UF College of Medicine
Department of Pharmacology and Therapeutics
UNIVERSITY of FLORIDA

GMS 6540
Medical Pharmacology & Therapeutics
IV: Cancer, Antimicrobial and Antiparasitic Agents

Classroom: Online via http://elearning.ufl.edu

Course Director and Program Coordinator:
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There are no set office hours for this online course, to best accommodate asynchronous learning. If you have questions about the material or the course, please contact one of the above individuals using E-Learning.

COURSE DESCRIPTION

This course is for basic and clinical scientists and others that wish to learn the pharmacology and therapeutics of cancers and of microbial and/or parasitic infections. This course will cover the fundamentals of small molecule drugs and therapeutic biologics (e.g., peptides, antibodies, gene and stem cell therapies) and their actions in the treatment of cancers and of microbial and/or parasitic infections. Specific topics include chemotherapy, antibacterials, and antivirals, among others. The course will prepare students for more advanced studies of pharmacology and therapeutics in the context of human physiology and pathophysiology.

Concepts are taught using a combination of online lectures and online problem sets. These concepts include the types and nomenclatures of small molecule drugs and therapeutic biologics, drug-receptor interactions, pharmacodynamics, pharmacokinetics, pharmacogenomics and the basis of personalized medicine. The problem sets are designed to help the student reinforce and understand these fundamental concepts. The ultimate goal is for students to develop an understanding of the core principals of medical pharmacology and therapeutics, as well as the problem solving and critical thinking skills, necessary to study pharmacology and therapeutics in the context of human disease.

Pharmacology is the science of how drugs interact with the body and how the body interacts with drugs. Therapeutics is the branch of biomedicine focused on the treatment of disease. Together, pharmacology and therapeutics are essential for understanding modern clinical medicine and the biomedical sciences. This course will provide a foundation for understanding the molecular, biochemical and physiological basis by which small molecule drugs and biologic therapeutics interact with human organ systems, and those organ systems interact with these therapeutic agents. In addition, this course will introduce the basics of the multi-T-phase concept of translational research. It will focus on the early phases exploring the breadth of T0 research in the identification of opportunities and approaches to health problems as it relates to small molecules, biologics, diagnostics, and devices. It will also clarify the important aspects of T1 through T2 translational health research as it relates to Phase I - Phase III clinical trials that take observational studies to evidenced-based guidelines for treatments

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.

LEARNING RESOURCES

1. Recorded video lectures with PowerPoint presentations will be provided in E-Learning.

2. Lecture notes for each video lecture are available as PDF downloads in E-Learning.

3. While not required, recommended texts to accompany the online content are:

Goodman and Gilman's The Pharmacological Basis of Therapeutics

Basic & Clinical Pharmacology by Katzung

These books are available online at no cost to UF students through the UF Health Science Center Library: https://uflib.ufl.edu/using-the-libraries/off-campus-access/ .

Anatomy & Physiology: The Unity of Form and Function by Saladin

LEARNING OUTCOMES

Successful completion of this course will prepare students to study pharmacology and therapeutics in the context of translational research and specific human physiologies and pathophysiologies. These students will be able to:

1. Understand the diversity of small molecule drugs and biologics (e.g., antibodies, peptides, viral-based gene therapies), that target the cardiovascular and renal systems.

2. Understand the mechanisms by which drugs and biologics targeting cancer and infectious agents act in the body and at their targets, including the pharmacokinetics and pharmacodynamics of these agents.

3. Demonstrate the ability to apply pharmacological principles of clinical and basic science relevancy by multiple choice examinations, research assignments, and quiz exercises.

GRADING SCALE

A numerical grade will be given at the end of the course and will be scored as follows, per University of Florida standards (https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx):

92-100% = A
90-91% = A-
87-89% = B+
82-86% = B
80-81% = B-
77-79% = C+
72-76% = C
70-71% = C-
67-69% = D+
62-66% = D
60-61% = D-
<60% = E

FINAL GRADE CALCULATION

Your final grade will be calculated as below:

20% Problem Sets
30% Review Exams
30% Research Assignments
20% Comprehensive Final Exam

1. **Problem Sets: 20%**

a. The course content is structured into groups of lectures that are accompanied by problem sets.
b. Problem sets may require basic calculations or interpretations of data figures describing the action of drugs or other therapeutic agents along with testing general comprehension.
c. They are open book.
d. Each problem set has its own due date, which is available in E-Learning.
e. Points will be spread evenly over all questions for the entire semester.

2. **Review Exams: 30%**

a. There will be two exams that will test mastery of the questions from the problem sets.
b. All questions will be taken directly from the problem sets.
c. Students should expect to see every question from the problem sets, other than the short answer questions, on this exam.
d. Points will be spread evenly over all questions from both exams.
e. These exams must be proctored by ProctorU.

3. **Research Assignments: 30%**

a. There are two Research Assignments, which are designed to help the student integrate the concepts of pharmacology and therapeutics with the preclinical and clinical stages of drug discovery as related to human disease.
b. This assignment is an original paper that explores an area of pharmacology relevant to the focus of the course.
c. The specific focus of each paper ***MUST*** be chosen from the provided list of topics.
d. The paper should cite authoritative sources such as the primary scientific literature and informational websites of government agencies.
e. This assignment is due on the date indicated in E-Learning and a scoring rubric is included with the online assignment.
f. All submissions will be submitted to Turnitin to check for originality.
g. See course FAQ for more information on paper specifics.

4. **Final Exam: 20%**

a. There will be one cumulative exam covering the material taught in all of the lectures.
b. This exam will be multiple choice.
c. The exam may be taken any time during the window of availability; however, it can only be taken once.
d. You must set up online proctoring for this exam as described in the following section.
e. If you are in the process of taking the exam when the scheduling window closes, it will automatically submit and you will not be allowed to complete the rest of the exam.

EXAM PROCTORING

The exam will be monitored by ProctorU, a UF chosen service that allows the students to complete their exams at home while still ensuring academic integrity. Students will make the arrangements for exam proctoring. But all standard costs of the exam are covered in the registration costs. Last-minute appointments with ProctorU to take the exam may incur extra costs that are the responsibility of the student.

ProctorU is a live online proctoring service that allows you to take your exam from the comfort of your home. ProctorU is available 24/7, however, you will need to schedule your proctoring session at least 72 hours in advance to avoid any on-demand scheduling fees. Creating a ProctorU account is simple. You can do so by visiting go.proctoru.com.

In order to use ProctorU, you will need a high-speed internet connection, a webcam (internal or external), a windows or apple operating system, and a government issued photo id. ProctorU recommends that you visit https://test-it-out.proctoru.com/ prior to your proctoring session to test your equipment. We recommend you click on the button that says “connect to a live person” to fully test out your equipment.

Additionally, please visit and review the test-taker resource center here. You should expect the startup process with the proctor to take about 10-15 minutes. However, this time will not affect your exam time. Please feel free to direct any questions to the student support team via the live chat within your account.

MAKE-UP AND LATE POLICY

There are no make-up exams allowed unless otherwise granted by the course coordinator prior to an examination date. Failure to take an exam without prior permission from the course coordinator will be recorded as 0.

All other assignments may be completed late up until final grades are posted. A penalty of 0.2% per hour will be applied to each late assignment unless due to an excused absence, as defined by UF policy https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/. At no point shall an assignment be worth less than 50% of its original value. In the event of an excused absence, the student must work with the instructor to turn in work as soon as feasible.

ACADEMIC HONESTY

Please review the complete policy of the University of Florida regarding academic dishonesty, found in the online student handbook at: http://graduateschool.ufl.edu/media/graduate-school/pdf-files/handbook.pdf. Students are expected to abide by the University of Florida Academic Honesty Guidelines and to adhere to the following pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. 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.”

ACCESSIBILITY

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

IMPORTANT NOTICE ABOUT PLAGIARISM

Plagiarism is not tolerated at the University of Florida. The University of Florida has an honor code that defines plagiarism as follows: Section 3a: Plagiarism. A student shall not represent as the student's own work all or any portion of the work of another. Plagiarism includes but is not limited to:

1. Quoting oral or written materials including but not limited to those found on the internet, whether published or unpublished, without proper attribution.
2. Submitting a document or assignment which in whole or in part is identical or substantially identical to a document or assignment not authored by the student.

Please note that intent is not an element of this kind of violation so it is important to take great care to complete the written assignments in your own words. The first incidence of plagiarism, which will be reported to the University, may be punishable by a maximum penalty of a "0" grade for the assignment. Subsequently, a second academic honesty infraction can result in expulsion from the University.

For a complete description of the UF Honor Code and procedures, please visit: https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/.

For a good discussion about plagiarism and how to properly cite your sources, please visit: http://mediasite.video.ufl.edu/Mediasite/Play/adaa44500eaf460a84f238e6b9a558f9 .

COURSE OUTLINE

Due Dates Can Be Found on E-Learning

Videos	Problem Sets/Research Assignments	Lecturer
Course Introduction		
Hallmarks of Cancer I		**Jahn**
Hallmarks of Cancer II		**Jahn**
Hallmarks of Cancer III		**Jahn**
Carcinogenesis		**Jahn**
	Problem Set 1: Cancer Biology	
Anticancer Drugs I		**Guryanova**
Anticancer Drugs II		**Guryanova**
Anticancer Drugs III		**Guryanova**
Anticancer Drugs IV		**Guryanova**
	Problem Set 2: Anticancer Drugs	
Growth Factor Inhibitors		**Jahn**
Hormone Therapy		**Jahn**
Radiation Therapy		**Jahn**
	Problem Set 3: Targeted Therapy	
Immunosupressant Drugs I		**B. Law**
Immunosupressant Drugs II		**B. Law**
	Problem Set 4: Immunopharmacology	

Microbial Chemotherapy I		**Rowe**
Microbial Chemotherapy II		**Rowe**
Antibacterials I		**Rowe**
Antibacterials II		**Rowe**
	Problem Set 5: Antibacterials 1	
	Research Assignment 1: Cancer Therapy	
Antibacterials III		**Rowe**
Antibacterials IV		**Rowe**
Antibacterials V		**Rowe**
	Problem Set 6: Antibacterials 2	
Antifungals		**Rowe**
Antiparasitics		**Rowe**
	Problem Set 7: Antifungals and Antiparasitics	
Antivirals I		**Rowe**
Antivirals II		**Rowe**
Vaccination		**Jahn**
Gene Therapy		**Jahn**
OTC Cold and Flu		**Jahn**
	Problem Set 8: Viral Pharmacology	
Toxicology I		**Jahn**
Toxicology II		**Jahn**
	Problem Set 9: Toxicology	
	Research Assignment 2: Antimicrobials	
	Final Exam	

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. 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/.