PHA5515 Principles of Medicinal Chemistry and Pharmacology II
Spring 2018
1 Credit Hour – [A-E Grading]

This course will provide a basis for the rational understanding of applied clinical pharmacology and therapeutics. This course will prepare the student to explain to practitioners and patients pharmacology concepts such as log dose response curves, population drug response curves, and receptor binding and regulation. This knowledge will also prepare students to better understand mechanism of action of new medications as they come on the market in the future.

Teaching Partnership Leaders
Joanna Peris, Ph.D.
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- Phone: 352-273-7688
- Office Hours: By appointment

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- Office: Jacksonville
- Phone: 904-244-9034
- Office Hours: By appointment

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:

1. EPA A2. Interpret patient data, and identify medication-related problems.
Course-Level Objectives

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

1. Define pharmacokinetics and pharmacodynamics and explain the differences between these two processes.
2. Define the concept of rational drug use and practice evaluating examples of rational drug use.
3. Describe the processes for determining the mechanism of action of a drug.
4. Explain the difference between EC50 and Emax and the importance of these terms in evaluation of dose response curves.
5. Discuss how dose-response curves can predict molecular, cellular, physiologic and behavioral characteristics of a drug’s action.
6. Demonstrate the ability to compare dose response curves in relation to potency, slope, variability and efficacy.
7. Compare the potency and efficacy of multiple dose response curves and anticipate the differences in mechanism of actions of the given drugs.
8. Evaluate the slope differences in dose response curves and explain the importance of a steep, shallow, and normal slope curve.
9. List factors contributing to variability.
10. Describe the importance of understanding cellular and/or molecular mechanism of drug actions and the relationship between receptor occupancy and biologic action.
11. Explain the difference between ED50, TD50, and LD50.
12. Calculate the Certain Safety Factor and Therapeutic index and explain the meaning of these results in determining if a drug is safe or unsafe.
13. Describe the law of mass action and relate this to the drug’s mechanism of action.
14. Classify a drug’s activity based on intrinsic action including full agonist, partial agonist, inverse agonist, and antagonist.
15. Describe the difference between a competitive and noncompetitive antagonist.
16. Quantify the degree of receptor occupancy by a drug based on receptor affinity and drug concentration.
17. Draw correlations between drug affinity for a receptor population and drug potency for causing a specific molecular cellular, physiological or behavioral effect.
18. Use this information to help maximize therapeutic benefits and minimize undesirable side effects of a drug.
19. Demonstrate the ability to interpret dose response curves in specific given examples.
20. 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.
21. 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
Course Outline

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.

<table>
<thead>
<tr>
<th>Date Recommended Dates for Independent Study</th>
<th>Mod#</th>
<th>Unit Topic</th>
<th>Contact Hours [hr.]a</th>
<th>Faculty Author</th>
<th>Learning Objectives Covered</th>
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</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td>1</td>
<td>Module 1: Introduction and Rational Drug Use; Introduction to Pharmacology</td>
<td>3.7hr</td>
<td>Peris</td>
<td>1, 2, 3</td>
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<td>1/19/18</td>
<td>1.1</td>
<td>Watch: Introduction to Rational Drug Use</td>
<td>0.85hr</td>
<td>Peris</td>
<td></td>
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<tr>
<td>1/22/18</td>
<td>1.2</td>
<td>Watch: Rational Drug Use Part 2</td>
<td>0.85hr</td>
<td>Peris</td>
<td></td>
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<tr>
<td>1/26/18 8:30-10:25am</td>
<td>1</td>
<td>Active Learning Session 1</td>
<td>2.0hr</td>
<td>Peris</td>
<td>1, 2, 3</td>
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<tr>
<td><strong>Week 2</strong></td>
<td>2</td>
<td>Module 2: DRC and Variability in Drug Response</td>
<td>3.7hrs</td>
<td>Peris, Moorman-Li</td>
<td>3</td>
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<tr>
<td>1/29/18</td>
<td>2.1</td>
<td>Watch: Dose Response Curves</td>
<td>0.85hr</td>
<td>Peris</td>
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<tr>
<td>1/29/18</td>
<td>2.2</td>
<td>Watch: Variability in Drug Response and Therapeutic Index</td>
<td>0.85hr</td>
<td>Peris</td>
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<tr>
<td>2/1/18 8:30-10:25am</td>
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<td>Active Learning Session 2</td>
<td>2.0hr</td>
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<td><strong>Week 3</strong></td>
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<td>Module 3: Law of Mass Action and Intrinsic Activity</td>
<td>3.7hr</td>
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<td>13, 14, 15</td>
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<td>2/2/18</td>
<td>3.1</td>
<td>Watch: Law of Mass Action</td>
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<td>2/2/18</td>
<td>3.2</td>
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<td>2/8/17 8:30-10:25am</td>
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<td>Active Learning Session 3</td>
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<td>13, 14, 15</td>
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<td><strong>Week 4</strong></td>
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<td>Module 4: Receptor Binding</td>
<td>3.7hr</td>
<td>Peris, Moorman-Li</td>
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<td>Watch: Receptor Binding Curves</td>
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<td>Date</td>
<td>Mod#</td>
<td>Unit Topic</td>
<td>Contact Hours [hr.]</td>
<td>Faculty Author</td>
<td>Learning Objectives Covered</td>
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<td>16, 17, 18</td>
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<td>Module 5: Receptor Regulation and Spare Receptors</td>
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<td>Peris, Moorman-Li</td>
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<td>Watch: Receptor Regulation</td>
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<td>2/20/18</td>
<td>5.2</td>
<td>Watch: Spare Receptors</td>
<td>0.85hr</td>
<td>Peris</td>
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<td>2/22/18 8:30-10:25am</td>
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<td>Active Learning Session 5</td>
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<td>All</td>
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**Required Textbooks/Readings**

   - Purchased for PHA5439

Use [UF VPN to access UF Libraries Resources](http://www.library.health.ufl.edu/) 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/).

**Suggested Textbooks/Readings**

Suggested reading materials will be posted in the Canvas site.

**Other Required Learning Resources**

N/A
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.]

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<tr>
<th>Assessment Item</th>
<th>Points</th>
<th>Grade Percentage</th>
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<tr>
<td>iRATs [5]</td>
<td>50</td>
<td>16.67%</td>
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<tr>
<td>tRATs [5]</td>
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<tr>
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<td>50%</td>
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<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
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Table 1. Grading Scale

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/

Pharm.D. Course Policies

The Policies in the following link apply to this course. Review the Pharm.D. Course Policies carefully, at this URL: http://curriculum.pharmacy.ufl.edu/current-students/course-policies/
Appendix A. Course Directory

Teaching Partnership Leader/Course Director:
Joanna Peris, Ph.D.                                      Robin Moorman-Li, Pharm.D., BCACP
Email: peris@cop.ufl.edu                                 Email: moorman@cop.ufl.edu
Office: P1-29/GNV                                       Office: JAX
Phone: 352-273-7688                                      Phone: 904-244-9590
Office Hours: By appointment                             Office Hours: By appointment

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

Academic Coordinator:
Name: Candice Walker
Email: candice.walker@cop.ufl.edu
Office: HPNP 4312/GNV
Phone: 352-273-5558
Office Hours: By appointment ONLY.

Questions to Ask:
- Issues related to course policies (absences, make up exams, missed attendance)
- Absence 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 gradebook (missing grades, wrong grade)
- Assistance with ExamSoft® (Distant campus students may contact Education Coordinator for use of SofTest and assistance during exams. The Academic Coordinator is the contact person for issues related to grading and posting of ExamSoft grades.)