GRADUATE STUDENT HANDBOOK

2017-2018

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Pharmaceutical and Pharmacological Sciences Graduate Program

(updated August 2017)

http://pharmacy.hsc.wvu.edu/Pages/

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SECTION I - PROGRAM OVERVIEW

The Pharmaceutical & Pharmacological Sciences (PPS) Graduate Program is one of the Ph.D. degree–granting programs in Biomedical Sciences at the WVU Health Sciences Center (HSC). It is housed in the School of Pharmacy and associated with the Department of Pharmaceutical Sciences, although participating faculty may come from different units or institutions. The program is headed by a graduate program director, who is a faculty member in the Department of Pharmaceutical Sciences. The graduate faculty consists of mentors in scientific disciplines from the West Virginia University (WVU) Health Sciences Center (HSC) and other WVU campuses, as well as the U.S. Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (CDC/NIOSH). The list of current mentors is available at the HSC Office of Research and Graduate Programs website (http://www.hsc.wvu.edu/media/7533/graduate-faculty-membership.pdf)

Program Mission

The Pharmaceutical & Pharmacological Sciences Graduate Program is committed to improving the health and well-being of West Virginians and society at large by conducting innovative research that advances scientific knowledge, pharmacy practice, and by educating students and practitioners.

Program Goals

1) To educate and train highly qualified individuals to pursue independent research in specialized fields in interdisciplinary teams, and to function and contribute as a member of a research team.

2) To prepare competent scientists able to contribute to health-related research, industrial research and development, pharmaceutical education, and scholarship.

3) To advance research in pharmaceutical and pharmacological sciences, health care, and education.

4) To provide leadership for the pharmacy profession in research and graduate education.

Program Objectives

Graduate education is designed to prepare students to become independent researchers. Students will develop competencies in the scientific research process through didactic studies and conceptualizing, designing, conducting, and reporting original research.

Didactic Studies

1) To learn basic and applied principles in specific disciplines and related fields in order to develop a broad background of knowledge.
2) To develop research skills including scientific communication and critical thinking/problem solving ability by participating in seminars, journal clubs, and designated research skill courses.

Research Training

1) To gain hands-on experience in conducting original research, including acquisition of background information (e.g. literature research), experimental design and experimentation, data analyses, and dissemination of findings.
2) To develop research communication skills by writing abstracts for research presentations, manuscripts for publication, research grant proposals, and a thesis or dissertation.
3) To gain additional insight into research and scholarship by participating in scholarly exchanges with faculty and students in the WVU School of Pharmacy, the Health Sciences Center (HSC), and the West Virginia University community.

SECTION II – PROGRAM DESCRIPTION

A. Research Areas

The Pharmaceutical and Pharmacological Sciences (PPS) Graduate program at West Virginia University is an interdisciplinary program that prepares students for a future in a variety of employment settings, ranging from academic research and industry to federal positions. Our students have a unique and rich training environment, which gives them a basis in such pharmaceutical sciences disciplines as drug development and discovery, pharmaceutics, pharmacology, toxicology, therapeutic development and regulatory affairs. Students can take additional graduate courses in drug delivery systems, drug metabolism, molecular modeling, bench to bedside and biotechnology.

The core areas of Ph.D. training in Pharmaceutical and Pharmacological Sciences are: 1) pharmacology and therapeutic development, 2) drug delivery, and 3) drug discovery and biotechnology. The students are mentored by experts with international reputation and publish in prestigious journals. They also have opportunities to present their research at national and international scientific meetings and to enroll in internships with pharmaceutical or biotech companies.

B. Entry to the PPS graduate program

Students enter the Pharmaceutical and Pharmacological Sciences program through the graduate program in the Biomedical Sciences, which is an undifferentiated gateway into the seven biomedical degree-granting programs at WVU. Following successful completion of the common core curriculum, qualified students may transfer into the graduate program in Pharmaceutical and Pharmacological Sciences to complete their PhD.

Admission is competitive and we receive many more applications than we have positions available. Upper level coursework in the sciences, math, and/or engineering is strongly recommended. Competitive applicants have STEM GPAs of 3.5 or higher, GRE scores greater than 300, and a strong record of research experiences. Applications are reviewed holistically; we consider the applicants ability to be successful in our curriculum and as a future scientist. For more information see: http://www.hsc.wvu.edu/resoff/graduate-education/phd-programs/biomedical-sciences/prospective-students/application-requirements-of-all-applicants.

A graduate student is classified by the WVU graduate catalog as full-time if enrolled for at least nine (9) credit hours in Fall and Spring semesters and at least six (6) credit hours for Summer. (http://catalog.wvu.edu/graduate/)

Residency Requirement

WVU requires a minimum of one (1) year in residence in full-time graduate study. Students in the Graduate Program in Pharmaceutical & Pharmacological Sciences are generally expected to complete their training in-house. In some instances, an individual student or graduate committee may propose a short-term off-site experience (e.g. internship with a pharmaceutical or biotechnology company) or an alternative plan by which the student may gain an equivalent educational experience. (http://catalog.wvu.edu/graduate/)

SECTION III - FINANCIAL ASSISTANCE

A. Graduate Assistantships

Most of the Ph.D. students in the Graduate Program in Pharmaceutical & Pharmacological Sciences receive financial support during their training, provided that they remain in good academic standing. Financial support is offered to graduate students in the form of graduate assistantships. This support includes an annual stipend, full tuition waiver, and health insurance. Certain university fees are not included in the graduate student financial package and payment of these fees are the responsibility of the student. These assistantships are intended to provide financial support to graduate students to allow them to devote full attention to their graduate studies.

Ph.D. students may be eligible for other forms of financial aid, including scholarships, fellowships, and loans. Contact the WVU Financial Aid Office for information. (http://catalog.wvu.edu/graduate/financialaid/#graduatetext)

In general, students receive their assistantship awards from the University for two years. After that, they are typically funded through research or training grants. It is the policy of WVU that a graduate student may hold no more than one graduate assistantship.

If a student wishes to seek outside employment, approval must be obtained by the student's mentor and the graduate program director.

B. Fellowships

Students may receive fellowships or scholarships from extramural sources through competitive applications. In accepting these, they are bound by provisions stipulated by the granting agencies and by the University policy on financial assistance and graduate education. Recipients of fellowships or scholarships may request and perform teaching related assignments, in addition to their research and didactic training, to further their educational goals. Should the fellowship amount not reach the regular stipend, supplements are available from the mentor's grants or institutional sources as allowed.

SECTION IV – PROGRAM REQUIREMENTS, GENERAL

A. Required Didactic Course Work

Prior to submission of the thesis or dissertation, the student must complete the following didactic course core requirements for their respective pathways. Students may request credit for these courses if completed at other institutions; however, it is the student's responsibility to obtain the necessary and official documents to demonstrate course equivalency. Course equivalency will be determined by the student's graduate committee, and must be approved by the ADRGP and Assistant Vice President for Graduate Education of the HSC. This must be completed no later than when the student's plan of study is submitted.

In the first year of graduate study, all Pharmaceutical and Pharmacological Sciences students take the undifferentiated biomedical sciences core curriculum. The remainder of the student's Plan of Study is designed with guidance from the student's advisor and graduate committee.

Credit hours

Currently, the number of credit hrs. for the fall and spring semesters is 9-17 and summer is 6 credit hrs. Approval is needed if a graduate student takes more than 17 hours in a semester.

Major Requirements

Course		credit hours
BMS 700	Scientific Integrity	2
BMS 702	Biomedical Lab Experience	2
BMS 706	Cellular Methods	1
BMS 707	Experiential Learning for Biomedical Trainees	2
BMS 720	Scientific Writing	2
BMS 747	Foundations for Contemporary Biomedical Research I	4
BMS 777	Foundations for Contemporary Biomedical Research 2	4
PHAR 779	Drugs: Bench to Market	3
Graduate Seminar:		7
PHAR 796	Graduate Seminar	
Research		45
PHAR 797	Research	
Journal Clubs (Select from the following)		7
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
PHAR 787	Drug Discovery and Development	
Advanced Courses/Electives		9
BIOC 791	Advanced Topics	

CHEM 514	Mass Spectrometry Principles and Practices
CHEM 531	Advanced Organic Chemistry 1
PHAR 780	Introduction to Molecular Modeling
PHAR 781	Drug Metabolism
PHAR 801	Drug Delivery
PHAR 812	Drug Chemistry and Biotechnology
PHAR 813	Biopharmaceutics and Pharmacogenomics
PHAR 814	Biochemical Pharmacology

Qualifying Exams
Dissertation Proposal Defense
Dissertation Defense

Total Hours **88**

Courses required in the Pharmaceutical and Pharmacological Sciences program include:
- PHAR779: Drugs: Bench to Market
- at least three more advanced courses of choice

B. Seminar Programs

Graduate Seminar

All regular students are required to participate in the graduate seminar program. Each semester, students are expected to register for, attend, and actively participate in all scheduled presentations. In addition, students will present in the seminar program each semester, beginning in their first semester in the program. Seminar courses will be graded as Pass (P) or Fail (F) by the seminar coordinator.

Journal Clubs

The PPS graduate program has several discipline-oriented journal clubs, as well as discussion groups. Graduate students are required to register and actively participate in a journal club of their choice. Additionally, students who have chosen a major advisor may participate in various discussion groups as recommended by their advisor. It is suggested that students who have yet to select a major advisor participate in discussion groups conducted in an area of potential research interest to them. Course requirements and grading policies will vary with each course.

Other Health Sciences Center Seminar Programs

In order for students to fully appreciate the multi-disciplinary nature of biomedical sciences research, students are encouraged to attend seminars offered in the HSC and WVU, as their schedules allow.

C. Teaching Experience Requirement

All graduate students in the Pharmaceutical and Pharmacological Sciences are required to have completed a teaching experience prior to graduation. Mentors are responsible for arranging teaching experiences to meet this requirement in consultation with the student's thesis or dissertation committee and the program director. This requirement needs to be fulfilled before graduation.

D. Doctoral Research

The dissertation advisor is the student's sole advisor in the graduate program. Most of the student's time in the graduate program will be devoted to conducting their dissertation research. Students register for research credits each semester as Phar 797, and their performance is graded satisfactory or unsatisfactory by their dissertation advisor. The SOP Research Evaluation Form for Phar 797 completed by the mentor is the basis for the grade entered by the course coordinator. Students are expected to make progress on their research while engaging in course work, journal club, teaching, and seminar attendance.

E. Advisor Selection and Graduate Committee Appointment

Selection of Advisor

Pharmaceutical and Pharmacological Sciences students complete research rotations in their first year with faculty on the approved mentor list. Choice of advisor is coordinated through the HSC undifferentiated program, and it should be made by the end of the Fall semester of Year 1 or during the Spring semester. For more details, see the HSC Graduate Handbook: http://www.hsc.wvu.edu/resoff/graduate-education/phd-programs/biomedical-sciences/1st-year-handbook/#Dissertation.

Change of Major Advisor

In exceptional cases, a student may request a change of research advisor. It is the student's responsibility to notify and provide justification to the program director for this request. Subsequent to meeting with the student and the student's current major advisor, the program director and the GRAC will formulate options for the student. A change in the major advisor may result in a change in the source of stipend support.

Graduate Committee Selection and Approval

Prior to the end of the Fall semester of Year 2 in the program, the student, under the direction of the research advisor, should have completed the process of selecting members of their dissertation graduate committee. The composition of this committee is very important and students are advised to work with their major advisor in giving considerable deliberation to

graduate committee member selection. These members will approve the formal Plan of Study, including the proposed research project, and serve as the final examining committee. They will provide the most readily accessible sources for expertise and direction in solving problems encountered during the student's research program.

The Ph.D. dissertation graduate committee should be comprised of 5 members and the major advisor must be a regular member of the Graduate Faculty. NIOSH faculty may serve as a co-chair. Majority of the graduate committee must be regular members of the graduate faculty. At least two members must be from the pathway, at least one member must be from outside of the pathway. Only one committee member with no graduate faculty status is permitted. Maximum number of committee members is 6.

All dissertation graduate committees must be approved by the advisor, Graduate Program Director, Dean of the School of Pharmacy, and the Assistant Vice President for Graduate Education.

F. Plan of Study

Content

The Plan of Study should reflect the areas of expertise in which the student will receive didactic training, the student's research skills area, thesis or dissertation topic, and expected competencies for graduate committee evaluation. The plan must be developed by the student and their research advisor, submitted and approved by the (i) the student's graduate committee, (ii) the Graduate Program Director, (iii) Dean of the School of Pharmacy and (iv) the Assistant Vice President for Graduate Education.

Submission

The Plan of Study should be submitted by the end of the fall semester of Year 2. Approval of the Plan of Study establishes a contractual agreement between the student and the University with respect to the details of what the student must accomplish to be eligible for the desired degree. Changes in the Plan of Study at some future date require joint approval by the dissertation graduate committee and the student.

Revision of Plan of Study

For major changes in a program, a revised Plan of Study (Plan of Study Amendment Form) must be submitted for approval. Forms are available at http://www.hsc.wvu.edu/resoff/graduate-education/policies-and-forms/forms/.

Pharmaceutical and Pharmacological Sciences Plan of Study

A typical plan of study in a PPS program is shown below.

Year 1

For detailed information see: http://www.hsc.wvu.edu/resoff/graduate-education/phd-programs/biomedical-sciences/1st-year-handbook/ and http://www.hsc.wvu.edu/resoff/graduate-education/phd-programs/biomedical-sciences/common-core-curriculum/

Fall

Course		**credit hours**
BMS 700	Scientific Integrity	1
BMS 702	Biomedical Lab Experience	2
BMS 706	Cellular Methods	1
BMS 747	Foundations for Contemporary Biomedical Research I	4
BMS 777	Foundations for Contemporary Biomedical Research 2	4
Total		**12**

Spring

Course		**credit hours**
BMS 700	Scientific Integrity	1
PHAR 779	Drugs: Bench to Market	3
Advanced Courses/Elective Modules (selected from the list)		3
PHAR 796	Graduate Seminar	1
PHAR 797	Research	1
Journal Club (Select from the following)		1
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
PHAR 787	Drug Discovery and Development	
Total		**10**

Summer

PHAR 797	Research	3

Year 2

Fall

Course		credit hours
Advanced Courses/Elective Modules (selected from the list)		3
PHAR 796	Graduate Seminar	1
PHAR 797	Research	4
Journal Club (Select from the following)		1
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
PHAR 787	Drug Discovery and Development	
Total		**9**

Spring

Course		credit hours
Advanced Courses/Elective Modules (selected from the list)		3
PHAR 796	Graduate Seminar	1
PHAR 797	Research	4
Journal Club (Select from the following)		1
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
PHAR 787	Drug Discovery and Development	
Take Qualifying Exam		
Total		**9**

Summer

PHAR 797	Research	1
BMS 720	Scientific Writing	2
Total		**3**

Year 3

Fall

Course		credit hours
PHAR 796	Graduate Seminar	1
PHAR 797	Research	7
Journal Club (Select from the following)		1

PHAR 782 Tumors of the CNS seminar
PHAR 783 Pharmacy Cell Biology Seminar
PHAR 784 Pharmacology Journal Club
PHAR 787 Drug Discovery and Development

Proposal Defense

Total **9**

Spring

Course		**credit hours**
PHAR 796	Graduate Seminar	1
PHAR 797	Research	7
Journal Club (Select from the following)		1
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
PHAR 787	Drug Discovery and Development	
Total		**9**

Summer

BMS 707	Experiential Learning for Biomedical Trainees	2
PHAR 797	Research	1
Total		**3**

Year 4

Fall

Course		**credit hours**
PHAR 796	Graduate Seminar	1
PHAR 797	Research	7
Journal Club (Select from the following)		1
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
PHAR 787	Drug Discovery and Development	
Total		**9**

Spring

Course		credit hours
PHAR 796	Graduate Seminar	1
PHAR 797	Research	7
Journal Club (Select from the following)		1
PHAR 782	Tumors of the CNS seminar	
PHAR 783	Pharmacy Cell Biology Seminar	
PHAR 784	Pharmacology Journal Club	
Total		**9**

Summer

PHAR 797	Research	3

G. Work Schedule, Sick Leave, Vacations

Graduate assistants are eligible for health insurance, but not sick or vacation leave.

The student should be aware that the Ph.D. degree is granted based on completion of the original dissertation research and not length of time in the program. Undue time spent away from the University will hamper your progress in research.

Work Schedule

The first year of study focuses primarily on didactic education. Thus, in the fall semester, the student can expect to follow the academic calendar of the University for the December holidays. During the week of Thanksgiving. University classes are not in session but research is still going on. The student should discuss his/her work schedule for this week with the faculty member with whom he/she is rotating. Mentors are made aware of the guideline of approximately 20 h per week in the laboratory during the short rotations. For safety, students should avoid working in the laboratory by themselves.

Students who chose their dissertation advisors should discuss the expectations for total hours of work as well as the days of service (weekends/holidays) with their mentors. These expectations are likely to vary between laboratories so it is important to establish what these are upon entry into a laboratory. The student should be aware that these decisions are made in the best interest and safety of the student and for the efficient conduct of the experiments.

Sick Leave

Graduate students do not receive a specified number of sick days per pay cycle or calendar year. Regardless of the state of health, the student's responsibilities remain the same and

include making up missed work by working weekends and evenings. Students should be familiar with any policies with regard to absenteeism in the syllabi of their courses. If the student is sick for a journal club, class or seminar, they should inform the faculty member in charge prior to that activity. The student should not assume that informing their advisor or course director of an absence will result in the communication of that information to other faculty. Each faculty member with whom the student has a class or other obligation must be informed individually.

Vacation

The vacation schedule for the University calendar does not apply to graduate school. Discuss the expectations for vacation with your mentor. These expectations are likely to vary between mentors so it is important to establish them upon entry in the research phase of the PPS program.

Leave of Absence

The WVU Health Science Center has a defined policy to deal with extended periods of time away from the laboratory or class, generally greater than two weeks. This is termed a leave of absence and may be taken due to grave illness, pregnancy or family crisis. This policy can be found at http://www.hsc.wvu.edu/media/7490/leave-of-absence-hsc-policy.pdf.

SECTION V - ACADEMIC AND PROFESSIONAL STANDARDS

A. Academic Standards

Credit hours for courses in which a grade of lower than a C is obtained will not count toward satisfying graduate degree requirements. A student must maintain an average grade point average of 3.00 in the graduate program. A student who fails to do so will be placed on probation and must bring their GPA up to 3.00 during the following semester in order to be removed from probation. If a student fails to raise their GPA to at least 3.00, he/she may be dismissed from the program.

In general, the School of Pharmacy graduate program follow the HSC policy, as described in the Graduate Student Handbook: http://www.hsc.wvu.edu/resoff/graduate-education/phd-programs/biomedical-sciences/1st-year-handbook/.

Students are required to conduct a research project culminating in a Ph.D. dissertation. Students are required to meet with their advisors as needed, and with their committees at least once a year or more frequently. Each meeting should be documented in the Graduate Committee Meeting form. The purpose of these meetings is to help assure satisfactory research progress, to allow for the early detection (and correction) of deficiencies, and to provide documentation of progress in the degree program.

B. Evaluation of Graduate Students

The research progress of each PPS student will be reviewed once a year starting at the end of year 2. SOP graduate students are required to submit the Annual Student Evaluation Form and Progress Report by June 15, following a graduate committee meeting. The committee has to meet at least once a year to discuss student's progress, with additional meetings scheduled as needed. These meetings should be held preferably after the student's seminar presentations.

Following the submission of the student's Annual Student Evaluation Form, his/her performance is evaluated by GRAC early in the fall semester. Evaluation will include grades in academic coursework, reports from committee meetings, and any written accolades or concerns by the advisor. Based on these reviews, a summary letter of each student's progress and status in the program will be generated by PPS Graduate Program Director annually at the beginning of the fall semester. This summary letter will be distributed to each student and their mentor with a copy placed into the student's file.

Additionally, all graduate students at the WVU Health Sciences Center are required to carry out an Individual Development Plan (IDP) self-evaluation annually and review it with their mentor. IDP self-evaluation is required for students supported by NIH, NSF, and many training fellowships. The IDP form can be found at http://www.hsc.wvu.edu/resoff/graduate-education/policies-and-forms/forms/ and more information is available at http://myidp.sciencecareers.org/.

C. Academic and Professional Integrity

Professional Ethics

Scholars, researchers, teachers and students seek, explore, and apply knowledge. In doing so, they are bound by their professional obligation to be upright in their pursuit of knowledge, honest in its interpretation and dissemination, and committed to its effective use. Without such integrity, the University as a community of scholars cannot function. Students in the program are required to receive training in the responsible conduct of research.

WVU Ethics Policy

Developing and practicing high standards for professional conduct are critical for the scientist. Both the University Graduate Council and the Graduate Faculty consider maintaining scientific integrity to be of utmost importance. All students are required to take a course in scientific ethics as part of the integrated first year curriculum. These standards are to be adhered to throughout the student's graduate education and into his or her career. All students are directed to be familiar with the University's policy on this subject: http://catalog.wvu.edu/graduate/enrollmentandregistration/#academicintegritytext

Students should pay particular attention to the avoidance of plagiarism in all scientific writing. The University's definition and position on plagiarism is: "Plagiarism" means the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment, including, but not limited to, the unacknowledged use of materials prepared by another individual." Please refer to the WVU Graduate Catalog: http://catalog.wvu.edu/graduate/enrollmentandregistration/#definitionsandtypesofacademicpenaltiestext

Students who have any questions regarding what constitutes plagiarism should request clarification from the faculty before embarking on any writing assignment. Failure to adhere to these standards of scientific integrity will result in disciplinary action by the graduate faculty and may jeopardize the student's status in the graduate program.

Appeals Policy

Students may appeal any academic penalty or sanction imposed by an instructor, the institution or its constituent academic units, as prescribed in the "Academic Rights, Penalties & Appeals" section of the WVU Graduate Catalog: http://catalog.wvu.edu/graduate/enrollmentandregistration/#academicrightspenaltiesappealtext

SECTION VI – PH.D. CANDIDACY AND DISSERTATION

A. Research Progress Report and Annual Evaluation

A research progress report and annual evaluation form is required of all Ph.D. degree students each year, beginning their second year in the program, as described above.

B. Written Qualifying Examination (Doctoral Qualifying/Preliminary Exam)

A written qualifying examination must be completed by every Ph.D. student, and it is expected to be completed prior to the end of their second year of study.

The written qualifying examination is developed and administered by the major advisor and the doctoral graduate committee, and may include test contributions from faculty members in the student's area of study, and any other areas deemed appropriate. The examination process will be initiated on behalf of the student by the major advisor, who will first meet with members of the doctoral graduate committee for the purpose of determining the composition and schedule for the examination.

The major advisor will then give notice, by written memorandum, which includes the format, date(s), and procedures for the examination, to all examination contributors and the student examinee. The major advisor will be responsible for all scheduling and administration protocols related to the examination. Consultation regarding the format and procedures for the examination is available through the Program Director. The examination may be completed in a 1-2 day period, but is not to exceed one week. The results of the examination must be reported to, and approved by the graduate committee members, reported to the student, PPS program director, and the HSC Office of Research and Graduate Education using the "Doctoral Qualifying (Preliminary) Examination" form (http://www.hsc.wvu.edu/resoff/graduate-education/policies-and-forms/forms/).

A one-time only re-examination in those areas of the written qualifying examination deemed not satisfactorily completed should be accomplished in a time-frame acceptable to the student, the major advisor, and contributing examiners. A remedial study plan will be established and implemented prior to the re-examination. Unsatisfactory completion of any portion of the written qualifying re-examination can result in expulsion of the student from the program.

C. Oral Qualifying Examination (Doctoral Candidacy Exam)

The satisfactory completion of the written qualifying examination is a prerequisite for taking the oral qualifying examination. The major advisor or designee will schedule a time agreeable to

the student and members of the student's doctoral graduate committee for administering the oral portion of the qualifying examination. The oral qualifying examination is expected to be completed within 6 months from the date of successful completion of the written portion. One re-examination of the oral qualifying can be scheduled with consent of the student, the major advisor, and members of the doctoral graduate committee. The recommended format of the examination involves an oral defense of a National Institutes of Health (NIH) style grant or fellowship proposal (e.g., F31, F32) on the student's research project. Other fellowships, such as AFPE, PhRMA Foundation, or others, can also be used as a basis for the defense.

The results of the examination, with the approval of the doctoral graduate committee, must be reported to the student, the PPS program director, and the HSC Graduate Programs Office. The student is declared a candidate for the Ph.D. degree only when certified of having successfully completed the oral and written qualifying examinations, and met any additional requirements specified by the doctoral graduate committee. Doctoral students are allowed no more than five (5) years beyond the qualifying examination in which to complete degree requirements. However, it is the expectation that graduation will occur two to three years after completion of a student's qualifying examination. In the event a student fails to complete the doctorate within five years after admission to candidacy, an extension of time can be obtained only by repeating the qualifying examination.

D. Publication Requirement

Students in the Pharmaceutical and Pharmacological Sciences program may not defend their dissertation until they have obtained, at the minimum, one first authored original manuscript on findings from the student's dissertation research accepted for publication in a peer-reviewed journal. Co-first authorship on a manuscript may be accepted. However, the manuscript will count towards the dissertation of only one graduate student. If more than one graduate student is a co-first author, the student's major advisor (or advisors if from different labs) will determine which student will obtain first author credit for dissertation purposes. Review papers do not fulfill this requirement. While one paper is the minimal program requirement, some advisors may impose more requirements with regard to the number of papers, quality and journal impact level that exceeds the minimum to qualify for the Ph.D. defense and degree. In such cases, these requirements must be presented to the students prior to acceptance into prospective research laboratories. Need to educate advisors of this and perhaps even have advisor's document this.

E. Submission of Ph.D. Dissertation

Upon completion of the research, a dissertation needs to be submitted by the student to the members of the student's doctoral graduate committee at least 10 working days prior to the final oral defense date (again need to educate advisors and students of this requirement as it is rarely followed). During this period, graduate committee members will review the dissertation and may make recommendations for its revision prior to defense and final acceptance.

F. Final Oral Examination (Dissertation Defense)

For scheduling the dissertation defense, a Shuttle Sheet is to be requested from the HSC Office of Research and Graduate Education within 6-8 weeks into the graduation semester but no later than 10 working days prior to the date for the defense. The Program Director will be notified by copy of the "Shuttle Sheet Request Form" available at http://www.hsc.wvu.edu/resoff/graduate-education/policies-and-forms/forms/.

Reporting of Final Examination Results

The results of the final oral examination for the Ph.D. candidate must be signed by all the examining graduate committee members present and must be reported to the HSC Office of Research and Graduate Education via the Shuttle Sheet within 24 hours after the examination. WVU requirements are available at: http://registrar.wvu.edu/graduation-diploma and in the WVU Graduate Catalog: http://catalog.wvu.edu/graduate/advisingcoursesdegrees/degree_regulations/#thesesdissertationstext.

Subsequent to the submission of the student's dissertation using the ETD (https://etd.lib.wvu.edu/) and prior to departing WVU, the student must "Check-out." Check-out includes returning all equipment, materials and supplies to their owners, returning all keys signed out, clean up of laboratory work space, returning library materials, and turning aver all materials used in the course of completing the student's research to their major advisor. The required signatures must be obtained on the Exit Form. It is the major advisor's responsibility to insure that this form is completed. Moreover, upon signing the Exit Form the advisor is confirming that the above items have been satisfactorily completed and will take full responsibility in the event that they have not.
An exit interview with the Assistant Vice President for Graduate Education is required. The PPS Program Director should meet with the student as well for program assessment purposes.
For more details, see HSC Handbook: http://www.hsc.wvu.edu/resoff/graduate-education/phd-programs/biomedical-sciences/1st-year-handbook/#CompletionofDegree and http://www.hsc.wvu.edu/media/7307/graduation-requirements-checklist-phd.pdf.

G. Deadline for Completion of the Degree

The University has 2 deadlines by which the degree must be completed or the student will need to retake introductory coursework. Once a student has been admitted to candidacy, they have **5 years** to complete the degree. Overall, the student must **complete the degree by the end of the eighth year** in graduate school. The expectation is that the student will finish well before this time. To ensure timely progress, the Office of Research and Graduate Studies will send letters to students at the beginning of their sixth year to inquire as to their progress towards completion.

SECTION VII – M.D./PH.D. STUDENTS

1. Two years of the medical school curriculum will satisfy the first year course requirements. The medical school curriculum includes an introduction to statistics as part of the Evidence Based Medicine course.

2. Laboratory long rotations are chosen through the M.D./Ph.D. program and are completed prior to entry of the student into the Ph.D. portion of the curriculum.

3. Passing the national boards will satisfy the written qualifying examination requirement.

4. The oral qualifying exam will be the proposal defense and it will follow the guidelines for regular graduate students. It is recommended that this exam be taken during the first year of research but must be completed by the end of the fall semester of their third semester in the graduate program. Failure to pass the oral exam by the end of the third semester in the graduate program, unless prior approval is provided by the Graduate Studies Committee, will result in dismissal from the doctoral graduate program.

5. Other course work and seminar requirements are PHAR 779 and two advanced courses, journal clubs, and seminars, as required of other students in the Ph.D. program.

6. Students will take the course in scientific ethics taught by the Office of Research and Graduate Studies.

SECTION VII - TEACHING AND COMMUNICATION SKILLS

While the didactic and research training described above constitute the formal process of graduate student education at the WVU School of Pharmacy, student development is fostered through other means as well. These include teaching experience, mentorship by the major professor, professional colleagueship and collaboration with faculty and graduate students, and participation in professional meetings. Students must work with their advisor and graduate committee to identify self-development goals and incorporate various experiences that will enhance (in addition to research skills) their teaching/presentation and computer-use skills. The overall result of these experiences should make the student an effective communicator both in academic and nonacademic settings and versatile in the use of computer technology in their research and communication activities. The student's annual evaluations and progress reports must also reflect gradual progression toward acquiring writing skills.

Participation at Scientific Meetings

Students are encouraged to submit abstracts to local, regional, and national professional meetings. This type of experience is an important aspect of the graduate training. Such participation allows the student to meet other researchers and keep abreast of developments in their field of study and to develop a network of scientist colleagues. It is recommended that students secure the assistance of faculty to develop audiovisual aids and to review the content of the presentation. Students should also rehearse in front of faculty and peers during the graduate seminar or specially arranged sessions. Funding for attending a regional or national meeting is generally arranged through the advisor or department. In addition, the School of Pharmacy has a number of competitive travel awards for first-authored presentations at national meetings each year.

Communication Skills

Graduate students are expected to participate as fully as possible in opportunities to develop their communication skills. These opportunities include participation in graduate seminars or journal clubs, in which candidates will be expected to develop suitable topics for verbal presentation to colleagues and members of the program.

Computer Skills

Knowledge of and skill in use of computer applications in research and education are essential during the graduate program and for career success. All students are expected to develop familiarity with the range of software available for use. Students are also expected to develop skills in applying computer applications to the analysis and presentation of data.

Signature Page

I have read and understand the Graduate Student Handbook of Pharmaceutical and Pharmacological Sciences Graduate Program. I agree to abide by the requirements outlined in this document as well as the Health Sciences and the University requirements governing these degrees.

Signature: _____

Name
(printed): _____

Date: _____

I pledge to adhere to the Student Code of Academic and Professional Integrity for the Ph.D. degree program and to maintain the highest standard of scientific integrity in all that I do.

Signature: _____

Name
(printed): _____

Date: _____

I agree to adhere to all Federal, State, and University policies and requirements for the conduct of work in the laboratory. I will remain up-to-date on all certifications for both laboratory conduct and the responsible conduct of research.

Signature: _____

Name
(printed): _____

Date: _____

APPENDICES

APPENDIX 1 - FACILITIES, INSTRUMENTS, SUPPLIES & SERVICES

Work and Study Space

All graduate students will be assigned individual desk space.

Key Disbursement

Once students have selected their major advisor, they will be authorized to check out only those keys needed for access to rooms such as laboratories, instrument rooms, and computer facilities in the School. A "Key Authorization" form must be completed and signed by the student and the student's major advisor before submitting it to the School of Pharmacy for obtaining the keys. The student will be charged a fee for replacing any key lost. Under no circumstances are keys to be duplicated, loaned or given to other individuals not authorized to have the keys. A violation of this rule will result in the loss of key privileges or other penalties. Loss of a key must be immediately reported to the student's advisor.

Graduate Student Travel

Graduate students may have occasion to travel to scientific meetings or to conduct research at other sites. For all travel that is paid by either grants or state funds, the Travel Request Form must first be completed. Failure to complete this form prior to traveling may result in either a delay for reimbursement or denial of reimbursement. Certain state travel requirements must be met. Upon return from the trip, all receipts must be turned in and a travel reimbursement form completed. Completion and filing of these forms are coordinated through the department affiliated with the advisor or the primary source of funds which will pay for the trip.

Student ID

Students with graduate assistantship appointments and those receiving stipends in the form of fellowships are issued an identification card that identifies them as staff of the School of Pharmacy. Student ID cards are to be carried at all times.

Research Notebooks

Instructions with regard to the use of research notebooks should be provided by the major advisor. Since research information or data generated during the student's program are considered the property of WVU, students are required to leave the data with their major

advisor upon completion of their program. Proper arrangements for a personal copy can be made with the student's major advisor**.**

Mail and Internal Memoranda

Each graduate student is assigned a mailbox and an e-mail address. Official announcements and internal memoranda are distributed to students by mail or e-mail, and since many of these communications have important information related to the student's program, the mail/e-mail should be checked daily.

Office Supplies

Students are generally expected to furnish their own paper and other supplies for classroom and study purposes. A limited supply may be available for research from their major advisor.

Telephone Use

Telephones in graduate student laboratories and offices are designed for receiving incoming calls, making calls throughout the University, and for making local Morgantown calls outside the University system. The student should consult their major advisor regarding long distance calls concerning University business.

Purchase of Research Supplies

The purchase of chemicals and supplies, obtaining laboratory animals, etc. should be made through the student's major advisor.

School of Pharmacy Resources and Facilities

Research Instruments

In order to allow for maximal use and to protect and maintain the School's major research instruments and computers, it is necessary that all individuals adhere to a common set of rules and guidelines. Conditions are described for achieving these goals, including the need for prior orientation and training of the potential users.

Guidelines for Instrument Use -

1) The use of major instruments and equipment items is restricted to those individuals who have been trained and authorized to use them.
2) Use of major instruments must be appropriately recorded in the log book provided for the particular item. A complete record or history of the instrument's past performance characteristics and usage frequency will greatly facilitate a diagnosis and corrective

measure when the instrument requires service or repair. Such information can also be used for updating or replacing items, providing an estimate of supplies and to alert the faculty member in charge of the equipment of the need for servicing.

3) Proper and considerate use of the instruments is needed at all times. It is the user's responsibility to leave the area clean and the instrument off or in "stand-by" mode as appropriate upon completion of use. Laboratory activities conducted in close vicinity of the instrument will be restricted to those which must be performed at the site of the instrument. This is needed to minimize the exposure of the instruments to corrosive chemicals and volatile organic liquids.
4) Equipment must not be borrowed or removed from its permanent location unless permission has been obtained from the faculty in charge of the instrument.

Chemical Storage and Record Keeping

In accordance with OSHA requirements for health standards in the work area, all containers of chemicals must be appropriately labeled to include the full name (no abbreviations) of the compound, CAS numbers and the hazard class (i.e. flammable, toxic, carcinogenic, corrosive, reactive, irritant). In addition, compounds must be stored in areas that meet compliance standards. Persons using these chemicals should 1) record the quantities removed, 2) indicate any relocation of items, and 3) sign their names. All attempts should be made to avoid improper use or waste of chemicals and supplies. Newly obtained materials must be entered into the lab chemical inventory upon receipt and the MSDS sheet filed.

Chemical Information

The HSC Environmental Health and Safety Office maintains a variety of references and information resources about hazardous materials. Each laboratory maintains a current file of MSDS sheets that provide safety information on hazardous materials in the lab.

Computers and Software

Computer facilities and software are located in each department's computer facility. General utility software is provided (e.g. word processing, communications, etc.) in individual departments and laboratories. It is illegal to copy software from these computers or to transfer illegally copied software onto them. In addition, illegal downloads of copyrighted materials are monitored by the University. Infringement of copyrights that are brought to the program's attention will result in the student being placed on probation for the duration of the program, with additional infringements resulting in dismissal.

Health Sciences Center Resources and Facilities

Library and Library Services

Several libraries with different, though partially overlapping, holdings are located on the WVU campus. The main (Wise) library is located on the downtown campus behind the Chemistry

building (Clark Hall). There are also two (2) other branch libraries, i.e., the HSC library and the Evansdale library. The HSC library offers information and assistance in the use of literature resources in the pharmaceutical, pharmacological and biomedical sciences. Students are advised to approach the library staff early upon admission for instructions in the effective use of services such as CAS On-line, MEDLINE, and other valuable on-line or CD-ROM reference systems.

Depending upon the student's specific interests and research problem, the HSC library may not house some of the materials required by the student. In such cases, the needs may be met by other libraries located on campus, within the State, or outside West Virginia. The student should consult with WVU libraries personnel on ways to access this information, such as through interlibrary loans.

Projection systems for presentations may be checked out from the Educational Technology and Resources Unit (ETRU).

Learning Center

Through the HSC Learning Center, the student can receive training in the use of relevant programs and communications software. A list of computer workshops can be obtained online. The student must register for these classes and should contact the CBLC directly for registration information. The training class are free for full time students.

APPENDIX 2 - SAFETY AND SECURITY REGULATIONS

Normal safety conduct and precautions are mandatory in all University laboratories and facilities. Students should be concerned not only with their own safety but also of others around them. The following guidelines should be observed closely at all times. For detailed safety and security rules, regulations and procedures see the West Virginia University Environmental Health and Safety Manual. A copy of this manual should be accessible in each laboratory (Environmental Health and Safety can provide copies of this manual).

Safety Glasses

All individuals must wear protective eyeglasses in the laboratory. An individual may wear glasses with corrective lenses provided they are constructed with shatter proof glass or plastic. The wearing of contact eye lenses in laboratories using chemicals is not recommended. Damage to both the lenses and, more importantly, the cornea of the wearer may result from the accumulation of noxious and irritating or corrosive vapors between the cornea and lens.

Clothing

A laboratory coat should be worn whenever the student is actively involved in experiments. The wearing of shorts, sandals, and other clothing that does not adequately cover the skin is prohibited. It is recommended that long hair be tied back, jewelry be kept to a minimum, and ties either be tucked into the shirt, held to the shirt with a tie-tack, or not worn at all.

Smoking

Smoking on University grounds is prohibited.

Food

Eating, drinking, or storing food in the laboratories is not allowed. The use of laboratory refrigerators or ice-machines for the storage of food or drink is also prohibited.

Housekeeping

Furniture, apparatus, and unnecessary debris may not block or impede exit doorways of laboratories or eye wash stations. Likewise, work areas must be kept free of clutter.

Chemical and Hazardous Waste Disposal

Chemicals which are no longer needed and hazardous liquid waste must be placed in approved containers and labeled as to their content. If allowed mixtures of liquid waste are to be disposed of, the identity of each chemical in the liquid waste and the relative percentage of each must be indicated. When full, these containers are to be placed in

safety cabinets or other suitable locations. Environmental Health and Safety should then be contacted for pickup. The required forms for the disposal of chemical wastes are available on-line. Instructions for completing the forms and arranging for a pick-up are also available on-line. No aqueous solutions, including buffers, can be disposed of by flushing them down the drain.

Handling of Chemicals

Unlabeled containers containing chemicals are forbidden. It is the student's responsibility to know the precautions required for handling the materials being used. Information such as the degree of toxicity and mode of possible exposure, important physicochemical properties, and special handling, must be known. A written description of the procedures in progress, the materials being used and appropriate procedures to be used in the event of a fire or chemical spill should be posted in work areas. Likewise, potential hazards associated with the chemicals in use should be accessible, and posted to the extent possible.

Chemical Inventory

All laboratories must keep an inventory of all chemicals located within that laboratory and submit a copy of the inventory to the School's CHO. Material Data Safety Sheets (MSDS) on all chemicals appearing on the chemical inventory must also be located in the same laboratory. As new chemicals or other hazardous materials are acquired or consumed, the inventory must be updated. It is the responsibility of all laboratory workers (technician, students, etc.) to insure that the laboratory's chemical inventory and MSDS file is maintained and up to date.

Radioactive Materials and Devices

Radioactive materials and devices must be confined to areas designated for them. Only individuals trained in the proper handling of radiation emitting materials and devices are permitted to use them. The HSC Radiation Safety Officer should be contacted for access to required training modules and approvals.

Animals

Students requiring animals in their research must demonstrate a thorough understanding of proper animal handling and disposal techniques before being permitted to use animals. Relevant CITI training modules, a health questionnaire, and animal facility orientation are required before a student can be activated on a protocol. Following proof of required training, a student may be added to an approved protocol upon the request of the student's major advisor or protocol principal investigator. Laboratory animals sacrificed at the conclusion of an experiment or after an in vitro preparation must be disposed of properly.

Experiments after Normal Working Hours

The handling of extremely hazardous chemicals or the conducting of potentially dangerous procedures is absolutely forbidden when the student is alone in the laboratory. Students should make proper arrangements for at least one other person to be present or in the vicinity when it is necessary to perform these experiments during off office hours. Routine checks on overnight experiments are permitted. For security purposes, all doors must be locked when you are not in the laboratory after hours.

Transport of Chemicals

Potentially dangerous chemicals including concentrated acids, bases, reactive metal hydrides, and flammable liquids must be transported in containers designed for this purpose (e.g. special rubber or polyethylene protective vessels designed for this purpose).

Immunization

In the course of research where students may come into contact with patients or subjects, or blood-borne pathogens, proper immunizations (e.g. hepatitis) must be obtained.

Biohazards

Prior to working with materials considered biohazards, a biohazard protocol must be completed and approved. The protocol form is available on-line. As with chemicals or radioactive materials, biohazardous materials must be used only in designated areas; signs indicating the presence of biohazardous material must be posted, and the student involved in their use must be trained in the proper handling of biohazardous materials.

Chemical Hygiene Officers (CHO)

Many of the faculty of the School of Pharmacy are CHOs and should be considered as resources for information concerning laboratory procedures. In the event that questions arise concerning laboratory practices or procedures, a CHO should be consulted. In addition, the School has a designated Safety Officer who can also be consulted.

Accidents and Injuries

All accidents that result in an injury, whether they occur in a laboratory or elsewhere in the HSC, must be reported as soon as possible. To receive care for any injury, go to the HSC Employee Health office. To report an accident and/or injury, a Supervisor's Accident Injury/Illness form must be completed. This form can be obtained from the Dean's Office.

IMPORTANT SAFETY AND SECURITY TELEPHONE NUMBERS

HSC EMERGENCY NUMBERS

TO Report an Emergency Call 3-4394 (HSC) or 9-911
Be prepared to provide the following information:
*Who you are
*Why you are calling
*Where the emergency is (building & room number)
* Call back number

- HSC Emergency.....3-4394
- Ambulance/Fire/Rescue..... 9-911
- WVU Public Safety..... 3-3136
- HSC Safety Office.....3-0952
- Radiation Safety Office.....3-3413
- Radiation Safety (pager).....(304) 987-1586
- Biosafety.....3-7157
- Biosafety (after hours).....(517) 712-8611

Other Useful numbers and websites

Facilities Management.....3-6924
(http://facilitiesmanagement.wvu.edu/hsc)

Maintenance Engineering (for malfunctioning of electrical, plumbing, etc.)...3-2749

Chemical Waste Pick-up (Environmental Health and Safety)
(http://www.ehs.wvu.edu/environmental/waste-management/hazardous-waste-disposal-form)

Radiation Safety Office.....3-3413
(http://www.hsc.wvu.edu/rsafety/)

Information Technology Services.....3-3631