

PHA5515 Principles of Medicinal Chemistry and Pharmacology II

Spring, 2024

1 Credit Hour – [A-E Grading]

This course provides a basis for the rational understanding of applied clinical pharmacology and therapeutics. This course prepares the student to explain to practitioners and patient's pharmacology concepts such as rational drug use (Module 1), log dose response and population dose response curves for drug efficacy and safety (Module 2), intrinsic activity and antagonist actions (Module 3), receptor binding curves (Module 4) and receptor regulation (Module 5). This knowledge prepares students to better understand mechanism of action of drugs discussed in subsequent Patient Care coursework and of new medications as they come on the market in the future.

Teaching Partnership Leaders

Siobhan Malany, Ph.D.

- Email: smalany@cop.ufl.edu
- Office: P1-31 GNV and 420A ORD
- Phone: 352-273-6004

Office Hours: Please see the Canvas course site for posted office hours.

Mahesh Peddibhotla, Ph.D., M.S. (Pharmacy)

- Email: speddibhotla@cop.ufl.edu
- Office: P1-39 GNV
- Phone: 407-456-3900

Office Hours: Please see the Canvas course site for posted office hours.

See Appendix A. for Course Directory of Faculty and Staff Contact Information.

Entrustable Professional Activities

This course will prepare you to perform the following activities which the public entrusts a pharmacist to perform:

Patient Care Provider Domain

2. Analyze information to determine the effects of medication therapy, identify medication-related problems, and prioritize health-related needs.

ST2.7. Evaluate an existing drug therapy regimen.

3. Establish patient-centered goals and create a care plan for a patient in collaboration with the patient, caregiver(s), and other health professionals that is evidence-based and cost-effective

ST3.2. Develop a treatment plan with a patient. (Including recommend therapeutic alternatives and generic substitution)

Practice Manager Domain

14. Fulfill a medication order.

ST14.3. Determine if a medication is contraindicated for a patient.

ST14.4. Identify and manage drug interactions.

Course-Level Objectives

Upon completion of this course, the student will be able to:

1. Define the concept of rational drug use, drug discovery, and mechanism of drug action.
2. Describe differences in pharmacodynamic (PD) and pharmacokinetic (PK) properties
3. Understand the process of assessing drug potency and efficacy from dose-response curves.
4. Describe the law of mass action and relate this to the drug's mechanism of action.
5. Classify a drug's activity based on intrinsic action including full agonist, partial agonist, inverse agonist, and competitive and noncompetitive antagonist.
6. Describe conditions when the Law of Mass action is not followed (spare receptors, receptor cooperativity).
7. Draw correlations between drug affinity for a receptor population and drug potency for causing a specific molecular cellular, physiological, or behavioral effect.
8. Determine drug residence time based on affinity values.
9. Describe the process of receptor regulation under conditions of under and over stimulation.
10. List alternative mechanisms that contribute to drug tolerance and sensitization.
11. Classify a drug's potential adverse reaction

Course Pre-requisites

1. Successful completion of Block 1 and Block 2 courses.

Course Co-requisites

1. There are no co-requisites for this course.

Required Textbooks/Readings

1. Foye WO, Lemke T, Williams DA. Foye's Principles of Medicinal Chemistry, Wolters Kluwer Health/Lippincott Williams & Wilkins, Philadelphia, PA, 7th Edition, 2019.
 - Purchased for PHA5439

Use [UF VPN to access UF Libraries Resources](#) when off-campus.

The UF HSC library staff can assist you with questions or issues related to accessing online library materials. For assistance contact your College of Pharmacy librarian or visit the [HSC Library Website](#) at this URL:<http://www.library.health.ufl.edu/>

Suggested Textbooks/Readings

Suggested readings will be posted on Canvas.

Other Required Learning Resources

None

Materials & Supplies Fees

None

Student Evaluation & Grading

Evaluation Methods and How Grades are calculated.

[The Canvas© gradebook will be set-up using the percentages below to compute the grade.]

Assessment Item	Points	Grade %
iRATs [5] @ 21pts each	105	36.2%
tRATs [5]	35	12.1%
Final Exam	150	51.7%
Total	290	100%

Table 1.1 Evaluation and Grading Above

Table 1.2 grading scale

Percentage	Letter Grade
92.50-100%	A
89.50-92.49%	A-
86.50-89.49%	B+
82.50-86.49%	B
79.50-82.49%	B-

76.50-79.49%	C+
72.50-76.49%	C
69.50-72.49%	C-
66.50-69.49%	D+
62.50-66.49%	D
59.50-62.49%	D-
< 59.50%	E

Rounding of grades:

Final grades in Canvas will be rounded to the 2nd decimal place. If the decimal is X.495 or higher, Canvas will round the grade to X.50. The above scale depicts this policy and grades are determined accordingly. Grade assignment is made using this policy and NO EXCEPTIONS will be made in situations where a student's grade is "close."

Educational Technology Use

The following technology below will be used during the course and the student must have the appropriate technology and software.

1. ExamSoft™ Testing Platform
2. Canvas™ Learning Management System

For technical support, navigate to [Educational Technology and IT Support Contact Information](#) at this URL: <http://curriculum.pharmacy.ufl.edu/current-students/technical-help/>

Artificial Intelligence Use

The use of artificial intelligence (AI) text generators such as ChatGPT on assignments, projects, quizzes, and exams is prohibited in this course. Use of AI text generators is considered evidence of academic dishonesty. If a student is uncertain about the use of AI technology, it is the student's responsibility to ask the instructor prior to beginning the assignment or assessment.

Pharm.D. Course Policies

The Policies in the following link apply to this course. Review the General [Pharm.D. Course Policies](#) carefully, at this URL: <http://curriculum.pharmacy.ufl.edu/current-students/course-policies/>

Attendance Policy

Attendance is mandatory for active learning sessions such as team-based learning sessions, case discussions, laboratory sessions, and other activities that the instructor designates as required. This course has 5 required sessions. A student who misses more than 1 session for this course (greater than 25% of the required active learning sessions) will receive an incomplete in the course and will retake the course during the next offering, resulting in delayed graduation.

Late Assignments

N/A

Makeup Assignments

Makeup assignments may be required for excused absences from all Active Learning Sessions. Students will be required to complete the makeup assignment within one week of the missed session.

Accessibility and Belonging Statement

The University of Florida College of Pharmacy strives to stimulate a culture that promotes diversity and inclusion within an exceptional community of students, faculty, and staff. It is our intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit.

We intend to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let us know ways to improve the course's effectiveness for you personally or for other students or student groups. If any of our class meetings conflict with any of your religious events, an excused absence will be provided when requested using the standard UF COP process as detailed in the [UF COP Course policies](#).

If you feel that you have experienced or witnessed any bias/treatment that falls short of these expectations, you may submit a report through the UF [COP Student Mistreatment Report](#).

Course Evaluation Process

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/>.

Appendix A. Course Directory

Teaching Partnerships and Faculty:

Siobhan Malany, Ph.D.

- Email: smalany@cop.ufl.edu
- Office: p1-31 GNV/Orlando Rm 420A.
- Phone: 353-273-6004/858-353-1862

Office Hours: Please see the Canvas course site for posted office hours

Mahesh Peddibhotla, Ph.D.

- Email: speddibhotla@cop.ufl.edu
- Office: P1-39 GNV/Orlando Rm 420A.
- Phone: 353-273-6004/858-353-1862

Office Hours: Please see the Canvas course site for posted office hours

Questions to Ask:

- Concerns about performance
- Guidance when there are performance problems (failing grades)
- General questions about content

Instructional Designer:

Name: Holly Fremmen

- Email: holly.fremmen@ufl.edu
- Phone: 352-273-5558

Academic Coordinator Gainesville Campus:

Name: Ashley Williams

- Email: acwilliams@ufl.edu
- Office: HPNP 4312
- Phone: 352-273-5617

Absence/Tardy Email: (Visit the course policy site for further instructions)

Educational Coordinators

Name: Katie Orben

- Email: korben06@ufl.edu
- Office: Jacksonville Campus
- Phone: 904-244-9590

Name: Jessica Linares

- Email: jnoriegalinaires@ufl.edu
- Office: Orlando Campus
- Phone: 407-313-4087

Questions to Ask:

- Issues related to course policies (absences, make up exams, missed attendance)
- Absence/tardy requests (Only the Academic Coordinator handles absence requests)
- Questions about dates, deadlines, meeting place
- Availability of handouts and other course materials
- Assignment directions
- Questions about grade entries in gradebook (missing grades, incorrect grade)
- Assistance with ExamSoft® (Distance campus students may contact the Educational
- Coordinator for use of Exemplify and assistance during exams. The Academic Coordinator is the contact person for issues related to grading and posting of ExamSoft grades.

Dates of Recommended Study	Mod#	Activity	Unit Topic	Contact (hr)	Objectives	Responsible Faculty
01/05/24	0	Quiz Self-Assessment	Course Introduction Quiz			Malany
	1	Module	Module 1: Introduction and Rational Drug Use; Introduction to Pharmacology		1-4	Malany Peddibhotla
01/08/24	1.1	Video Lecture	Watch: Introduction to Rational Drug Use	0.5		Malany
01/10/24	1.2	Video Lecture	Watch: Introduction to Drug Discovery	0.5		Malany
01/12/24	1.3	Video Lecture	Watch: PK, PD and toxicology	0.25		Peddibhotla
01/15/24	1.4	Video Lecture	Watch: Mechanism of action	0.25		Peddibhotla
01/16/24	1.5	Video Lecture	Watch: Pharmacogenomic variability	0.5		Peddibhotla
01/18/24 1:00pm- 2:50pm	1	Active Learning Session--VC	Active Learning Session 1	2	1-4	Malany Peddibhotla
01/18/24	1	Quiz In-class Graded	iRAT/tRAT 1			
	2	Module	Module 2: DRC and Variability in Drug Response		1-4	Malany Peddibhotla
01/22/24	2	Other	Review: Log Scales DOC			Malany
01/23/24	2	Video Other	Watch: Semi-Log Plot Review			Malany
01/23/24	2	Video Lecture	Watch: Semi-Log Plot Review			Malany
01/23/24	2	Reading	Read: How to Label Semi-Log Graph Paper			Malany
01/25/24	2.1	Video Lecture	Watch: Drug Stimulus and Response and Dose Response Curves	0.7		Malany
01/26/24	2.2	Video Lecture	Watch: Variability in Drug Response and Therapeutic Index	0.5		Malany
01/29/24	2.3	Video Lecture	Watch: PK-PD Simulations	0.5		Malany
01/29/24		Optional/ Supplemental	Tips for Success #1: Analyzing			Robin Moorman Li

			Drug-Dose Response Curves Quickly and Accurately			
02/02/24 10:00am- 11:50am	2	Active Learning Session--VC	Active Learning Session 2	2	1-4	Malany Peddibhotla
02/02/24	2	Quiz In-class Graded	iRAT/tRAT 2			
	3	Module	Module 3: Law of Mass Action and Intrinsic Activity	0		Malany Peddibhotla
02/05/24	3.1	Video Lecture	Watch: Law of Mass Action	0.6		Malany
02/06/24	3.2	Video Lecture	Watch: Intrinsic Activity and Spare Receptors	0.6		Malany
02/07/24	3.4	Video Lecture	Watch: Receptor Targets and Mode of Action	0.7		Malany
02/08/24		Optional/ Supplemental	Tips for Success #2: Assessing Intrinsic Activity of Drugs Using Dose-Response Curves			Robin Moorman Li
02/09/24 10:00am- 11:50am	3	Active Learning Session--VC	Active Learning Session 3	2		Malany Peddibhotla
02/09/24	3	Quiz In-class Graded	iRAT/tRAT 3			
	4	Module	Module 4: Receptor Binding			Malany Peddibhotla
02/12/24	4.1	Video Lecture	Watch: Receptor Binding Curves	0.3		Peddibhotla
02/19/24	4.2	Video Lecture	Watch: Drug Residence Time	0.3		Malany
02/13/24	4.3	Video Lecture	Watch: Competition Curves	0.3		Peddibhotla
02/14/24	4.4	Video Lecture	Watch: Drug-Receptor Structure Activity Relationships	0.8		Malany
02/14/24		Optional/ Supplemental	Tips for Success #3: Correlating Drug Affinity for Specific Receptors with Drug Effects			Robin Moorman Li
02/15/24		Optional/ Supplemental	Playposit for Tips Session3 prob 3			Robin Moorman Li
02/16/24 8:00am- 9:50am	4	Active Learning Session--VC	Active Learning Session 4	2		Malany Peddibhotla

02/16/24	4	Quiz In-class Graded	iRAT/tRAT 4			
	5	Module	Module 5: Receptor Regulation and Adverse Effects			Malany Peddibhotla
02/18/24	5.1	Video Lecture	Watch: Receptor Regulation	0.5		Malany
02/19/24	5.2	Video Lecture	Watch: Mechanism of Drug Tolerance	0.5		Malany
02/20/24	5.3	Video Lecture	Watch: Adverse Drug Reactions	0.6		Peddibhotla
02/22/24 1:00pm-2:50pm	5	Active Learning Session--VC	Active Learning Session 5	2		Malany Peddibhotla
02/22/24	5	Quiz In-class Graded	iRAT/tRAT 5			
2/22/24 3:00pm – 3:30pm		Course Eval	Mandatory Course Evaluations. Attendance required.			
03/01/24 1:00pm-3:00pm	1-5	Exam	Final Exam			
03/07/24 8:00am - 8:30am		Exam Review				
			Total Hours	19.5		