Cover Sheet: Request 10075

PHA 5433 Principles of Medicinal Chemistry & Pharmacology I

Info

Process	Course|Modify|Ugrad/Pro
Status	Pending
Submitter	Beck,Diane Elizabeth beck@cop.ufl.edu
Created	2/25/2015 10:24:37 PM
Updated	2/27/2015 9:24:56 AM
Description	This course occurs during Year 1 - Fall Semester of the new 2015 Curriculum. The course is a modification of the current PHA 5433 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. A UCC1 Form is being submitted per Dr. Julian since there has not been a recent UCC review of the course.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	COP - Interdisciplinary Studies	Whalen, Karen		2/26/2015
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					

UCC1: New Course Transmittal Form

Recommended SCNS Course Identification

1. Prefix PHA 2. Level 5 3. Number 433 4. Lab Code None

5. Course Title Principles of Medicinal Chemistry and Pharmacology I
6. Transcript Title (21 character maximum) Prin Med Chem-Pcol I

7. Effective Term Fall 8. Effective Year 2015 9. Rotating Topic? No
10. Amount of Credit 3 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

Provides foundational knowledge about individual functional groups in drugs and how to predict drug absorption, distribution, interactions, metabolism and excretion.

20. Prerequisites

Admission to the Doctor of Pharmacy Program

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

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

PHA 5433 Principles of Medicinal Chemistry and Pharmacology I

Fall 2015 – Block 2 (10 weeks)

3 Semester Credit Hours

Course Purpose

The purpose of this course is to provide a mechanism for understanding and predicting the properties of drugs: absorption, distribution, interaction with receptors and enzymes, metabolism, and excretion. The mechanism involves identification of individual functional groups in drugs, prediction of the physicochemical/biochemical properties of those individual functional groups and prediction of how the collective individual functional groups can contribute to the properties of the drugs. As a pharmacist, these concepts are essential when developing a prioritized problem list and care plan for a patient. Future coursework will require application of concepts taught in this course as the student pharmacist learns to develop a prioritized problem list and care plan.

Course Faculty and Office Hours

Teaching Partnership Leader:

Margaret O. James, Ph.D.
Email: mojames@ufl.edu
Office: Room P6-20
Phone: (352) 273-7707
Office Hours: Dr. James may be contacted through the course website. She is also available by phoning or emailing.

Teaching Partners:

Hendrik Luesch, Ph.D. Email: leusch@cop.ufl.edu Phone: 352-273-7738
Joanna Peris, Ph.D. Email: peris@cop.ufl.edu Phone: 352-273-7688
Robin Moorman-Li , Pharm.D., BCACP Email: moorman@cop.ufl.edu Phone: 904-244-9590
Yousong Ding, Ph.D. Email: yding@cop.ufl.edu Phone: 352-273-7742
Robert Huigens, Ph.D. Email: rwhuigens@ufl.edu Phone: 352-273-7718

Academic Coordinator

Christine Salama, M.A. Email: 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 and develop a prioritized problem list.
- **EPA A3.** Formulate evidence-based care plans. (In collaboration with an inter-professional team)

Course Objectives

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

1. Develop and integrate knowledge about principles of medicinal chemistry and pharmacology.
2. Identify the unique role and challenges for natural products in drug discovery.
3. Recognize sources of drugs that increasingly impact healthcare.
4. Determine how to discover new therapeutic targets.
5. Predict the effects of functional groups in drugs on pKa, solubility, and interactions.
6. Predict interactions between functional groups in macromolecules and in ligands that are responsible for binding of ligands to receptors/enzymes based on biochemical principles.
7. Predict the effect of binding to receptors on activity versus potency.
8. Predict the following based on analysis of functional groups: a) metabolism, b) drug interactions.
9. Predict drug-drug, drug-food, and related interactions based on alterations of drug metabolism.
10. Consider the role of genetics as a determinant of the rate of metabolism of drugs
11. Predict efflux transport for different classes of drugs.
12. Predict drug-drug, drug-food, and related interactions based on alterations of drug transport
13. Predict degree of ionization of acids and bases from the Henderson Hasselbalch equation.
14. Estimate the pH of solutions of weak acids and bases.
15. Select buffer composition to make and maintain pH of a solution.
16. Explain how prodrugs and soft drugs result in drug action.
17. Apply the problem solving strategy learned in the Personal and Professional development course when solving problems related to medicinal chemistry and pharmacology.

Pre-Requisite Knowledge and Skills

Admission to the Doctor of Pharmacy program.

Course Outline

Lectures. Lectures are recorded live and attendance is not required.

Dates or Week	Instructor	Related Learning Objective	Topic/Learning Activities	Instructor Contact Hours
Week 1	Hendrik Luesch, Ph.D.	1-4	***Module 1: How new drugs are developed: Natural products and drug discovery*** **Online-GNV Live/Individual Study:** Video lectures: • From plants to natural products to marketed drug • Complementary drug discovery approaches	4 hrs

Dates or Week	Instructor	Related Learning Objective	Topic/Learning Activities	Instructor Contact Hours
			• Emerging new sources and targets of drugs	
Week 2	Robert Huigens, Ph.D.	1,5,6,13, 14,15	***Module 2: Relationships of functional groups to pharmacological activity – Part 1*** **Online-GNV Live/Individual Study:** • Basic organic chemistry of drug molecules • Types of functional groups • Estimated pKa values • Degree of ionization at pH 7.4 and 2.0	6 hrs
Week 3	Robert Huigens, Ph.D.	1,5 1,5,6,13, 14,15,17	***Module 2-Continued: Relationships of functional groups to pharmacological activity – Part 1*** **Online-GNV Live/Individual Study:** • Estimation of water solubility • Partition coefficients **In Class Activity 1 (2 hours)** In-class individual quiz (IRAT); Watch pre-recorded video review of quiz; break into small groups to discuss and take a second quiz as a team (TRAT).	3 hrs 2 hrs
Week 4	Yousong Ding, Ph.D.	1,5,6	***Module 3: Relationships of functional groups to pharmacological activity – Part 2*** **Online-GNV Live/Individual Study:** • Stereochemistry • Interactions of functional groups with receptors (give concrete examples) • Salt bonds • Covalent bonds • Hydrogen bonds • Van der Waals interactions • Other	6 hrs
Week 5		1-6,17	***Module 3-Contd: Relationships of functional groups to pharmacological activity – Part 2*** **In Class Activity 2 (2 hours)** In-class individual quiz (IRAT); Watch pre-recorded video review of quiz; break into small groups to discuss and take a second quiz as a team (TRAT).	2 hrs

Dates or Week	Instructor	Related Learning Objective	Topic/Learning Activities	Instructor Contact Hours
			Mid-term Exam	2 hrs
Week 6	Margaret James, Ph.D.	11	***Module 4: Physicochemical and biopharmaceutical properties of drug substances*: *Drug Absorption*** **Online-GNV Live/Individual Study:** • Drug absorption i) Facilitated transport ii) Passive transport iii) Active transport iv) Influx vs efflux transporters	3 hrs
		17	**In Class Activity 3 (2 hours)** In-class individual quiz (IRAT); Watch pre-recorded video review of quiz; break into small groups to discuss and take a second quiz as a team (TRAT).	2 hrs
Week 7 and 8	Margaret James, Ph.D.	8,9,10, 12	***Module 5: Metabolism*** **Online-GNV Live/Individual Study:** 1. Major pathways of drug metabolism 2. Predict the pathways of metabolism of drugs based on analysis of functional groups 3. Predict drug interactions based on metabolism of functional groups 4. Effect of biotransformation – therapeutic activity and toxicity 5. Organs where biotransformation occurs and entero-hepatic cycling 6. Factors affecting rate and extent of biotransformation 7. Regulation of drug-metabolizing enzymes by genetic and environmental factors, and implications for drug therapy 8. Predict drug-drug, drug-food, and related interactions based on alterations of drug metabolism.	8 hrs
		17	**Active Learning Session 4 (2 hours)** In-class individual quiz (IRAT); Watch pre-recorded video review of quiz; break into small groups to discuss and take a second quiz as a team (TRAT).	2 hr

Dates or Week	Instructor	Related Learning Objective	Topic/Learning Activities	Instructor Contact Hours
Week 9	Yousong Ding, Ph.D.	16 17	***Module 6: Prodrugs and soft drugs (Examples that are sold)*** 3 hours of lecture **Active Learning Session 5 (2 hours)** In-class individual quiz (IRAT); Watch pre-recorded video review of quiz; break into small groups to discuss and take a second quiz as a team (TRAT).	3 hrs 2 hrs
Week 10			FINAL EXAM	

Textbooks

The following textbooks are required:

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
2. Brunton L. Goodman and Gilman's The Pharmacological Basis of Therapeutics, McGraw-Hill Professional, New York, NY, 12th Edition, 2011. ISBN-13:978-0071624428; ISBN-10:0071624422 (Available in Access Pharmacy)

Materials and Supplies Fees: None

Student Evaluation & Grading

Evaluation Methods and how grades are determined

Assessments:

Assessment Item	Grade Percentage
Active Learning IRAT Quizzes (N=5)	15%
Active Learning TRAT Quizzes (N=5)	15%
Midterm Exam	30%
Final Exam (Comprehensive)	40%
Total	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.

Educational Technology Use

The following technology below will be used during the course and the student must have the appropriate technology and software. **Appendix A** outlines who to contact if you have questions about technology.

1. ExamSoft®
2. Canvas Learning Management System

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

Additional Policy Specific to This Course:
Active Learning Sessions are required (30% of final grade)

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:
None

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 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:

The format of the make-up is at the discretion of the course coordinator, but is usually of the essay or oral exam type. Missing rescheduled exams will result in a zero grade!

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. University Grading Policies (Assigning Grade Points)
2. Concerns, Appeals, and Complaints
3. Academic Integrity Policy

4. Psychomotor and Learning Expectations
5. How to Request Learning Accommodations
6. Faculty and Course Evaluations
7. Computer and Other Technology Requirements
8. Expectations in Class and Other Learning Activities
9. Communications - Discussion Board Policy
10. Communications - Email
11. Religious Holidays
12. 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

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 (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