

## REQUEST FOR NEW COURSE

<b>1. General Information.</b>				
a.	Submitted by the College of: Pharmacy	Today's Date:	11/23/09	
b.	Department/Division: Pharmaceutical Science			
c.	Contact person name: Catina Rossoll	Email: cross2@uky.edu	Phone:	859.257.1998
d.	Requested Effective Date:	<input checked="" type="checkbox"/> Semester following approval	OR	<input type="checkbox"/> Specific Term/Year <sup>1</sup> : _____
<b>2. Designation and Description of Proposed Course.</b>				
a.	Prefix and Number:	PHS 632		
b.	Full Title:	The Practice of Drug Metabolism		
c.	Transcript Title (if full title is more than 40 characters):	N/A		
d.	To be Cross-Listed <sup>2</sup> with (Prefix and Number):	N/A		
e.	Courses must be described by <u>at least one</u> of the meeting patterns below. Include number of actual contact hours <sup>3</sup> for each meeting pattern type.			
	3 Lecture	_____ Laboratory <sup>1</sup>	_____ Recitation	_____ Discussion
	_____ Clinical	_____ Colloquium	_____ Practicum	_____ Research
	_____ Seminar	_____ Studio	_____ Other – Please explain: _____	
f.	Identify a grading system:	<input checked="" type="checkbox"/> Letter (A, B, C, etc.)	<input type="checkbox"/> Pass/Fail	
g.	Number of credits:	3		
h.	Is this course repeatable for additional credit?			YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
	If YES:	Maximum number of credit hours:	_____	
	If YES:	Will this course allow multiple registrations during the same semester?	YES <input type="checkbox"/> NO <input type="checkbox"/>	
i.	Course Description for Bulletin:	The purpose of this course is to teach students about practical aspects of drug metabolism research. This includes addressing the function and purpose of drug metabolism studies, how those studies are carried out, why and how they are done, how metabolites are characterized, and some discussion of the limits and utility of the various approaches used in drug metabolism research.		
j.	Prerequisites, if any:	None		
k.	Will this course also be offered through Distance Learning?			YES <sup>4</sup> <input type="checkbox"/> NO <input checked="" type="checkbox"/>
l.	Supplementary teaching component, if any:	<input type="checkbox"/> Community-Based Experience	<input type="checkbox"/> Service Learning	<input type="checkbox"/> Both
3.	Will this course be taught off campus?			YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
<b>4. Frequency of Course Offering.</b>				

<sup>1</sup> Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

<sup>2</sup> The chair of the cross-listing department must sign off on the Signature Routing Log.

<sup>3</sup> In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, represents at least two hours per week for a semester for one credit hour. (from SR 5.2.1)

<sup>4</sup> You must *also* submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.

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<b>a.</b>	Course will be offered (check all that apply):	<input checked="" type="checkbox"/> Fall	<input type="checkbox"/> Spring	<input type="checkbox"/> Summer
<b>b.</b>	Will the course be offered every year?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If NO, explain:	Most graduate level courses in Pharmaceutical Sciences are offered every other year.		
<b>5.</b>	<b>Are facilities and personnel necessary for the proposed new course available?</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If NO, explain:	_____		
<b>6.</b>	<b>What enrollment (per section per semester) may reasonably be expected?</b>	10-14		
<b>7.</b>	<b>Anticipated Student Demand.</b>			
<b>a.</b>	Will this course serve students primarily within the degree program?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
<b>b.</b>	Will it be of interest to a significant number of students outside the degree pgm?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If YES, explain:	It probably would be of interest to students in Toxicology and Pharmacology as well, since many of these students may also be interested in drug metabolism issues and a basic understanding of the process, principles and mechanisms of doing drug metabolism research can be valuable to them.		
<b>8.</b>	<b>Check the category most applicable to this course:</b>			
	<input checked="" type="checkbox"/> Traditional – Offered in Corresponding Departments at Universities Elsewhere			
	<input type="checkbox"/> Relatively New – Now Being Widely Established			
	<input type="checkbox"/> Not Yet Found in Many (or Any) Other Universities			
<b>9.</b>	<b>Course Relationship to Program(s).</b>			
<b>a.</b>	Is this course part of a proposed new program?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, name the proposed new program:	_____		
<b>b.</b>	Will this course be a new requirement <sup>5</sup> for ANY program?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES <sup>5</sup> , list affected programs:	_____		
<b>10.</b>	<b>Information to be Placed on Syllabus.</b>			
<b>a.</b>	Is the course 400G or 500?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, the <i>differentiation for undergraduate and graduate students must be included</i> in the information required in <b>10.b.</b> You must include: (i) identification of additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See <i>SR 3.1.4.</i> )			
<b>b.</b>	<input checked="" type="checkbox"/> The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from <b>10.a</b> above) are attached.			

<sup>5</sup> In order to change a program, a program change form must also be submitted.

# REQUEST FOR NEW COURSE

## Signature Routing Log

**General Information:**

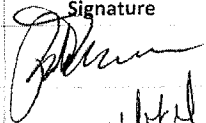
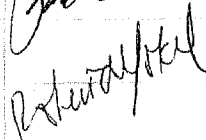
Course Prefix and Number: PHS 632

Proposal Contact Person Name: Catina Rossoll Phone: 257.1998 Email: cross2@email.uky.edu

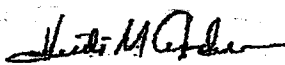
**INSTRUCTIONS:**

Identify the groups or individuals reviewing the proposal; note the date of approval; offer a contact person for each entry; and obtain signature of person authorized to report approval.

**Internal College Approvals and Course Cross-listing Approvals:**

Reviewing Group	Date Approved	Contact Person (name/phone/email)	Signature
Department Faculty	11/24/09	Patrick McNamara / 257.8656 / pmcnamar@email.uky.edu	
Graduate Program Committee	10-29-09	Robert Yokel / 257.4855 / ryokel@email.uky.edu	
Graduate Program Faculty	11-23-09	Robert Yokel / 257.4855 / ryokel@email.uky.edu	
		/ /	
		/ /	

**External-to-College Approvals:**

Council	Date Approved	Signature	Approval of Revision <sup>6</sup>
Undergraduate Council			
Graduate Council			
Health Care Colleges Council			
Senate Council Approval			University Senate Approval

Comments:

<sup>6</sup> Councils use this space to indicate approval of revisions made subsequent to that council's approval, if deemed necessary by the revising council.

**The Practice of Drug Metabolism**  
**PHS 632; Fall 2008**  
**MWF 4:00 pm; Room 442 COP**

Course Instructor – Peter J. Wedlund, PhD  
Office Room 420 College of Pharmacy  
257-5788 (Office)  
[pjwedl1@email.uky.edu](mailto:pjwedl1@email.uky.edu) (e-mail)  
Office hours 8:00-10:00 M-F

**Course Description:** The purpose of this course is to teach students about practical aspects of drug metabolism research. This includes addressing the function and purpose of drug metabolism studies, how those studies are carried out, why and how they are done, how metabolites are characterized, and some discussion of the limits and utility of the various approaches used in drug metabolism research. There is no substitute for practical experience. The course has been divided into three parts. The first part deals with metabolite characterization, both the identification by NMR and MS, and isolation methods by chromatographic methods. The second part of the course focuses on quantification and qualification methods employed in drug and metabolism research. This includes analytical assay methods, mass balance studies, in vitro methods, autoradiography, and metabolite pharmacokinetics and toxicokinetics. The third section covers selected topics in drug metabolism research that are more topical and address various issues related to drug metabolism research (pharmacogenomics, stereoselective metabolism, reversible metabolism, biomarkers and surrogate markers, microdialysis, unstable and reactive metabolite identification, High throughput analysis systems, computational systems, etc).

**Purpose of the Course:** The purpose of this course is to provide students with a broad based background in the practical areas of drug metabolism research. The main purpose of the course is to focus on aspects of metabolism research that will provide students with a better appreciation of the various methods available for addressing drug metabolism problems and issues. It is hoped this course will provide students a greater interest and appreciation of how these methods are employed to understand drug metabolism in mammals. By the end of the course, students should have sufficient understanding and knowledge of drug metabolism to perform drug metabolism research in humans and/or animals in a research setting.

**Grading of the Course:** There are a total of 3 exams in the course. Each test is worth 100 points for a total of 300 points for the course. It is anticipated the course grades will be:

270-300 points = A  
240-269 points = B  
210-239 points = C



The scale may be modified at the Instructor's discretion, but in no case will a student pass this course who does not master at least 75% of the material given on exams (225 points lowest possible B grade). Exams are all open book, and there are always 10 essay questions on each

exam. Students are given adequate time to complete these exams (there is no strict time limit of 1 or 2 hours for an exam, students may take up to 8 hours to complete an exam if they wish). Special arrangements for room and times will be made for the day of an exam. These are typically scheduled on the weekend so they do not interfere with other courses students may be taking.

### **Academic Honesty/Penalties From Graduate Handbook**

Academic honesty is the cornerstone upon which scientific research and scholarship are based. Experimental discoveries and new scientific insights are built upon a foundation formed by the work and thoughts of others. Thus, utilizing such thoughts in a paper or manuscript, without giving credit to the originator of the idea or result, is dishonest. Such dishonesty is termed *plagiarism*, and is considered an extremely serious offense by the graduate program, the University of Kentucky, and the academic community throughout the world. The penalties for plagiarism are grave, and can range from a zero for an assignment, to an E (failure) in a course, and, in grievous instances, suspension, dismissal or expulsion from the graduate program and university. The official university list of definitions (Senate Rule 6.3.1), and penalties (Senate Rule 6.4.3(3)) is available at:

<http://www.uky.edu/USC/New/SenateRulesMain.htm>

In addition, scientific journals demand a high standard of honesty and fair credit for previous publications in manuscripts that are submitted for review. The journals published by the American Association of Pharmaceutical Scientists have developed an Ethics Policy that covers plagiarism, improper manipulation of images, data fabrication or falsification, and other serious breaches of scientific conduct. This information is available at: <http://www.aapsj.org/about/AAPS-ethicspolicy-2007.pdf>. The American Chemical Society and its associated journals also have ethical guidelines that can be found at: <http://pubs.acs.org/userimages/ContentEditor/1218054468605/ethics.pdf>.

Students should familiarize themselves with what constitutes plagiarism, especially in writing manuscripts for the primary literature and their dissertations. Practices that are accepted in other cultures may be considered serious offenses in the United States. The University Academic Ombud Office has additional resources at: <http://www.uky.edu/Ombud/policies.php> and a link to an excellent paper, "Plagiarism: What is it?" at <http://www.uky.edu/Ombud/Plagiarism.pdf>.

The "cure" for plagiarism is general and simple- writers must include an immediate citation in the text, to indicate where the information originated, or, if phrases are used verbatim, quotation marks in addition to a citation. To quote Dr. Leggas, "...err on the side of caution – i.e., Don't hesitate to give credit where credit is due – nobody will blame you for knowing and referencing the literature!"

### **Honor Code Regarding Tests and Quizzes**

The purpose of quizzes and exams is to assess YOUR understanding of course material. These are NEVER given as a group exercise to assess the level of understanding of two or more people in the class. Anyone caught passing information or using information from others to answer exam or quiz questions will receive an automatic zero on the exam or quiz. It is your responsibility to maintain the highest standards possible with respect to the goals and objectives of this academic institution and graduate program. Violation of these standards will be dealt with promptly.

**Reading:** There is no text book for the course as no text has yet been found that covers all the material of this course completely. However, the instructor has a number of texts in his office that he is more than happy to provide students who may wish to borrow them so they can copy a

chapter. In addition, the instructor will provide a number of articles for each lecture that address each specific topic. Students can usually find the articles in the Medical Center Library or may borrow them from the instructor if necessary. Students are responsible for any reading material given in class. Students may be tested on any information in the lecture or reading material that is suggested they read. Exam questions are not copied from reading material or old exams, but represent problems that integrate information provided in the course. Copies of some older exams will be provided to the students so they know what to expect for types of exam questions in the course.

**Time Table:** A time table for the course is attached. Classes will meet every MWF at 4:00 pm, in Room 442 COP, according to the schedule attached to this syllabus. Some modest changes in this schedule may occur depending on student understanding and comprehension of course material. However, this is the anticipated order that the instructor will stick with for the semester. Students are responsible for lecture material whether they can attend the lecture(s) or not.

**Instructor:** Dr Peter Wedlund did his PhD work in the area of pharmacokinetics and drug metabolism in small animals (rats and monkeys) then went on to do post-doctoral research in pharmacokinetics and drug metabolism in humans. His experience with analytical methods includes use of TLC, HPLC, GC and MS. He has developed a number of different stereoselective analytical methods, and has studied genetic variations affecting drug metabolism and drug response for over 20 years. He has been involved in small animal research in the drug metabolism area (enzyme induction, in vitro systems) and has taught graduate students about analytical methods and animal handling methods for metabolism work over most of this time. He or people he has directed have probably faced most of the common problems in metabolism research at one time or another. He is an avid follower of the metabolism field as it relates to the pharmaceutical industry and its use and applications there. The instructor has direct research experience with a number of the areas and topics that will be covered in this course. This will be the 7<sup>th</sup> time he has taught “The Practice of Drug Metabolism” as a stand alone course, and had taught it earlier on two other occasions as part of PHR 664.

PHR 760-010 The Practice of Drug Metabolism -- Lectures

Date	Weekday	Topic	Section
23-Aug	W	Introduction to Drug Metabolism Studies, Purpose and function of course	1
25-Aug	F	NMR	1
28-Aug	M	NMR	1
30-Aug	W	NMR	1
1-Sep	F	No Class out of town	1
4-Sep	M	Labor Day	1
6-Sep	W	NMR	1
8-Sep	F	Mass Spectroscopy	1
11-Sep	M	Mass Spectroscopy	1
13-Sep	<b>W --542</b>	Mass Spectroscopy	1
15-Sep	<b>F--542</b>	Mass Spectroscopy	1
18-Sep	M	NMR-MS applications	1
20-Sep	W	Chromatography	1
22-Sep	F	Chromatography	1
25-Sep	M	Chromatography	1
27-Sep	W	Metabolite isolation	2
29-Sep	F	Metabolite isolation	2
<b>30-Sept</b>	<b>Sat</b>	<b>EXAM 1 – 1<sup>st</sup> section of course</b>	
2-Oct	M	Metabolite quantification	2
4-Oct	W	Immunoassay methods	2
6-Oct	F	Immunoassay methods	2
9-Oct	M	Mass Balance studies	2
11-Oct	W	Autoradiography and autoradioluminography	2
13-Oct	F	Good Laboratory Practice	2
16-Oct	M	In-vitro metabolism systems	2
18-Oct	W	In-Vitro metabolism systems	2
20-Oct	F	In-vitro prediction of In vivo metabolism	2
23-Oct	M	Metabolite Pharmacokinetics	2
25-Oct	W	Toxicokinetics	2
27-Oct	F	Pharmacogenomics	3
<b>28-Oct</b>	<b>Sat</b>	<b>EXAM 2 – 2<sup>nd</sup> section of course</b>	
30-Oct	M	Pharmacogenomics	3
1-Nov	W	Toxicogenomics	3
3-Nov	F	Metabolomics	3
6-Nov	M	High Throughput Testing	3
8-Nov	W	Surrogate and Biomarkers markers	3
10-Nov	F	Reversible metabolism	3
13-Nov	M	Unstable/reactive metabolites	3
15-Nov	W	Induction and inhibition of metabolism	3
17-Nov	F	Out of Town -- no Class	
20-Nov	M	Extraheptic metabolism	3
22-Nov	W	Model Systems	3
24-Nov	F	THANKSGIVING	
27-Nov	M	Stereoselective metabolism	3
29-Nov	W	Model Systems	3
1-Dec	F	Model Systems	3
4-Dec	M	Model Systems	3
6-Dec	W	In silico systems	3
8-Dec	F	Allometric scaling	3
<b>13-Dec</b>	<b>W</b>	<b>EXAM 3 – Last 3<sup>rd</sup> of course</b>	

