

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.

Course Prerequisites: --

1. Successful completion of Block 1.

Course Corequisites: -- N/A

Course Faculty and Staff		
Course Directors		Instructional Designer
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Academic Coordinators		
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Teaching Faculty		
Siobhan Malany, Ph.D.	Mahesh Peddibhotla, Ph.D., M.S. (Pharmacy)	

[Faculty and Staff: Who to Contact and Questions to Ask](#)

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

Course Objectives and Educational Outcomes	
Course Objectives	Linked Educational Outcome
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.	Learner
2. Describe differences in pharmacodynamic (PD) and pharmacokinetic (PK) properties	Learner
3. Understand the process of assessing drug potency and efficacy from dose-response curves.	Learner
4. Describe the law of mass action and relate this to the drug's mechanism of action.	Learner
5. Classify a drug's activity based on intrinsic action including full agonist, partial agonist, inverse agonist, and competitive and noncompetitive antagonist.	Learner
6. Describe conditions when the Law of Mass action is not followed (spare receptors, receptor cooperativity).	Learner

7. Draw correlations between drug affinity for a receptor population and drug potency for causing a specific molecular cellular, physiological, or behavioral effect.	Learner
8. Determine drug residence time based on affinity values.	Learner
9. Describe the process of receptor regulation under conditions of under and over stimulation.	Learner
10. List alternative mechanisms that contribute to drug tolerance and sensitization.	Learner
11. Identify sources to find reported adverse drug reactions and classify a drug's potential adverse reactions	Provider

Course Resources and Fees

Course Outline

See Appendix A. Please routinely check your Google campus calendar and the Canvas course site for any messages about changes in the schedule including meeting dates/times, deadlines, and room changes.

Required Textbooks/Readings

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](http://www.library.health.ufl.edu/) at this URL:<http://www.library.health.ufl.edu/>

- 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

Suggested Textbooks/Readings

Suggested readings will be posted on Canvas.

Other Required Learning Resources

None

Materials & Supplies Fees

N/A

Evaluation and Grading

Student Evaluation & Grading

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

Assessment Item	Grade Percentage
iRATs [5] @ 21pts each	36.2% (105 points)
tRATs [5]	12.1% (35 points)
Final Exam	51.7% (150 points)
Total	100%

Grading Scale

Percentage	Letter Grade	Percentage	Letter Grade	Percentage	Letter Grade
92.50-100%	A	79.50-82.49%	B-	66.50-69.49%	D+
89.50-92.49%	A-	76.50-79.49%	C+	62.50-66.49%	D
86.50-89.49%	B+	72.50-76.49%	C	59.50-62.49%	D-
82.50-86.49%	B	69.50-72.49%	C-	< 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 <u>NO EXCEPTIONS</u> will be made in situations where a student's grade is "close."
University of Florida Honor Pledge and Academic Dishonesty
<p>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."</p> <p>The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Expectations for Artificial Intelligence and when use constitutes academic dishonesty is outlined below.</p> <p>Tendering information (giving your work to another to be copied, giving someone answers to assessment questions, informing another person in a later section about the questions that appear on an assessment that you have taken, or giving or selling a paper to another student), is considered academic dishonesty.</p> <p>If you have any questions or concerns, please consult the course's Teaching Partnership Leader/Course Director or Assistant Dean for Curricular Affairs.</p> <p>See the UF Conduct Code website for more information. If you have any questions or concerns, please consult with the instructor or TAs in this class.</p>

Assignment Descriptions
N/A

Course-Related Policies
UF Resources and Policies
University of Florida resources and policies can be found at this URL: https://go.ufl.edu/syllabuspolicies
PharmD 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 active learning sessions. A student who misses greater than 1 session(s) for this course will receive an incomplete in the course and will retake the course during the next offering, resulting in delayed graduation.
Makeup Assignments
There are no makeup assignments
Late Assignments
There are no late assignments
Educational Technology Use
The following technology below will be used during the course and the student must have the appropriate technology and software.
<ol style="list-style-type: none"> 1. ExamSoft™ Testing Platform 2. Canvas™ Learning Management System
For technical support, navigate to Educational Technology and IT Support Contact Information at this URL:

Course-Related Policies

<http://curriculum.pharmacy.ufl.edu/current-students/technical-help/>

Artificial Intelligence (AI) Use for Assessments

The use of generative AI in assessments is prohibited, unless explicitly allowed by the course instructor. Assessments include any submitted work, graded or ungraded, that will be evaluated. These include, but are not limited to, quizzes, exams, assignments, writing projects, etc. 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.

When authorized by the course director/course instructors, students may use AI technologies in the completion of an assessment if they acknowledge all use by naming the technology, describing how it was employed, and adhering to any other requirement stipulated in the assessment's instructions. Failure to acknowledge the use of AI technology or disregarding instructions related to the use of AI for assessments is considered academic misconduct. Students must disclose the use of AI and AI-assisted technologies by following the instructions below.

Application of AI technology must be done with human oversight and control, and students should carefully review and edit the result, as AI can generate outputs that can be incorrect, incomplete, or biased. **Students assume full responsibility for all content, including errors and omissions, if AI is employed.** Additionally, privacy is a concern with AI-generated content. Most commercially available AI systems are not compliant with [HIPAA](#) or FERPA protections, inputting patient or student information is prohibited by federal law.

Instructions to acknowledge the use of AI:

Statement: During the preparation of this assignment I/we, [INSERT NAME/S], used [INSERT TOOL / SERVICE] in order to [INSERT REASON OR PURPOSE]. After using this tool/service, I/we reviewed and edited the content as needed and take full responsibility for the content of the submission.

Penalties for unauthorized use:

Unauthorized use of AI text generators for assessments is considered evidence of academic dishonesty (see [policy on academic dishonesty](#)).

Guidance on Using AI Tools for Learning

You are welcome to use AI tools to support your learning in this course, including for tasks such as brainstorming, outlining, or summarizing complex topics. However, please be aware that AI-generated content may contain false or misleading information. It is your responsibility to critically evaluate and fact-check any information you use. For all assessments, your responses should be based on the content provided in course materials and lectures.

To protect instructional content and comply with university policies, if you choose to create your own study aids using AI, instructor materials (e.g., PowerPoint slides, lecture transcripts, course handouts) may only be uploaded to university-supported, secure platforms such as the Navigator suite of AI tools (<https://it.ufl.edu/ai/>) or Microsoft Copilot (<https://copilot.microsoft.com/>) using your GatorLink credentials. When using Navigator AI, students should select a model approved for handling sensitive data. Individual instructors may choose not to permit the use of their instructional materials with AI tools. Any course materials that are restricted from AI use will be communicated to students through the course learning management system, Canvas.

Students are prohibited from uploading instructor materials to open or non-university-supported AI tools unless they have received written permission from the course instructor. Students are expected to use AI tools responsibly and must not upload any content that violates copyright laws or terms of use. If you are unsure whether an AI tool is appropriate to use, please consult the instructor.

Disability Resource Center

Students with disabilities who experience learning barriers and would like to request academic accommodations should

Course-Related Policies

connect with the Disability Resource Center. See the [Get Started with the DRC webpage](#) on the Disability Resource Center site. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

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. Students can complete evaluations in three ways:

1. The email they receive from GatorEvals,
2. Their Canvas course menu under GatorEvals, or
3. The central portal at <https://my-ufl.bluera.com>

Guidance on how to provide constructive feedback is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>

Appendix A: Course Outline

Date / Time [Recommend ed for Independent Study]	Mod#	Activity	Activity Title	Contact Time (min)	Faculty
01/05/26	0	Quiz Self-Assessment	Course Introduction Quiz		Malany
1/05/26	1	Module	Module 1: Introduction and Rational Drug Use; Introduction to Pharmacology (Objectives 1-4)		Peddibhotla, Malany
01/14/26	1.1	Video Lecture	Watch: Drug Discovery and Rational Drug Use	58	Malany
01/14/26	1.2	Video Lecture	Watch: PK, PD and Toxicology	25	Peddibhotla
01/14/26	1.3	Video Lecture	Watch: Mechanism of Action (MOA) and Pharmacogenomics	24	Peddibhotla
01/16/2026 at 8:00am - 9:50am	1	Active Learning Session--VC	Active Learning Session 1	90	Peddibhotla, Malany
	1	Quiz In-class Graded			Peddibhotla, Malany
	2	Module	Module 2: DRC and Variability in Drug Response (Objectives 1-5)		Peddibhotla, Malany
01/30/26	2.1	Video Lecture	Watch: Drug Stimulus Response and Dose Response Curves	49	Malany
01/30/26	2.2	Video Lecture	Watch: Variability in Drug Response and Therapeutic Index	43	Malany

01/30/26	2.3	Lecture Video	Analyzing Drug-Dose Response Curves Quickly and Accurately	22	Malany
01/30/26	2	Optional/Supplemental	Variability in Drug Response Case Studies		
01/30/26	2	Optional/Supplemental	Watch: Semi-Log Plot Review		
01/30/26	2	Optional/Supplemental	Review: Log Scales DOC		
01/30/26	2	Optional/Supplemental	Watch: Semi-Log Plot Review		
01/30/26	2	Optional/Supplemental	Read: How to Label Semi-Log Graph Paper		
02/05/2026 at 1:00pm - 2:50pm	2	Active Learning Session--VC	Active Learning Session 2	90	Peddibhotla, Malany
	2	Quiz In-class Graded	iRAT/tRAT 2		Peddibhotla, Malany
	3	Module	Module 3: Law of Mass Action and Intrinsic Activity (Objectives 1-6)		Peddibhotla, Malany
02/09/26	3.1	Video Lecture	Watch: Law of Mass Action	45	Malany
02/09/26	3.2	Video Lecture	Watch: Intrinsic Activity and Spare Receptors	34	Malany
02/09/26	3.3	Lecture Video	Watch: Receptor Targets and Mode of Action	31	
02/09/26		Optional/Supplemental	Tips for Success #2: Assessing Intrinsic Activity of Drugs Using Dose-Response Curves		
02/12/2026 at 8:00am - 9:50am	3	Active Learning Session--VC	Active Learning Session 3	90	Peddibhotla, Malany
	3	Quiz In-class Graded	iRAT/tRAT 3		Peddibhotla, Malany
	4	Module	Module 4: Receptor Binding (Objectives 1-8)		Malany
02/13/26	4.1	Video Lecture	Watch: Receptor Binding and Competition Curves	45	Peddibhotla
02/13/26	4.2	Lecture Video	Watch: Drug Residence Time	28	
02/13/26	4.4	Lecture Video	Watch: Drug-Receptor Structure Activity Relationships	33	
02/13/26		Optional/Supplemental	Tips for Success #3: Correlating Drug Affinity for Specific Receptors with Drug Effects - rerecord as practice problems		
02/13/26		Optional/Supplemental	Playposit for Tips Session3 prob 3 m- replace with simulations		
02/18/2026 at 10:00am - 11:50am	4	Active Learning Session--VC	Active Learning Session 4	90	Peddibhotla, Malany
	4	Quiz In-class Graded	iRAT/tRAT 4		Peddibhotla, Malany

	5	Module	Module 5: Receptor Regulation and Spare Receptors (Objectives 1-11)		Peddibhotla, Malany
02/19/26	5.1	Video Lecture	Watch: Receptor Regulation	33	Malany
02/19/26	5.2	Video Lecture	Watch: Mechanism of Drug Tolerance	24	Malany
02/19/26	5.3	Video Lecture	Watch: Adverse Drug Reactions	38	Peddibhotla
02/26/2026 at 11:50am - 12:10pm		Course Evaluation	Course Evaluations		
02/27/2026 at 8:00am - 9:50am	5	Active Learning Session--VC	Active Learning Session 5	90	Peddibhotla, Malany
	5	Quiz In-class Graded	iRAT/tRAT 5		Peddibhotla, Malany
03/02/2026 at 1:00pm - 3:00pm	1-5	Exam	Final Exam		
			Total Contact Min	1003	
			Total Contact Hours	17.42	