012

Washington State University
MAJOR CURRICULAR CHANGE FORM - - COURSE
(Submit original signed form and ten copies to the Registrar's Office, zip 1035.)

1-2015

Future Effective Date: ~~09/25/2014~~ ☑ New course ☐ Temporary course ☐ Drop service course
(effective date cannot be retroactive) ☐ There is a course fee associated with this course (see instructions)

☐ Variable credit _____ ☐ Repeat credit (cumulative maximum _____ hours)

☐ Increase credit (former credit _____) ☐ Lecture-lab ratio (former ratio _____)

☐ Number (former number _____) ☐ Prefix (former prefix _____)

☐ Crosslisting (between WSU departments) **(Must have both departmental signatures)** ☐ Cooperative listing (UI prefix and number _____)
taught by: WSU ☐ UI ☐ jointly taught ☐

☐ Conjoint listing (400/500) ☐ S, F grading

☐ Request to meet Writing in the Major [M] requirement **(Must have All-University Writing Committee Approval)**

☐ Request to meet GER in _____ **(Must have GenEd Committee Approval)** ☐ Fulfills GER lab (L) requirement

☐ Professional course **(Pharmacy & Vet Med only)** ☐ Graduate credit **(professional programs only)**

☐ Other (please list request) _____

PharmSci	520	Foundations of Molecular Regulation
course prefix	course no.	title

	3	0	0	Graduate standing
credit	lecture hrs per week	lab hrs per week	studio hrs per week	prerequisite

Description (**20 words or less**) Principles of molecular biology, genetics, and biochemistry used to develop therapeutic approaches to the treatment and prevention of human disease.

Instructor: Sayed Daoud, PhD Phone number: (509) 368-6572 Email: daoud@wsu.edu
Contact: Kay Meier, PhD Phone number: (509) 358-7631 Email: kmeier@wsu.edu
Campus Zip Code: 1495

- Please attach rationale for your request, a current and complete syllabus, and explain how this impacts other units in Pullman and other branches (if applicable).
- Secure all required signatures and provide 10 copies to the Registrar's Office.

Kamyn E Meier 4/3/14	[signature] 4/3/14	SEP 18 2014
~~Chair/date~~	**Dean/date**	GSC ~~General Education Com~~/date
Chair (if crosslisted/interdisciplinary)*	**Dean (if crosslisted/interdisciplinary) ***	**Graduate Studies Com/date**
All-University Writing Com/date	**Academic Affairs Com/date**	**Senate/date**

***If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.**

COURSE REQUEST INSTRUCTIONS
(do not include these instructions with your proposal)

Definitions, policies, and additional procedures can be found in the *Educational Policies and Procedures Manual* (available at http://facsen.wsu.edu/eppm/). For submission deadlines and forms, refer to www.ronet.wsu.edu/ROPubs/. Please submit changes at least 9 months before effective date.

The original copy must be signed by all participating chairs and deans. Send the signed original and ten copies to Lisa Devine, Registrar's Office, French 346, ZIP 1035. Requests are routed to the General Education Office or All-University Writing Committee (if appropriate), Catalog Subcommittee, Academic Affairs Committee and/or Graduate Studies Committee, and Faculty Senate. Upon final approval by the Senate, a copy of the form is returned to the department.

General Education Courses
If you are requesting the course to fulfill a general education requirement, please see http://gened.wsu.edu/ for additional information.

Writing in the Major Courses
If you are requesting the course to fulfill the writing in the major requirement, please see http://www.writingprogram.wsu.edu/units/WID/auwc/ for additional information.

Course Fee Requests
If you are requesting a special course fee you need to follow the procedures found in the Business Policies and Procedures Manual (BPPM):
http://www.wsu.edu/~forms/HTML/BPPM/30_Finance/30.95_Special_Course_Fees.htm

PROCEDURE:
Submit requests for courses by checking the appropriate box(es) on the "Major Change Form—Courses". Include a rationale for the request and attach justification for changes to existing courses. For all requests, submit a **current and complete** syllabus for the course as is described below.

Note the following for lecture/lab/studio courses, crosslisted courses, conjoint courses, cooperative courses, or request to change course prefix or number:

- **Lecture/Lab** or **Lecture/Studio Courses:** Course proposals requesting a **lecture/lab** or **lecture/studio** component must be identified by filling out the lecture hrs/lab hrs/studio hrs per week and should follow guidelines for contact hours as outlined in the university online catalog at the following link http://catalog.wsu.edu/Catalog/Content/SummaryofAcademicPolicies.pdf and found under the heading "Credit".
- **Crosslisted/Interdisciplinary Courses:** Course proposals requesting crosslisting between departments must identify the course which is to be the owner of the course (i.e., the parent department), on the form, by noting that course *first*. For example, on the form, Anth 200/ CAC 119 would indicate that Anthropology is the parent department. **Note that all department chairs and deans must sign the form.**
- **Conjoint Courses:** Courses requesting an undergraduate, 400-level, and a graduate, 500-level counterpart, must follow the criteria described in the *Educational Policies and Procedures Manual* http://facsen.wsu.edu/eppm/ . The request must describe how the additional work required of graduate students will provide additional depth in several of the areas covered in the course, and describe how the course will provide for significant time for graduate students to interact with the instructor.
- **Cooperative courses taught by UI:** For cooperative courses taught at the University of Idaho, which are to be offered to WSU students, the review process is simplified. Submit two copies of the major change form to the Registrar's Office. Course title, credit hours, and description must match the UI catalog description. Refer to the *Educational Policies and Procedures Manual* under Cooperative Courses for further information.

- **Changes to course numbers or prefixes:** Course proposals requesting changes to course prefixes or numbers **must be substantive** in order to be considered for approval since these changes affect the accuracy of a student's advising, catalog, degree audit, and transfer articulation information and take time to implement.
- **Prerequisites:** Generally 200-, 300- and 400-level courses should have prerequisite(s). All 500-level courses must have a prerequisite. Beginning in Fall 2012, all prerequisites will be fully enforced at the time of registration.

SYLLABUS CHECKLIST:

For guidance in completing your syllabus please see vpue.wsu.edu/policies/ for a syllabus guide and an example of a good syllabus.

NOTE: It is the departmental responsibility to coordinate all approved course changes with the scheduling area within the Registrar's Office for inclusion in the schedule of classes http://www.schedules.wsu.edu/Schedules/Apps/HomePage.ASP .

Routing for Review and Approval. Requests are routed to the Catalog Subcommittee, the Academic Affairs Committee and/or Graduate Studies Committee, and the Faculty Senate. Upon final approval by the Senate, a copy of the Major Curriculum Change Form will be returned to the department.

Rationale for new course request: PharmSci 520

The College of Pharmacy is in the process of reviewing and expanding the PhD curriculum in Pharmaceutical Sciences to reflect the move of the program to the Spokane campus, and the research expertise of recently hired faculty members in the college.

PharmSci 530, "Foundations in Cellular Regulation", is a course that provides students with an overview of cellular topics related to biomedical science in general, and pharmaceutical sciences in particular. The course has successfully blended lectures, in-class discussions of recent papers, and a written paper as part of the graduate experience. This course has been offered for several years as NEP 510, and was approved as PharmSci/NEP 530 for Fall 2014. It is one of the options on the "required elective" list for the PhD PharmSci curriculum.

With a new cohort of PhD students arriving in Fall 2014, the faculty has agreed that there is a need for additional foundational coursework that will provide first-year students with the background that they need to participate in research projects and seminars in the college. PharmSci 520, "Foundations in Molecular Regulation", has been designed to complement and precede PharmSci 530 in the curriculum. The proposed course, which will be team-taught by faculty members in the College of Pharmacy, is intended to provide an overview of molecular principles underlying the biomedical and pharmaceutical sciences.

At this point, PharmSci 520 is being considered as one of the "required elective" courses that students can select for their Program of Study. The faculty will be engaged in a Graduate Retreat in May, at which time the core and elective requirements will be reviewed and possibly revised.

PharmSci 520 will be open to enrollment by graduate and professional students from the College of Pharmacy, as well as from other colleges. It is not anticipated that the course will impact other campuses, since the content has been specifically designed for graduate students in the Health Sciences, and the course will only be taught on the Spokane campus.

PharmSci 520: Foundations of Molecular Regulation

Washington State University Spokane
College of Pharmacy
Fall 2014

Course Logistics

Course Title: Foundations of Molecular Regulation

Course Number: PharmSci 540

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

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

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

Instructor of Record:

Sayed Daoud, PhD	Office: PBS 415 Phone: 509-368-6572 Email: daoud@wsu.edu
[Team-taught by College of Pharmacy faculty]	Office: Phone: Email:

Course Communication:
WSU Spokane and Pullman use the Angel LMS (Learning Management System). If you have not used Angel 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 Angel at

http://angel.wsu.edu/Tutorials/STudentOrientation/STudentOrientation.html

How do I access Angel?

1. Go to: lms.wsu.edu
2. Log in with your WSU Network ID and Password

Where can I find more information on Angel?

- Inside Angel, look for the question mark button on the left hand edge "powerstrip."
- Visit http://angel.wsu.edu/ for additional help.

Semester: Fall

Course Time and Location: Two sessions per week, 75 minutes each

Office Hours: TBA

Course Objectives

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

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

Upon completion of the course students will be able to [method of assessment is provided in brackets]:

1) Explain basic steps involved in DNA replication, transcription, and translation. [exams]
2) Describe epigenetic processes that affect gene transcription and translation. [exams]
3) Explain the enzymatic steps that post-translationally regulate protein function. [exams]
4) Explain basic methods used to generate and analyze genomic and proteomic data. [exams; written assignment]
5) Explain the major pathways involved in lipid and carbohydrate metabolism. [exams]
6) Describe the major pathways that regulate lipid and carbohydrate metabolism. [exams]
7) Read, analyze, and discuss original research articles related to material presented in the course. [in-class discussions; 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 Angel.

Topic Outline

Dates	Module	Topic
Week 1	1	Introduction to course
	2	Functional groups in biomolecules; basic enzymatic reactions
Week 2	4	DNA replication and repair
	5	DNA recombination
Week 3	6	Chromatin structure and epigenetics
	7	DNA transcription and mRNA processing
Week 4	8	mRNA translation
	9	Introduction to genomics
Week 5	10	Examples of human disease states and therapeutic agents relevant to the processes discussed in modules 1-8
	--	**Exam I** (material from modules 1-10)
Week 6	11	Protein synthesis and its regulation
	12	Post-translational modifications: glycosylation, phosphorylation
Week 7	13	Post-translational modifications: acylation, lipidation, O-GlcNAcylation, sumoylation
	14	Protein-protein interactions
Week 8	15	Protein degradation and its regulation
	16	Introduction to proteomics
Week 9	17	Examples of human disease states and therapeutic agents relevant to the processes discussed in modules 11-15
	--	**Exam II** (material from modules 11-17)
Week 10	18	Lipid synthesis and metabolism
	19	Membrane lipids and their regulation
Week 11	20	Plasma lipids and their regulation
	21	Introduction to lipidomics
Week 12	22	Examples of human disease states and therapeutic approaches relevant to the processes discussed in modules 18-20
	--	**Exam III** (material from modules 18-22)
Week 13	23	Carbohydrate synthesis
	24	Carbohydrate metabolism
Week 14	25	Regulation of carbohydrate metabolism

Dates	Module	Topic
	26	Dietary and pharmacologic manipulations of carbohydrate metabolism
Week 15	27	Introduction to glycomics/metabolomics
	28	Examples of human disease states and therapeutic agents relevant to the processes discussed in modules 23-27
Week 16	--	**Exam IV** (material from modules 24-29)

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 20% 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.

Students will be assigned a grade for the in-class discussions based on attendance and participation. The grading scale will be as follows:

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
- 5 points: Critical thinking as reflected in presentation of figures, and in discussion

The journal club portion of the course will comprise 15% of the final grade in the course.

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 6-10-page draft of the written assignment is due on xxx by 5 pm; it can be submitted to the instructor by email. Edited drafts will be returned to the students by xxx. The revised and final version will be due on xxx 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 more) of these should be a review article (from a journal) or book chapter, but at least two 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 10-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; you will need more (or more reference sources) to reach the 10-page minimum.

> 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 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
- 1 point: 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.

- 4 points: Following the directions provided above; i.e., all the correct sections, references are in correct format, length is correct, references are appropriate
- 4 points: Writing mechanics; paper read easily and does not contain grammar/spelling errors
- 4 points: Introductory sections; good summary of background, introduction to key issues
- 4 points: Analysis of references; understands references and discusses key findings clearly; Depth of analysis is at the graduate level
- 4 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

Student Conduct Code and Standards of Professionalism

The WSU Standards of Conduct for Students (Student Conduct Code) is in the WSU Spokane 2010-2011 Student Handbook, and also at www.conduct.wsu.edu/default.asp?PageID=338 *(Chapter 504-26 WAC)*. Any violation of the Student Conduct Code is a disciplinary issue and is within the jurisdiction of the Office of Student Conduct. As such, the Conduct officers or Conduct Board make decisions on sanctions for violations of the code.

With respect to conduct that violates the program's standards of professionalism (see below), the decision to place students on probation or dismiss them from the NEP BS degree shall be made by the Program Director, in consultation with NEP faculty. A student will be notified in writing if he or she has been placed on probationary status or dismissed and will be provided an opportunity to appeal the decision (see below).

Voluntary Student Resignation

1. *Resignation:* If it becomes necessary to resign, the student will submit a signed letter of resignation to the Program Director. Refer to the guidelines as outlined in the WSU Spokane Student Handbook.
2. *Reapplication*: Students who are dismissed may not reapply for admission to the NEP BS degree. Students who resign for personal reasons may reapply and be considered on an equal basis with new applicants.

Grievance Procedures

Appeal procedures for students who have been sanctioned under the WSU Student Conduct Code are set forth in the Student Conduct Code, WAC 504-26-407 found at http://apps.leg.wa.gov/WAC/default.aspx?cite=504-26-407.

If a student is placed on probation or dismissed from the NEP BS degree for academic reasons, including violation(s) of the standards of professionalism, the student may appeal the written decision of the Director to the Dean within twenty (20) business days in accordance with the Academic Complaint Procedures (Regulation 104) set forth in the WSU Spokane Student Handbook.

It is the responsibility of students and faculty to promote academic integrity and intellectual honesty. All assignments should demonstrate independent effort and thought unless otherwise instructed. Evidence of cheating, copying of homework, working as a group on an independent assignment, plagiarism or not citing references properly will result in a conference with the instructor. The possible consequences of breaching academic integrity include the following: failing grade on the quiz or assignment, a full letter grade drop for the course, or a failing grade in the course. The student will also be referred immediately to the office of the Dean and/or the WSU Office of Student Conduct.

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, we encourage you to provide feedback as you 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

All students requesting reasonable accommodation must meet with the instructor prior to or during the first week of the course to review all proposed accommodations in relation to course content and requirements. Please note that written evaluations can be accommodated but performance evaluations are considered analogous to job skill performance, therefore expectations will not be adjusted.

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, please contact Liz West, Assistant Director of Student Affairs, in Academic Center 130 (liz.west@wsu.edu, 509-358-7534). Read more:
http://spokane.wsu.edu/students/current/StudentAffairs/disability/disabilityguidelines.html

Campus Safety

The WSU Campus Safety Plan, which can be found at http://safetyplan.wsu.edu, contains a comprehensive listing of university policies, procedures, statistics, and information relating to campus safety, emergency management, and the health and welfare of the campus community. Please visit this web site as well as the University emergency management web site at http://oem.wsu.edu/Emergencies to become familiar with the campus safety and emergency information provided. Everyone should also become familiar with the WSU ALERT site (http://alert.wsu.edu) where information about emergencies and other issues affecting WSU will be found. This site also provides information on the communication resources WSU will use to provide warning and notification during emergencies. It should be bookmarked on computers. **Finally, all faculty, staff, and students should go to the zzusis portal at http://zzusis.wsu.edu and register their emergency contact information for the Crisis Communication System (CCS).** Enter your network ID and password and you will be taken to the zzusis portal page. Look for the Pullman Emergency Information box on the left side of the page and click on Update Now to be taken to the registration page where you can enter your cell, landline, and email contact information as well as arrange for emergency text messages to be sent to your cell phone.