distancelearnersLinks to an external site.. See more on ILL -- including an FAQ specially for distance learners -- at http://cms.uflib.ufl.edu/accesssupport/InterlibraryLoanLinks to an external site..

Course Structure

Topics are grouped into modules with lectures, multiple-choice quizzes and self-guided research assignments focusing on course concepts and renal diseases.

Course Schedule

Unless otherwise noted, all multiple choice quizzes, research assignments and final exam 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.

The lowest score of the 7 MCQ quizzes will be dropped.

Lecture 1: Introduction to Renal Physiology
Lecture 2: General Functions of the Kidney, Renal Anatomy
Lecture 3: Clearance I
Lecture 4: Clearance II
MCQ Quiz 1: Clearance

Lecture 5: Renal Hemodynamics I
Lecture 6: Renal Hemodynamics II
Lecture 7: Renal Hemodynamics III
Lecture 8: Renal Hemodynamics IV
MCQ Quiz 2: Renal Hemodynamics

Functional Genomics Research Assignment 1: Heavy Proteinuria and Nephrotic Syndromes

Lecture 9: Renal Epithelial Sodium Transport
Lecture 10: Sodium Balance I
Lecture 11: Sodium Balance II
Lecture 12: Sodium Balance III
Lecture 13: Sodium Balance IV
MCQ Quiz 3: Sodium Balance

Lecture 14: Renal Handling of Calcium and Phosphate
Lecture 15: Renal Handling of Potassium
MCQ Quiz 4: Calcium, Phosphate, and Potassium

Lecture 16: Concentration and Dilution I
Lecture 17: Concentration and Dilution II
Lecture 18: Concentration and Dilution III
Lecture 19: Concentration and Dilution IV
MCQ Quiz 5: Concentration and Dilution

Lecture 20: Acid/Base I
Lecture 21: Acid/Base II
Lecture 22: Acid-Base III
MCQ Quiz 6: Acid-Base

Lecture 23: Clinical Correlation: Kidney Diseases
Lecture 24: Clinical Correlation: The Aging Kidney
MCQ Quiz 7: Kidney Dysfunction

Functional Genomics Research Assignment 2: Hereditary Kidney Cancer Syndromes

Final Examination (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:

- Research Assignments: 30%
- MCQ Quizzes: 35% (The lowest score of the 7 quizzes will be dropped)
- Final Exam: 35%

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 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

- Links to an external site.(https://go.proctoru.com/session/new)

- Review Equipment Requirements & Test your computer

Links to an external site. (https://support.proctoru.com/hc/en-us/articles/24692181239309-Equipment-Requirements

- Links to an external site.)

- Schedule your exam

- Links to an external site.(https://support.proctoru.com/hc/en-us/articles/25852622025741-How-to-Schedule-Reschedule-or-Cancel-an-Exam)

- Read the ProctorU Test Taker Library for more information and resources about what to expect for your text taking experience.

4. Links to an external site.(https://support.proctoru.com/hc/en-us/categories/115001818507-Test-Taker-Library)

Late Work Policy

Multiple choice quizzes

- Unless you have an approved excused absence, a 10% deduction will be applied for each week the quiz is answered after the due date.

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.**

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://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.

Artificial Intelligence (AI) Use Policy:

For this graduate level course, GMS6401 Medical Renal 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.
