University of Florida Department of Physiology and Aging

GMS 6413 Advances in Hypertension Research - Course Syllabus

Course Number: GMS 6413

Credit Hours: 2

Format: Online, asynchronous

Instructor: Michelle L. Gumz, PhD, Professor, Department of Physiology and Aging

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

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Course Description

This is an advanced graduate class, also suitable for postdoctoral students, which will expose students to important, current aspects of Hypertension research. The course begins with a broad overview followed by lectures that cover the epidemiology of hypertension as well as clinical trials and pharmacogenomics. The first half of the course then concludes with the topics of monogenic, inherited forms of hypertension, salt-sensitive hypertension, and circadian rhythms.

The course continues with a focus on the roles of the kidney, endothelial dysfunction, immune signaling, and microbiome in hypertension. The second half of the course concludes with the topics of hypertension in pregnancy, fetal programming of hypertension, and metabolic syndrome. The teaching faculty are drawn from a wide range of disciplines and are all actively involved in research in their areas of expertise.

Learning Outcomes

Upon completion of this course, students will be able to:

1. Understand how many individual body systems cooperate in the control of normal blood pressure.
2. Understand how impairments in cardiovascular, neural, endocrine, immune system, and/or renal function can lead to hypertension.
3. Understand why the majority of hypertension is classified as “essential” or of unknown origin.
4. Understand the role of genetic and environmental factors in the development of hypertension.
5. Develop an in-depth understanding of some of the research contributions that are shaping our current views on the causes and consequences of high blood pressure.

Prerequisites
This course requires a BA or BS and a strong science foundation with at least 5 full semester courses related to biology, chemistry and/or physics. In addition, Principles of Medical Physiology (GMS6400) is required.

Course Contacts
Instructor: Michelle L. Gumz, Ph.D., Professor, (Email via Canvas, response in 1-2 business days)

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

Target Audience
This course is designed for individuals wishing for an in---depth understanding of current state of hypertension research. This course will be useful for students who have not met the entry requirements
for medical school and who are interested in a career in cardiovascular and/or nephrology medicine, and for those wishing to enhance their applications into Masters and Ph.D. programs in the medical
sciences in cardiovascular research.

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..

Schedule
The structure of this course involves 1) Lectures by research faculty on areas of their expertise; 2) assigned readings; 3) examinations on the lecture material; and 4) a term paper.

Course Goals
Hypertension is a multifactorial disease and this course explores: 1) some of the current treatments available; 2) how cardiovascular, neural, endocrine, and renal function all influence blood pressure
control; 3) how vascular endothelial dysfunction and inflammation are associated with hypertension; 4) how genetic, epigenetic, and environmental factors can determine the level of blood pressure; 5) the
complexity of the factors that lead to hypertension.

Learning Resources
1. Recorded lectures with PowerPoint presentations and PDF handouts of the lectures (which may include additional explanatory material) is provided on the course website.

2. Recommended text: There is no required textbook although general background information can be obtained the online version of "Berne & Levy Physiology, 7th Edition" 2018. Author: Bruce M. Koeppen & Bruce A. Stanton. ISBN: 9780323393942.

3. Links to original articles are provided which access through the UF library system linked to PUBMED. These original articles are supplemental to the lectures.

Grade Breakdown:

- Two Open-book exams: 60% (30% each)
- One Term Paper: 30%
- Participation: 10% (discussion board)

Grading scale:
A numerical grade will be given at the end of the course and will be scored as follows:
93---100%= A
90---92%= A-
87---89% = B+
83---86% = B
80---82% = B-
77---79% = C+
73---76% = C

70---72% = C-
67---69% = D+
63---66% = D
<63% = E

Late Work Policy

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

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

Course Schedule

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

LECTURES:

1. Overview Part 1
2. Overview Part 2
3. Epidemiology of HTN
4. Clinical Trials in HTN
5. Pharmacogenomics of HTN
6. Monogenic Causes of HTN
7. Salt-sensitive HTN
8. Circadian Rhythms & HTN

Exam 1 (Topics 1-8)

9. Kidney in HTN
10. Endothelial Dysfunction in HTN
11. CNS mechanisms of HTN
12. Immune System and HTN
13. Microbiome and HTN
14. HTN in pregnancy
15. Fetal programming of HTN
16. Metabolic Syndrome & HTN

Exam 2 (Topics 9-16)

Examinations: There will be two (2) take-home examinations
based on the lectures. The first exam will cover lectures 1-8, and the second examination will cover lectures 9-16.

Term paper (assigned essay): Please refer to the term paper assignment for instructions, rubric, and topic. Remember that this is not an examination. To successfully complete the assignment, you will conduct independent research and cite appropriate literature or reviews (not basic textbooks).

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.

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, GMS6413 Advanced Topics in Hypertension Research, 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.
