PHA5515 Principles of Medicinal Chemistry and Pharmacology II

Spring, 2021

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

Joanna Peris, Ph.D.

- Email: peris@cop.ufl.edu
- Office: P1-29/GNV
- Phone: 352-273-7688

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

Robin Moorman-Li, Pharm.D., BCACP, CPE

- Email: moorman@cop.ufl.edu
- Office: JAX
- Phone: 904-244-9590

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

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

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 and mechanism of drug action
2. Understand the process of assessing drug potency and efficacy from dose-response curves
3. Describe the law of mass action and relate this to the drug's mechanism of action.
4. Classify a drug's activity based on intrinsic action including full agonist, partial agonist, inverse agonist, and competitive and noncompetitive antagonist.
5. Draw correlations between drug affinity for a receptor population and drug potency for causing a specific molecular cellular, physiological or behavioral effect.
6. Describe the process of receptor regulation under conditions of under and over stimulation as well as list alternative mechanisms that contribute to drug tolerance and sensitization.
7. Describe conditions when the Law of Mass action is not followed (spare receptors, receptor cooperativity).

Course Pre-requisites

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

Course Co-requisites

1. PHA5561: Pathophysiology & Patient Assessment II
2. PHA5132: Principles of Drug Therapy Individualization
3. PHA5162L: Professional Skills Lab II
4. PHA5022C: Personal and Professional Development II

Course Outline

See Appendix. Please routinely check your 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

1. Foye WO, Lemke T, Williams DA. Foye's Principles of Medicinal Chemistry, Wolters Kluwer Health/Lippincott Williams & Wilkins, Philadelphia, PA, 7th Edition, 2013. ISBN-13:978-1609133450; ISBN-10:1609133455
    - 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]	37.5	18.75%
tRATs [5]	12.5	6.25%
Final Exam	150	75%
Total	200	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."

Makeup Assignments

Makeup assignments might be required for excused absences from Active Learning Sessions. Faculty also have the option of requiring a meeting to review material with the student. If this option is exercised, the student will be notified via email within 24 hours of the missed active learning session.

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/

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/

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:

Joanna Peris, Ph.D.

- Email: peris@cop.ufl.edu
- Office: P1-29/GNV
- Phone: 352-273-7688

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

Robin Moorman-Li, Pharm.D., BCACP, CPE

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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

Questions to Ask:

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

Instructional Designer:

Name: Holly Fremen

- Email: holly.fremen@cop.ufl.edu
- Office: HPNP 4309
- Phone: 352-273-5558

Academic Coordinator Gainesville Campus:

Name: Misti Merril

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

Absence/Tardy Email: absent1pd@cop.ufl.edu (Visit the course policy site for further instructions)

Educational Coordinators

Name: McKenzie Wallen

- Email: mwallen@cop.ufl.edu
- Office: Jacksonville Campus

Name: Iverta Allen

- Email: iallen1@cop.ufl.edu
- Office: Orlando Campus

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 Examplify 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 MIN	Objectives	Responsible Faculty
01/13/2021	0	Quiz Self-Assessment	Course Introduction Quiz			Joanna Peris, Robin Moorman Li, Siobhan Malany
	1	Module	Module 1: Introduction and Rational Drug Use; Introduction to Pharmacology		1	Joanna Peris, Robin Moorman Li, Siobhan Malany
01/13/2021	1.1	Video Lecture	Watch: Introduction to Rational Drug Use	20		Joanna Peris
01/15/2021	1.2	Video Lecture	Watch: Drug Discovery	30		Siobhan Malany
	1.3	Video Lecture	Watch: PK, PD and toxicology	15		Joanna Peris
	1.4	Video Lecture	Watch: Mechanism of action	15		Joanna Peris
	1.5	Video Lecture	Watch: Pharmacogenomic variability	20		Robin Moorman-Li
01/21/2021 8:30-10:25am	1	Active Learning Session--VC	Active Learning Session 1	120	1	Joanna Peris, Robin Moorman Li, Siobhan Malany
	1	Quiz In-class Graded	iRAT/tRAT 1			
	2	Module	Module 2: DRC and Variability in Drug Response		2, plus previous objective 1	Joanna Peris, Robin Moorman Li, Siobhan Malany
01/26/2021	2	Other	Review: Log Scales DOC			Joanna Peris
01/26/2021	2	Video Other	Watch: Semi-Log Plot Review			Joanna Peris
01/26/2021	2	Video Lecture	Watch: Semi-Log Plot Review			Joanna Peris
01/26/2021	2	Reading	Read: How to Label Semi-Log Graph Paper			Joanna Peris

01/27/2021	2.1	Video Lecture	Watch: Dose Response Curves	50		Joanna Peris
01/28/2021	2.2	Video Lecture	Watch: Variability in Drug Response and Therapeutic Index	35		Joanna Peris
1/29/2021	2	Supplemental Video: Found in Supplemental Resources Tab	Tips for Success #1: Analyzing Drug-Dose Response Curves Quickly and Accurately			Robin Moorman Li
02/05/2021 8:30-10:25 am	2	Active Learning Session--VC	Active Learning Session 2	120	2, plus previous objectives 1	Joanna Peris, Robin Moorman Li, Siobhan Malany
	2	Quiz In-class Graded	iRAT/tRAT 2			
	3	Module	Module 3: Law of Mass Action and Intrinsic Activity		3-4, plus previous objectives 1-2	Joanna Peris, Robin Moorman Li, Siobhan Malany
02/08/2021	3.1	Video Lecture	Watch: Law of Mass Action	50		Joanna Peris
02/09/2021	3.2	Video Lecture	Watch: Intrinsic Activity	50		Joanna Peris
	3	Supplemental Video: Found in Supplemental Resources Tab	Tips for Success #2: Assessing Intrinsic Activity of Drugs Using Dose-Response Curves			Robin Moorman Li
02/11/2021 1:55-3:50pm	3	Active Learning Session--VC	Active Learning Session 3	120	3-4, plus previous objectives 1-2	Joanna Peris, Robin Moorman Li, Siobhan Malany
	3	Quiz In-class Graded	iRAT/tRAT 3			
	4	Module	Module 4: Receptor Binding		5, plus previous objectives 1-4	Joanna Peris, Robin Moorman Li, Siobhan Malany
02/12/2021	4.1	Video Lecture	Watch: Receptor Binding Curves	35		Joanna Peris

02/15/2021	4.2	Video Lecture	Watch: Competition Curves	30		Joanna Peris
02/16/2021	4.3	Video Lecture	Watch: Structure activity relationships	35		Siobhan Malany
02/17/2021	4	Supplemental Video: Found in Supplemental Resources Tab	Tips for Success #3: Correlating Drug Affinity for Specific Receptors with Drug Effects			Robin Moorman Li
02/18/2021 8:30-10:25am	4	Active Learning Session--VC	Active Learning Session 4	120	5, plus previous objectives 1-4	Joanna Peris, Robin Moorman Li, Siobhan Malany
	4	Quiz In-class Graded	iRAT/tRAT 4			
	5	Module	Module 5: Receptor Regulation and Spare Receptors		6-7, plus previous objectives 1-5	Joanna Peris, Robin Moorman Li, Siobhan Malany
02/19/2021	5.1	Video Lecture	Watch: Receptor Regulation	50		Joanna Peris
02/22/2021	5.2	Video Lecture	Watch: Spare Receptors	50		Joanna Peris
02/25/2021 8:30-10:25am	5	Active Learning Session--VC	Active Learning Session 5	120	6-7, plus previous objectives 1-5	Joanna Peris, Robin Moorman Li, Siobhan Malany
	5	Quiz In-class Graded	iRAT/tRAT 5			
03/03/2021 2:00-4:00 pm	1-5	Exam	Final Exam		ALL objectives	
			Total Min	1100		
			Total Hours	18.33		