From:	noreply@wsu.edu
To:	curriculum.submit
Subject:	461437 Pharmaceutical Sciences Requirements Revise - Revise or Drop Graduate Plan
Date:	Wednesday, August 15, 2018 2:07:17 PM
Attachments:	2018.08.15.14.07.03.93.FormData.html 2018.08.15.14.07.02.32.currentCatalogFile_Pharm_Sci_curricular_changes_2018.pdf

Susan Marsh has submitted a request for a major curricular change. His/her email address is: susan.marsh@wsu.edu.

Requested change: Revise or Drop Graduate Plan

Degree: PhD in pharmaceutical sciences

Title:

Requested Effective Date: Fall 2019

Revise plan requirement: Yes

Dean: Pollack, Gary - Dean - College of Pharmacy,

Chair: Lazarus, Philip,

UCORE Committee Approval Date	All-University Writing Com / Date

Catalog Subcommittee Approval Date	GSC or AAC Approval Date	Faculty Senate Approval Date

MAJOR CURRICULAR CHANGE FORM – REVISE REQUIREMENTS

RATIONALE

A formal meeting of the Graduate Faculty in Pharmaceutical Sciences was held on 9th June, 2017, during which the faculty voted to increase the graded credit requirements from 15 to 21 credits. The faculty felt that this was necessary for two reasons. Firstly, technological and scientific advances in pharmaceutical sciences are occurring at breakneck speed and there is a need to increase both the depth and breadth of students' knowledge to allow them to remain competitive in their field. Secondly, there was concern that the coursework requirements in graduate programs at our peer institutions were far more intensive and rigorous than ours and that our students could potentially be at a disadvantage if we failed to improve both the quality and quantity of our required coursework.

The proposed changes are detailed in the following pages but will encompass the following:

1. **Major curricular change (revise requirements):** increase the core required graded credits from 6 to 13 credits and reduce the graded elective requirements from 9 to 8 credits, resulting in an increase in the total graded credit requirement from 15 to 21 credits. The two existing required core courses (PharmSci 577 and PharmSci 578; 6 credits total) would remain unchanged. See page 2 for a table summarizing the proposed changes to graded coursework requirements and page 3 for proposed changes to 2019-20 catalog.

2. **Course revision:** revision and renaming of an existing 3 credit course that has not been taught for several years: PharmSci 579 Principles of Pharmacology (formerly Advances in Pharmaceutical Sciences). This course will be a required core class beginning with students entering the program in Fall 2019.

3. **Course revision:** consolidation of two existing 3 credit courses (PharmSci 520 and PharmSci 530) that were previously available as electives into one 4 credit required core course: PharmSci 520 Foundations of Molecular and Cellular Regulation. This course will be a required core class beginning with students entering the program in Fall 2019.

Major curricular change forms for course revisions for #2 and #3 will be submitted concomitantly with this package. Other requests that will be submitted but that are not central to the increase in core graded credit requirements are as follows:

4. **New course:** a new 3 credit elective course that examines various aspects of toxicicology: PharmSci 566 Fundamentals of Toxicology.

5. **New course/crosslisting:** crosslisting one of the core graduate classes with the Doctor of Pharmacy program to allow for the PharmD honors students to take the course with modified grading requirements: PharmSci/PharDSci 577 Responsible Conduct in Biomedical Research.

SUMMARY OF PROPOSED CHANGES TO GRADED COURSEWORK REQUIREMENTS

	CURRENT		NEW		CHANGE
REQUIRED CORE COURSES	PharmSci 577 Responsible Conduct in Biomedical Research (3 cr)	Training in biomedical research ethics consistent with NIH requirements; introduction to literature searching and analysis, scientific writing, and oral presentations.	PharmSci 577 Responsible Conduct in Biomedical Research (3 cr)	Training in biomedical research ethics consistent with NIH requirements; introduction to literature searching and analysis, scientific writing, and oral presentations.	Unchanged but crosslisting with PharDSci 577 to accommodate modified grading requirements for honors students in PharmD program
	PharmSci 578 Biomedical Statistics (3 cr)	Research process; techniques for conducting health sciences research and evaluation; critique published health sciences research and collect, utilize, and evaluate primary and secondary data.	PharmSci 578 Biomedical Statistics (3 cr)	Research process; techniques for conducting health sciences research and evaluation; critique published health sciences research and collect, utilize, and evaluate primary and secondary data.	Unchanged
			PharmSci 579 Principles of Pharmacology (3 cr)	Key principles of drug pharmacodynamics, pharmacokinetics, organ system pharmacology, and cutting-edge biomedical research-based drug discovery.	Revision and renaming of existing course
			PharmSci 520 Foundations of Molecular and Cellular Regulation (4 cr)	Cellular biology, molecular biology, genetics, and biochemistry as used to develop therapeutic approaches for the treatment and prevention of human disease states.	Consolidation of PharmSci 520 and 530 which were previously offered as 3 credit electives and increase course to 4 credits
ELECTIVES	9 graded credits of electives		8 graded credits of electives		Reduce elective requirements from 9 to 8 credits
TOTAL GRADED CREDITS	**Current minimum graded credits required: 15 (6 core; 9 electives)**		**New minimum graded credits required: 21 (13 core; 8 electives)**		**Increase total graded credits from 15 to 21**

PROPOSED CHANGES TO 2019-20 CATALOG (highlighted in red/underlined text)

Pharmaceutical Sciences, PhD
College of Pharmacy and Pharmaceutical Sciences
Website: https://pharmacy.wsu.edu/ph-d-in-pharmaceutical-sciences/
Number of graded credits: 21
Number of S/F credits: 37
Required research credits 20
Other requirements: 72 hours minimum total credits:
21 hours minimum from graded (No P/F) graduate-level (500-level) courses (13 units of required core courses listed below and 8 graded units of electives). Required Core Courses: PharmSci 577 Responsible Conduct in Biomedical Research-3 units graded, PharmSci 578, Biomedical Statistics-3 units graded, PharmSci 520 Foundations of Molecular and Cellular Regulation-4 units graded, PharmSci 579 Principles of Pharmacology-3 units graded, PharmSci 597 Graduate Seminar-1 unit S/F every semester. 20 hours minimum 800-level research credits, 9 hours maximum of non-graduate courses; dissertation. Students entering the program should have completed undergraduate work that includes biology, chemistry (including organic chemistry and biochemistry), mathematics (through calculus), and organ/mammalian physiology course. Students working toward the Ph.D. in Pharmaceutical Science are expected to develop an area of research emphasis that is consistent with the capabilities and interests of the faculty.
Avg time to complete degree: 4-6 years
Location(s): Spokane
Tests required: GRE (Combined), TOEFL, IELTS, TOEFLI
Deadline: Jan 9
Description: The mission of the Graduate Program in the Pharmaceutical Sciences is to prepare graduates for careers in academia, industry, and other public and private institutions dedicated to the promotion of human health. Faculty in the program utilize multi-disciplinary and translational research approaches to (1) understand mechanisms of disease, (2) identify novel therapeutic targets, (3) develop and optimize pharmaceutical treatment approaches, and (4) promote the prevention and management of chronic diseases. Pharmacogenomics, drug metabolism, pharmacokinetics, gene therapy, molecular therapeutics, medicinal chemistry, and systems pharmacology are emphasized. We strive to prepare students to become independent and creative problem solvers who will develop into leaders in their respective fields.
A PharmD/PhD combined degree option is available to train clinician scientists. Interested students may apply for PhD admission during the first two years of their progression through the PharmD program.

Contact Information
Christina Brelia, Graduate Program Coordinator College of Pharmacy and Pharmaceutical Sciences
PBS, Room 323
PO Box 1495
Spokane, WA 99210-1495 Telephone: 509-358-7730 E-mail: pharmacy.gradprog@wsu.edu

COURSE REVISION – PHARMSCI 579 PRINCIPLES OF PHARMACOLOGY

RATIONALE

In recent years, it has become noticeable that our graduate program was missing a course in the basic principles of pharmacology; both students and faculty voiced concern about this omission and agreed that this should be a core coursework requirement of all students in the program. We have an existing course – PharmSci 579 Advances in Pharmaceutical Sciences (3cr) – that has not been taught for many years and needs to be revised and renamed so that it contains current information in the field.

We are therefore requesting approval of a course revision and renaming – PharmSci 579 Principles of Pharmacology (3cr) – which will be a required course beginning with students entering the program Fall 2019. In the meantime, the new course we are proposing in this submission will be taught in Spring 2019 under the existing title. The instructors of record for this course will be Drs Zhaokang Cheng and John Clarke, both of whom are assistant professors in the Department of Pharmaceutical Sciences with expertise in pharmacology from a cellular and molecular level through to potential therapeutic applications. The revised course provides a rigorous introduction to the field as well as analysis of cutting-edge findings and new therapeutic advances.

This course will be offered every Spring semester. As this will be a required course for the PhD students, we anticipate 8-10 graduate students will take this course each year, in addition to 3-4 students from the Doctor of Pharmacy program for whom this will be an elective option.

Washington State University College of Pharmacy and Pharmaceutical Sciences
Pharmaceutical Sciences Graduate Program
Spring 2020

Course Logistics

Course Number: PharmSci 579

Course Title: Principles of Pharmacology

Prerequisite(s): Graduate standing or permission of the instructor.

Course Description:
Key principles of drug pharmacodynamics, pharmacokinetics, organ system pharmacology, and cutting-edge biomedical research-based drug discovery.

Academic Hours (Lecture-Lab-Total): 3-0-3

Instructor of Record:

John Clarke, PhD Department of Pharmaceutical Sciences	Office: PBS 345 Phone: 509-358-7929 Email: j.clarke@wsu.edu
Zhaokang Cheng, PhD Department of Pharmaceutical Sciences	Office: PBS 423 Phone: 509-358-7741 Email: zhaokang.cheng@wsu.edu

Participating Instructors:

Kathryn Meier, PhD Department of Pharmaceutical Sciences	Office: PBS 120P Phone: 509-358-7631 Email: kmeier@wsu.edu

Course Communication:
The College of Pharmacy and Pharmaceutical Sciences utilizes Blackboard as our primary Learning Management System. You can log on to Blackboard at: https://learn.wsu.edu/webapps/login/. Click on the *"WSU Authentication"* and type in your WSU Network ID and password to access Blackboard. Your courses should be automatically pre-loaded based on enrollment. If you have difficulty finding one of your courses within Blackboard, contact the instructor for the course, or you can reach Pharmacy Information Services at 509-358-7609. There is also an "*On Demand Help"* feature you can utilize located on the bottom of the web page after you log on to the Blackboard site.

Semester: Spring 2020

Course Time and Location: Monday/Wednesday 1:00pm - 2:25pm, PBS ???

Office Hours: By Appointment

Course Objectives

This course is organized by different modules based on subspecialties of pharmacology. The major goals of this course are:

1) To introduce students in the Pharmaceutical Sciences Graduate Program and Doctor of Pharmacy Program to fundamental concepts and mechanisms in pharmacology, as well as special topics in cutting-edge pharmaceutical and biomedical research.

2) To provide all students, including interested students from other degree programs, with a foundation in pharmacodynamics, pharmacokinetics, pharmacogenetics and pharmacogenomics.

3) To build critical thinking, oral presentation, discussion, and writing skills in the pharmaceutical and biomedical sciences.

Student Learning Outcomes

At the end of this course, students should be able to:	**The following topic(s)/dates(s) will address this outcome:**	**This outcome will be evaluated primarily by:**
Describe basic principles of pharmacology including mechanisms of pharmacodynamics and pharmacokinetics	Modules 1 and 2	Exam 1 and Topics in Pharmacology for modules 1 and 2
Describe factors in inter-individual variability and principles of drug responses that are important in pharmacology and medicine	Modules 3 and 4	Exam 1 and Topics in Pharmacology for module 3
Understand the function and pharmacology of specific organs systems	Modules 4-8	Exams 1 and 2 and Topics in Pharmacology for modules 6, 7, and 8
Apply critical thinking and analysis skills through oral presentation, discussion, and writing to evaluate scientific research in pharmacology.	Modules 1-8	Exams 1 and 2 and all Topics in Pharmacology

Topic Outline

Module	Date:	Topic:	Instructor
1	Jan 7	Course overview	Cheng
	Jan 9	Drug-receptor interaction	Cheng
	Jan 14	Pharmacodynamics	Cheng
	Jan 16	*Topics in pharmacology*	Cheng

Module	Date:	Topic:	Instructor
2	Jan 21	No Class- Martin Luther King Jr Day	-
	Jan 23	Drug metabolism and pharmacokinetics	Clarke
	Jan 28	Drug transporters	Clarke
	Jan 30	*Topics in pharmacology*	Clarke
3	Feb 4	Pharmacogenetics and pharmacogenomics	Clarke
	Feb 6	Precision medicine	Clarke
	Feb 11	Adverse drug reactions	Clarke
	Feb 13	*Topics in pharmacology*	Clarke
4	Feb 18	Placebo effects	Meier
	Feb 20	Respiratory pharmacology	Meier
	Feb 25	Dietary supplements	Meier
	Feb 27	**EXAM 1**	-
5	Mar 4	Inflammation pharmacology	Cheng
	Mar 6	Gene, protein, and cell-based therapy	Cheng
	Mar 11	No Class- Spring break	-
	Mar 13	No Class- Spring break	-
6	Mar 18	Cell cycle	Clarke
	Mar 20	Cell death	Cheng
	Mar 25	Cancer pharmacology	Cheng
	Mar 27	*Topics in pharmacology*	Cheng
7	Apr 1	Endocrine pharmacology	Cheng
	Apr 3	Cardiovascular and renal pharmacology 1	Cheng
	Apr 8	Cardiovascular and renal pharmacology 2	Cheng
	Apr 10	*Topics in pharmacology*	Cheng
8	Apr 15	Liver and biliary tract pharmacology	Clarke
	Apr 17	Neuropharmacology	Clarke
	Apr 22	Drug development and regulation	Clarke
	Apr 24	*Topics in pharmacology*	Clarke
	Apr 29	**EXAM 2**	-

Course Expectations

Students are expected to attend all lectures, complete all assignments and examinations. There will be assigned reading materials for some classes. It is expected that students will complete the readings prior to the class so as to participate fully in class discussions.

Students may pursue additional information from scholarly publications or consult with classmates on assignments. However, the final assignments must be the students' original work and no copying will be accepted.

"Make-up exams" will be scheduled only under the most extraordinary circumstances, after receiving approval of the instructor prior to the exam.

Course Grading Scale and Grading Criteria

Grading Scale:

A = 93-100%	C = 73-76%
A- = 90-92%	C- = 70-72%
B+ = 87-89%	D+ = 67-69%
B = 83-86%	D = 60-66%
B- = 80-82%	F < 60%
C+ = 77-79%	

Assessment:

1. Exams: Two Exams will be given, and each will represent 20% of the course grade (40% total). Each exam will cover information only from the preceding modules (i.e. the second exam will not be cumulative). Exams will provide an opportunity for students to apply the knowledge gained from the preceding modules through critical thinking in the form of short answer/write-in questions.
2. Topics in Pharmacology: A "Topics in Pharmacology" session is scheduled for each module where possible (6 sessions total: 3 sessions by Dr. Clarke, and 3 sessions by Dr. Cheng) to discuss related journal articles, with the aim of developing students' independent learning, critical thinking, presenting, and writing skills in the areas of pharmacology. Journal articles will be chosen by the instructors and assigned at the beginning of each module where a "Topics in Pharmacology" session is scheduled (i.e. modules 4 and 5 will not have an article assigned). For each instructor's 3 sessions, every student will choose one session to do Journal Club presentation, one session to complete Written Assignment-Critical Analysis, and one session for Written Assignment-Project Narrative. All presentation days will be assigned at the beginning of the semester.
    a. Journal Club presentations: Two Journal Club presentations, each comprising 15% of the final grade (30% total), will be completed by each student and will occur during the "Topics in Pharmacology" class sessions. Each student will complete one Journal Club presentation during one of Dr. Clarke's "Topics in Pharmacology" sessions and one Journal Club presentation during one of Dr. Cheng's "Topics in Pharmacology" sessions. Depending on the number of students enrolled in the course, Journal Club presentations may be organized into groups of students who will present the journal article as a team. Two grading rubrics will be completed for each student: one by Dr. Clarke for his 3 sessions and one by Dr. Cheng for his 3 sessions. It is expected that students who are not presenting come prepared, having read and understood the article, to discuss the strengths, weaknesses, and novelty of the research. The participation portion of the grade will be completed for each student for the sessions he/she does not present (4 sessions total).
    b. Written Assignment-Critical Analyses: Two critical analysis written assignments will be completed, and each will represent 10% of final grade each (20% total). The Critical Analyses should be based on journal articles used in the Topics in Pharmacology sessions (one by Dr. Clarke, the other by Dr. Cheng). Written Assignment-Critical

Analyses are due on the day of the Journal Club presentation for the corresponding module.

c. Written Assignment-Project Narratives: Two project narratives will be completed, and each will represent 5% of final grade (10% total). The Project Narratives should be based on journal articles used in the Topics in Pharmacology sessions (one by Dr. Clarke, the other by Dr. Cheng). Written Assignment-Project Narratives are due on the day of the Journal Club presentation for the corresponding module.

Guidelines for Journal Club presentation:

The purpose of your presentation is to provide a synopsis and critical review of a recent scientific publication and present it to your peers. All students are strongly advised to ensure that their presentation and/or device operate correctly in the classroom well in advance of their scheduled presentation day and time. Note that a failure to deliver the oral presentation at the scheduled presentation day and time will result in an automatic grade reduction as detailed in the Late Assignments section. It is expected that the presentation and discussion will take the entire class time. This is an opportunity to demonstrate and refine your critical thinking and presentation skills. As such, the following are guidelines for your presentation:

- Consider your audience and ensure sufficient background is included in your presentation (the introduction section of the article is a good place to start).
- Clearly define the hypothesis (or hypotheses) being tested.
- When presenting data, explain the methods used, provide a clear explanation of the observations, and provide interpretation of the data.
- Conclude you presentation with a discussion of the impact of the research and what studies should be performed next.
- Be prepared to answer questions regarding the article being presented.
- Questions and/or discussion points can be presented to the audience to stimulate discussion.
- Critical analysis of all aspects of the research should be included. Some examples of things to consider are included here:
    - Are the experiments based on sound assumptions/previous data?
    - Were the data collected and analyzed in a robust and reproducible manner?
    - Was the article clearly organized and written?
    - Are the conclusions supported by the data?
    - Are there additional experiments that should have been completed?

Guidelines for Critical Analysis:

- Text should be 400-500 words (including title)
- Target to a scientific audience who is somewhat familiar with the subject area (e.g. a commentary article that is appropriate for a scientific journal)
- Your critique should address the following questions:
    - What is the background knowledge in this area of science?
    - Was there a gap in knowledge that needed to be explored?
    - Was a hypothesis stated and, if so, was the study designed to test the hypothesis?
    - Is the study innovative and are the data new and novel?
    - Are the authors' conclusions consistent with their data presented?

- References should be used to substantiate your points
    - You may use the citation style of your choice and a list of references should be provided
    - The reference list is NOT included in the 400-500 word limit
    - At least five references should be used
- Define any scientific terms used
- Do not copy text from the article (see the definition of plagiarism in the course syllabus) and do not use direct quotations

Guidelines for Project Narrative:

- Text (including title) should be no more than 80 words (2-3 sentences)
- Target to a non-scientist lay audience by using plain language (no technical jargon)
- Explain the significance & importance of the research project
- Be sure to capture the key finding of the study
- Must be interesting and catch your reader's attention
- Non-standard abbreviations should be avoided
- Do not use references
- Do not copy text from the article (see the definition of plagiarism in the course syllabus) and do not use direct quotations

Required and Optional Textbooks, References, and Other Resources

The instructor will provide extensive handouts and/or copies of PowerPoint Presentations that substitute for a textbook. Book chapters/journal articles/relevant reviews (for in-class discussion) will be posted on Blackboard.

Additional Comments

Late assignments: All Written Assignments must be submitted via the appropriate Assignment dropbox in Blackboard. Note that the submission window for Blackboard will expire at 5pm sharp on the due date. Students are advised to plan ahead and familiarize themselves with Blackboard and the assignment requirements well in advance of the due date and time. No late assignments will be accepted without significant penalty unless the student: 1) provides a written medical note to the instructor of record from either a physician, physician's assistant or nurse in the case of sickness, surgery, or other significant medical procedures; or 2) obtains prior approval from the instructor of record. Approval will only be granted for instances such as a death in the family or other major events, as deemed appropriate by the instructor of record. Failure to finalize the upload of the assignment prior to the expiration of the respective site on Blackboard or to deliver the oral presentation at the scheduled date and time will result in an automatic grade reduction of 50% of what is earned on the assignment if turned in within 1 week of the due date; a zero grade will be assessed if not received within 1 week of the due date.

Methodology: Lectures, in-class discussions, written assignment and examinations.

Academic Honesty, Conduct, and Behavior

Students are reminded that they must adhere to the policies agreed to in writing when entering the College of Pharmacy and Pharmaceutical Sciences. These are detailed in the Ph.D. Student Handbook under Student Conduct and Academic Integrity.

Academic integrity is the cornerstone of higher education. As such, all members of the university community share responsibility for maintaining and promoting the principles of integrity in all activities, including academic integrity and honest scholarship. Academic integrity will be strongly enforced in this course. Students who violate WSU's Academic Integrity Policy (identified in Washington Administrative Code (WAC) 504-26-010(3) and -404) will receive a failing grade for the course, will not have the option to withdraw from the course pending an appeal, and will be reported to the Office of Student Conduct.

Cheating includes, but is not limited to, plagiarism and unauthorized collaboration as defined in the Standards of Conduct for Students, WAC 504-26-010(3). You need to read and understand all of the definitions of cheating: http://app.leg.wa.gov/WAC/default.aspx?cite=504-26-010. If you have any questions about what is and is not allowed in this course, you should ask course instructors before proceeding.

If you wish to appeal a faculty member's decision relating to academic integrity, please use the form available at conduct.wsu.edu.

Course Evaluations

Student evaluations of courses/course modules and faculty effectiveness are a valuable and important component of the College's commitment to provide quality learning experiences and contribute to our efforts to assure that students achieve the objectives of our professional degree program. Thus, all evaluations are given serious consideration as part of the assessment process and are read first by the Department Chair before they are processed, analyzed, and given to the faculty. Because the most effective way to impact positive changes is through **constructive comments**, students are encouraged to provide feedback as they would wish to receive it. This will allow the faculty member to focus on improvements or affirm students' perspective on effective elements of the course.

Students with Disabilities Statement

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, **both Spokane and Yakima students** should contact Student Affairs, in Academic Center 130 (spokane.disability@wsu.edu, 509-358-7534).

All accommodations must be approved. Additional information can be found at: https://spokane.wsu.edu/studentaffairs/disability-resources/. Please also see, "Students with Disabilities" in the College of Pharmacy and Pharmaceutical Sciences Ph.D. Student Handbook (link on left hand side of webpage): https://pharmacy.wsu.edu/ph-d-in-pharmaceutical-sciences/current-student-resources/.

Campus Safety

Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "Alert, Assess, Act," protocol for all types of emergencies and the "Run, Hide, Fight" response for an active shooter incident. Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT in the most appropriate way to assure your own safety (and the safety of others if you are able).

Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's Run, Hide, Fight video and visit the WSU safety portal.

Please sign up for the emergency alert notifications at your individual campuses.

Spokane students can find detailed information regarding the current WSU Spokane Security Services, including a link to Emergency Management, at the following website: https://spokane.wsu.edu/campus-security/.

Similar information relevant to the Pacific Northwest University campus in Yakima can be found on their web-site at: http://www.pnwu.edu/inside-pnwu/departments/campus-security/

Rubric for Journal Club presentations:

	A	B	C	D-F
Subject knowledge	Clear summary of background and main points; demonstrates comprehension of subject area; evidence of additional reading. (27-30 pts)	Adequate summary of Background and main points; demonstrates good grasp of subject area; some evidence of additional reading. (24-26 pts)	Poor summary of background and main points; demonstrates some knowledge; limited evidence of additional reading. (21-23pts)	Poor summary of background and main points; demonstrates little or no knowledge; no evidence of additional reading. (≤ 20 pts)
Critical analysis	Excellent critical analysis; evidence of reflection and insight; conclusions supported by evidence. (27-30 pts)	Good critical analysis; some evidence of reflection and insight; most conclusions supported by evidence. (24-26 pts)	Adequate critical analysis; little evidence of reflection and insight; not all conclusions supported by evidence. (21-23 pts)	No critical analysis; no evidence of reflection and insight; no conclusions. (≤ 20 pts)
Slides organization and clarity	Information clearly and logically presented; remains focused. (9-10 pts)	Information clearly and mostly logically presented; remains mostly focused. (8 pts)	Information not clearly presented; lacks logical sequence; occasional lack of focus. (7 pts)	Little or no structure present; confusing discussion; no logical sequence of ideas; frequently off topic. (≤ 6 pts)
Oral delivery	Effectively communicates information. Makes full, effective use of time. (9-10 pts)	Mostly effective in communicating information. Meets set time parameters. (8 pts)	Somewhat effective in communicating information. Falls slightly outside set time parameters. (7 pts)	Unable to communicate information. Falls well outside set time parameters. (≤ 6 pts)
Participation 1	Present, prepared, and engaged (9-10 pts)	Present and mostly engaged (8 pts)	Present but lacks engagement (7 pts)	Absent (0 pts)
Participation 2	Present, prepared, and engaged (9-10 pts)	Present and mostly engaged (8 pts)	Present but lacks engagement (7 pts)	Absent (0 pts)

Points (out of 100) _____

Rubric for Critical Analysis:

	A	B	C	D-F
Summary	Excellent synopsis of background information & gap in knowledge; excellent summary of key findings; excellent explanation of context & significance of study. (18-20 pts)	Good synopsis of background information & gap in knowledge; good summary of key findings; good explanation of context & significance of study. (16-17 pts)	Satisfactory synopsis of background information & gap in knowledge; satisfactory summary of key findings; satisfactory explanation of context & significance of study. (14-15 pts)	Poor synopsis of background information & gap in knowledge; poor summary of key findings; poor explanation of context & significance of study. (≤ 13 pts)
Analysis	Excellent critical analysis; Insightful discussion of strengths, limitations and implications. (27-30 pts)	Good critical analysis; sufficient discussion of strengths, limitations and implications. (24-26 pts)	Satisfactory critical analysis; appropriate discussion of strengths, limitations and implications. (21-23 pts)	Poor critical analysis; minimal discussion of strengths, limitations and implications. (≤ 20 pts)
Organization	Excellent development of sections; logical organization; excellent use of references and scientific language to support major points. (27-30 pts)	Good development of sections; some evidence of logical organization; good use of references and scientific language to support major points. (24-26 pts)	Satisfactory development of sections; some lapses in organization; satisfactory use of references and scientific language to support major points. (21-23 pts)	Poor development of sections; seriously flawed logical organization; poor use of references and scientific language to support major points. (≤ 20 pts)
Writing	Appropriate length; rare grammatical, spelling, or punctuation errors. (18-20 pts)	Appropriate length; few grammatical, spelling, or punctuation errors. (16-17 pts)	Appropriate length; some grammatical, spelling, or punctuation errors. (14-15 pts)	Inappropriate length; frequent grammatical, spelling, or punctuation errors. (≤ 13 pts)

Points (out of 100) _____

Rubric for Project Narrative:

	A	B	C	D-F
Content	Excellent summary of major points of study. (36-40 pts)	Good summary of major points of study. (32-35 pts)	Satisfactory summary of major points of study. (28-31 pts)	Poor summary of major points of study. (≤ 27 pts)
Communication	Very interesting & engaging; excellent use of language for a lay audience. (36-40 pts)	Interesting & engaging; good use of language for a lay audience. (32-35 pts)	Somewhat interesting & engaging; satisfactory use of language for a lay audience. (28-31 pts)	Not interesting or engaging; inappropriate language or jargon for a lay audience. (≤ 27 pts)
Writing	Appropriate length; rare grammatical, spelling, or punctuation errors. (18-20 pts)	Appropriate length; few grammatical, spelling, or punctuation errors. (16-17 pts)	Appropriate length; some grammatical, spelling, or punctuation errors. (14-15 pts)	Inappropriate length; frequent grammatical, spelling, or punctuation errors. (≤ 13 pts)

Points (out of 100) _____

COURSE REVISION – PHARMSCI 520 FOUNDATIONS OF MOLECULAR AND CELLULAR REGULATION

RATIONALE

We currently offer two 3 credit graduate courses in cell and gene signalling as they relate to pharmaceutical sciences – PharmSci 520 Foundations of Molecular Regulation and PharmSci 530 Foundations of Cellular Regulation. A recent review of our graduate courses revealed significant overlap in content between the two courses and recommended that these two courses be consolidated into a single 4 credit course – PharmSci 520 Foundations of Molecular and Cellular Regulation – that would be a core coursework requirement for all graduate students in the program. The co-instructors of record for this course will be the two IORs from the original PharmSci 520/530 courses – Drs Sayed Daoud and Kathryn Meier.

It should be noted that this 4 credit revised course is being offered in Fall 2018 under PharmSci 512 Topics in Pharmacology in anticipation of having a revised and renamed course approved and ready to be offered in Fall 2019.

This course will be offered every Fall semester. As this will be a required course for the PhD students, all of our graduate students take this course – we anticipate that 8-10 graduate students will take this course each year, in addition to 2-3 students from the Doctor of Pharmacy program for whom this will be an elective option.

PHARMSCI 520: Foundations of Molecular & Cellular Regulation

Pharmaceutical Sciences Graduate Program
College of Pharmacy and Pharmaceutical Sciences
Washington State University Health Sciences - Spokane
Fall 2019

Course Logistics

Course Title: Foundations of Molecular & Cellular Regulation

Course Number: PHARMSCI 520

Prerequisite(s): Admission to the Pharmaceutical Sciences Graduate Program, graduate standing or permission of the instructor.

Course Description: Cellular biology, molecular biology, genetics, and biochemistry as used to develop therapeutic approaches for the treatment and prevention of human disease states.

Academic Credit Hours (Lecture-Lab-Total): 4-0-4

Instructor of Record:

Sayed Daoud, PhD Department of Pharmaceutical Sciences College of Pharmacy & Pharmaceutical Sciences	Office: SPBS 415 Phone: 509-368-6572 Email: daoud@wsu.edu
Co-Instructor of Record Kathryn E. Meier, PhD Department of Pharmaceutical Sciences College of Pharmacy & Pharmaceutical Sciences	Office: SPBS 120P Phone: 509-358-7631 Email: kmeier@wsu.edu
Participating Instructor: Weimin Li, MD, PhD Biomedical Sciences Elson S. Floyd College of Medicine	Office: SPBS 237 Phone: 509-368-6625 Email: weimin.li@wsu.edu

Course Communication:
The College of Pharmacy and Pharmaceutical Sciences (CPPS) utilizes Blackboard as the primary Learning Management System. You can log on to Blackboard at: https://learn.wsu.edu/webapps/login/. Click on the *"WSU Authentication"* and type in your WSU Network ID and password to access Blackboard. If you have not used Blackboard before, please take a few minutes to become familiar with the system prior to the start of the semester. There is a short student orientation video on Blackboard at https://www.youtube.com/watch?v=36kDE4lvRmI&index=1&list=PLontYaReEU1seUE3ACG3sEc3zR7Br7URU. There is also an "*On Demand Help"* feature you can utilize located on the bottom of the web page after you log on to the Blackboard site.

Course Objectives

As an overview, this course is designed with the following major goals in mind:

1) To provide students in the Pharmaceutical Sciences Graduate Program with a foundation in molecular and cellular approaches relevant to the pharmaceutical and biomedical sciences.
2) To provide all students, including interested students from other degree programs, with a foundation in principles of cellular biology, molecular biology, biochemistry and genetics in relation to human health.
3) To build critical thinking skills in the biomedical sciences.

Student Learning Outcomes

At the end of this course, students should be able to:	**The following topic(s)/dates(s) will address this outcome:**	**This outcome will be evaluated primarily by:**
Explain basic steps involved in DNA replication, transcription, and translation.	Weeks 1-4	Exam I
Understand DNA processes and recombination	Weeks 3-4	Exam I
Describe epigenetic processes that affect gene transcription & translation.	Weeks 3-4	Exam I
Explain the enzymatic steps that post-translationally regulate protein function.	Weeks 5-8	Exam II
Explain basic methods used to generate and analyze genomic and proteomic data.	Weeks 1-9	Written assignment Exams I & II
Delineate signal transduction pathways mediating the actions of xenobiotic agents	Weeks 10-13	Exam III
Read, analyze, and discuss original research articles related to material presented in the course.	Weeks 1-13	Written assignment

Required and Optional Textbooks, References and other Resources

The instructors will provide extensive handouts and/or copies of PowerPoint presentations that substitute for a textbook. Journal articles (for in-class discussion) will be posted on Blackboard.

Class Format and Schedule

Course Time and Location: Wednesday and Friday 10:10am – 11:50am, SPBS 112

Week	Date	Content	Instructor
1	Aug 22	Introduction and course review	Daoud
	Aug 24	Functional groups in biomolecules; basic enzymatic reactions Group discussion	Li

2	Aug 29	DNA replication, transcription and translation Group discussion	Li
	Aug 31	DNA replication, transcription and translation Group discussion	Li
3	Sept 05	DNA recombination and repair Group discussion	Li
	Sept 07	Introduction to genomics Group discussion	Daoud
4	Sept 12	Introduction to genomics Group discussion	Daoud
	Sept 14	Examples of human disease states and therapeutic agents relevant to the processes discussed in weeks 1-4 *Identify/select a single gene/protein for the writing assignment*	Daoud
5	Sept 19	**Exam I** (material from weeks 1-4)	Li/Daoud
	Sept 21	Post-translational modification (glycosylation, phosphorylation, acylation, sumoylation) Group discussion	Daoud
6	Sept 26	Post-translational modification (glycosylation, phosphorylation, acylation, sumoylation) Group discussion	Daoud
	Sept 28	Protein-protein interactions Group discussion	Daoud
7	Oct 03	Protein-protein interactions Group discussion	Daoud
	Oct 05	Protein degradation and regulation Group discussion	Daoud
8	Oct 10	Protein degradation and regulation Group discussion	Daoud
	Oct 12	Introduction to proteomics Group discussion	Daoud
9	Oct 17	Introduction to proteomics Group discussion	Daoud
	Oct 19	Examples of human disease states and therapeutic agents relevant to the processes discussed in weeks 5-9 *Draft written assignment due*	Daoud
10	Oct 24	**Exam II** (material from weeks 5-9)	Daoud
	Oct 26	G protein-coupled receptors Group discussion *Edited draft paper back*	Meier
11	Oct 31	Tyrosine kinase and cytokine receptors Group discussions	Meier
	Nov 02	Nuclear Receptors; DNA as a drug target Group discussion	Meier
12	Nov 07	DNA as a drug target Group discussion	Meier
	Nov 09	Enzymes and channels as drug targets I	Meier

		Group discussion	
13	Nov 14	Enzymes and channels as drug targets II Group discussion *Final revised written assignment due date*	Meier
	Nov 16	Examples of human disease states and therapeutic agents relevant to the processes discussed in weeks 8-11	Meier
14	Nov 21	**Thanksgiving Vacation**	
	Nov 23	**Thanksgiving Vacation**	
15	Nov 28	Free Study & Preparation for Exam III	
	Nov 30	Course Wrap up **Exam III** (material from weeks 10 – 13)	Meier

Course Grading Distribution and Grading Scale

One writing assignment, class participation and two exams will be assessed for this course. The due dates and contributions of each piece of assessment to the final grade are as follows:

Assessment	**Percent**	**Due dates**
Exam 1	25%	Sept 19
Draft writing assignment	5%	Oct 19
Final writing assignment	20%	Nov 14
Exam 2	25%	Oct 24
Exam 3	25%	Nov 30
Total	**100%**	

All writing assignments must be submitted via the appropriate Assignment dropbox in Blackboard. Note that the submission window for Blackboard will expire at 5pm sharp on the due date. Students are advised to plan ahead and familiarize themselves with Blackboard and the assignment requirements well in advance of the due date and time. No late assignments will be accepted without significant penalty unless the student (1) provides a written medical note to the instructor of record from either a physician, physician's assistant, or nurse in the case of sickness, surgery, or other significant medical procedures, or (2) obtains prior approval by the instructor of record, approval which will only be granted for instances such as a death in the family or other major events, as deemed appropriate by the instructor of record. Failure to finalize the upload of the assignment prior to the expiration of the respective site on Blackboard will result in an automatic grade reduction of 50% of what is earned on the assignment if turned in within 1 week of the due date; a zero grade will be assessed if not received within 1 week of the due date.

Expectations of students

Students are expected to attend lectures, and are responsible for all material presented in the lectures plus any additional material as directed by the instructor. "Make-up exams" will be scheduled only under the most extraordinary circumstances, after receiving approval of the instructor prior to the exam.

Grading Scale:

A = 93-100%	C = 73-76%
A- = 90-92%	C- = 70-72%
B+ = 87-89%	D+ = 67-69%
B = 83-86%	D = 60-66%
B- = 80-82%	F = < 60%
C+ = 77-79%	

Examinations

There will be three examinations, each comprising 25% of the final grade. The exams will consist of multiple choice and/or short-answer questions.

In-class discussions

There will be in-class discussions of research articles, assigned by the instructor, on a weekly basis or at the discretion of the instructor. Each student will be expected to present one figure from the assigned paper, and to participate in discussion of the paper.

The instructor will assign a recent paper, related to the lecture content, for review each week. The papers will contain at least as many figures or tables as there are enrolled students. During the discussion, the instructor will provide a brief introduction to the paper, and will then call upon students (or ask for volunteers) to go over each figure of the paper. Students will be expected to explain the figure, including:

1) The goal of the experiment
2) The methods employed
3) The meaning of the results shown in the figure

Additional comments regarding quality of the data or its presentation are welcome; other students can contribute such remarks as well. The overall format will be informal, although participation is expected and required. The purpose of this graduate component is to provide the additional scientific depth required for a graduate course, and to reinforce points made in the didactic component.

Written Assignments

Purpose: To broaden course participation beyond the traditional exam format, to enhance scientific writing skills, and to build critical thinking skills.

Due dates: A complete 6-page draft of the written assignment is due on October 19th by 5 pm using BBL dropbox. Edited drafts will be returned to the students by October 26th. The revised and final version will be due on November 14th at 5 pm.

Assignment: Select a single gene or protein that is believed to be important in human health. If you choose a well-established gene (e.g., mutation that is the focus of screening efforts), focus on a particular aspect of that gene, its regulation, or its product that may be relatively underexplored or controversial. The point is to select a topic that will provide you with sufficient recent data for discussion, but is not too broad to cover in the assignment. Please choose something that is of interest to you, but not directly related to your thesis or non-thesis project or dissertation.

Obtain at least four references concerning benefit/therapeutic value/risk of the gene or protein with respect to human disease. Some of these references should address the value of targeting the gene or protein for therapeutic benefit, or of screening for variations in expression of the gene/protein. One or two of these should be a review article (from a journal) or book chapter, and three of them must be original scientific articles from the biomedical literature. No web references are allowed as the four primary references, although of course some journal articles can be accessed via the internet. Use numbers (in parentheses) to cite your references within the text; this will require that you number the references in the order in which they are cited in the text. For your reference list, use the following format.

> *For a journal article:*
> Brown, J.M., Taniya, E.B., and Liu, X.L. (2004) Toxicity of ephedra products in mouse exercise models. *J. Pharm. Sci.* **31**, 56-68.
>
> *For a book chapter:*
> Slomonov, G.F. (2003) Use of ephedra by American athletes. *In:* Therapeutics and Toxicology of Herbal Supplements (V. Whitcomb, ed.), Elsevier, New York, pp. 139-146.

An "original article" refers to scholarly work that describes a study and provides the data upon which the investigators base a conclusion. It should contain graphs, tables, study methods, etc. The authors are the individuals who performed and analyzed the experiments. Such an article may be cited and discussed in later original articles, or in review articles. "Review articles" summarize results from multiple original articles and put them into context relative to each other. They do not generally include actual data.

Write a 6-page critical analysis (12-point font, double-spaced) of this topic. *The page limit does not include the references, which should be on a separate page.* The first submitted draft of the paper can be shorter, if you need input regarding areas to expand. The following components should be included; sub-titles are not necessary. At least one page should be devoted to each section.

> Introduction: what is the gene, where is it expressed, what are the known variants, how is it regulated, what does the gene product do, what is the relationship to human health, introduce controversy (if any), mention issues that are of particular interest to you. Cite the review article in this section.
>
> Therapeutic application: general overview of need for screening, gene therapy, or pharmacologic therapy; further discussion of controversy (if any). This information would likely be derived (in your own words) from one or more review articles.
> Critical analysis of original references (at least one page for each): Describe the purpose of the study, the approach taken by the authors, and the major findings. Use correct scientific nomenclature. Do not provide an analysis of any review article(s); cite the original article in this section. Your analysis should include a critique of the methods (as appropriate), a critique of the authors' interpretation of the results, mention anything that the authors should have addressed but did not, and compare results between references or with other published literature (as appropriate).

Summary/conclusion: In this section, provide your own analysis of what you have read. Would you suggest that this gene or its product is a good target for therapeutic intervention? What are the pros and cons of targeting this gene by specific approaches? Please use first person in this section (but not elsewhere in the paper). You can also use this section to suggest your ideas for future directions in this research area. The instructor will be specifically judging how you analyze information and come to a conclusion. You will not be judged on the nature of your conclusion (e.g., whether it is positive or negative).

Assistance: This assignment is individual work, completed with the benefit of feedback from the instructor. Any signs of collaboration (i.e., similar references and approach in papers from different students), or of plagiarism from published sources, will result in a poor or failing grade. This applies to the first draft as well as to the final paper. The goal is a clearly written paper, with a scholarly emphasis, that shows evidence of your analytical skills.

Grading: The written paper, 25 points total, will comprise 25% of the final grade.

The draft of the paper (5% of final grade) will be graded assessed to the following rubric:

- 1 point: Following the directions provided above; i.e., turned in on time, appropriate length
- 1 point: Writing mechanics; paper reads easily and does not contain grammar/spelling errors
- 1 point: Introductory sections; good summary of background, introduction to key issues
- 2 points: Analysis and conclusions; logical analysis of appropriate references

For the final version of the paper (20% of final grade), each component of the rubric will be graded as follows.

- 6 points: Following the directions provided above; i.e., all the correct sections, references are in correct format, length is correct, references are appropriate
- 6 points: Writing mechanics; paper read easily and does not contain grammar/spelling errors
- 6 points: Introductory sections; good summary of background, introduction to key issues
- 6 points: Analysis of references; understands references and discusses key findings clearly; Depth of analysis is at the graduate level
- 6 points: Conclusion; provides recommendation, analysis based on scientific reasoning

Additional Comments

Class Format and Schedule: This is a didactic (lecture-based) course that includes in-class discussion. The instructor will use various methods to encourage student discussion. All work in the course is individual in nature. "Individual work" means that the student may not obtain assistance from any other person in completion of an examination. Individual assignments or examinations will specify the types of resources to be used.

Methodology: Lectures, in-class discussions, written assignment, and examinations.

Academic Honesty, Conduct, and Behavior

Students are reminded that they must adhere to the policies agreed to in writing when entering the College of Pharmacy and Pharmaceutical Sciences. These are detailed in the Ph.D. Student Handbook under Student Conduct and Academic Integrity.

Academic integrity is the cornerstone of higher education. As such, all members of the university community share responsibility for maintaining and promoting the principles of integrity in all activities, including academic integrity and honest scholarship. Academic integrity will be strongly enforced in this course. Students who violate WSU's Academic Integrity Policy (identified in Washington Administrative Code (WAC) 504-26-010(3) and -404) will receive a failing grade for the course, will not have the option to withdraw from the course pending an appeal, and will be reported to the Office of Student Conduct.

Cheating includes, but is not limited to, plagiarism and unauthorized collaboration as defined in the Standards of Conduct for Students, WAC 504-26-010(3). You need to read and understand all of the definitions of cheating: http://app.leg.wa.gov/WAC/default.aspx?cite=504-26-010. If you have any questions about what is and is not allowed in this course, you should ask course instructors before proceeding.

If you wish to appeal a faculty member's decision relating to academic integrity, please use the form available at conduct.wsu.edu.

Course Evaluations

Student evaluations of courses/course modules and faculty effectiveness are a valuable and important component of the College's commitment to provide quality learning experiences and contribute to our efforts to assure that students achieve the objectives of our professional degree program. Thus, all evaluations are given serious consideration as part of the assessment process and are read first by the Department Chair before they are processed, analyzed, and given to the faculty. Because the most effective way to impact positive changes is through **constructive comments**, students are encouraged to provide feedback as they would wish to receive it. This will allow the faculty member to focus on improvements or affirm students' perspective on effective elements of the course.

Students with Disabilities Statement

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, **both Spokane and Yakima students** should contact Student Affairs, in Academic Center 130 (spokane.disability@wsu.edu, 509-358-7534).

All accommodations must be approved. Additional information can be found at: https://spokane.wsu.edu/studentaffairs/disability-resources/. Please also see, "Students with Disabilities" in the College of Pharmacy and Pharmaceutical Sciences Ph.D. Student Handbook (link on left hand side of webpage): https://pharmacy.wsu.edu/ph-d-in-pharmaceutical-sciences/current-student-resources/.

Campus Safety

Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "Alert, Assess, Act," protocol for all types of emergencies and the "Run, Hide, Fight" response for an active shooter incident. Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT in the most appropriate way to assure your own safety (and the safety of others if you are able).

Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's Run, Hide, Fight video and visit the WSU safety portal.

Please sign up for the emergency alert notifications at your individual campuses.

Spokane students can find detailed information regarding the current WSU Spokane Security Services, including a link to Emergency Management, at the following website: https://spokane.wsu.edu/campus-security/.

Similar information relevant to the Pacific Northwest University campus in Yakima can be found on their web-site at: http://www.pnwu.edu/inside-pnwu/departments/campus-security/

NEW COURSE – PHARMSCI 566 FUNDAMENTALS OF TOXICOLOGY

RATIONALE

In recent years, it has become noticeable that our graduate program was missing a course in the fundamentals of toxicology; both students and faculty voiced concern about this omission and agreed that this should be an elective available to students in the program. We are therefore requesting approval of a new course – PharmSci 566 Fundamentals of Toxicology – which will be a 3 credit elective course offered in Fall 2019. In the meantime, the new course we are proposing in this submission will be taught in Fall 2018 under an existing course number and name – PharmSci 505 Principles and Methods of Toxicology (note that we prefer to keep this course number and title for use as a special topics placeholder going forward, hence the request to create a new course).

The instructor of record will be Dr Ayesha Ahmed – she is a classically trained toxicologist and clinical assistant professor in the Department of Pharmaceutical Sciences. The new course will provide a rigorous introduction to the field as well as analysis of challenges and recent cutting-edge findings.

This course will be offered every Fall semester. As this will be an elective course for the PhD students, we anticipate 4-5 graduate students will take this course each year, in addition to 2-3 students from the Doctor of Pharmacy program for whom this will be an elective option.

PharmSci 566 Fundamentals of Toxicology

College of Pharmacy and Pharmaceutical Sciences
Washington State University Spokane
Fall 2019

Course Logistics

Course Title: Fundamentals of Toxicology

Course Number: PHARMSCI 566

Prerequisite(s): Graduate standing or permission of the instructor.

Course Description:
Application of toxicology in the safety evaluation and risk assessment at the molecular, cellular and organ levels; with a special emphasis on the concepts and approaches applied to organ system toxicology.

Academic Hours (Lecture-Lab-Total): 3-0-3

Instructor of Record:
Ayesha Ahmed, Ph.D.
Assistant Professor, Department of Pharmaceutical Sciences,
College of Pharmacy and Pharmaceutical Sciences
Office: PBS 403A
Phone: 509-358-6667
Email: ayesha.ahmed@wsu.edu

Participating Instructors:
John Clarke, Ph.D.
Assistant Professor, Department of Pharmaceutical Sciences,
College of Pharmacy and Pharmaceutical Sciences
Office: PBS 345
Phone: 509-358-7929
Email: j.clarke@wsu.edu

Salah-uddin Ahmed, Ph.D.
Associate Professor, Department of Pharmaceutical Sciences,
College of Pharmacy and Pharmaceutical Sciences
Office: PBS 411
Phone: 509-368-6566
Email: salah.ahmed@wsu.edu

Shobhan Gaddameedhi, Ph.D.
Assistant Professor, Department of Pharmaceutical Sciences,
College of Pharmacy and Pharmaceutical Sciences
Office: PBS 317
Phone: 509-368-6570
Email: shobhan.gaddameedhi@wsu.edu

Course Communication:
WSU Spokane and Pullman use the Blackboard. If you have not used Blackboard before, please take a few minutes to become familiar with the system prior to the start of the semester. There is a short student orientation video on Blackboard at https://news.wsu.edu/announcement/blackboard-learn-now-available-to-instructors/

Semester: Fall 2019

Course Time/Day and Location: Monday, 1:10-3:40 pm, PBS 112

Office Hours: By Appointment

Course Objectives

As an overview, this course is designed with the following major goals in mind:

1) To provide students in graduate and pharmacy programs with a foundation in Toxicology with focus on the principles, concepts and approaches used by the toxicologists to evaluate toxicity at the cellular, molecular and organ system level.
2) To provide all students including interested students from other degree programs with a foundation in the fundamentals of Toxicology with focus on the organ-based approach and understanding the factors that predispose certain tissues to toxicity following exposure to the xenobiotics.
3) To provide all students, the basic understanding of the ICH and FDA guidelines and regulations related to planning of the pharmacology and toxicity studies.
4) To build critical thinking skills in the biomedical, toxicological and pharmaceutical sciences.

Student Learning Outcomes

At the end of this course, students should be able to:	**The following topic(s)/dates(s) will address this outcome:**	**This outcome will be evaluated primarily by:**
Describe the elements of approaches used by toxicologist to determine the interaction of the toxicants with focus on its mechanism of action, the cellular dysfunction and resultant toxicity.	Weeks 1-4	Exam
Explain the characteristics of exposure and evaluation of exposure with focus on the dose-response relationship, variation in toxic responses and *in vivo* and *in vitro* toxicology.	Weeks 1-4	Exam
Describe the regulatory and general considerations for conducting toxicity testing with special emphasis in the area of genetics, pharmacology, immunology, developmental and reproductive toxicology.	Weeks 6-13	Written assignment Presentation
Read, analyze, discuss and write report based on the original research articles related to the applications of toxicology in the drug development and occupational toxicology.	Weeks 1-13	Presentation

Topic Outline

Week	Topic	Instructor
1	Course overview: principles of toxicology	Ayesha Ahmed
2	Mechanism of toxicity I	John Clarke
3	Mechanism of toxicity II	John Clarke
4	Development of formulations for toxicological studies	Salah Ahmed
5	**Exam (material from weeks 1-4)**	
6	General toxicology	Salah Ahmed
7	Safety pharmacology assessments	Ayesha Ahmed
8	Developmental and reproductive toxicology	Ayesha Ahmed
9	Genetic toxicology I	Shobhan Gaddameedhi
10	Genetic toxicology II **Written assignment due**	Shobhan Gaddameedhi
11	Immunotoxicology	Shobhan Gaddameedhi
12	Regulatory toxicology: application of toxicology in the drug development	Ayesha Ahmed
13	Occupational toxicology I	Ayesha Ahmed
14	Occupational toxicology II	Ayesha Ahmed
15	**Research Paper Presentations**	

Expectations of students

Students are expected to attend lectures, and are responsible for all material presented in the lectures plus any additional material as directed by the instructor. "Make-up exams" will be scheduled only under the most extraordinary circumstances, after receiving approval of the instructor prior to the exam.

Grading Scale:

A = 93-100%	C = 73-76%
A- = 90-92%	C- = 70-72%
B+ = 87-89%	D+ = 67-69%
B = 83-86%	D = 60-66%
B- = 80-82%	F = < 60%
C+ = 77-79%	

In calculating the final grade, percentages will be rounded to the nearest whole number.

Assessment

There will be three assessment items, each comprising 30% of the final grade plus 10% for in-class participation as follows:

Written exam that will consist of multiple choice and short answer questions (*30% of the final grade*).

Written assignment (*30% of the final grade*) to evaluate that the students can think and synthesize the research ideas in the area of toxicology as it relates to pharmacological sciences.

Presentation of a peer-reviewed research paper (*30% of the final grade*) for 20 minutes (plus 5 minutes for question and answer session) to evaluate the student's ability of critical thinking and improved learning of the research topics within the field of Occupational Toxicology and the application of Toxicology in the drug development.

Attendance and participation (*10% of the final grade)* will be determined as described below.

In-class discussions

There will be in-class discussions of research/review articles, assigned by the instructor, on a weekly basis or at the discretion of the instructor. Each student will be expected to participate in discussion of the paper

Rubric for grading the in-class discussions:

- 5 points: Attendance; providing a valid excuse if unable to attend
- 5 points: Preparation; familiarity with the paper as reflected in general discussion, even if issues remain to be clarified regarding methodology and details, critical thinking as reflected in presentation of figures, and in discussion

Written assignment

The idea of the written assignment is to broaden course participation beyond the traditional exam format. With this approach students will be able enhance scientific thinking, scientific writing skills, interpretation of the scientific literature within the field and able to write and discuss the papers. Student will choose the topic for the written assignment with focus on applications of the Toxicology. Specifically, Instructor will encourage the students to select a peer-reviewed original article with the focus on General Toxicology, Developmental and Reproductive toxicology
and Genetic toxicology. Student will turn over the assignment report on the due date to be graded.

Required and Optional Textbooks, References, and Other Resources

Recommended reading:

1. A Comprehensive Guide to Toxicology in Preclinical Drug Development, Ali S. Faqi, 2013, available as ebook Central WSU.
2. Casarett & Doull's Toxicology The Basic Science of Poisons; 8th Edi Curtis D. Klaassen

The handouts including the PowerPoint presentation and relevant book chapters/journal articles/ reviews (for in-class discussion) will be posted on Blackboard.

Additional Comments

Class Format and Schedule: This is a didactic (lecture-based) course that includes in-class discussion. The instructor will use various methods to encourage student participation in the classroom. All work in the course is individual in nature. "Individual work" means that the student may not obtain assistance from any other person in completion of an examination. Individual assignments or examinations will specify the types of resources to be used.

Methodology: Lectures, in-class discussions, written assignment and examinations.

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Students with Disabilities Statement

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https://spokane.wsu.edu/campus-security/.

Similar information relevant to the Pacific Northwest University campus in Yakima can be found on their web-site at:
http://www.pnwu.edu/inside-pnwu/departments/campus-security/

NEW COURSE/CROSSLISTING – PHARMSCI/PHARDSCI 577 RESPONSIBLE CONDUCT IN BIOMEDICAL RESEARCH

RATIONALE

PharmSci 577 Responsible Conduct in Biomedical Research is a 3 credit course that is a core requirement for all of our graduate students. It covers all aspects of research from ethics to grant writing to experimental design and satisfies the National Institutes of Health requirements for instruction in the responsible conduct of research (https://grants.nih.gov/grants/guide/notice-files/NOT-OD-10-019.html).

In Fall 2013 the College of Pharmacy and Pharmaceutical Sciences instituted an Honors Program that allows highly competitive students to conduct research during their studies in the Doctor of Pharmacy (PharmD) program (http://www.pharmacy.wsu.edu/documents/2017/12/honors-program-details.pdf). PharmD Honors students are required to take at least one course from within the Pharmaceutical Sciences Graduate Program offerings and the faculty recently decided that all Honors students would be best served by taking PharmSci 577 to satisfy this requirement.

There are several challenges that the instructor of record has had to overcome in order to accommodate the PharmD Honors students in PharmSci 577. The first is that the PharmD program is co-located in Spokane and Yakima and several Honors students are based in Yakima. The second is the increased number of students in the course and the time constraints associated with the assessment required by the PhD students, especially formal presentations.

We are therefore requesting that PharmSci 577 be crosslisted with PharDSci 577 (a new course number) so that grading requirements can be modified for the PharmD Honors students. The class schedule will be the same for all students, irrespective of their academic program, and the assessment requirements for the PhD students who take PharmSci 577 will remain unchanged. All of these are clearly outlined in the attached syllabus.

This course is offered every Fall semester. As this is a required course for the PhD students, all of our first year graduate students take this course as PharmSci 577 – this number has typically been 6-8 students and we anticipate that our intake will increase such that 8-10 graduate students will take this course each year. In addition, we anticipate 8-10 students from the Doctor of Pharmacy honors program will take this course each year as PharDSci 577 as it will be a requirement for their program.

Washington State University Health Sciences
Pharmaceutical Sciences Graduate Program

Course Title: Responsible Conduct in Biomedical Research

Course Numbers: PharmSci 577
PharDSci 577

Credits: 3

Pre-requisites: Admission to the Pharmaceutical Sciences Graduate Program; PharmD Honors Program

Instructors of Record:

Sayed Daoud, PhD
Pharmaceutical Sciences
Office: SPBS 415
Ph: 509-368-6572
Email: daoud@wsu.edu
Office hours: by appointment

Andrea Lazarus, PhD
Department of Pharmacotherapy
Office: SPBS 130J
Ph: 509-358-7525
Email: andrea.lazarus@wsu.edu
Office hours: by appointment

Participating Instructors:

Jonathan Potter Director, Riverpoint Campus Library Office: SAC 230 Ph: 509-368-6973 Email: jonathan.potter@wsu.edu	Steven Russell, DVM Office of the Campus Vet Email: spruss@wsu.edu
Kathryn Meier, PhD Pharmaceutical Sciences Office: SPBS 130P Ph: 509-358-7631 Email: kmeier@wsu.edu	William Kabasenche, PhD School of Politics, Philosophy, and Public Affairs wkabasenche@wsu.edu
Philip Lazarus, PhD Chair, Pharmaceutical Sciences Office: SPBS 431 Ph: 509-358-7947 Email: phil.lazarus@wsu.edu	Michael Ebinger, PhD, MBA Director, WSU Center for Innovation Ph: 509-358-7897 Email: ebingerm@wsu.edu

Course Communication:

The College of Pharmacy & Pharmaceutical Sciences (CPPS) utilizes Blackboard as the primary Learning Management System. If you have not used it before, you can log on to Blackboard at: https://learn.wsu.edu/webapps/login/. Click on the *"WSU Authentication"* and type in your WSU Network ID and password to access Blackboard. Your courses should be automatically pre-loaded based on enrollment. If you have difficulty finding one of your courses within Blackboard, please call Pharmacy IT at 509-358-7609.

You can also become familiar with Blackboard by viewing a short student orientation video at: https://www.youtube.com/watch?v=36kDE4lvRmI&index=1&list=PLontYaReEU1seUE3ACG3sEc3zR7Br7URU. There is also an "*On Demand Help"* feature you can utilize located on the bottom of the web page after you log on to the Blackboard site.

Course Objectives:

This course is designed to introduce entering graduate/PharmD Honors students to Responsible Conduct of Research concepts and issues in biomedical research. The course will provide a practical overview of rules, regulations, attitudes and professional practices that contribute to successful practice of research.

Student Learning Outcomes	**The following weeks will address this outcome:**	**This outcome will be evaluated primarily by:**
Understand the expectations for graduate/PharmD Honors students both in terms of academic output and personal conduct, and the responsibilities of graduate mentors in the Departments of Pharmaceutical Sciences & Pharmacotherapy	Weeks 1,2	Exam 1
Understand how do conduct experiments safety and in accordance with all federal, state, and university regulations, and maintain comprehensive, secure laboratory notebooks	Week 3	Exam 1
Understand how to use online research tools to search and cite the scientific literature and identify funding opportunities	Week 5	Exam 1 and oral presentations
Critically evaluate primary research literature and develop graduate-level writing and oral presentation skills	Weeks 4, 5-13	Writing assignment 1 and oral presentations
Understand ethical principles pertaining to the conduct of research involving human or animal subjects	Weeks 7, 8	Exams 1 & 2
Understand the peer review process involved in both manuscript preparation and grant submission	Week 6, 10	Exams 1 & 2
Understand the fundamental processes involved in writing a research grant proposal	Week 9	Exam 2
Understand principles of scientific integrity pertaining to the conduct of research and subsequent publication of its results	Weeks 11, 12	Writing assignment 2, Exam 2
Understand the processes designed to protect intellectual property	Week 13	Exam 2

Required and Optional Textbooks, References and other Resources

Reading materials will be assigned as needed to support the learning objectives for individual lectures and will be posted on Blackboard prior to the class session. PowerPoint slides will be posted weekly on the course webpage as background material to study for exams.

Class Format and Schedule

Course time and location: Tuesday, 2:10pm – 4:40pm (Spokane – SAC 45; Yakima – Cadwell 108)

Instruction in this course will be largely discussion based and therefore relies heavily on class participation. Students are expected to be prepared for discussion of cases presented by the instructor and bring their reading to bear upon discussion. This course will be taught conjointly with PharmD Honors program in Yakima via videoconference (AMS).

Week	Date	Content	Instructor	Assignment/ Assessment
1	Aug 21	Course Overview Basics in the Responsible Conduct of Research	Daoud Daoud	
2	Aug 28	Mentor and Trainee Responsibilities/Lab Etiquette	Daoud	Assignment: identify 3 papers for oral presentation/narrative (due September 11th)
3	Sept 04	Data Management Practices	Daoud	
4	Sept 11	Preparing an Oral Presentation/Writing a Research Abstract	A. Lazarus	
5	Sept 18	Library Resources	Potter	
6	Sept 25	Authorship, Publication and Peer Review Student Presentation #1	Meier	
7	Oct 02	Welfare of Laboratory Animals Student Presentation #2	Russell*	
8	Oct 09	NIH, Funding Mechanisms, and the Study Section Review Process	P. Lazarus	**Exam #1** Assignment: Write abstract and title for assigned publication
9	Oct 16	Human Subjects Protection Student Presentation #3	A. Lazarus	
10	Oct 23	Writing an NIH Grant Proposal Student Presentation #4	A. Lazarus	Abstract and title assignment due date
11	Oct 30	Research Ethics and Conflict of Interest Student Presentation # 5	A. Lazarus	Assignment: Case study reflections (due November 13th)
12	Nov 06	Student Presentation # 6 (if needed) Scientific Misconduct	Kabasenche	
13	Nov 13	Intellectual Property, Patents, Copyright and Commercialization	Ebinger	Case study reflections
	Nov 20	Thanksgiving vacation	No Classes	
14	Nov 27	Free Study & Preparation for Exam 2	No Classes	
15	Dec 04	Course wrap-up	Daoud/ A. Lazarus	**Exam #2**

Course Expectations

- There may be assigned readings for most classes and these will be posted on Blackboard. Students are expected to complete the readings prior to each class.
- Class attendance is expected and the instructor reserves the right to monitor class attendance.
- Professional behavior is expected of all students at all times.
- Students may consult with classmates on assignments; however, students are reminded that assignments are assessed on an individual basis and each student must turn in his/her original work. No copying will be accepted.
- Assignments and presentations must be completed by the scheduled day and time.

Course Grading Distribution and Grading Scale

Three writing assignments and one oral presentation will be assessed for this course. The due dates and contributions of each piece of assessment to the final grade are as follows:

Assessment	**Percent**	**Due dates**
Exam 1	15%	October 09
Abstract writing	20%	October 23
Case study reflection	20%	November 13
Exam 2	15%	December 04
Oral presentation	30%	Weeks 6 -12
Total	**100%**	

All writing assignments must be submitted via the appropriate Assignment dropbox in Blackboard. Note that the submission window for Blackboard will expire at 5pm sharp on the due date. Students are advised to plan ahead and familiarize themselves with Blackboard and the Assigment requirements well in advance of the due date and time. No late assignments will be accepted without significant penalty unless the student (1) provides a written medical note to the instructor of record from either a physician, physician's assistant, or nurse in the case of sickness, surgery, or other significant medical procedures, or (2) obtains prior approval by the instructor of record, approval which will only be granted for instances such as a death in the family or other major events, as deemed appropriate by the instructor of record. Failure to finalize the upload of the assignment prior to the expiration of the respective site on Blackboard or to deliver the oral presentation at the scheduled day and time will result in an automatic grade reduction of 50% of what is earned on that assignment if turned in within 1 week of the due date; a zero grade will be assessed if not received within 1 week of the due date.

Grading Scale:

A = 93-100%	C = 73-76%
A- = 90-92%	C- = 70-72%
B+ = 87-89%	D+ = 67-69%
B = 83-86%	D = 63-66%
B- = 80-82%	F = < 62%
C+ = 77-79%	

Methods of Assessment

All writing assignments must be uploaded to Blackboard no later than 5pm on the specified due date. Students should ensure that their name appears in the file name. Each piece of written assessment will be electronically returned to students complete with comments, grade and grading rubric. The preferred file formats for the submitted documents are .doc, .docx, .pages or .rtf.

Grading rubrics for each of the assignments will be uploaded to Blackboard by the instructor well in advance of the submission deadlines.

1. Abstract Writing: 20% (Due date: October 23)

Students will receive an original research article from a peer-reviewed journal with the abstract and title redacted. Students must read the research article and write a title and abstract for the articles, based on the guidelines discussed in the lecture. The title and abstract should adhere to the following format:

Title of Article (200 characters or less)

Background: *Explain why this project is important, and the rationale for doing this study. (2-4 sentences)*
Methods*: Describe how the study was done (2-3 sentences)*
Results: *Describe the main findings of the study (4-5 sentences)*
Conclusions: *Put the findings in perspective and explain the implications of the findings. (3-5 sentences)*

The entire abstract should not exceed 350 words and should use Arial 11-point font. If your project cannot be described using these headings (structured abstract), you may write an unstructured abstract, but it must still be within the word limit.

The abstract will be judged according to a rubric based on the key qualities of a good title and abstract as outlined in class. This rubric will be provided at the same time as the article to be reviewed.

2. Exams: 15% each

Students will take two exams with multiple choice, true/false, matching questions or short -answers based on material presented in class, using Powerpoint slides posted on Blackboard as background material. Material covered on each exam is shown below. Students will not be questioned on material covered in student presentations.

Exam 1 (October 09): Lectures 1-7
Exam 2 (December 04): Lectures 8-13

3. Case Study Reflections: 20% (Due date: Nov 13th)

Students will be provided with 3-4 ethical dilemmas. Students must identify the potential ethical concerns, and provide strategies for dealing with the situation, providing a rationale for their strategy and potential outcomes. Student reflections will be judged according to a rubric, which will be provided along with the case studies.

4. Presentation of Research Papers/Presentation Narrative: 30% (Weeks 6 -12)

Using the search strategies outlined in the Week 5 lecture, students will identify 3 scientific articles of interest from peer-reviewed journals. Copies of these articles will be provided to the IORs, who will make a final determination regarding which article is most appropriate for presentation.

For PhD students (PharmSci 577): Using the guidelines discussed in the Week 4 lecture, students will prepare and give an oral presentation (30 min) based on the selected article. Presentations will be judged according to a rubric provided along with the article to be presented.

For PharmD Honors students (PharDSci 577): Students will write an Oral Presentation Narrative (one-page limit). The following should be addressed in the one-page Oral Presentation Narrative:

1) What the research project's hypothesis, objective, rationale, and specific aims? Briefly describe the methodology and experimental design. 20-points (2/3 page)
2) As presented, how is the research project innovative or how does the research project introduce novel concepts or agents, or exhibit other uniquely creative qualities? 10-points (1/3 page)

The final grade on the Oral Presentation Narrative is the cumulative average of the class oral presentations.

Academic Honesty, Conduct, and Behavior

Students are reminded that they must adhere to the policies agreed to in writing when entering the College of Pharmacy and Pharmaceutical Sciences. These are detailed in the Ph.D. Student Handbook under Student Conduct and Academic Integrity.

Academic integrity is the cornerstone of higher education. As such, all members of the university community share responsibility for maintaining and promoting the principles of integrity in all activities, including academic integrity and honest scholarship. Academic integrity will be strongly enforced in this course. Students who violate WSU's Academic Integrity Policy (identified in Washington Administrative Code (WAC) 504-26-010(3) and -404) will receive a failing grade for the course, will not have the option to withdraw from the course pending an appeal, and will be reported to the Office of Student Conduct.

Cheating includes, but is not limited to, plagiarism and unauthorized collaboration as defined in the Standards of Conduct for Students, WAC 504-26-010(3). You need to read and understand all of the definitions of cheating: http://app.leg.wa.gov/WAC/default.aspx?cite=504-26-010. If you have any questions about what is and is not allowed in this course, you should ask course instructors before proceeding.

If you wish to appeal a faculty member's decision relating to academic integrity, please use the form available at conduct.wsu.edu.

Course Evaluations

Student evaluations of courses/course modules and faculty effectiveness are a valuable and important component of the College's commitment to provide quality learning experiences and contribute to our efforts to assure that students achieve the objectives of our professional degree program. Thus, all evaluations are given serious consideration as part of the assessment process and are read first by the Department Chair before they are processed, analyzed, and given to the faculty. Because the most effective way to impact positive changes is through **constructive comments**, students are encouraged to provide feedback as they would wish to receive it. This will allow the faculty member to focus on improvements or affirm students' perspective on effective elements of the course.

Students with Disabilities Statement

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, **both Spokane and Yakima students** should contact Student Affairs, in Academic Center 130 (spokane.disability@wsu.edu, 509-358-7534).

All accommodations must be approved. Additional information can be found at: https://spokane.wsu.edu/studentaffairs/disability-resources/. Please also see, "Students with Disabilities" in the College of Pharmacy and Pharmaceutical Sciences Ph.D. Student Handbook (link on left hand side of webpage): https://pharmacy.wsu.edu/ph-d-in-pharmaceutical-sciences/current-student-resources/.

Campus Safety

Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "Alert, Assess, Act," protocol for all types of emergencies and the "Run, Hide, Fight" response for an active shooter incident. Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT in the most appropriate way to assure your own safety (and the safety of others if you are able).

Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's Run, Hide, Fight video and visit the WSU safety portal.

Please sign up for the emergency alert notifications at your individual campuses.

Spokane students can find detailed information regarding the current WSU Spokane Security Services, including a link to Emergency Management, at the following website: https://spokane.wsu.edu/campus-security/.

Similar information relevant to the Pacific Northwest University campus in Yakima can be found on their web-site at: http://www.pnwu.edu/inside-pnwu/departments/campus-security/

From: Lazarus, Philip
To: curriculum.submit; Pollack, Gary Martin
Subject: RE: 461437 Pharmaceutical Sciences Requirements Revise - Revise or Drop Graduate Plan
Date: Wednesday, August 15, 2018 3:35:07 PM

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1. I approve this proposal in its current form.

Philip Lazarus, PhD
Boeing Professor and Chair
Dept of Pharmaceutical Sciences
College of Pharmacy and Pharmaceutical Sciences
Washington State University
Spokane, WA
Email: phil.lazarus@wsu.edu
Tel: 509-358-7947

From: curriculum.submit@wsu.edu <curriculum.submit@wsu.edu>
Sent: Wednesday, August 15, 2018 2:07 PM
To: Lazarus, Philip <phil.lazarus@wsu.edu>; Pollack, Gary Martin <gary.pollack@wsu.edu>
Subject: 461437 Pharmaceutical Sciences Requirements Revise - Revise or Drop Graduate Plan

Lazarus, Philip,

Pollack, Gary - Dean - College of Pharmacy,

Susan Marsh has submitted a request for a major curricular change.

Requested change: Revise or Drop Graduate Plan

Degree: PhD in pharmaceutical sciences

Title:

Requested Effective Date: Fall 2019

Revise plan requirement: Yes

Both Chair and Dean approval is required to complete the submission process. Please indicate that you have reviewed the proposal by highlighting one of the statements below and **reply all** to this email. (curriculum.submit@wsu.edu.) [Details of major change requested can be found in the attached supplemental documentation]

1. I approve this proposal in its current form.

2. I approve this proposal with revisions. Revisions are attached.

3. I do not approve this proposal. Please return to submitter.

If you do not respond within one week, you will be sent a reminder email. If no response is received within three weeks of the submission date, the proposal will be returned to the submitter.

Thank you for your assistance as we embark on this new process. If you have any questions or concerns, please let us know wsu.curriculum@wsu.edu.

Suzanne Lambeth, Assistant Registrar

Graduations, Curriculum, & Scheduling

Washington State University

Registrar's Office

PO Box 641035

Pullman WA 99164-1035

509-335-7905

slambeth@wsu.edu

Note: Please use the attachments to this email rather than the link below to view the supporting documentation.

From: Pollack, Gary Martin
To: curriculum.submit
Subject: 055-058 RE: 461447 New or Restore Course: PHARDSCI 577
Date: Wednesday, August 29, 2018 9:03:08 PM

My apologies Suzanne. I thought that this had been done already. Yes, I approve of each of the proposed changes.

Thanks so much.

Gary

Gary M. Pollack, PhD
Professor and Dean
College of Pharmacy and Pharmaceutical Sciences
Washington State University
www.pharmacy.wsu.edu

From: curriculum.submit
Sent: Wednesday, August 29, 2018 3:53 PM
To: Pollack, Gary Martin <gary.pollack@wsu.edu>
Subject: FW: 461447 New or Restore Course: PHARDSCI 577

Dr. Martin,

I do not see that I've received a response from you on this submission and several others. Can you please review the submissions for this proposal and the following proposals (which should be in your email) and indicate whether or not you approve these proposals?

461440 – Pharm Sci 579
461444 – Pharm Sci 520
461446 – Pharm Sci 566
461437 – Pharm Sci revise requirements

Please let me know if you have questions.

Thank you

Suzanne

Suzanne Lambeth, Assistant Registrar
Graduations, Curriculum, & Scheduling
Washington State University
Registrar's Office

PO Box 641035
Pullman WA 99164-1035
509-335-7905
slambeth@wsu.edu

From: noreply@wsu.edu <noreply@wsu.edu>
Sent: Wednesday, August 15, 2018 2:21 PM
To: curriculum.submit <curriculum.submit@wsu.edu>
Subject: 461447 New or Restore Course: PHARDSCI 577

Susan Marsh has submitted a request for a major curricular change. His/her email address is: susan.marsh@wsu.edu.

Course Subject: PHARDSCI

Course Number: 577

Title: Responsible Conduct in Biomedical Research

Lecture Hours: 3

Total Credits: 3

Prerequisite: None

Catalog Description: Training in biomedical research ethics consistent with NIH requirements; introduction to literature searching and analysis, scientific writing, and oral presentations.

Grading Type: Letter graded A-F

Crosslisted: yes

Requested Effective Date: Fall 2019

Dean: Pollack, Gary - Dean - College of Pharmacy

Chair: Lazarus, Philip

The course is crosslisted, additional chair/dean fields are as follows.

Chairs:

Lazarus, Philip phil.lazarus@wsu.edu

Deans:

Pollack, Gary - Dean - College of Pharmacy gary.pollack@wsu.edu

UCORE Committee Approval Date	All-University Writing Com / Date	
Catalog Subcommittee Approval Date	GSC or AAC Approval Date	Faculty Senate Approval Date