PROPOSAL TO EXTEND A WSU PULLMAN DEGREE PROGRAM TO NEW LOCATION(S) AND/OR THE GLOBAL CAMPUS

Send this completed proposal electronically to the OFFICE OF THE PROVOST (donnac@wsu.edu).

Degree Title:  
M.S. Pharmaceutical Sciences

Department(s) or Program(s):  
Pharmaceutical Sciences

College(s):  
Pharmacy

Degree will be Extended to (check all that apply):

X New Location(s)  
List location(s): Spokane (Riverpoint campus, WSU)

Global Campus

Other  
Explain____________________________________

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email:  gary.pollack@wsu.edu  phone: 509-358-6670

1. DESCRIPTION AND RATIONALE – briefly explain:
(a) Disciplinary focus of the degree program

The focus of the program will continue to be pharmaceutical sciences, which encompasses various basic science disciplines within pharmacy.

(b) Likely characteristics and career goals of students who will enroll.

Students will enter with a background in the biological and/or chemical sciences. Their career goals will be to conduct research in academia or in the biotechnology/pharmaceutical industries. Some will likely pursue science-related careers in government (e.g., regulatory or granting agencies). Current enrollment includes a mixture of in-state students, students from
elsewhere in the US, and international students. Students are accepted only into the PhD PharmSci program. The thesis MS is available as an option for students who do not complete their PhD requirements, for various reasons. These reasons have included changes in personal situation, departure of the student’s mentor from WSU, and decisions from the student’s dissertation committee that their progress toward the PhD is not satisfactory.

(c) Delivery Model

The curriculum (see Appendix I) will be delivered by didactic lectures in combination with seminars and in-class discussions. Research training will involve individual training of students in research settings under the supervision of their mentors, as is typical of graduate programs in the biomedical sciences. In summary, as of Spring 2014 the curriculum is delivered entirely from Spokane.

(d) Rationale for extending the degree to this location or medium

The College of Pharmacy was formerly split between the Pullman and Spokane campuses, with all graduate student training occurring on the Pullman campus. The college moved entirely to Spokane, effective January 2014. All of the research labs and faculty members are now located in Spokane. The offices and laboratories of most of the faculty members who participate as graduate faculty in the Pharmaceutical Sciences program are housed in the new Pharmaceutical and Biomedical Sciences Building. This building was specifically designed to include office space for graduate students, adjacent to and connected with their labs. Pharmacy occupies two of the three research floors in the building. The Spokane campus offers many advantages, including state-of-the-art research facilities, new research equipment, and opportunities for research collaboration with other investigators working in the area of human health. The proximity of major hospitals is another advantage for those doing translational work or performing studies using human subjects or specimens. The Office of Graduate Education for the College of Pharmacy is housed in Spokane and offers advising and staff support to the students. A very significant phase of faculty hiring is still underway, with several new tenure-track faculty members already in place, and more arriving in 2014. The ability of these individuals to serve as mentors for graduate students has been a key consideration in hiring. In summary, relocation of the MS PharmSci to the Riverpoint campus is necessary because the College of Pharmacy has moved to Spokane.

(e) Collaborative relationship, if any, with other educational partners.

Graduate courses for the Pharmaceutical Sciences graduate programs will be offered by faculty within the college. The increase in the number of faculty members within Pharmaceutical Sciences provides sufficient coverage for teaching of the existing graduate courses; new courses are under discussion.
2. PROJECTED NUMBER OF STUDENTS AND DEGREES

The College does not solicit or consider applications for the MS PharmSci degree. The degree program exists solely as an option for students, admitted to the PhD program, who subsequently decide to finish with a thesis-based MS degree. Based on the last few years, we anticipate approximately one MS graduate per year from this program.

3. NEEDS ASSESSMENT – Explain the rationale for estimates of student demand for each location and/or the Global Campus, and the employment outlook for students with this degree.

The employment outlook for students graduating with a MS in Pharmaceutical Sciences has always been strong. Graduates are prepared to do research in various fields in the basic biomedical sciences, facilitating their immediate employment in the biotechnology and pharmaceutical industries or in academic research. We also provide students with teaching experience that allows them to find rewarding jobs at all levels of academia.

4. CURRICULUM - explain and provide rationale for any differences between locations or the Global Campus in:

   (a) how university and departmental requirements are satisfied at each location/Global Campus,

      The curriculum will only be offered in one location (Spokane), so there will be no differences between locations.

   (b) the content of required courses at each location/Global Campus.

      Since there will be only one location, there is no difference in course content between locations.

5. STUDENT LEARNING OUTCOMES – Identify program learning outcomes, means of assessing outcomes, and process for using results to improve the program. (If the same as the existing program, insert those here.) Identify and justify any differences in learning outcomes or assessment between locations/Global Campus.

      The full statement of the existing learning outcomes for the PhD program is provided in Appendix III. An abbreviated version is provided below. Since MS students do not complete all of the steps in the PhD educational process, their abilities with respect to each of the stated outcomes is anticipated to be less than that of a PhD student. Nonetheless, students participate in training that is designed to achieve each of the outcomes. Successful completion of their MS dissertation provides evidence of their intermediate-level skills as researchers.

      The program objectives, followed by outcomes for each program objective, are:
A. To prepare graduates for careers as successful professionals in academia, industry, health care, and private institutions dedicated to the promotion of human health and wellness.

B. Achieve mastery of knowledge in the general field of Pharmaceutical Sciences or Nutrition and Exercise Physiology.

C. Develop the expertise to use appropriate methodologies to solve novel and emerging problems related to the fields of Pharmaceutical Sciences or Nutrition and Exercise Physiology.

D. Disseminate research findings to local, regional, national, and international audiences primarily through publication in peer-reviewed journals and presentations at conferences.

E. Participate in professional organizations, including becoming members, attending meetings, and taking leadership roles where appropriate.

F. Participate in teaching, internships, fellowships, workshops, credentialing and grant applications to enhance competitiveness for career opportunities as appropriate.

G. To prepare students to be effective and innovative researchers in the fields appropriate to either Pharmaceutical Sciences or Nutrition and Exercise Physiology.

H. Train students in critical, integrative, and evaluative thinking at the highest levels of rigor.

I. Develop advanced written and oral communication skills.

J. Become independent, self-motivated researchers with the ability to identify specific problems in their field of expertise and to formulate solutions to these problems.

K. Develop a comprehensive knowledge of previous and current research in their field of expertise and be able to demonstrate that knowledge capability in a review of the literature at a level that is potentially publishable.

L. Generate innovative questions within their field of expertise and pose hypotheses related to those questions.

M. Apply sound methodological approaches to test hypotheses related to specific research questions and describe the methods effectively.

N. Perform statistical analyses of research data and present the results in a way that clearly describes the data.

O. To enhance visibility of the College of Pharmacy doctoral programs nationally and internationally.

P. Attract and retain high-quality graduate students.

Q. Provide effective mentoring that encourages students to graduate in a timely manner.

R. Attract, retain, and support nationally- and internationally-recognized research-active faculty who contribute to College of Pharmacy Graduate Programs.
6. DIVERSITY -- Identify strategies for promoting diversity at each new location and/or Global Campus.

Currently, approximately 20% of the PhD PharmSci students identify as members of under-represented groups. We intend to expand the diversity of our student body. Strategies to further increase diversity were discussed in our application to extend the PhD PharmSci program to Spokane.

7. RESOURCE ASSESSMENT -- Identify basic resources needed to deliver program at each new location and/or Global Campus.

(a) Faculty and Staff – In order to extend this program, what is your faculty hiring plan at each location/Global Campus - both transitionally and long-term - for tenure-track, clinical and adjunct faculty, TAs, and staff?

As mentioned above, the college is in the process of recruiting additional tenure-track faculty members. This is being done to replace faculty members who have left or retired, and to build new research strength within the college. These new hires, most of which are investigators who already have extramural funding, are greatly augmenting the existing graduate program.

(b) Curriculum – What resources will be available to develop and maintain the necessary courses at each location/Global Campus?

Since the entire college has moved to Spokane, no additional resources are needed to maintain the courses. The revised curriculum is provided as Appendix IV.

8. FUNDING -- Describe the funding model for extending program to the proposed new location(s) and/or Global Campus.

(a) Describe and justify the budget requirements.

No new funds will be required to move the MS PharmSci program to Spokane. The Dean of the College of Pharmacy provides graduate stipends to PhD students for the first two years of their studies, with support coming from the mentor’s grants after that time. Students who switch to the MS are typically offered an assistantship for one additional semester while they complete their dissertation.

(b) Will the program be state-supported or self-supported (fee-based)?

The program will be state-supported through tuition.

(c) What tuition will be charged?

Standard graduate student tuition will be charged.
Appendix I. List of Graduate Faculty Participants, Pharmaceutical Sciences. (updated January 2014)

A. List of Pharmaceutical Sciences Graduate Faculty participants entitled to full rights and responsibilities of active Graduate Faculty membership:

Tenure-track faculty:
- Melissa Ahern, PhD
- Salah Ahmed, PhD (new faculty)
- Sayed Daoud, PhD
- William Fassett, PhD
- Mark Garrison, PharmD
- Mike Gibson, PhD (new faculty)
- E. Carolyn Johnson, PhD
- Philip Lazarus, PhD (new faculty)
- David Liu, PhD (new faculty)
- Susan Marsh, PhD
- Gary Meadows, PhD
- Kathryn Meier, PhD
- Josh Neumiller, PharmD
- Mary Paine, PhD (new faculty)
- Gary Pollack, PhD
- Gregory Poon, PhD
- Grant Trobridge, PhD
- Zhenjia Wang, PhD (new faculty)
- John White, PA-C, PharmD
- Jiyue Zhu, PhD (new faculty)

Non-tenure-track faculty:
- Janet Beary, PhD
- Gang Chen, PhD
- Laura Frank, MPH, PhD
- Judy Knuth, MS (co-chair, only)
- Susan Kynast-Gales, PhD
- Andrea Lazarus, PhD (new faculty)
- Jeannie Padowski, PhD
- Connie Remsberg, PharmD, PhD (new faculty)
- Sergei Tolmachev, PhD
- Shuwen Wang, PhD (new faculty)
- Lisa Woodard, PharmD, MPH
- Carol Wysham, MD
- Hui Zhang, PhD

B. The College of Pharmacy Associate Dean for Graduate Education is responsible for submitting an updated list of active College of Pharmacy Graduate Programs faculty participants to the Dean of the Graduate School for approval annually.
Appendix I. MS Pharmaceutical Sciences Curriculum

MASTER OF SCIENCE (M.S.) PHARMACEUTICAL SCIENCES CURRICULUM

Amended January 2014 to reflect courses available in or from Spokane, and to parallel the PhD curriculum.

Consult the Graduate School Policies & Procedures Manual for general requirements for the Ph.D. degree (http://www.gradschool.wsu.edu/currentstudents/PoliciesAndProcedures/)

Total required graded credits: 30
  Minimum 21 hrs graded course work
  Minimum 15 hrs graded course work at the 500 level
  Minimum 4 hrs 700-level course work in major; maximum of 9 hrs
  Maximum 6 hrs non-graduate 300- and 400-level course work
  Maximum 12 hrs 600-level special project/independent study

REQUIRED CORE COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PharmSci 577</td>
<td>Introduction to Research</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 578</td>
<td>Biomedical Statistics</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 597</td>
<td>Pharmaceutical Sciences/NEP Seminar (each semester)</td>
<td>1 credit (S/F)</td>
</tr>
<tr>
<td>PharmSci 600</td>
<td>Special Projects or Independent Research</td>
<td>Variable credit</td>
</tr>
<tr>
<td>PharmSci 800</td>
<td>Doctoral Research, Dissertation,</td>
<td>Variable credit</td>
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</table>

REQUIRED ELECTIVES (A MINIMUM OF 6 CREDITS FROM THE FOLLOWING):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HPA 519</td>
<td>Biostatistics &amp; Epidemiology for the Health Sciences</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 511</td>
<td>Topics in Toxicology</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 512</td>
<td>Topics in Pharmacology</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 555</td>
<td>General and Cellular Physiology</td>
<td>4 credits</td>
</tr>
<tr>
<td>PharmSci 572</td>
<td>Fundamentals of Oncology</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 573</td>
<td>Principles of Pharmacokinetics and Toxicokinetics</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 574</td>
<td>Advanced Pharmacokinetics and Pharmacodynamics</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 575</td>
<td>Receptor-ligand Interactions</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 576</td>
<td>Biophysical methods</td>
<td>3 credits</td>
</tr>
<tr>
<td>PharmSci 579</td>
<td>Advances in Pharmaceutical Sciences</td>
<td>3 credits</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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<tr>
<td>PharmSci 581</td>
<td>Stem Cell Biology, Therapeutics and Regenerative Medicine</td>
<td>3</td>
</tr>
<tr>
<td>PharmSci 530</td>
<td>Foundations of Cellular Regulation (currently NEP 510; re-numbered as PharmSci/NEP 530 for Fall 2014)</td>
<td>3</td>
</tr>
<tr>
<td>PharmSci xxx</td>
<td>Scientific Writing (formerly P/T 543; request for restoration, additional credit, and new course number is in preparation)</td>
<td>2</td>
</tr>
<tr>
<td>PharmSci xxx</td>
<td>Human Genetics and Advanced Biochemistry (request for new course is in preparation)</td>
<td>3</td>
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</table>

**APPROVED OTHER SUGGESTED ELECTIVES:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MBioS 503</td>
<td>Molecular Biology 1 (online)</td>
<td>3</td>
</tr>
<tr>
<td>MBioS 504</td>
<td>Molecular Biology 2 (online)</td>
<td>3</td>
</tr>
<tr>
<td>MBioS 513</td>
<td>General Biochemistry (online)</td>
<td>3</td>
</tr>
<tr>
<td>MBioS 514</td>
<td>General Biochemistry 2 (online)</td>
<td>3</td>
</tr>
<tr>
<td>MBioS 574</td>
<td>Protein Biotechnology (online)</td>
<td>3</td>
</tr>
<tr>
<td>MBioS 578</td>
<td>Bioinformatics (online)</td>
<td>3</td>
</tr>
<tr>
<td>Neuro 520</td>
<td>Fundamentals of Neuroscience (Spokane)</td>
<td>4</td>
</tr>
<tr>
<td>Phil 530</td>
<td>Bioethics (Spokane)</td>
<td>2</td>
</tr>
</tbody>
</table>

**Transfer Courses**

Course transferred from another institution must be approved by the students advisor, Associate Dean for Graduate Education and the Graduate School. **Variable credit**

*Please note that courses from either the “required elective” or “other elective” list can be taken to reach the minimum number of 15 graded credits at the 500-level, or 21 total graded credits.*
Appendix II. Learning Outcomes and Assessment

List of Sections

Section I: Outcomes and Assessment Plan – Pharmaceutical Sciences Graduate Program
Section II: Evaluation Rubric, Preliminary Exam
Section III: Evaluation Rubric, Dissertation and Final Defense
Section IV: PHARS/NEP 597 Presentation Rubric and Participation Rubric
Section V: PHARS/NEP 597 Participation Rubric
Section VI: Research Rotation Review Form
SECTION I

COLLEGE OF PHARMACY GRADUATE PROGRAMS
ASSESSMENT PLAN

PROGRAM TITLE  Graduate Program in Pharmaceutical Sciences

GRADUATE PROGRAMS OBJECTIVES AND OUTCOMES

The Objectives of the College of Pharmacy Graduate Programs are:

A. To prepare graduates for careers as successful professionals in academia, industry, health care, and private institutions dedicated to the promotion of human health and wellness.

B. To prepare students to be effective and innovative researchers in the fields appropriate to either Pharmaceutical Sciences or Nutrition and Exercise Physiology.

C. To enhance visibility of the College of Pharmacy doctoral programs nationally and internationally.

The outcomes for each of the stated program objectives are:

A. To prepare graduates for careers as successful professionals in academia, industry, health care, and private institutions dedicated to the promotion of human health and wellness.

1. Achieve mastery of knowledge in the general field of Pharmaceutical Sciences or Nutrition and Exercise Physiology.

2. Develop the expertise to use appropriate methodologies to solve novel and emerging problems related to the fields of Pharmaceutical Sciences or Nutrition and Exercise Physiology.

3. Disseminate research findings to local, regional, national, and international audiences primarily through publication in peer-reviewed journals and presentations at conferences.

4. Participate in professional organizations, including becoming members, attending meetings, and taking leadership roles where appropriate.

5. Participate in teaching, internships, fellowships, workshops, credentialing and grant applications to enhance competitiveness for career opportunities as appropriate.

B. To prepare students to be effective and innovative researchers in the fields appropriate to either Pharmaceutical Sciences or Nutrition and Exercise Physiology.
1. Train students in critical, integrative, and evaluative thinking at the highest levels of rigor.
2. Develop advanced written and oral communication skills.
3. Become independent, self-motivated researchers with the ability to identify specific problems in their field of expertise and to formulate solutions to these problems.
4. Develop a comprehensive knowledge of previous and current research in their field of expertise and be able to demonstrate that knowledge capability in a review of the literature at a level that is potentially publishable.
5. Generate innovative questions within their field of expertise and pose hypotheses related to those questions.
6. Apply sound methodological approaches to test hypotheses related to specific research questions and describe the methods effectively.
7. Perform statistical analyses of research data and present the results in a way that clearly describes the data.

C. To enhance visibility of the College of Pharmacy doctoral programs nationally and internationally.

1. Attract and retain high-quality graduate students.
2. Provide effective mentoring that encourages students to graduate in a timely manner.
3. Attract, retain, and support nationally- and internationally-recognized research-active faculty who contribute to College of Pharmacy Graduate Programs.
## OUTCOMES ASSESSMENT MAP

**Objective A:** To prepare graduates for careers as successful professionals in academia, industry, health care, and private institutions dedicated to the promotion of human health and wellness.

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>DATA</th>
<th>SOURCE</th>
<th>WHEN COLLECTED</th>
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<tbody>
<tr>
<td>A-1. Achieve mastery of knowledge in the general field of Pharmaceutical Sciences or Nutrition and Exercise Physiology</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam</td>
<td>Faculty members on student's Advisory Committee</td>
<td>Timing of exams depends on student's course of study and progress</td>
</tr>
<tr>
<td>A-2. Develop the expertise to use appropriate methodologies to solve novel and emerging problems related to the fields of Pharmaceutical Sciences or Nutrition and Exercise Physiology</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam; Annual Review (Data gathered from submitted Curriculum Vitae)</td>
<td>Student's Advisor, Faculty members on student's Advisory Committee, and other Graduate Program Faculty</td>
<td>Timing of exams depends on student's course of study and progress; CV updated annually</td>
</tr>
<tr>
<td>A-3. Disseminate research findings to local, regional, national, and international audiences primarily through publication in peer-reviewed journals and presentations at conferences</td>
<td>Annual Review (Data gathered from submitted Curriculum Vitae)</td>
<td>Submitted by Students</td>
<td>Annually</td>
</tr>
<tr>
<td>A-4. Participate in professional organizations, including becoming members, attending meetings, and taking leadership roles where appropriate</td>
<td>Annual Review (Data gathered from submitted Curriculum Vitae)</td>
<td>Submitted by Students</td>
<td>Annually</td>
</tr>
<tr>
<td>A-5. Participate in teaching, internships, fellowships, workshops, credentialing and grant applications to enhance competitiveness for career opportunities as appropriate</td>
<td>Annual Review (Data gathered from submitted Curriculum Vitae)</td>
<td>Submitted by Students</td>
<td>Annually</td>
</tr>
</tbody>
</table>
**Objective B:** To prepare students to be effective and innovative researchers in the fields appropriate to either Pharmaceutical Sciences or Nutrition and Exercise Physiology.

<table>
<thead>
<tr>
<th>OUTCOME</th>
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<th>WHEN COLLECTED</th>
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<tbody>
<tr>
<td>B-1. Train students in critical, integrative, and evaluative thinking at the highest levels of rigor</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam; PharmSci/NEP 597 Seminar</td>
<td>Faculty members on student's Advisory Committee</td>
<td>Timing of exams depends on student's course of study and progress</td>
</tr>
<tr>
<td>B-2. Develop advanced written and oral communication skills</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam; PharmSci/NEP 597 Seminar</td>
<td>Faculty members on student's Advisory Committee</td>
<td>Timing of exams depends on student's course of study and progress</td>
</tr>
<tr>
<td>B-3. Become independent, self-motivated researchers with the ability to identify specific problems in their field of expertise and to formulate solutions to these problems</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam; Annual Review (Data gathered from CV submitted for the Annual Review)</td>
<td>Student's Advisor, Graduate Program Director</td>
<td>Annually</td>
</tr>
<tr>
<td>B-4. Develop a comprehensive knowledge of previous and current research in their field of expertise and be able to demonstrate that knowledge capability in a review of the literature at a level that is potentially publishable</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam; Annual Review (Data gathered from CV submitted for the Annual Review)</td>
<td>Student's Advisor, Graduate Program Director</td>
<td>Annually</td>
</tr>
<tr>
<td>B-5. Generate innovative questions within their field of expertise and pose hypotheses related to those questions</td>
<td>Rubric to be filled out at student's Preliminary Exam and Final Exam; Annual Review (Data gathered from CV submitted for the Annual Review)</td>
<td>Faculty members on student's Advisory Committee</td>
<td>Timing of exams depends on student's course of study and progress; one seminar presentation each semester</td>
</tr>
</tbody>
</table>
B-6. Apply sound methodological approaches to test hypotheses related to specific research questions and describe the methods effectively

Rubric to be filled out at student's Preliminary Exam and Final Exam; PharmSci/NEP 597 Seminar

Faculty members on student's Advisory Committee; Course instructor

Timing of exams depends on student's course of study and progress; one seminar presentation each semester

B-7. Perform statistical analyses of research data and present the results in a way that clearly describes the data

Rubric to be filled out at student's Preliminary Exam and Final Exam; Successful Completion of Statistics Course PharmSci/NEP 578

Faculty members on student's Advisory Committee; Course instructor

Timing of exams depends on student's course of study and progress

**Objective C:** To enhance visibility of the College of Pharmacy doctoral programs nationally and internationally.

<table>
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<tr>
<th>OUTCOME</th>
<th>DATA</th>
<th>SOURCE</th>
<th>WHEN COLLECTED</th>
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</thead>
<tbody>
<tr>
<td>C-1. Attract and retain high-quality graduate students</td>
<td>Highest GPA/GRE scores; lab experience; letters of recommendations; students' acceptance rate; Retention- number of fellowships and grants received</td>
<td>Submitted by applicants</td>
<td>Submitted through the application process</td>
</tr>
<tr>
<td>C-2. Provide effective mentoring that encourages students to graduate in a timely manner</td>
<td>Annual Review; Continuous evaluation of progress; number of committee meetings</td>
<td>Faculty, Advisory Committee, Graduate Program Director</td>
<td>Annually; ongoing</td>
</tr>
<tr>
<td>C-3. Attract, retain, and support nationally- and internationally-recognized research-active faculty who contribute to College of Pharmacy Graduate Programs</td>
<td>Faculty Activity reports (research grants, publications); Annual Review; number of matriculated graduate students</td>
<td>Submitted by faculty, reviewed by Director of Graduate Program and Associate Dean for Graduate Education and Scholarship</td>
<td>Annually</td>
</tr>
</tbody>
</table>
Summary: Data to be collected

- Rubric to be filled out at student's Preliminary Exam
- Rubric to be filled out at student's Final Exam
- Student Curriculum Vitae to be updated every year and submitted for the Annual Review including items related to professional development such as:
  - Membership in Scientific organizations, professional and scholarly societies;
  - Certificates and Licensure;
  - Awards, fellowships, scholarships and honors;
  - Leadership and outreach activities;
  - Participation in special trainings and workshops;
  - Conferences attended;
  - Oral presentations, Posters and abstracts;
  - Publications
- Presentation and Participation Rubrics to be filled out by the instructor of PharmSci/NEP 597 seminar
- Rubric to be filled out by the instructor of PharmSci/NEP 578 Statistics course
- Application statistics (number of applicants, percentage of applicants accepted, percentage of accepted candidates matriculating)
- GRE scores and GPAs of admitted students; laboratory experience listed; letters of recommendations
- Number of fellowships and grants received
- Annual Review documents (measures progress towards degree)
- Exit interview data.

Summary: When data are to be collected

Data to be collected individually for each student when available:

- Rubric to be filled out by each committee member at student’s preliminary exam
- Rubric to be filled out by each committee member at student’s final exam
- Rubric to be filled out by the instructor of PharmSci/NEP 578 Biomedical Statistics course (to be created)
- Rubric to be filled out by each committee member at student’s committee meeting (to be created)

Data to be collected each semester

- Presentation and Participation Rubrics to be filled out by the instructor(s) of PharmSci/NEP 597 seminar

Data to be collected annually

Student Progression

- Student Curriculum Vitae to be updated every year and submitted for the Annual Review including items related to professional development such as:
  - Membership in Scientific, professional and scholarly societies; Certificates and Licensure; Awards, fellowships, scholarships and honors; Leadership and outreach activities; Participation in special trainings and workshops; Conferences
attended; Oral presentations, posters and abstracts; Publications; Number of fellowships and grants received

Programmatic
- Application statistics (number of applicants, percentage of applicants accepted, percentage of accepted candidates matriculating)
- GRE scores and GPAs of admitted students; Laboratory experience listed; letters of recommendations
- Faculty Activity Reports (research, grants, publications)
- Faculty Annual Review documents
- Number of matriculated graduate students

ADMISSIONS PROCESS & STATISTICS – C1
Admissions Criteria to the Ph.D. program in Pharmaceutical Sciences include:
- Bachelors degree in related discipline
- Cumulative GPA > 3.0
- GRE scores
- Completion of an organ physiology/mammalian physiology course (300-level or higher)
- Completion of an undergraduate course in biochemistry is preferred
- Research experience is preferred but not essential
- Three letters of recommendation indicating the applicants’ capacity for critical thinking, research or academic experience and the potential for success in graduate studies

These basic criteria are used in the initial screening of applicants, who are then scored on a scale from 1-5 with 5 being the best regarding experience, reference letters, goal statement, GPA, and GRE. The score is used to determine if applicants will be further pursued.

Metrics to be measured:
- Quality of Applicants to the Pharmaceutical Sciences Graduate Program
- Gender Ratios of Graduate students

MENTORSHIP OF THE GRADUATE STUDENTS – OUTCOME C2
PharmSci graduate students are required to take PHARMSCI/NEP 597 Pharmaceutical Sciences/NEP Seminar and present a seminar once a year. The seminar emphasizes critical thinking and oral communication skills, and requires students to communicate science at a level that is appropriate to the audience, which has a diverse background. NEP students participate in the same seminar with the PharmSci students.

Professional presentation skills are also emphasized. Evaluation of these skills is
achieved by a rubric included; this rubric will be implemented into the program for 2012-2013 academic year.

Both written and oral communication skills are developed and assessed through required coursework in addition to the preliminary and final exams; the rubrics for the exams are included.

EVALUATION OF STUDENT PROGRESS – OUTCOME C2

All students enrolled in the PharmSci Graduate Program must complete a written review in conjunction with their major Research Advisor/Mentor and also submit a current CV at the conclusion of the academic year. The written review includes the student’s cumulative GPA, a statement reflecting on their research progress, a plan for the next academic year, the advisor’s assessment of the student’s progress and recommendations for improvement, if necessary, and a self-reflection on TA performance where applicable. Faculty that have supervised TAs in their classes also submit a separate written evaluation of the student’s performance.

QUALITY OF GRADUATES – OUTCOMES A & B

All students graduating from the Pharmaceutical Sciences Graduate Program must complete dissertation and final defence as well as submit a Curriculum Vitae.

Data gathered from student's Curriculum Vitae will include:
- Membership in Scientific organizations, professional and scholarly societies;
- Certificates and Licensure;
- Awards, fellowships, scholarships and honors;
- Leadership and outreach activities;
- Participation in special trainings and workshops;
- Conferences attended;
- Oral presentations, Posters and abstracts;
- Number of fellowships and grants received
- Publications
# SECTION II

COLLEGE OF PHARMACY GRADUATE PROGRAM
Evaluation Rubric: Preliminary Exam

Doctoral candidate: ___________________________  Date: ______________

Committee member: ___________________________

<table>
<thead>
<tr>
<th></th>
<th>Weak</th>
<th>Needs Improvement</th>
<th>Competent</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates mastery of knowledge in the field of study</td>
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<tr>
<td>States the research problem in such a way that it clearly fits</td>
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<td>within the context of the literature in an area of study</td>
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<tr>
<td>Demonstrates the potential value of the solution to the</td>
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<tr>
<td>research problem in advancing knowledge within the area of</td>
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<tr>
<td>study</td>
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<tr>
<td>Provides a sound plan for applying appropriate research</td>
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<tr>
<td>methods/tools to solving research problem and shows a good</td>
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<tr>
<td>understanding of how to use methods/tools effectively</td>
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<tr>
<td>Provides a sound plan for analyzing and interpreting research</td>
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<tr>
<td>data</td>
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<tr>
<td>Communicates research proposal clearly and professionally in</td>
<td></td>
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<tr>
<td>both written and oral forms</td>
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<tr>
<td>Demonstrates capability for independent research in the area</td>
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<tr>
<td>of study and the ability to make an original contribution to</td>
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<td></td>
<td></td>
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<tr>
<td>the field</td>
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</tbody>
</table>

Comments: ________________________________________________________

_________________________________________________________________
SECTION III
COLLEGE OF PHARMACY GRADUATE PROGRAM
Evaluation Rubric: Dissertation and Final Defense

Doctoral candidate: ___________________________  Date: _______________

Committee member: ___________________________

<table>
<thead>
<tr>
<th></th>
<th>Weak</th>
<th>Competent</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates mastery of knowledge and a high level of expertise in the field of study</td>
<td></td>
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<tr>
<td>Reviews the literature in a way that demonstrates comprehensive knowledge of previous and current research in the field of study</td>
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<td></td>
</tr>
<tr>
<td>States the research problem in such a way that it clearly fits within the context of the literature in an area of study</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates the potential value of the solution to the research problem in advancing knowledge within the area of study</td>
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<tr>
<td>Applies sound and appropriate research methods/tools to problems in an area of study and describes the methods/tools effectively</td>
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<tr>
<td>Performs appropriate statistical analyses of research data and presents the results in a way that makes clear sense of the data</td>
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<tr>
<td>Communicates research clearly and professionally in both written and oral forms</td>
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<tr>
<td>Has demonstrated capability for independent research in the area of study and is making an original contribution to the field</td>
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</tbody>
</table>

Comments: ________________________________________________________

_________________________________________________________________

_________________________________________________________________
<table>
<thead>
<tr>
<th>SECTION IV: PHARMDSCI 597 Presentation Rubric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject knowledge (45 pts)</strong></td>
</tr>
<tr>
<td>Excellent summary of literature and main points; demonstrates comprehension of subject area; evidence of additional reading. (41-45 pts)</td>
</tr>
<tr>
<td><strong>Critical analysis (30 pts)</strong></td>
</tr>
<tr>
<td>Excellent critical analysis; evidence of reflection and insight; conclusions supported by evidence. (27-30 pts)</td>
</tr>
<tr>
<td><strong>Organization (10 pts)</strong></td>
</tr>
<tr>
<td>Information clearly and logically presented; remains focused. Makes full, effective use of time. (9-10 pts)</td>
</tr>
<tr>
<td><strong>Communication (10 pts)</strong></td>
</tr>
<tr>
<td>Effectively communicates information. Content and/or style are appropriate and targeted to audience and context. (9-10 pts)</td>
</tr>
<tr>
<td><strong>Visual aids (5 pts)</strong></td>
</tr>
<tr>
<td>Slides clearly and logically designed; important information clearly visible in text and/or graphic format. (5 pts)</td>
</tr>
</tbody>
</table>

Total (out of 100 points): ___________________________
# SECTION V

**PHARS/NEP 597 Participation Rubric**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Attendance/</td>
<td>Student is always prompt and regularly</td>
<td>Student regularly attends classes but is</td>
<td>Student regularly attends classes but is</td>
<td>Student has poor attendance and is usually</td>
</tr>
<tr>
<td>promptness</td>
<td>attends classes.</td>
<td>occasionally late.</td>
<td>often late.</td>
<td>late.</td>
</tr>
<tr>
<td>**Level of</td>
<td>Student always contributes to class by</td>
<td>Student often contributes to class by</td>
<td>Student rarely contributes to class by</td>
<td>Student never contributes to class by</td>
</tr>
<tr>
<td>engagement</td>
<td>offering ideas and asking questions.</td>
<td>offering ideas and asking questions.</td>
<td>offering ideas and asking questions.</td>
<td>offering ideas and asking questions.</td>
</tr>
<tr>
<td>in class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Preparation</strong></td>
<td>Student is always prepared for class.</td>
<td>Student is usually prepared for class.</td>
<td>Student is rarely prepared for class.</td>
<td>Student is never prepared for class.</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
SECTION VI

Graduate Student Research Rotation Review Form

Graduate Students: Please complete sections A and B, and then give this form to your Rotation Advisor to complete Section C. Once your Rotation Advisor has completed Section C, make sure the form is signed and dated by both you and your Rotation Advisor. This form must be returned to the Graduate Programs Coordinator within two weeks of completing the Rotation.

Section A

Graduate Student: __________________________ Student ID#: __________________________
( Student Name) (WSU SID#)

Rotation Advisor: __________________________ Rotation #:
First Rotation
(Advisor Name) Second Rotation
(Advisor Name) Third Rotation

Section B

Please describe your Research Rotation experience, and share this reflection with your Rotation Advisor before s/he begins Section C. Common items to comment on are attendance in research meetings, literature readings, techniques learned, hours devoted to the research rotation, and results obtained and their significance (or lack thereof). You may use the space below, and/or attach a separate, signed, document.
Rotation Advisors: Please complete Section C, and then return this signed and dated form to the Graduate Student. This form must be returned to the Graduate Programs Coordinator within two weeks of completing the Rotation.

Section C

1. Graduate Student Research Rotation Evaluation:

<table>
<thead>
<tr>
<th>Passing</th>
<th>Failing</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Excellent</td>
<td>□ Unsatisfactory</td>
</tr>
<tr>
<td>□ Satisfactory</td>
<td></td>
</tr>
<tr>
<td>□ Needs Improvement</td>
<td></td>
</tr>
</tbody>
</table>

2. Please comment on the Graduate Student’s research potential, demonstrated responsibility, initiative to learn, dedication to his/her research, and your written assessment of their performance overall. If applicable, please provide an evaluation of the Graduate Student’s research presentation. Please use the space below, and/or attach an additional signed and dated document.

By signing, the Graduate Student and Rotation Advisor each agree that they have read and discussed the contents of this Graduate Student Research Rotation Review Form with each other.

Graduate Student Signature: ________________________________  Date: ________________________________

Rotation Advisor Signature: ________________________________  Date: ________________________________