

# Cover Sheet: Request 10104

## PHA 5515 Principles of Medicinal Chemistry and Pharmacology II

### Info

Process	Course Modify Ugrad/Pro
Status	Pending
Submitter	Beck,Diane Elizabeth beck@cop.ufl.edu
Created	2/26/2015 4:01:13 PM
Updated	2/27/2015 9:21:37 AM
Description	<p>This course occurs during Year 1 - Spring Semester of the new 2015 Curriculum.</p> <p>The course is a modification of the current PHA 5515 course in the following ways: Title, Credit Hours, Course Description, Pre-requisites, Instructors, Course Objectives, Weekly Course Schedule, Required Textbooks, and Methods of Evaluation/Grade determination.</p> <p>A UCC1 Form is being submitted per Dr. Julian since there has not been a recent UCC review of the course.</p>

### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	COP - Interdisciplinary Studies	Whalen, Karen		2/27/2015
College	Approved	COP - College of Pharmacy	Beck, Diane Elizabeth		2/27/2015
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/27/2015
Statewide Course Numbering System					
Office of the Registrar					
Student Academic Support System					
Catalog					
College Notified					

## Recommended SCNS Course Identification

1. Prefix PHA      2. Level 5      3. Number 515      4. Lab Code None

5. Course Title Principles of Medicinal Chemistry and Pharmacology II

6. Transcript Title (21 character maximum) Prin Med Chem-Pcol II

7. Effective Term Spring

8. Effective Year 2015

9. Rotating Topic? No

10. Amount of Credit 1

11. If variable, # minimum and # maximum credits per semester.

12. Repeatable credit? No

13. If yes, total repeatable credit allowed #

14. S/U Only? No

15. Contact Type Regularly Scheduled [base hr]

16. Degree Type Professional

17. If other, please specify: [Click here to enter text.](#)

18. Category of Instruction Introductory

## 19. Course Description (50 words maximum)

Provides a basis for rational understanding of applied clinical pharmacology and therapeutics by preparing students to explain concepts such as log dose response curves, population drug response curves, and receptor binding and regulation.

## 20. Prerequisites

PHA 5560 Pathophysiology and Patient Assessment I

PHA 5433 Principles of Medicinal Chemistry and Pharmacology I

## 21. Co-requisites

[Click here to enter text.](#)

## 22. Rationale and Placement in Curriculum

The first year of the Pharm.D. curriculum introduces principles and concepts. These are applied during years 2 and 3 as students complete a series of body system courses.

23. Complete the syllabus checklist on the next page of this form.

### Syllabus Requirements Checklist

The University's complete Syllabus Policy can be found at:

[http://www.aa.ufl.edu/Data/Sites/18/media/policies/syllabi\\_policy.pdf](http://www.aa.ufl.edu/Data/Sites/18/media/policies/syllabi_policy.pdf)

The syllabus of the proposed course **must** include the following:

- ☒ Course title
- ☒ Instructor contact information (if applicable, TA information may be listed as TBA)
- ☒ Office hours during which students may meet with the instructor and TA (if applicable)
- ☒ Course objectives and/or goals
- ☒ A weekly course schedule of topics and assignments.
- ☒ Methods by which students will be evaluated and their grades determined
- ☒ Information on current UF grading policies for assigning grade points. This may be achieved by including a link to the appropriate undergraduate catalog web page:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.
- ☒ List of all required and recommended textbooks
- ☒ Materials and Supplies Fees, if any
- ☒ A statement related to class attendance, make-up exams and other work such as: *"Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>."*
- ☒ A statement related to accommodations for students with disabilities such as: *"Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation."*
- ☒ A statement informing students of the online course evaluation process such as: *"Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>."*

It is **recommended** that the syllabus contain the following:

- ☒ Critical dates for exams or other work
- ☒ Class demeanor expected by the professor (e.g. tardiness, cell phone usage)
- ☒ The university's honesty policy regarding cheating, plagiarism, etc.

*Suggested wording: 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." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.*

- ☒ Contact information for the Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies

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## PHA 5515 Principles of Medicinal Chemistry and Pharmacology II

Spring 2016 – Block 3 (8 weeks)

1 Semester Credit Hours

### Course Purpose:

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.

### Course Faculty and Office Hours

**Teaching Partnership Leader:** Dr. J. Peris

Email: [peris@ufl.edu](mailto:peris@ufl.edu)

Office: P1-29

Phone: (352)273-7688

Office Hours: by appointment

**Teaching Partners:**

Dr. R. Moorman-Li

Email: [moorman@cop.ufl.edu](mailto:moorman@cop.ufl.edu)

Office: Jacksonville campus

Phone: (904) 244-9590

Office Hours: by appointment

### Academic Coordinator

Christine Salama, M.A.      Email: [csalama@ufl.edu](mailto:csalama@ufl.edu)

Office: HPNP 4312      Phone: 352-273-5617

Office Hours: by email and appointment

### This Course Will Prepare You to Perform the Following Activities Which the Public Entrusts a Pharmacist to Perform:

EPA A2. Interpret patient data and identify medication-related problems.

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## Course Objectives

Pharmacology is the unified study of the properties of drugs and all aspects of their interaction with living organisms. This course is designed to introduce the student to mechanisms of drug action. By the end 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 EC<sub>50</sub> and E<sub>max</sub> and the importance of these terms in evaluation of dose response curves
5. Discuss how dose-response curves can predict molecular, cellular, and 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 ED<sub>50</sub>, TD<sub>50</sub>, and LD<sub>50</sub>
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 importance of a 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 including H<sub>1</sub> and H<sub>2</sub> blockers, anti-inflammatory agents, analgesics, etc.
20. Describe the molecular location of the site of drug action
21. 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.
22. Describe conditions when the Law of Mass action is not followed (spare receptors, receptor cooperativity).

## Pre-Requisite Knowledge and Skills

PHA 5560 Pathophysiology and Patient Assessment I

PHA 5433 Principles of Medicinal Chemistry and Pharmacology I

## Weekly Course Outline

**LECTURE.** Each lecture consists of 50 min “live” lecture covering reading assignments and lecture notes. It is strongly suggested that all students in Gainesville attend the live lectures so as to foster student-lecturer interactions which makes for a more interesting and dynamic lecture even for the students watching on video.

**Active Learning Sessions.** Students will be assigned to small teams at the beginning of the term. They will have access to the case studies 1 week prior to the session and are expected to meet with their teams to prepare answers prior to the active learning session. During the session, students will complete an individual closed book quiz at the beginning of class. Following the quiz students will work in their teams to evaluate additional cases. Students will randomly be asked questions on these cases and will have 15-20 seconds to confer with teammates prior to answering the question. Responses will be graded based on the rubric in Appendix A. The team grade will be determined by averaging the scores of any group members earned during this session.

Week	Instructor	Related Learning Objectives	Learning Activities/Topic	Instructor Contact Hours
Wk 1	Peris	1-7	<b>Online/Individual Study</b> Module 1: Log Dose Response Curves 2 1-hr videotaped lectures <ul style="list-style-type: none"> <li>• Introduction to pharmacology</li> <li>• Pharmacokinetics vs pharmacodynamics</li> <li>• Pharmacogenomics</li> <li>• Toxicology</li> <li>• Mechanism of action</li> <li>• Rational use of drugs</li> </ul>	2 hrs
	Moorman-Li		<b>In-Class Activity 1</b> <b>Quiz/Discussion session 1</b>	1 hr
Wk 2	Peris	8-12	<b>Online/Individual Study</b> Module 2: Population DRC and Variability in Drug Response 2 1-hr videotaped lectures	2 hrs



			<ul style="list-style-type: none"> <li>Clinical significance of competition curves</li> </ul>	
			<b>In-Class Activity 4</b> <b>Quiz/Discussion session 4</b>	1 hr
Wk 5	Peris  Moorman-Li	19-22	<b>Online/Individual Study</b> Module 5: Receptor Regulation and Spare receptors 2 1-hr video/lecture <ul style="list-style-type: none"> <li>Receptor s</li> <li>Presynaptic receptors <ul style="list-style-type: none"> <li>Homologous</li> <li>Heterologous</li> </ul> </li> <li>Autoreceptors <ul style="list-style-type: none"> <li>Impulse modulating</li> <li>Synthesis modulating</li> <li>Release modulating</li> </ul> </li> <li>Regulating receptor numbers</li> <li>Adaptation to abnormal signaling <ul style="list-style-type: none"> <li>Neurotransmitter functions</li> <li>Second messengers functions</li> <li>Autoreceptors</li> </ul> </li> <li>Spare receptors</li> </ul>	2 hr
			<b>In-Class Activity 5</b> <b>Quiz/Discussion session 5</b>	1 hr
Wk 6			<b>Final Exam</b>	

## Textbooks

Foye WO, Lemke T, Williams DA. Foye's Principles of Medicinal Chemistry, Wolters Kluwer Health/Lippincott Williams & Wilkins, Philadelphia, PA, 7<sup>th</sup> Edition, 2013. ISBN-13:978-1609133450; ISBN-10:1609133455

Note packets, problem sets and patient cases will be made available on Canvas.

## Student Evaluation & Grading

Evaluation Methods and how grades are determined



Assessment Item	Points	Grade Percentage
Quizzes (N =5) The quizzes/discussions and exam will test your knowledge of the information provided in lecture. The total point value for a given topic will be directly dependent on the number of lectures devoted to that topic.	75	30%
In-Class Team Activities (N=5) Some points are individually awarded while other points will require team interaction and cooperation. (See rubric below)	50	20%
Comprehensive Final Exam	125	50%
Total	250	100%

## Grading Scale

> 92.5%	A
89.5-92.4%	A-
86.5-89.4%	B+
82.5-86.4%	B
79.5-82.4%	B-
76.5-79.4%	C+
72.5-76.4%	C
69.5-72.4%	C-
66.5-69.4%	D+
62.5-66.4%	D
59.5-62.4%	D-
< 59.4%	E

**Rounding of grades:** Final course grade will only be rounded up if the decimal is 0.5 or higher. The above scale depicts this policy.

### Grading rubric for Small Team Discussions

	Zero	3 points	5 points	7 points	10 points
Student performance in team discussion	Clearly not prepared to answer questions on material	A considerable amount of content missing in answers	Some content was missing but was able to answer at least half of the questions	Correct content but reading most answers from notes or receiving excessive information from teammates	Correct content; able to confidently answer questions in own words

**Student Conduct:** It is expected all students will conduct themselves in a professional manner at all times. It is also expected that students will stay current and view lectures in a timely manner. All members of a team are expected to contribute equally. Part of the skills required for doing well in this course is based on your ability to work in a team and communicate effectively with all team members to ensure equal division of work.

## Class Attendance Policy

### Policy Across All 1PD-3PD courses:

Class attendance is mandatory for active learning sessions such as problem-solving sessions, case discussions, and laboratory sessions. Student attendance may be excused by the Teaching Partnership Leader in the following situations: documented illness, family emergencies, religious holidays, and other reasons of serious nature. Conflict with work schedules is an unexcused absence.

Requests for excused absences MUST be made by an email to the Academic Coordinator and the course facilitator prior to the scheduled session. The student is responsible for follow up and confirming whether the absence is excused or unexcused. The Teaching Partnership Leader and your campus specific director must be CCD in this communication. The following format is recommended:

**To:** Academic Coordinator and Campus Course Facilitator

**CC:** Teaching Partnership Leader and your specific campus director

**Subject:** PHA XXXX – Excused Absence request

Dear Prof. \_\_\_\_\_,

Professionally and politely request an excused absence.

Explain the nature of conflict and rationale for receiving an excused absence.

Thank the faculty member for their consideration of your special request.

Salutation,

Type in your full name and last 4 digits of UF-ID #, and Campus Name

Failing to follow this policy will render the absence not excusable. A request for an "excused absence" does not guarantee acceptance. No precedence can be drawn from any courses in the College of Pharmacy or any other college within University of Florida.

Makeup assignment(s) will be made for any excused absence(s) and must be submitted **within one-week of the missed session(s)**. If the situation leads to missing multiple class sessions and makeup becomes difficult, the student and Teaching Partnership Leader will meet with the Associate Dean of Student Affairs to explore options such as a remediation plan or course withdrawal.

Class attendance requires full engagement of activities and discussions. The following are unacceptable during class: 1) read non-course related materials that are either in hard-copy or web-based, 2) study for other courses, 3) use a laptop for activities that are not course-related. Class participation will be reduced in such situations.

Please refer to the University Attendance Policy at

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

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**Additional Policy Specific to This Course:**

For the five in-class discussion sessions, attendance is mandatory

**Quiz/Exam Policy**
**Policy across All 1PD-3PD courses:**

1. Students must arrive and be seated promptly to be eligible to take the exam. Students who arrive late for the exam will not be allowed to start the exam if they are more than 30 minutes late or if another student has left the room after seeing the exam.
2. No talking or other disruptive behavior during the distribution or taking of the exam.
- 3 Calculators must meet the following requirements: Only nonprogrammable calculators are allowed during exams for this course.
4. If you encounter calculator problems (e.g., dead battery), contact the Proctor.
5. Nonessential materials are NOT allowed at the student's desk during examination periods. Please leave all nonessential materials outside of or in the front of the examination room.
6. Other exam rules may be instituted during the progression of the course.
7. Once the exam commences, students may not leave the room without first turning in the exam. Once the exam is turned in, the examination period for the student is considered complete and the student must leave the examination room. If there is urgent need to use the restroom, the Proctor will provide guidance.

*Failure to follow exam rules may be considered as evidence of academic dishonesty.*

**Additional Policy Specific to This Course:**

Penalties for tardiness: Students who arrive late to an exam are not eligible to take the exam and must contact the course coordinator within 24 hours of the exam to arrange for a makeup exam that may be offered, depending on the circumstances surrounding the tardiness.

**Make-up Quiz/Exam Policy**
**Policy across All 1PD-3PD courses:**

Makeup exams are given only under special circumstances. If the student is unable to take a scheduled examination, the Teaching Partnership Leader and Academic Coordinator must be notified before the examination. In addition, a written letter of explanation, requesting that the absence from the exam be excused, must be presented before the exam or immediately afterwards. An excused absence is allowable when: 1) the student is hospitalized and/or has been advised by a licensed medical practitioner or hospital not to attend the exam, or 2) if there is a documented death of an immediate family member. All excused absences will be considered on an individual basis by the Teaching Partnership Leader. For unusual situations (e.g., wedding that was planned before admission), the faculty member will communicate with student affairs.

Depending on the decision, a comprehensive exam may be given, which will contain material from all previous exams. The questions on the makeup exam may be in the form of essay, short answer, or multiple-choice. With the exception of highly extenuating circumstances, failure to follow the prescribed procedures or failure to attend the announced comprehensive examination will result in a grade of zero

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for that exam. A request for an "excused absence" does not guarantee acceptance. No precedence can be drawn from any courses in the College of Pharmacy or any other college within University of Florida.

The makeup exam must be taken ***within one-week of the missed exam***. In extenuating circumstances (e.g., hospitalization, faculty availability), the instructor may arrange an alternate deadline for the exam.

The student may contact the instructor to obtain details about why points were deducted. The student has two weeks following the return of the Exam to clarify any questions and appeal any possible grading errors. Any appeals on the final examination must be made in writing and submitted to your facilitator. **When an appeal is made to re-grade an Exam, the entire Exam will be reevaluated and scored.**

### **Additional Policy Specific to this Course:**

Make-up quizzes are not offered. An alternate make-up exam can be made available for students with excused absences or extenuating circumstances at the discretion of course faculty.

### **Policy on Old Quizzes and Assignments**

Old quizzes and assignments are not provided.

## **General College of Pharmacy Course Policies**

The College of Pharmacy has a website that lists course policies that are common to all courses. This website covers the following:

1. Class Attendance, Make-up Exams and Other Work
2. University Grading Policies for Assigning Grade Points
3. Concerns, Appeals, and Complaints
4. Academic Integrity Policy
5. How to request learning accommodations
6. Faculty and course evaluations
7. Computer and Other Technology Requirements
8. Student expectations in class
9. Discussion board policy
10. Email communications
11. Religious holidays
12. How to Contact Counseling & student health Services
13. How to access services for student success
14. Faculty Lectures/Presentations Download Policy

Please see the following URL for this information:

<http://www.cop.ufl.edu/wp-content/uploads/dept/studaff/policies/General%20COP%20Course%20Policies.pdf>

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## Appendix A. Faculty and Staff: Who to Contact

### Academic Coordinator:

1. Questions about dates, deadlines, meeting place
2. Availability of handouts and other course materials
3. Assignment directions
4. Questions about grade entries gradebook (missing grades, wrong grade)
5. Assistance with ExamSoft®

### Teaching Partnership Leaders

1. Issues related to course policies (absences, make up exams, missed attendance)
2. Questions about grades
3. Concerns about performance
4. Guidance when there are performance problems (failing grades)
5. General questions about content

### Other Teaching Partnership Faculty Members

1. Questions about specific content

### Technical Support:

Contact the College of Pharmacy MediaHelp Desk for assistance with course-related technical issues (e.g., Canvas access, video access, printing of documents). The MediaHelp Desk may be reached via the following:

**Phone:** 352-273-6281 (9am-4PM ET)

**Email:** [mediahelp@cop.ufl.edu](mailto:mediahelp@cop.ufl.edu) (response is delayed outside of M-F 9AM-4PM ET)

Contact the University of Florida Computing Help Desk for addresses issues related to:

1. Gatorlink accounts,
2. Gatorlink email,
3. myUFL, and
4. ISIS.

**Phone:** (352)-392-4357