THE OHIO STATE UNIVERSITY

COLLEGE OF PHARMACY

Pharmaceutical Sciences Graduate Program Handbook

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1.0 PREAMBLE

1.1 Purpose of Handbook

The Research and Graduate Studies Committee (RGSC) prepared this handbook for graduate students and graduate faculty in the College of Pharmacy:

- To provide information specific to graduate programs offered in the College of Pharmacy.
- To list and describe college policies, rules and procedures related to graduate programs.
- To supplement the statement of policies and procedures related to graduate programs in the Graduate School Handbook (GSH) published by the Graduate School.

The Pharmacy Graduate Handbook (PGH) is a companion volume to the Graduate School Handbook (GSH) and specific Graduate School policies, rules, or statements published in the GSH are generally not repeated here. However, cross-references are provided to assist in locating essential information. Graduate students and graduate faculty members should become thoroughly familiar with the GSH and the PGH. Program area specific rules and procedures must be approved by the RGSC and contained in this handbook.

1.2 Goals

The major goals of graduate education in the College of Pharmacy are:

- Identify research questions to address a problem.
- Identify, interpret, and critique literature to assess state of knowledge regarding problem.
- Design and write experimental protocols, including study Methods/Design/Implementation
- Conduct and complete research projects contributing new information to the field.
- Communicate research results, both verbally and through writing.
- Conduct Ethically Responsible Research.
- Demonstrate preparation for careers in academia, industry, government agencies, or other related fields.

2.0 THE COLLEGE OF PHARMACY RESEARCH AND GRADUATE STUDIES COMMITTEE (RGSC)

2.1 Relationship between the Graduate School and the College

Each academic unit in the university authorized to offer a graduate degree is required to form a departmental Graduate Studies Committee to fulfill the responsibilities outlined in the GSH. Although there are four academic divisions in the College of Pharmacy, Medicinal Chemistry and Pharmacognosy, Pharmacy Practice and Science, Pharmacy Education and Innovation, and Pharmaceutics and Pharmacology, the College of Pharmacy is viewed as a single academic department by the Graduate School. Hence, the College of Pharmacy has one Committee that serves as the graduate studies committee. The GSC in the College of Pharmacy is formally known as the Research and Graduate Studies Committee.

2.2 Roles and Functions

The college RGSC coordinates and facilitates the graduate program in the College of Pharmacy in accordance with the policies and procedures of the Graduate School and the college graduate faculty. The RGSC is the only committee responsible for the functions outlined in the PGH. Actions taken by the RGSC are subject to approval, modification, or reversal by the college graduate faculty. Since the college RGSC is responsible for both graduate and research programs, specific responsibilities pertaining to each of these areas are outlined below.

2.3 Graduate Programs

Responsibilities: In addition to the functions outlined by the GSH, the RGSC:

- Reviews, monitors, and recommends to the college graduate faculty any alteration, deletion or addition to the contents contained in this PGH, or its supplements developed by the divisions in the college. The college graduate faculty then discusses and approves/disapproves the changes.
- Reviews, monitors, proposes changes and carries out all operations related to graduate programs in cooperation with the Office of Graduate Studies and Research in the College of Pharmacy.
- Shares jurisdiction with the BSPS Program Committee and the Pharm.D. Program Committee for approval of undergraduate and professional courses that also carry graduate credits.
- Coordinates nominations of graduate students for University Fellowships and other fellowships or awards offered by the college.
- Arbitrates any grievance related to graduate programs or topics contained in the GSH, or PGH or its supplements.
- Maintains the Pharmacy Graduate Handbook (PGH) and oversees procedures for evaluation of Graduate Associate performance.
- Responds to any petition from any faculty member or graduate student related to some aspect of graduate study.
- Calls an annual meeting (and other meetings as needed) of the College of Pharmacy graduate faculty to present the report on committee's activities and to discuss relevant issues related to graduate education in the College of Pharmacy. (The chairperson of the college RGSC will chair this meeting. All graduate faculty members of the College of Pharmacy will be eligible to vote at this meeting or any other graduate faculty meeting.)

2.4 Research Program

The Research and Graduate Studies Committee is also responsible to the Graduate Faculty and the Executive Committee of the college for the following functions:

- Fosters research and interdisciplinary collaboration within the college.
- Studies and recommends policies with respect to research activities, facilities, personnel, and plans for future development.
- Solicits and provides nominations for national, university-wide, and college level research and scholarly awards.
- Coordinates the application process and review of college supported research grants.
- Organizes the annual College of Pharmacy Research Day program.

2.5 Composition

The RGSC consists of the Associate Dean for Research and Graduate Studies; at least one member from each graduate specialization, who hold Category M or P graduate faculty status; and a graduate student representative who is in good academic standing and who is enrolled in the graduate programs within the college. The chair of the RGSC is elected by the committee members.

2.6 Ex- Officio Members

All ex-officio members to the RGSC are non-voting members.

2.7 Graduate Student Representative

The graduate student representative is appointed annually after a call for nominations by the Graduate Program Manager. If multiple nominations are received, a vote from the committee members is required to determine the graduate student representative.

2.8 Graduate Studies Chair

Faculty members are appointed on an annual basis by the Dean in consultation with the College Executive Committee. Members of the RGSC will be appointed or elected by August 1st of each year for the following academic year. The Associate Dean for Graduate Studies and Research in the College of Pharmacy will call the first meeting of the Committee during August. At this first meeting, the members of the RGSC will elect a chairperson from its membership for the academic year. All members, except for the ex-officio members and the graduate student representative, may be considered for the chairperson's position of the RGSC. The chair of the RGSC serves as the Graduate Studies Chair for the College and in this capacity serves as the liaison to the Graduate School.

2.9 Distribution Procedures for the Graduate Program Handbook

The GSH and the PGH are on the college web site. Previous versions of the PGH will be posted until all students admitted at the time that version was current have completed their program of study in the college.

3.0 GRADUATE FACULTY MEMBERSHIP

3.1 Categories, Functions and Eligibility Requirements:

Graduate faculty categories, functions and eligibility requirements are outlined in the GSH, Section I.5.

The appropriate category level is determined by the faculty member's qualifications and by the functions the faculty member is expected to perform in the graduate program. The RGSC appoints Category M Graduate Faculty members and notifies the Graduate School of its actions. The RGSC submits nominations for Category P membership of the Graduate Faculty to the Policy and Standards Committee of the Council on Research and Graduate Studies and certifies by appropriate documentation that those nominated meet published university-wide criteria.

Regarding Category P status, the publication record will be the major evidence for meeting the requirement of engagement in an active program of research or scholarship or significant promise of establishing such a program. It is expected that new faculty recruited into tenure track positions in the College of Pharmacy in program areas involved with Ph.D. education will have the skills and experience for nomination to Category P status.

3.2 Procedures for Appointment

Nominations of faculty for Category M or P status must be submitted to the RGSC for approval. These requests originate from the Division or graduate specialization proposing the appointment and should include a letter indicating the intended involvement in advising MS or PhD students, a copy of their curriculum vitae, and a letter of support from the division or graduate specialization.

3.3 Review

Appointments to the graduate faculty will be reviewed at least every five years. Fulfillment of any one of the following criteria will determine continuation as graduate faculty:

- Service as a graduate student advisor during the last five years.
- Service to the graduate program such as participation on master's and Ph.D. examination and advisory committees or teaching graduate level courses during the last five years.
- Publication and/or funding record during the last five years that documents an ongoing research program in which graduate students could participate.

- Performance of advisor roles (Section 5.2) will also be considered in the review. On a case-by-case basis, the RGSC may allow continuance on the graduate faculty based on a petition.

4.0 ADMISSION

All the guidelines, rules and procedures related to the admission of students to the Graduate School are outlined in the GSH. Only those sections where the College of Pharmacy standards differ from those described in the GSH are described in this section.

4.1 Admission Criteria (see GSH)

An applicant must submit documentation that demonstrates fulfillment of the following admission criteria or equivalent qualifications:

1. An earned four-year baccalaureate degree, graduate degree, or professional degree (or approved equivalent) from a regionally accredited college or university by the expected date of entry.
2. A minimum of a 3.0 cumulative grade-point average (cGPA) (on the 4.0 scale used at this university) in the last degree earned by the applicant relevant to the degree program of application, as well as any graduate coursework completed after the last relevant degree was earned.
    - For international students, the cGPA is calculated on the home institution's grading scheme and the grade key on the transcript is then utilized to approximate an equivalent US grade based on the educational system of that country.
    - Applicants whose last degree relevant to the program of study was earned at an institution with a grading scheme where a numerical cGPA cannot be calculated (e.g. narrative evaluation, satisfactory/unsatisfactory, etc.) require additional Graduate School consideration. Once a graduate program reviews and recommends the applicant for admission, the program is required to submit a petition to the Graduate School for a final determination.
    - Please note that there are other university processes or systems (e.g., the fellowship competition, etc.) that may have different requirements and, as such, may require additional review. These reviews add time to the admissions process. Graduate programs, as well as prospective students, should plan accordingly to ensure that they meet all necessary deadlines.
3. Prerequisite training that will enable the student to pursue the graduate program to which admission is sought.
4. A minimum score of 79 on a valid internet-based Test of English as a Foreign Language (TOEFL-IBT), or 7.0 on the International English Language Testing System (IELTS). This requirement applies only to an applicant from a country where the first language is not English, unless a bachelor's degree or higher was earned from a country exempt from the English proficiency requirements. Residents of Puerto Rico and those who hold approved U.S. asylee, refugee, or permanent resident status for one year at the time of matriculation are also exempt from providing English language proficiency test scores.
5. The Graduate Record Examination (GRE) and the Graduate Management Admission Test (GMAT) are not required for admission.

5.0 ADVISOR

5.1 Assignment

The following procedure will be followed to expedite the placement of graduate students in an area and in a research program which best suits their personal interest and aptitudes:

- Based on his or her expressed or apparent field of interest, the newly enrolled student will be assigned to a temporary general advisor in that field for guidance in scheduling courses for the initial semesters. The advisor will recommend courses based on the student's past record and background. In most cases this will be a "core" program of courses in the student's area of interest. In some cases, where the student's background is deficient, the advisor will recommend courses to bolster those deficiencies and prepare the student to take the core courses.
- Before the end of the Spring semester of their first year, the student will indicate their choice of a permanent major advisor to the Division Chair. If the selected faculty member is both willing and able to accept the responsibility, the student will be assigned to that advisor who will provide guidance for both the graduate program and research.
- The permanent advisor for each student will be reported to the Graduate Program Coordinator by the Vice Chair/Graduate Studies Chair for each Division or specialization.
- Should the student or advisor believe that a change of advisor is appropriate, the student (or advisor) must notify the current advisor (or student) and Division Chair of the intended change. The student and current advisor are required to discuss the need for the change with each other and the Division Chair prior to the change. The Division Chair should also consult with the new advisor. Once a change in advisor is made, the Graduate Studies Chair and the Graduate Program Coordinator should be informed.

5.2 Role of Advisor

The Graduate School lists the responsibilities of the advisor **here**.

The master's or doctoral advisor serves the following primary roles for graduate students in the COP:

- Conduct advising in an ethical manner, including when recruiting advisees.
- Communicate with the co-advisor, the student’s candidacy or dissertation committee and the Graduate Studies Committee regarding the student’s program of study.
- Communicate clear intentions, expectations, and requirements to potential and current advisees, including how long the advisor expects to stay in their current position and the amount of funding support available to advisees.
- Address problems immediately so both parties can remedy issues expediently.
- Maintain open lines of communication with graduate students, including those enrolled in distance programs, and interact with graduate students in a professional manner.
- Communicate clear expectations for time to degree completion and publication expectations.
- Provide periodic and regular evaluations of progress toward degree.
- Provide timely written feedback on advisee’s professional writing (article drafts, dissertation chapter drafts, etc.).
- Give students appropriate credit for their work (e.g., as reflected in author strings in journal articles or books).
- Aid in preparing students to be the best professional they can be.
- Initiate conversations about academic progress and stay current about degree requirements and procedures.
- Initiate conversations with advisee about career goals.
- Support traditional and non-traditional career goals.

- Help graduate students develop professional skills that will make them competitive for employment in their given field.
- Encourage students to take part in activities that will enrich their academic development, e.g., by participating in professional conferences and other networking activities.
- Respect advisees' academic and non-academic commitments and responsibilities.
- Provide prompt and honest feedback on student's work.
- Allow reasonable time for students to prepare requested materials.
- Do not require that a student continue to provide a service (e.g., teaching, laboratory management, mentoring of other students, etc.) under terms that can hinder a student's degree completion.

6.0 AREAS OF STUDY

6.1 Degrees Offered

The College of Pharmacy offers programs of study and research leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Pharmaceutical Sciences. Areas of study for the Ph.D. include Medicinal Chemistry and Pharmacognosy, Pharmaceutics and Pharmacology, and Outcomes and Translational Science. Admission to the Ph.D. program does not first require application to the M.S. program; preference is given to applicants to the Ph.D. program. In addition, the college offers the M.S. in Health-System Pharmacy Administration and Leadership (M.S. only).

6.2 Program Requirements

A core curriculum is required for each area of specialization; see Appendix I for detailed descriptions of curriculum requirements, candidacy examination policies, and other specific policies for each area of specialization.

The advisor must be a member of the graduate faculty of the college, and for the two examination committees (candidacy and final) at least one other committee member shall be a regular faculty member with at least a 50% appointment in the college. The master's examination committee is composed of at least two graduate faculty members including the student's advisor. The candidacy examination committee is composed of at least four authorized graduate faculty members and may include the student's advisor consistent with Graduate Studies Committee policy. The dissertation committee is composed of the advisor who must be a Category P graduate faculty member in the doctoral candidate's graduate program and at least two other authorized graduate faculty members.

Attendance at Candidacy and Final Examinations is limited to the committee members and the student. An exception is made if students elect to hold an open or public presentation as part of their Final Examination as described in the following paragraphs.

6.3 Exit Seminar

Each doctoral student is required to present an exit seminar for the college community, based upon their dissertation. The seminar is presented during the final semester of enrollment, after completion of dissertation research. It is recommended that a student hold their exit seminar as part of their Final Examination, although a stand-alone seminar is also acceptable.

If students elect to hold a public seminar as a part of their Final Examination, the public presentation may be attended by other faculty members (who are not members of the final oral examination committee) and graduate students, subject to the rules of the Graduate Studies Committee.

The public presentation of the dissertation research, including questions from the public, is recommended to last about one-half hour, and is included within the two-hour period of the final oral examination. If presented as a stand-alone seminar, the presentation should be about 45 minutes in length and be advertised to the college faculty and students at least one week beforehand. In this format, the seminar may be presented as part of a seminar course or separate from it and can take place at any time during the final semester of enrollment. In both cases, the exit seminar may be counted as participation in a division seminar program if required as part of the Division's coursework.

6.4 Summary of Ph.D. Degree Graduation requirements

1. Satisfactory completion of the candidacy examination and submission of the approved Report on Candidacy Examination.
2. Registration for at least three graduate credit hours during the autumn or spring semester or summer term when the candidacy and final oral examinations are taken and during the autumn or spring semester or summer term in which graduation is expected.
3. Submission of the Application to Graduate form to GRADFORMS no later than the third Friday of the autumn or spring semester (or third Friday of summer term) in which graduation is expected.
4. Completion of a minimum of 80 graduate credit hours, at least 50 of which must be completed beyond the master's degree. For a master's degree earned at another institution to count toward the 80 hours, it must be officially transferred. Of the 50 post-master's hours, at least 24 graduate hours must be taken at this university.
5. Cumulative grade-point average of at least 3.0.
6. Approval of complete and defensible dissertation draft by the dissertation committee members and submission of the Application for Final Examination and the complete and defensible dissertation draft to the Graduate School at least two weeks before the date of the final oral examination.
7. Satisfactory completion of the final oral examination and verification that the Report on Final Examination form has been approved (via GRADFORMS) by the published deadline.
8. Electronic submission of the approved dissertation and a separate 500-word or less abstract by the published deadline for the semester or summer session of graduation.
9. Committee approval of the Report on Final Document and completion of Survey of Earned Doctorates after electronic submission and acceptance of dissertation by the published deadline for the autumn or spring semester or summer term of graduation.
10. Completion of PhD degree requirements within five years after being admitted to candidacy.
11. Receipt of final grades in the Office of the University Registrar by the published deadline.
12. Completion of PhD degree requirements established by the Graduate Studies Committee.

7.0 SPECIAL GRADUATE PROGRAMS

For information on special graduate programs, see the GSH, Section 8. Special graduate programs include Combined Programs, Graduate Certificate Programs, Experimental Interdisciplinary Programs, and Graduate Minors and Graduate Interdisciplinary Specializations. The college policy on Combined Programs follows; for information about the other special graduate programs, see the GSH, Section 8.5.

7.1 Combined Pharm.D. / Graduate Programs

7.1.1 Rationale

The combination of advanced professional (Pharm.D.) and research (Ph.D.) education in pharmacy and the pharmaceutical sciences prepares outstanding students for careers in academic pharmacy and pharmaceutical research.

In the combined program, highly motivated students can earn the Pharm.D. and Ph.D. degrees in less time than completion of the degrees separately. Some course work is credited toward both degrees, and the calendar year is fully utilized for completion of degree requirements, e.g., summer semesters are devoted to research. Both degrees may be completed after seven years of dedicated effort.

7.1.2 Application

Students in combined programs are enrolled concurrently in the Graduate School and in Pharmacy School. A separate application must be submitted to both the Pharm.D. Program and the Ph.D. Program.

Application information for each program can be found on the College of Pharmacy website:
Pharm.D. Application: https://pharmacy.osu.edu/education/doctor-pharmacy
Ph.D. Application: https://pharmacy.osu.edu/education/graduate-programs/phd-program

7.1.3 Admission

Once the applicant has been admitted to both the Pharm.D. and the Ph.D. Programs, application is then made to the Combined Program, which simply entails completion of the **"Combined Degree Form on GradForms"**. The form must then be approved and signed by the Graduate Research Committee Chairperson and by the Pharm.D. Admissions Committee Chairperson.

7.1.4 Advisor

At the time of admission to the Combined Program, a Graduate Faculty member is appointed to advise the student, following the guidelines of the individual graduate program. The graduate advisor may be the same as the student's Pharm.D. Program advisor.

7.1.5 Monitoring Progress

The Pharm.D. Program Committee is responsible for monitoring progress of the student toward the Pharm.D. degree. The student's graduate advisor and their advisory committee are responsible for monitoring progress toward the Ph.D. degree. A statement describing the student's goals, objectives, and general plan for completing both degrees must be deposited in the Graduate School by the end of the first semester of enrollment in the Combined Program.

Course Load. The number of credit hours a Combined Program student attempts each semester is determined by the student and the advisor(s) and must be consistent with the course loads described in Section 8.1 of the Graduate School Handbook and by the Pharm.D. program. Students may access the University Registrar's website to obtain information about online registration.

Withdrawal. Students who are denied further registration, or who withdraw from the graduate portion of their combined program may either retain their graduate credit in the Graduate School should they reenroll at a later time, or transfer that graduate credit earned to the Pharm.D. program, subject to the rules of the Pharm.D. program.

Course Credit. The program director or provisional graduate advisor must designate the courses to be completed for graduate credit only, the courses to be completed for Pharm.D. degree credit only, and the courses counted for credit in both programs.

Cumulative Point-Hour Ratio.
A student enrolled in the Combined Program has two cumulative point-hour ratios, one including all credit counted toward the Ph.D. degree and one including all credit counted toward the Pharm.D. degree.

Academic Standards. The academic standards stated in Section 2.4 of the Graduate School Handbook apply to Combined Program students.

7.1.6 Doctoral Degree Requirements

A student enrolled in the Combined Program must submit the Application to Graduate form to the Graduate School no later than the third Friday of the semester (or the first Friday of summer session) in which graduation is expected. All doctoral degree requirements apply to students enrolled in the Combined Program (Section 8.1 of the Graduate School Handbook).

7.1.6.1 Curriculum

During the first four years the focus is on the requirements for the Pharm.D. degree. During academic years 1-3 (designated as P1-P3 in the Pharm.D. Program), the required course work for the Pharm.D. degree is completed. This rigorous series of courses will fully occupy the effort of most students. During academic years 1-3 a limited number of courses for the Ph.D. Program may be taken as Pharm.D. Program electives. Summer sessions during years 1-3 may be used to complete courses for the Ph.D. Program and for research. Experiential course work for the Pharm.D. degree is completed during year 4 and the Pharm.D. degree is awarded at the end of Spring Semester, year 4. Experiential training for the Pharm.D. degree may include up to two months of “non-patient contact” experience, and a research rotation is appropriate for combined-program students.

Table 1			
Year	Autumn Semester	Spring Semester	Summer Term
1	Pharm D Courses	Pharm D Courses	Research[a]
2	Pharm D Courses	Pharm D Courses	Research[a]
3	Pharm D Courses	Pharm D Courses	Research[a]
4	Pharm D Experiential[b]	Pharm D Experiential[b] **Pharm D Degree**	Research
5	PhD Courses	PhD Courses	Research & PhD Courses
6+[d]	Candidacy[c] Exam	Research & PhD Courses	Research & PhD Courses
7+[d]	Dissertation Research	Dissertation Research	Final Exam for **PhD degree**

[a]Students may hold a GRA appointment which requires enrollment, or may be compensated for time worked (hourly employee) which does not require enrollment.
[b]Up to two months may be non-patient contact, and a research rotation is encouraged for two months of the experiential component of the Pharm.D. program.
[c]For example; the exam may be scheduled during any semester after completion of graduate program course work.
[d]These "years" are flexible in length and depend on rate of progress on dissertation research and preparation of the Ph.D. dissertation.
Shaded cells represent semesters during which students would generally receive financial support.

Course work toward the Ph.D. degree is completed typically during years 5 and 6, and the Ph.D. candidacy exam is taken upon completion of course work. Dissertation research and preparation of the Ph.D. dissertation are then completed followed by the final examination and awarding of the Ph.D. degree. While the Pharm.D. curriculum is completed in a lock-step fashion, the time to complete the Ph.D. Program is necessarily variable due to alternate-year availability of some courses and the variability in the time required to complete the dissertation. Table 1 outlines the requirements for the two degrees and their coordination over time.

7.2 Master's Programs

In the graduate specializations in Pharmaceutics and Pharmacology, Medicinal Chemistry and Pharmacognosy, and Outcomes and Translational Science, students are not admitted with an initial goal of seeking a terminal Master's degree. Under special circumstances, students and/or their advisor may seek a terminal Master's degree (thesis or non-thesis option).

The Master's in Health System Pharmacy Administration and Leadership is a terminal master's degree (no associated Ph.D. option). Requirements for completion of the master's degree (non-thesis options) may be found at Section 6 of the Graduate School Handbook.

8.0 STIPEND APPOINTMENTS

For rules and information related to appointments, see the GSH, Section 9 and 11. The following sections highlight policies and procedures in addition to those described in the GSH.

8.1 General Rules for Graduate Students with Stipend Appointments

Most pharmaceutical sciences graduate students in the PhD program hold stipend appointments in the form of teaching associateships (GTAs), research associateships (GRAs), or fellowships,

etc. Stipend appointments are normally made for a period of 12 months, although the appointment type may change at the beginning of semesters based on the source of support.

8.2 GA Appointments
Graduate Associates (GTAs and GRAs) are selected for their appointments based on factors such as previous academic performance, letters of recommendation, English language ability, and experience. Normally, such appointments are for a 50% time commitment. Occasionally, special requirements may justify more or less than a 50% time commitment. Appointment at less than 50% requires permission of the Dean of the Graduate School. For the college policy related to 25% GA appointments, see Appendix II. Subject to the availability of funds, reappointment to a GA position will depend on the student's academic performance, performance in the position, and for students so required, progress toward completion of spoken English proficiency for appointment as a GTA (GSH 2.8), and ESL proficiency (GSH 2.7).

8.3 Service Requirements
Students on appointment should be present in the college and available to perform assigned duties during their period of appointment. Service required will average not more than 20 hours per week during the period of the appointment. Pre-candidacy students holding GA appointments should register for 8 or more hours of course work in autumn and spring semester and 4 credit hours during summer semester. Pre-candidacy students supported by fellowship or trainee appointments should register for 12 or more hours in autumn and spring and 6 or more hours in summer. Post-candidacy students holding GA appointments should register for 3 hours of course work per semester. When GAs are absent from their duties, including the time between semesters, their request for leave of absence must be approved in advance by their advisor and the division chair. Documentation must be submitted to the office of the Associate Dean for Research and Graduate Studies.

8.4 GA Employment Benefits and Procedures
GAs are usually paid on a 50% time basis; stipends are directly deposited to the student's bank account. Resident and non-resident fees are waived for students on stipend appointments, and health insurance and other benefits are available. Up to two weeks paid vacation are allowed per year; guidelines are in Appendix IV and leave request forms can be found here. Additional benefit information can be found in section 11 of the GSH.

8.5 Outside Employment
Outside employment is discouraged. Students are expected to make progress through the program as expeditiously as possible. Students holding an appointment and considering outside employment must first consult their advisor. Evaluation of the impact of outside employment on a student's academic progress and responsibilities should be made by the advisor, in consultation with the division faculty.

8.6 Performance Evaluation
Progress in research and course work is evaluated for all students on an annual basis by the faculty advisor, in consultation with other appropriate faculty.

GTA teaching performance is evaluated each semester by the course instructor to whom the GTA is assigned. A copy of each evaluation is uploaded to the student's HR file in the online database used by the University.

If at any time a student receives a second "U" grade for research study (Pharmacy 8993 or 8999), the advisor will discuss the student's progress with the Graduate Studies Chair of the student's

division and the Graduate Studies Committee chair will be notified. If warranted, the Graduate Studies chair will notify the graduate school that a student is not making satisfactory progress and could be denied further registration in the graduate program.

8.7 Termination of GA Appointment

Termination of an appointment may occur because of factors such as: the student is no longer enrolled; the student is carrying less than the minimum credit hour load; mutual agreement between the faculty advisor and the student; a grievance hearing that such action is justified; lack of funds; early completion of a graduate program; academic probation; lack of progress toward a degree; violation of attendance or other contracts; under terms outlined in the recovery from chemical dependency policy; poor performance as a Graduate Associate; lack of satisfactory progress as defined by the Graduate school; and for GTA appointments to international students, failure to complete the spoken English requirement in a timely manner. The Spoken English and ESL proficiency requirements (GSH 2.7-2.8) should be completed within the first year of enrollment.

9.0 GRADUATE STUDENT REPRESENTATION

A graduate student from the College of Pharmacy serves on the RGSC. Graduate students interested in serving on university and college committees / councils may inquire with the Graduate Program Coordinator.

10.0 MISCELLANEOUS RULES AND PROCEDURES

10.1 Grievance Procedure for Graduate Students

Graduate students who feel they have a grievance with respect to the terms and conditions of their appointment or to other matters should follow the procedure as outlined:

- Discuss the problem informally with the faculty member who is the source of the student's grievance. If this does not result in a satisfactory resolution, the student should consult his/her advisor and Division Chair in that order.
- When recourse to these persons does not provide for a solution to the grievance, the student should transmit his/her complaint in writing to the Chair of the RGSC of the College of Pharmacy (with copies to the faculty member who the student feels is the source of his or her grievance and the Division Chair or Program Director). The faculty member is required to respond in writing to the Graduate Committee within 10 working days and the Committee, in turn, must convene within 10 working days of the receipt of all of the documents. Both student and faculty member may be asked to discuss the matter with the Committee and to provide supporting evidence deemed relevant to the issue. Upon conclusion of all appropriate and necessary deliberations, the Committee shall vote to uphold or deny the student's statement of grievance and may recommend a course of action.
- Students may also consult the OSU Graduate and Professional Student Ombud (https://ombuds.osu.edu/grad-ombuds) for impartial consultations on grievances or concerns.
- If a satisfactory solution is not found through the options listed above, students may file a formal petition with the Dean of the Graduate School.

10.2 Access to the Pharmacy Buildings

Graduate students may obtain keys to outside and inside doors of buildings in which their presence is authorized. Key requests can be processed by the Building Coordinator for the College of Pharmacy. Under no circumstances are these keys to be given to unauthorized persons to use. Upon termination of appointment, keys must be returned to either the Building Coordinator or the Office of Human Resources in the college.

10.3 Computer and IT Policies

The Ohio State University College of Pharmacy, its employees, and students, are subject to the University's Policies on Information Technologies. See: https://it.osu.edu/policies-and-standards for guidelines on acceptable uses as well as prohibited activities. Specific information on computer use in the College of Pharmacy is posted on the College website. It is the responsibility of all students to be familiar with computer use policies of the college.

The University Office of Information Technology provides an email account for all students at The Ohio State University. Students may elect to forward mail sent to this account to another address (useful for students who already have an email account and do not wish to change it).

Each faculty and graduate student is granted access to the College of Pharmacy computer network services (email and internet access). A network access request is typically initiated at the time faculty, or students are hired. Requests for changes to network/access privileges or reports of network or computing problems should be directed to the IT group in the College of Pharmacy (COP-problem@osu.edu). Specific requests may require faculty advisor approval.

No device will be connected to the College's computing networks without prior registration with the College Technology Support Group. Owners with registered personal equipment will notify the Support Group on their departure from the College. Devices include but are not limited to: computers, notebooks, tablets, PDA's, access points, printers and routers. Anything which can receive or transmit data over our Ethernet networks must be registered.

10.4 Vivarium Access and Animal Research

Some research projects in the College of Pharmacy involve the use of animals. The Animal Welfare Act and Public Health Service policy established regulations that must be followed in all research involving animals. In order to participate in any research involving animals, a student must comply with the following: provide anticipated exposure data in the Occupational Health Registry, complete the Animal Usage Orientation Course, and complete the Occupational Health and Safety Training. Each student will be associated with each animal protocol they are working on. Additional information can be found on the animal care and use website:
https://orrp.osu.edu/iacuc/

Research animals must be housed in one of the University Laboratory Animal Resources (ULAR) housing sites. All ULAR animal housing sites are limited access. It is important that limited access be maintained in order to minimize the spread of disease between animals and humans and in order to maintain the safety of the animals. Students who will be working with animals may obtain access to one of the ULAR housing sites by contacting the faculty manager and the advisor. No access will be permitted until all of the criteria listed in the previous paragraph are fulfilled.

10.5 Matters of General Safety

In general, students should be aware of sound laboratory practices at all times. Students should familiarize themselves with the appropriate responses to emergency situations. Those who work in laboratories are required to take laboratory safety courses and should become familiar with the laboratory Chemical Hygiene Plan. Specific information on policies and appropriate training for working with biohazards, radioactive materials, and other potential hazards is available at the Environmental Health and Occupational Safety website (http://www.ehs.osu.edu/).

Do not use the elevators when there is an emergency evacuation, including fire drills. If someone sees smoke and/or fire, that person should activate the closest fire alarm switch, exit the building,

proceed to the appropriate assembly point, and report the location of the problem to a Building Coordinator.

It is recommended that students work at times when another person is present in the same lab or on the same floor for the purposes of personnel safety. When that is not possible, it is recommended that students inform someone else of their planned schedule and/or experiments ahead of time. Optimally, potentially dangerous procedures should be discussed with a research advisor prior to execution and should not be carried out when working alone.

Access to Buildings Outside of Normal Business Hours
Students who are in the labs after "normal" working hours or are the last to leave the space have a responsibility to make certain that all doors are closed and locked and that lights and other utilities or lab-specific instruments are turned off per lab policy. The presence of expensive equipment, supplies, and chemicals can make labs a target for vandalism or theft.

In addition, University buildings are typically locked evenings and weekends, and the Ohio State University Police Department can remove persons whose presence is not authorized after hours. Identification cards should be carried when in the building outside of normal business hours. Students working outside of normal hours may wish to utilize the Lyft Ride Smart for transportation on campus. More information on this service is available through the OSU Department of Transportation and Traffic Management (https://ttm.osu.edu/ride-smart).

All employees are covered by Worker's Compensation if injured while working.
If an accident does occur, the employee should be taken to the OSU Hospitals' Emergency Department. It is the responsibility of the employee to explain that he/she is an employee and the injury occurred while working. Go to the Human Resources office to obtain workmen's compensation forms. Appropriate documentation for injuries during research activities should be documented appropriately in the Chemical Hygiene Plan in the lab.

10.6 Exit Requirements and Procedures
Before their departure from the college, all personnel, including graduate students, must return keys to the building supervisor, and notify their advisor, and the graduate program coordinator. At the time of graduation, an exit survey should be completed (available from graduate program coordinator).

10.7 Feedback Regarding Graduate Program
Ideas for improving our operations and procedures related to our graduate programs are needed and appreciated. Please submit suggestions to the attention of the Graduate Program Manager or the Associate Dean for Research and Graduate Studies.

10.8 Individual Study and Research in the Pharmaceutical Sciences
The Pharmacy 8993 and Pharmacy 8999 courses are independent research courses that are carried out under the supervision of a specified faculty advisor. The scope of the research carried out as a part of these courses is broadly defined and the direction of individual projects should be discussed by the student and primary research advisor. Examples of independent research efforts include, but are not limited to, scientific laboratory or computer-based work, literature searches and reviews, and scientific writing as applied to reports, manuscripts, presentations, and proposals. Regular communication between the student and advisor is expected throughout the course of the project. The student should provide updates on their work to their advisor throughout

the semester. Faculty advisors are responsible for monitoring the progress of the student and providing feedback as needed. In cases where the student and faculty advisor are not able to meet in person due to illness, sabbatical, or other absence from campus, students and advisors are expected to be in regular communication using online meeting tools, email, or phone conversations to ensure productivity.

APPENDIX I AREAS OF STUDY

Ph.D. Medicinal Chemistry & Pharmacognosy

The graduate program in Medicinal Chemistry & Pharmacognosy is designed as a Ph.D. degree program. All the guidelines, rules, and procedures related to the Ph.D. program are outlined in the GSH (http://www.gradsch.osu.edu/). It is the responsibility of each student to know and meet all Graduate School requirements. Only highlights of the Graduate School requirements and those sections where the standards of the Division of Medicinal Chemistry & Pharmacognosy differ from those outlined in the GSH are described in this section.

The components of the doctoral program in the Division of Medicinal Chemistry & Pharmacognosy are as follows:

- Completion of the core curriculum requirements.
- The candidacy examination.
- Dissertation research resulting in a thesis.
- The final oral examination.

The Division of Medicinal Chemistry & Pharmacognosy permits students to receive the M.S. as a terminal degree when the advisor, in consultation with the student and the Advisory Committee, recommends that the student should proceed towards the M.S. degree (rather than the Ph.D. degree) and the Division Chair and Associate Dean for Research and Graduate Studies concur with the advisor's recommendation. A minimum of 30 graduate credit hours are required to complete the M.S. degree. Students are encouraged to complete the thesis option for their M.S. degree, which requires the writing and defense of an M.S. thesis based on laboratory work. Alternatively, students may earn an M.S. degree by passing an oral thesis examination. In some situations, the major advisor, in consultation with the Advisory Committee and in concurrence with the student, may petition for completion of the terminal M.S. program under a non-thesis option. The non-thesis option requires completion of a scholarly paper and a subsequent oral examination with a committee of two faculty members. In this case, the scholarly paper may be submitted for publication, although this is not a requirement for successful completion.

Core Curriculum Requirements in the Division of Medicinal Chemistry & Pharmacognosy

Each student may take slightly different paths (Biochemical Track, Synthetic Medchem Track, Natural Products Track, and Computational Medchem Track) to complete their required and elective courses by the end of the second year. Most students are expected to complete their coursework in a two-year period. In some cases, however, students may require additional time to complete this coursework.

Students must maintain a minimum cumulative grade point average of 3.0 and show reasonable progress toward program requirements to remain in good standing in the program. If a student's GPA falls below 3.0, they may receive a warning letter from the Graduate School or may enter a remediation plan for one term to raise their GPA to a 3.0 or better. If the student's GPA remains below 3.0, they may be placed on academic probation or face academic dismissal.

Pre-candidacy students are encouraged to register for a total of 14-16 credit hours each Autumn and Spring semester during the first two years, including PHR8993. For summer registration prior to completion of candidacy, students should be enrolled for 4 credits. Upon completion of

candidacy, students should be enrolled for 3 credits each subsequent semester (Autumn, Spring, and Summer).

Students in the Division enroll in core classes and pursue elective courses aligned with their areas of specialization.

Core courses:

Autumn of First Year

PHR 7350 - Drug Discovery and Drug Design (2 credits)
PHR 8320 - Biomedicinal Chemistry for Graduate Students (5 credits)

Spring of First Year

PHR 8390 – Recent Advances in Pharmacognosy (2 credits)

Summer of First Year

PHR 8520 – Research Ethics (1 credit)

Autumn of Second Year

CHEM 6410 – Basic Organic Reaction Mechanisms
(Organic Synthesis I, 1.5 credits)

All Semesters

PHR 8880/8881 – College and Division Seminars (0.5 credits)

Students will present a seminar in their second and fourth years.

Natural Products/Pharmacognosy Graduate Course Electives

All students in the Division enroll in core courses. Students specializing in pharmacognosy/natural products will typically pursue elective courses aimed at deepening their knowledge of the discovery and development of new medicines derived from natural sources. A minimum of 4.5 elective credits are required. Specific courses are chosen by the student in consultation with their faculty advisor and committee. Common elective courses are provided below. Highly recommended courses are shown in blue.

Medicinal Chemistry/Natural Products:

PHR 7120 – High Throughput Screening (1 credit)
PHR 7370 - Advanced Pharmaceutical Analysis (2 credits)
PHR 7891 – Chromatographic Methods (2 credits)
PHR 7893 – Phytochemical Analysis of Natural Products (2 credits)
PHR 8510 – Advanced Pharmacognosy (2 credits)
MICRO/PHR 5270 – Microbial Natural Products and Biosynthesis

Chemistry:

CHEM 5420 – Spectroscopy of Organic Compounds (1.5 credits)
CHEM 5450 – Practical NMR Spectroscopy (1 credit)
CHEM 8499 – Advanced Topics in Organic Chemistry (1.5-3 credits)

CHEM 7150 – Mass Spectrometry (3 credits)

Biochemistry:

BIOCHEM 6762 – Advanced Biochemistry: Enzymes (1.5 credits)
BIOCHEM 6764 – Advanced Biochemistry: Metabolism (1.5 credits)

Microbiology:

MICRO 5161 – Bioinformatics and Molecular Microbiology (3 credits)
MICRO 5194 – Microbial Natural Products (3 credits)
MICRO 6020 – Microbial Physiology and Biochemistry (3 credits)
MICRO 6080 – Advanced Microbial Genetics (3 credits)

The pharmacognosy faculty also highly recommends a Biochem/Molecular Biology/Grant Writing courses suggested by faculty advisor based on research focus.

Computational Medicinal Chemistry Graduate Course Electives

All students in the Division enroll in core courses. Students specializing in computational medicinal chemistry will typically pursue elective courses aimed at deepening their knowledge of the application of computational methods to the discovery and development of new medicines. A minimum of 4.5 elective credits are required. Specific courses are chosen by the student in consultation with their faculty advisor and committee. Common elective courses are provided below. Highly recommended courses are shown in blue.

Medicinal Chemistry/Natural Products

PHR 7120 – High Throughput Screening (1 credit)
PHR 8380 - Advanced Medicinal Chemistry: Structure-based Computer-aided Molecular Design (2 credits)
PHR 8510 - Advanced Pharmacognosy (2 credits)

Chemistry

CHEM 7470 - Computational Chemistry (1.5 credits)
CHEM 7550 - Statistical Thermodynamics (3 credits)
CHEM 7590 - Molecular Simulation of Materials (3 credits)

Biochemistry

BIOCHEM 5621 - Biochemistry and Molecular Biology Lab (4 credits)
BIOCHEM 6701 - Advanced Biochemistry: Molecular Biology (3 credits)

Others

CSE 5241 - Introduction to Database Systems (2 credits)
CSE 5243 - Introduction to Data Mining (3 credits)
CSE 5361 - Numerical Methods (3 credits)
CSE 5441 - Introduction to Parallel Computing (3 credits)

CSE 5523 - Machine Learning and Statistical Pattern Recognition (3 credits)
BMI 5730 - Introduction to Bioinformatics (3 credits)
BMI 5770 - Health Analytics: Data to Discovery to Dissemination (3 credits)

Synthetic Medicinal Chemistry
Graduate Course Electives

All students in the Division enroll in core courses. Students specializing in synthetic medicinal chemistry will typically pursue elective courses aimed at deepening their knowledge of chemistry and its applications to the discovery and development of new medicines. A minimum of 4.5 elective credits are required. Specific courses are chosen by the student in consultation with their faculty advisor and committee. Common elective courses are provided below. Highly recommended courses are shown in blue.

Medicinal Chemistry/Natural Products:

PHR 7120 – High Throughput Screening (1 credit)
PHR 7370 - Advanced Pharmaceutical Analysis (2 credits)
PHR 7891 - Chromatographic Methods (2 credits, Lab)
PHR 7893 - Phytochemical Analysis of Natural Products (2 credits, Lab)
PHR 8510 - Advanced Pharmacognosy (2 credits)

Organic Chemistry:

CHEM 6420 - Physical Organic I (1.5 credits)
CHEM 6430 - Organic Synthesis II (1.5 credits)
CHEM 6440 - Physical Organic II (1.5 credits)
CHEM 7440 - Physical Organic III (1.5 credits)
CHEM 7450 - Synthesis III (Organometallics) (1.5 credits)

Computational Chemistry:

CHEM 7470 - Computational Chemistry (1.5 credits)
PHR 8380 - Structure-based Computer-aided Molecular Design (2 credits)

Biochemistry/Chemical Biology
Graduate Course Electives

All students in the Division enroll in core courses. Students specializing in biochemistry/chemical biology will typically pursue elective courses aimed at deepening their knowledge of the application of biochemical methods to the discovery and development of new medicines. A minimum of 4.5 elective credits are required. Specific courses are chosen by the student in consultation with their faculty advisor and committee. Common elective courses are provided below. Highly recommended courses are shown in blue.

Medicinal Chemistry/Natural Products

PHR 7120 – High Throughput Screening (1 credit)
PHR 7891 - Chromatographic Methods (2 credits)
PHR 7893 - Phytochemical Analysis of Natural Products (2 credits)

PHR 8510 – Advanced Pharmacognosy (2 credits)
MICRO/PHR 5270 – Microbial Natural Products and Biosynthesis

Others

PHR 8005 - Principles of Drug Disposition and Drug Action (3 credits)
CHEM 6420 - Physical Organic Chemistry (1.5 credits)

Lab Rotations and Selection of Research Advisor

First year students are required to complete 2 research rotations during the Autumn semester. The duration of these laboratory rotations will typically be 7 weeks and correspond with the timing of first and second-session classes. Students will have the opportunity to meet with various faculty members prior to and during the first week of the semester to learn about their research and potential rotation opportunities. The Graduate Studies Chair for the Division is available to discuss plans for rotations with students and to help pair them with faculty for these research experiences. A separate 8993 Lab Rotation Form should be filled out by the student and rotation advisor at the beginning of each rotation and submitted to the Graduate Program Manager. In addition to performing research rotations, it is recommended that students continue to meet with potential faculty advisors throughout the semester to discuss their plans for future research. By the last day of regularly scheduled classes in the Autumn semester, students are expected to submit their Research Advisor Selection form to the Graduate Studies Chair. Final pairing of students and research advisors will be done in consultation with the Division Faculty, taking student preferences and the availability of faculty funding and research space into account.

Seminars

Each graduate student in the Division of Medicinal Chemistry & Pharmacognosy is required to give three seminars. The first two seminars are typically given in years 2 and 4. The second-year seminar is a literature-based seminar, while the fourth-year seminar focuses on the student's dissertation research. An exit seminar (3rd seminar), based on the student's completed dissertation research, will also be given. More information about the exit seminar is given in section 6.2 of this handbook. Attendance at the seminars given by students, postdocs, and outside speakers is mandatory.

Advisory, Candidacy Examination, Dissertation, and Final Oral Examination Committees

As stated above in the section on Lab Rotations, it is recommended that students identify a research advisor by the end of the Autumn semester of their first year in the program. In cases where students are not matched with an advisor at the end of this semester, they are expected to identify an advisor by the end of the Spring semester of that first year. Until that time, the Grad Studies Chair for the Division will serve as the student's first-year advisor. The advisor, in consultation with the student, will propose an Advisory Committee consisting of at least four authorized faculty members (including the major advisor). The student's advisor serves as the chair of the Advisory Committee. At least one member of the Advisory Committee other than the student's advisor shall be a regular faculty member with at least a 50% time appointment in the Division of Medicinal Chemistry & Pharmacognosy. One of the functions of this committee is to consult at least once a year with the advisor and the student on the student's progress in dissertation research and course work (see also section 8.3. 'Performance Evaluation'). The Advisory Committee may also serve as part of the Candidacy Examination Committee, the Dissertation Committee,

and the Final Oral Examination Committee. The composition of the examination committees must be submitted to the Graduate School through GRADFORMS (https://gradforms.osu.edu/) at least two weeks prior to any examination and as a part of the "Application to Graduate" form, which must be submitted by the third Friday of the term of graduation.

Committee Types and Required Faculty Composition

Committee Type	Typical Timing	Min. Number of Faculty*
Advisory/Annual Review	Once Per Year (Minimum)	3-4
Candidacy Exam	Summer after 2nd Year	4
M.S. Exam (Thesis option; Terminal)	Final Semester	2
M.S. Exam (Non-thesis; Teminal)	Final Semester	2
PhD Dissertation Exam	Final Semester	3 + GFR**

* Minimum numbers are specified by the Graduate School for all examinations.
** GFR = Graduate Faculty Representative. The GFR is assigned by the Graduate School after a student registers for their dissertation exam.

The Candidacy Examination and Final Oral Examination

A. Written Examination (Candidacy). The Candidacy Examination must be taken following completion of the student's core coursework program, usually before the start of the third year of the program. The written portion of the Candidacy Examination consists of an independent research proposal developed by the student. The proposal should not be in the dissertation research area of the student.

Students are required to provide their Advisory Committee with specific aims and an abstract of the proposal (not to exceed one page, double-spaced) and meet with the Advisory Committee to obtain approval of the topic. This is typically completed as part of the annual review process at the end of the second year of study. Guidance from advisors is expected to be minimal and typically should be limited to suggestions on procedural or formatting matters for the preparation of the proposal. However, students are encouraged to consult the National Institutes of Health website for tutorials and examples and to consult with senior students about their grant writing experience. In general, the proposal format should be consistent with the style of a National Institute of Health (NIH) R21 proposal. Formatting guidelines are provided by the NIH and in the section of the Pharmaceutics and Pharmacology Program description below entitled "*Instructions for preparation of the proposal" (p.35).* Briefly, applications are typically prepared single spaced using 11-point Arial font and 1-inch margins on all sides of the page. In addition to the Specific Aims page, the proposal should be limited to 6 pages in length. References do not count toward the page limit.

Members of the Advisory Committee are typically given 1 to 2 weeks to evaluate the completed proposal. The Committee must unanimously agree that the proposal meets their expectations before the student can schedule the Oral Candidacy Examination. If the written proposal is not unanimously approved, the Advisory Committee will meet with the student to discuss deficiencies. If necessary, a second and final proposal will be prepared by the student within four weeks of the initial completed review and evaluated by the Advisory Committee. The second proposal may be a new proposal or a revision of the first proposal. Failure of the second proposal to gain the approval of the Committee disqualifies a student from advancement to doctoral candidacy status.

B. Oral Examination (Candidacy). The oral exam consists of a defense of the research proposal prepared by the student as the written portion of the Candidacy Examination, as well as answering questions concerning the student's course work and research. The oral examination will take a maximum of two hours. If an oral presentation of the proposal is prepared (not required), it should not exceed 25 minutes. The responsibility for the oral portion of the Candidacy Examination rests with the student's Candidacy Examination Committee, which is composed of the student's Advisory Committee (plus one Graduate Faculty Representative in the case of a re-examination). Upon recommendation by the Candidacy Examination Committee, a student failing the oral exam will be permitted to retake the oral exam. A maximum of two oral examinations will be allowed. A second failure of the oral examination disqualifies a student from advancing to doctoral candidacy status. The oral portion of the Candidacy Examination is open only to the members of the Candidacy Examination Committee.

Timeline for Candidacy Examination

Important Dates	Estimated/Typical Timing
Specific Aims to committee	~1 week prior to Annual Review meeting (April/May; 2nd year)
Present proposal idea to committee	At the Annual Review meeting (April/May; 2nd year))
Proposal submitted to committee	~3-4 weeks prior to exam date. 4 weeks is preferred.
Schedule exam with GradForms	No later than two weeks prior to exam date
Oral Candidacy Examination	By end of summer semester after 2nd year of study

C. The Final Oral Examination (PhD Dissertation Examination)
The Final Oral Examination includes but may not be limited to discussion of the dissertation. The examination is scheduled for two hours. The Final Oral Examination Committee is composed of the student's Dissertation Committee, plus a Graduate Faculty Representative. The student's Dissertation Committee is composed of at least 3 authorized faculty members. The student's advisor serves as chair of the Dissertation Committee. At least one member of the Dissertation Committee other than the student's advisor shall be a regular faculty member with at least a 50% time appointment in the Division of Medicinal Chemistry & Pharmacognosy. A unanimous affirmative vote from the Final Oral Examination Committee members is required for the student to successfully complete the Final Oral Examination. The Final Oral Examination is open only to the members of the Final Oral Examination Committee, although a public seminar may be given at the beginning of the exam as described in section 6.2.1 or this handbook.

Timeline for Final Oral Examination*

Important Dates	Estimated/Typical Timing
Discuss graduation timeline with committee	Annual Review meeting prior to desired graduation
Submit application to graduate	By the 3rd Friday of the semester of graduation*
Submit written dissertation to committee	~3-4 weeks prior to exam date. 4 weeks is preferred.
Format Review by OSU Graduate School	No later than two weeks prior to exam date
Schedule exam with GradForms	No later than two weeks prior to exam date
Final Oral Examination	By the deadline listed by the Graduate School*
Submit final version to Graduate School	By the deadline listed by the Graduate School*

*See https://gradsch.osu.edu/graduation-calendar-0 for important graduation deadlines for each semester.

APPENDIX I CONTINUED

Ph.D. Pharmaceutical Administration

This program is not currently offered.

APPENDIX I CONTINUED

Master of Science in Pharmaceutical Sciences with a specialization in Health-System Pharmacy Administration & Leadership (MS HSPAL)

Division of Pharmacy Practice and Science

The MS in Health-System Pharmacy Administration and Leadership program envisions a health-system that achieves optimal medication outcomes with a medication system designed to foster quality medication therapy which is continually monitored for areas of improvement.

The graduate of the MS HSPAL program will be able to:

- Develop a strategic vision for current and future health-system pharmacy services.
- Design, implement, and evaluate current and future health-system pharmacy services.
- Apply healthcare process improvement to promote better health-system pharmacy care at lower costs.
- Apply leadership and finance principles to build successful health-system pharmacy teams and services.
- Develop competence in clear, simple and effective written and oral communication

The program is offered on a full-time basis in conjunction with an American Society of Health-System Pharmacists (ASHP) accredited Health-System Pharmacy Administration and Leadership residency program. The program is also offered on a part-time basis without an affiliated residency to pharmacists meeting the requirements noted below.

Applications are considered on a competitive basis. The minimum criteria to receive consideration for admission to the MS HSPAL include:

1. an earned professional degree from an ACPE accredited college of pharmacy;
2. a 3.0 (on a 4.0 scale) cumulative grade point average (GPA);
3. eligibility for licensure to practice pharmacy in the State of Ohio; and
4. acceptance into an ASHP candidate or accredited status residency program, OR, for those enrolling part-time, one of the following:
    a. at least 3 years' in healthy-system pharmacy practice (including currently being employed), or
    b. completion of an ASHP-accredited PGY1-residency

Applicants are also evaluated based on performance during interviews. Application information is posted on the College of Pharmacy's website.

A minimum of 30 graduate credit hours, successful completion of a major project, and passing a master's examination are the minimum requirements for the completion of the M.S. program in Health-System Pharmacy Administration. A graduate cumulative point-hour ratio of at least 3.0 is required for graduation.

CURRICULUM

Core Courses: Required of all students

Course	*Course #*	*Credit Hours*
Health System Pharmacy Finance	PHR 8100	3
Information Systems for Health-System Pharmacy	PHR 8120	1.5
Advanced Leadership & Management Principles	PHR 8130	2
Research Methodology	PHR 8140	2
Systems Issues with Medication Safety	PHR 8150	2
Operations Management in Health-System Pharmacy	PHR 8160	2
Planning, Leading and Managing the Pharmacy Enterprise	PHR 8170	2
Economic Evaluation of the Pharmacy Enterprise	PHR 8180	1
Community-Based Pharmacy Practice	PHR 8190	2
Operational Assessment of the Pharmacy Enterprise	PHR 8200	2
Pharmaceutical Supply Chain Principles for Health-System Pharmacy	PHR 8250	2
Supervised Project in Health-System Pharmacy – 1	PHR 8210	2
Supervised Project in Health-System Pharmacy – 2	PHR 8220	2
Supervised Project in Health-System Pharmacy – 3	PHR 8230	2
Supervised Project in Health-System Pharmacy – 4	PHR 8240	2
Seminar	PHR 8884	Varies*

*Each student is required to register for *Pharmacy 8884: Seminar (1 credit hour)* each autumn and spring semester of enrollment in the program.

Electives

Students may consider course work in other areas including health services administration. Electives can be selected either from this list or with the approval of the student's adviser and the director of the MS HSPAL program.

Course	*Course #*	*Credit Hours*
Advocacy in Pharmacy	PHR 5525	1
Personal Finance for the Health, Law & Public Policy Professionals	BUS FIN / PHR 7650	3
Success & Leadership in Pharmacy	PHR 5560	1.5
Health Services Finance I	PUBHHMP 7620	3
Health Services Finance II	PUBHHMP 7621	3
Strategic Management and Program Development	PUBHHMP 7631	3
Information Systems for Health Services Organizations	PUBHHMP 7682	1.5

MAJOR PROJECT

Each student is encouraged to develop individual areas of expertise and pursue those areas of particular interest. This skill and knowledge development is achieved by synthesizing the academic and residency/work experiences.

While a thesis is not required, the student is expected to engage in supervised scholarly activity under the guidance of their adviser. The results of this scholarly activity should be grant-supported

(if necessary) and should be submitted for publication in a peer-reviewed journal.

The focus of the scholarly project is determined through consideration of the following: (1) consideration of the interests of the student, (2) needs of the practice site, and (3) expertise of the graduate faculty. Conduct of the major project should be in compliance with a Major Project Timeline (below). The major project is approved by the adviser based on their review of the final manuscript at the culmination of the students' independent research study.

MAJOR PROJECT TIMELINE*

Semester	Activity	Date
First Year		
Autumn	Brainstorming of project ideas and alignment of project ideas with student's areas of interest, practice site needs, and faculty expertise.	August - December
Autumn	Completion of CITI Responsible Conduct of Research Course (Biomedical or Social and Behavior)	December 1
Spring	Selection of project idea and faculty adviser(s)	March 1
Spring	Establish research team meeting schedule & proposed project timeline	April 1
Summer	Draft of background/methods for manuscript	July 1
Summer	Formalize project proposal, submit for IRB approval	August 1
Second Year		
Autumn	Address/resolve IRB issues Develop data collection tools	August/September October
Spring	Data collection and analysis First draft of manuscript Second draft of manuscript Final draft of manuscript	October - February March 1 April 1 May 1

** Timeline is designed for those full-time residents enrolled in the MS HSPAL program. Students completing the program on a part-time basis will work with their adviser and the director of the MS HSPAL program to establish a project timeline.*

RESPONSIBLE CONDUCT OF RESEARCH

Students must complete the CITI Responsible Conduct of Research Course in Biomedical or Social and Behavioral Research available from the OSU Research Foundation prior to initiating any research project. All students must receive Institutional Review Board approval for any human subject's research project prior to beginning data collection. When patient data is required, HIPAA review is also necessary (http://orrp.osu.edu/irb).

GRADUATION

Application to Graduate. The Application to Graduate form must be submitted by the student to the Graduate School by the third Friday of the semester in which graduation is expected. This form may be found on the Ohio State University, Graduate School website, gradforms.osu.edu, and requires approval of the faculty advisor.

A current summary of Master's Degree Graduation Requirements may be found in the OSU Graduate School Handbook, https://gradsch.osu.edu/

MASTER'S EXAMINATION

The master's examination is a test of the student's knowledge of the field. The master's examination is taken after submitting the Application to Graduate form and during the semester in which the student plans to graduate. The purpose of this examination is to test the student's ability to synthesize and apply the material learned during the required coursework. The examination is evaluated by the master's examination committee (composed of at least two Graduate Faculty members including the student's adviser). The judgment of each examiner is indicated by their signature on the Master's Examination Report form.

A copy of the final written exam and notification of a passing grade on the Master's examination will be kept in the student's file at the Ohio State University, College of Pharmacy, Graduate Studies Office.

APPENDIX I CONTINUED

Ph.D. in Pharmaceutics and Pharmacology

A minimum of 80 semester hour credits is required for the Ph.D. degree. These credits will be obtained through successful completion of required courses, electives and research credit. Flexibility in the program allows students to prepare for a variety of careers in the pharmaceutical sciences. This is achieved by having only a few required courses in the Program and allowing the remainder of the courses to be electives determined by the student and her/his advisor to better tailor the coursework to match the student's research project and interests relative to her/his career goals.

Background and Prerequisites

While there are no specific required course prerequisites for admission to the Program, admitted applicants must have completed a Bachelor's degree program, and typically this will have been within a scientific discipline (e.g. pharmacy, pharmaceutics, pharmacology, biology, biochemistry, chemistry, engineering, etc.). A majority of admitted applicants also have Master's degrees in a scientific discipline.

Coursework within the Program

Required of all students:

A. Fundamentals of Drug Disposition (PHR 8005, 3 credit hours)

B. Biostatistics (e.g. STAT 5301, MOLGEN 5650 or equivalent, 2 credit hours minimum).

C. Pharmaceutical Sciences Research and Communication (Pharmacy 8008, 1 credit hour).

D. Research Ethics (PHR 8520; 1 credit hour).

E. Journal Club (Pharmacy 8730, 1 credit hour) is required for pre-candidacy students. Post-candidacy students may enroll as an elective. Journal club will be offered one semester per academic year.

F. Pharmaceutics and Pharmacology Seminar (either Pharmacy 8882.01 (presentation) or 8882.02 (participation), 0.5 credit hour). Enrollment in Pharmacy 8882.01 (student presentation) is required twice in years 3-5; enrollment in Pharmacy 8882.02 (student participation) is required for all other semesters except Summer.

G. Individual Study in the Pharmaceutical Sciences (pre-candidacy: Pharmacy 8993) or Research in the Pharmaceutical Sciences (post-candidacy: Pharmacy 8999) is required every semester.

Elective Courses

A minimum of 3 graduate level courses are required as electives for each student. Any graduate level course relevant to the student's research focus area may be acceptable as an elective. However, the student must obtain the advisor's approval for all elective courses that are taken to ensure both the student and advisor are in agreement about the coursework relevant to the student's training. Students should confer with their advisors to evaluate prior coursework relative to the student's focus area of research and determine if there are any gaps in basic knowledge that could be filled with courses inside or outside the College of Pharmacy. Some suggestions are listed below.

Electives within the College of Pharmacy

Pharmaceutics and Pharmacology	**Course**
Pharmacometrics	PHR 8025
Advanced Drug Delivery Systems	PHR 8070
Drug Discovery and Drug Design	PHR 7350
Principles of Safety Pharmacology (online)	PHR 5780
Organ System Toxicology (online)	PHR 7582
Chemotherapy of Infectious Diseases	PHR 8370
CNS Drug Discovery	PHR 7180

Elective Courses outside the College of Pharmacy

The Ohio State University has a large number of graduate courses that may be appropriate for students in Pharmaceutics to take as electives. Examples of subject areas and some specific courses are listed below:

Biochemistry (e.g. BIOCHEM 5613/5614, 5721/5722)
Biostatistics/statistics (e.g. STAT 5301/5302, MOLGEN 5650, STAT 6201, STAT 6450, STAT 6730)
Cell Biology (e.g., MOLGEN 5623)
Bioinformatics (e.g., BMI 5730)
Biomedical Engineering (e.g. BIOMEDE 4610)
Fundamentals of Oncology (e.g. PATHOL 6640)
Grant Writing (e.g. BSGP 7070 and 7080)
Introduction to General Pharmacology (online) (BIOPHARM 5600)
Molecular Biology (e.g. CHEM 6230)
Molecular Genetics (e.g. MOLGEN 5623).
Physical Chemistry (e.g. CHEM 4300/4310)
Physics (Physics 5740)
Signal Transduction (MOLGEN 5796)

Minimum Enrollment Requirements

Prior to passing the candidacy exam, full-time students supported as Graduate Teaching Associates and Graduate Research Associates are required by the college to enroll for a minimum of 8 and no more than 18 credits per semester; Graduate Fellows are required to enroll for a minimum of 12 and no more than 18 credits per semester. Prior to passing the candidacy exam, students

typically enroll for 12 to 18 credit hours per autumn and spring semesters using the variable unit Pre-Candidacy Research credit (PHR 8993) to make up the difference between credit hours obtained for required/elective courses and the remainder of the course credits. After passing the candidacy exam, all full-time students should enroll in 3 credits per semester, and this will typically be done using the Post-candidacy Research credit (PHR 8999).

Example Course Schedule

Course	Credit Hours		Credit Hours		Credit Hours
Autumn, Year 1		**Spring, Year 1**		**Summer, Year 1**	
Fundamentals of Drug Disposition, PHR 8005	3	Biostatistics, STAT 5301	4	Research Ethics, PHR 8520	1
Pharmaceutical Sciences Research and Communication, PHR 8008	1	Elective (research area focused)	~3		
		Journal Club, PHR 8730	1		
Seminar, PHR 8882.02	0.5	Seminar, PHR 8882.02 and PHR 8880.02	1 total		
Pre-candidacy Individual Research Studies, PHR 8993	~11.5	Pre-candidacy Individual Research Studies, PHR 8993	~7.5	Pre-candidacy Individual Research Studies, PHR 8993	3
Total	16		16		4
Autumn, Year 2		**Spring, Year 2**		**Summer, Year 2**	
Elective (research area focused)	~3	Elective (research area focused)	~3	Milestone: Successful completion of candidacy exam	
		Journal Club, PHR 8730	1		
Seminar, PHR 8882.02	0.5	Seminar, PHR 8882.02 and PHR 8880.02	1 total		
Pre-candidacy Individual Research Studies, PHR 8993	~12.5	Pre-candidacy Individual Research Studies, PHR 8993	~11.5	Pre-candidacy Individual Research Studies, PHR 8993	3
Total	16	Total	16	Total	3
Autumn, Years 3-5		**Spring, Years 3-5**		**Summer, Years 3-5**	
Seminar, PHR 8882.02 (or 8882.01 presentation)	0.5	Seminar, PHR 8882.02 (or 8882.01/8880.01 presentation)	1		

Post-candidacy Research in the Pharmaceutical Sciences, PHR 8999	~2.5	Post-candidacy Research in the Pharmaceutical Sciences, PHR 8999	2	Post-candidacy Research in the Pharmaceutical Sciences, PHR 8999	~3
Total	~3		3		~3

Committees

For first year students the Pharmaceutics & Pharmacology Graduate Program Committee (PGPC) will advise on coursework, rotations and advisor selection until a permanent advisor is identified. First year students are required to complete at least 2 rotations and identify a permanent advisor by the end of the Spring semester. Any exceptions to this requirement must be approved in advance by the PGPC. Laboratory rotations generally range between 4-7 weeks depending on the laboratory requirement and/or project involved but cannot be less than 4 weeks or more than 7 weeks. Once an advisor is identified, it is helpful for students to have their first dissertation committee meeting held by at least the beginning of the Autumn semester of second year.

Committees involved in each student's doctoral program are the Dissertation Committee, the Candidacy Examination Committee and the Final Oral Examination Committee. Procedures for the oral examination can be found at https://gradsch.osu.edu/handbook/7-9-doctoral-final-examination. See Section 7 of the University Graduate School Handbook for information on the composition and responsibilities of these committees. All of the committees are composed of the advisor, who must be a Category P graduate faculty member, and at least three authorized graduate faculty members who must be either Category M or Category P. The advisor must be a member of the graduate faculty of the Division of Pharmaceutics & Pharmacology and, for the two examination committees, at least one member other than the advisor must be a faculty member in the Division of Pharmaceutics & Pharmacology. The student's advisor will chair the committee and committee members will be selected by the student in consultation with the advisor. The composition of the examination committees must be approved by the PGPC; names of proposed committee members must be submitted to the College of Pharmacy Research and Graduate Studies Program Manager at least two weeks before submission of the "Doctoral Notification of Candidacy Examination" form or the "Application to Graduate" form to the graduate school.

Candidacy Examination

The first candidacy committee meeting must be held before the end of the Spring semester of the second year in the program. Students failing to complete the candidacy exam by the end of their second year will receive an unsatisfactory ("U") grade for their research credit in the last semester of their second year (typically this will be the Summer semester). Note that two "U" grades will lead to dismissal from the program.

If for any reason the candidacy examination cannot be completed on time, students should petition the reason(s) for their delay with an anticipated examination date to the Division of Pharmaceutics & Pharmacology Graduate Program Committee (PGPC) for approval. This petition must be received by the PGPC before the end of the Spring semester of the second year. The graduate committee will evaluate the petition and may offer an extension time of one, or under extreme circumstances, two semesters to complete the candidacy examination. On any account, students must complete their candidacy exam before the end of the Spring semester of 3rd year. Failure

to complete the candidacy exam by the end of the third year Spring semester may result in denial of further registration in the program.

The purpose of the candidacy examination is to determine whether graduate students have achieved the competency level and capacity to carry out pharmaceutical sciences research at the doctoral level. The exam tests for a broad knowledge base in the area of pharmaceutical sciences and the capability for critical thinking. This includes the ability of the student to critically review the pharmaceutical sciences literature, analyze experimental data, and to form hypotheses and design experiments to test them. The candidacy exam generally does not test recall of specific information presented in course work, although students are presumed to have mastered knowledge and concepts presented in courses.

The candidacy examination is composed of a written part and an oral part. The written part must be passed before the oral part can be taken. Both parts of the Candidacy Examination will be conducted by the student's Candidacy Examination Committee.

The oral portion of the candidacy examination is held after completion of the written portion and must be completed within one month of the written portion. To schedule the oral exam, the student must submit an Application for Candidacy on GRADFORMS and have this approved by their program and advisor at least two weeks before the oral's proposed date. The oral examination must take place during announced university business hours, Monday through Friday. Candidacy examinations must be held on Ohio State's Columbus or Wooster campus, or via video conference, dependent upon unanimous agreement by the student and committee.

A. Written Part

To be eligible to take the examination, students must have a cumulative grade point average of 3.00 or higher and generally should have completed one and a half years of course work. The written examination requires the student to prepare an original research proposal in the area of pharmaceutical sciences. The proposal may, but does not have to, be in the dissertation research area.

Approval of the Proposal: The student will provide the candidacy committee with the tentative summary, hypothesis and specific aims of the proposal (one page). The committee will determine within one week whether the ideas are acceptable to develop into a full proposal. Within thirty days from the date of approval, the student will submit an original research proposal in the form outlined below.

Instructions for preparation of the proposal.

Include sufficient information to permit an effective review without reviewers having to refer to the literature. Brevity and clarity are considered indicative of an applicant's approach and ability.

1) Margins are 1"; Font is 11; Arial typeface, black font; Single Spaced
2) Color can be used in figures, but all text must be black.
3) Specific Aims = 1 Page
    a) State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved. List succinctly the specific objectives (Specific Aims) of the

research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.

4) Research Strategy = 6 pages
   a) Organize the Research Strategy in the specified order and using the instructions provided below.
      Start each section with the appropriate section heading—Significance, Innovation, Approach. Cite published experimental details in the Research Strategy section and provide the full reference in the Reference section.
   b) Format
      i) Significance (approximately one half to one page)
         (1) Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
         (2) Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
         (3) Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.
      ii) Innovation (approximately one half to one page)
         (1) Explain how the proposal challenges and seeks to shift current research or clinical practice paradigms.
         (2) Describe any novel theoretical concepts, approaches or methodologies, instrumentation or intervention(s) to be developed or used, and any advantage over existing methodologies, instrumentation or intervention(s).
         (3) Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation or interventions.
      iii) Approach (approximately 4-5 pages)
         (1) Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted.
            (a) Extensive experimental detail (e.g., buffer components, sources of equipment and chemicals, injection volumes) should not be included. Emphasis on rationale for the chosen model(s), experimental groups, positive and negative controls, data analysis, and possible outcomes are essential.
            (b) Statistical procedures by which the data will be analyzed should be included
         (2) Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
            (a) Potential experimental difficulties should be discussed together with alternative approaches that could achieve the desired aims.
            (b) An estimated timeline and budget for the project should be included.

   c) The applicant may address Significance, Innovation and Approach for each Specific Aim individually, or may address Significance, Innovation and Approach for all of the Specific Aims collectively.
   d) Background and Preliminary data should be incorporated into the Significance, Innovation or Approach section. Be sure to summarize your progress, if any, to date.
   e) References should be cited by number in the text and listed at the end in the order of appearance in the text. Each reference must include the title, names of all authors, book or journal, volume number, page numbers, and year of publication. The reference should be limited to relevant and current literature; it is important to be concise and to

select only those literature references pertinent to the proposed research. References are not counted in the 6 page limit.

While the proposal must be entirely the work of the student, she or he is encouraged to seek feedback from the advisor to facilitate learning during preparation of the proposal and to insure it is of high quality prior to submitting to the full Committee. The completed proposal will be evaluated by the members of the Candidacy Examination Committee; the Committee must unanimously agree that the proposal meets their expectations. If the written proposal is not unanimously approved, the Candidacy Examination Committee will meet with the student individually or as a group to discuss improvements that should be made to the document. A second and final proposal will be prepared by the student and evaluated by the original Committee. The second proposal may be a new proposal or a revision of the first proposal. Failure of the second proposal to gain the approval of the Committee disqualifies a student from advancement to doctoral candidacy status.

Proposal Evaluation Criteria

Significance: Does this study address a scientifically important problem? If the aims of the proposal are achieved, how will scientific knowledge be advanced?

Innovation: How would the proposed studies add to the existing concepts or methods in the field? Does the proposal employ novel concepts, approaches or methods?

Approach: Are the conceptual framework, design (including composition of study population), methods, and analyses adequately developed, well-integrated, and appropriate to the aims of the project? Are problem areas acknowledged and alternative tactics considered?

B. Oral Part

The oral part of the examination must occur within one month of approval of the written proposal. The purpose of the oral exam is to further evaluate the student's knowledge and capacity for critical thinking about the pharmaceutical sciences problem proposed in the written proposal? The student's oral presentation could consist of up to 12 PowerPoint Slides based on the advisor's recommendation. The committee members can ask questions throughout the presentation as well as require explanation of concepts and experimental strategy on a blackboard or drywall board. While the written proposal may function as a starting point for the examination, questions from examiners will not be constrained to the proposal. Questioning of the student should occupy the entire period of the examination. Upon recommendation by the Candidacy Examination Committee, a student failing the oral exam may be permitted to retake the oral exam, which must be taken during the subsequent semester; a maximum of two examinations will be allowed. A second failure of the oral examination disqualifies a student from advancing to doctoral candidacy status.

Graduate School Policy

See Section 7 of the Graduate School Handbook, for important information about the candidacy examination.

Dissertation Committee Meetings

After the candidacy exam, dissertation committee meetings must be held no more than one year apart until completion of the graduate program. The final dissertation committee meeting must

be held within three to four months of the anticipated defense date. Students that are overdue for a meeting will be considered not in compliance with this policy and may receive an Unsatisfactory (U) grade in PHR 8999 and/or may not be considered for awards that require nomination by the program.

The structure of each dissertation meeting should be decided in advance by the student and the advisor. Typically, the student prepares a presentation of about 30 minutes that describes the overall goal of the dissertation project, progress made in the previous year(s), and goals for the upcoming year(s) including plans for graduation if is nearing the fifth year. It might be also helpful for the student to prepare a brief document or slide deck outlining their progress and goals, to be distributed to the committee before the meeting.

Each committee meeting must be documented through completion of a Dissertation Committee Meeting Report Form and submitted to the College of Pharmacy Research and Graduate Studies Program. During the course of the program, students typically completes about three to four dissertation committee meetings (not including candidacy examination meeting(s)) before they graduate from the program.

Dissertation and Final Oral Examination

Please see the University Graduate School Handbook sections 7.8 and 7.9 regarding the Dissertation and Final Oral Examination procedures.

In accordance with section 7.9.8 of the University Graduate Handbook, the final oral examination lasts no longer than 2 hours. At least one hour of the two-hour examination period must be allotted to discussion of the research and to questions of the committee and answers by the doctoral candidate. This one hour closed examination period will be preceded by a public presentation lasting approximately 45 minutes. It is recommended that committee members hold substantial questions for the oral examination in the closed questioning after the public presentation. This public presentation is considered to be the program's required exit seminar.

Normal Progress for Graduate Students in Doctoral Program

1. Students holding half-time associateship appointments are expected to complete an average of eight (8) credits of course work (excluding S/U graded courses) per semester during the first two years of enrollment (i.e. until the candidacy exam is completed). Grades of B or better are expected in required courses. Information on graduate standing and academic standards can be found at https://gradsch.osu.edu/handbook/5-academic-and-professional-standards for academic standards.
2. Students are expected to complete the candidacy examination according to the schedule outlined in the 'Candidacy Examination' section of this handbook.
3. Students are expected to make progress on their dissertation research. Evidence of such progress includes publication of papers and abstracts, written research reports, and presentations at local, regional and national scientific meetings. Students are required to publish at least one first-author research (non-review) publication prior to graduation.
4. Students are expected to complete all requirements for the Ph.D. degree within 15 semesters.
5. Students not making normal progress will be considered by Division faculty for reassessment of status in the graduate program. Possible changes in status include enrollment in the M.S. degree program and conclusion of graduate studies with a M.S.

with or without Thesis Curriculum and/or discontinuation of enrollment. If the student is supported by division funds (GTA or Fellowship), determination will be made of whether support will be continued.

Ph.D. Outcomes and Translational Sciences

Translational scientists conduct studies at the interface of the laboratory and the clinic and Outcome's scientists conduct studies at the interface of the clinic, practice, and the community; with the goal to establish best practices that optimize individual and population health and outcomes. The training program has both an educational (course work) and a research component. The course work will provide a foundation in research design and methods, fundamentals of grant writing, biostatistics, and research ethics. Additional coursework will be specifically tailored to each student's research interests, outcomes or translational sciences. The research component will be conducted under the direction of a primary mentor and a secondary mentor. Research results will be published in peer-reviewed scientific journals and presented at scientific & professional meetings.

The program here at Ohio State University's College of Pharmacy is designed for students with a variety of educational backgrounds, who want to earn a PhD in Pharmaceutical Sciences with a focus on outcomes or translational sciences. For example, students who have completed a Pharm.D. degree, internationally trained pharmacists, other healthcare professionals, as well as students with a master's degree in a variety of disciplines, could apply for admission to this program.

Students may also seek admission into the combined PharmD/PhD program in Outcomes and Translational Sciences. Students accepted into the combined PharmD/PhD program are admitted by the Graduate School, the Graduate Studies Committee, and the PharmD Admissions Committee.

Advisor

At the time of admission to the graduate program or the combined program, a Graduate Faculty member is appointed to advise the student. For students in the graduate program, the student must select an advisor no later than the end of first year. For students in the combined program, the graduate advisor may be the same as the student's PharmD program advisor. The graduate advisor should be selected no later than the end of the third year of the PharmD program if the student is in the combined program, and optimally would be selected earlier.

Committees

The advisory committee plays a critical role in guiding each student's course of graduate study. For students in the graduate program, the advisory committee should be selected no later than the end of the second year of the graduate program. For students in the combined program, an advisory committee should be selected no later than the end of the third year of the PharmD program. The advisory committee should be comprised of at least two graduate faculty (>50% appointment) in the College of Pharmacy, and one of the two must be in the Division of Outcomes and Translational Sciences, or a graduate faculty member in the Division of Pharmaceutics & Pharmacology that conducts translational/clinical research. Committee members for the candidacy examination and the dissertation examination may be, but are not required to be, identical.

Candidacy Examination Policy and Procedures

The purpose of the candidacy examination is to determine whether graduate students have achieved the competency level and capacity to carry out pharmaceutical sciences research at the doctoral level. The exam tests for a broad knowledge base in pharmaceutical sciences and

the capability for critical thinking. This includes the ability of the student to critically review the pharmaceutical sciences literature, analyze experimental and other data, and to form hypotheses and design experiments/research studies to test them. The candidacy exam generally does not test recall of specific information presented in course work, although students are presumed to have mastered knowledge and concepts presented in courses.

The candidacy examination is composed of a written part and an oral part. The written part must be passed before the oral part can be taken. Both parts of the Candidacy Examination will be conducted by the student's Candidacy Examination Committee.

A. Written Part

To be eligible to take the examination, students must have a cumulative grade point average of 3.00 or higher and generally should have completed the didactic portion of their graduate program of study. The written examination requires the student to prepare an original research proposal in pharmaceutical sciences. The proposal may, but does not have to, be in the dissertation research area.

Approval of the Proposal: The student will provide the candidacy committee with the tentative summary, hypothesis, and specific aims of the proposal (one page). The committee will determine within one week whether the ideas are acceptable to develop into a full proposal. Within thirty days from the date of approval, the student will submit an original research proposal in the form outlined below.

Instructions for preparation of the proposal.

Include sufficient information to permit an effective review without reviewers having to refer to the literature. Brevity and clarity are considered indicative of an applicant's approach and ability.

1) Margins are 1"; Font is 11; Arial typeface, black font; Single Spaced
2) Color can be used in figures, but all text must be black.
3) Specific Aims = 1 Page
    a) State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved. List succinctly the specific objectives (Specific Aims) of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.
4) Research Strategy = 6 pages
    a) Organize the Research Strategy in the specified order and using the instructions provided below. Start each section with the appropriate section heading—
    Significance, Innovation, Approach. Cite published experimental details in the Research Strategy section and provide the full reference in the Reference section.
    b) Format
        i) Significance (approximately one half to one page)
        (1) Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.

(2) Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.

(3) Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

ii) Innovation (approximately one half to one page)

(1) Explain how the proposal challenges and seeks to shift current research or clinical practice paradigms.

(2) Describe any novel theoretical concepts, approaches or methodologies, instrumentation or intervention(s) to be developed or used, and any advantage over existing methodologies, instrumentation or intervention(s).

(3) Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies instrumentation or interventions.

5) Approach (approximately 4-5 pages)

(1) Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted.

(a) Extensive experimental detail (e.g., buffer components, sources of equipment and chemicals, injection volumes) should not be included. Emphasis on rationale for the chosen model(s), experimental groups, positive and negative controls, data analysis, and possible outcomes are essential.

(b) Statistical procedures by which the data will be analyzed should be included

(2) Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.

(a) Potential experimental difficulties should be discussed together with alternative approaches that could achieve the desired aims.

(b) An estimated timeline and budget for the project should be included.

(c) The applicant may address Significance, Innovation and Approach for each Specific Aim individually, or may address Significance, Innovation and Approach for all of the Specific Aims collectively.

(d) Background and Preliminary data should be incorporated into the Significance, Innovation or Approach section. Be sure to summarize your progress, if any, to date.

(e) References should be cited by number in the text and listed at the end in the order of appearance in the text. Each reference must include the title, names of all authors, book or journal, volume number, page numbers, and year of publication. The reference should be limited to relevant and current literature; it is important to be concise and to select only those literature references pertinent to the proposed research. References are not counted in the 6-page limit.

While the proposal must be entirely the work of the student, she or he is encouraged to seek feedback from the advisor to facilitate learning during preparation of the proposal and to insure it is of high quality prior to submitting to the full Committee. The completed proposal will be evaluated by the members of the Candidacy Examination Committee; the Committee must unanimously agree that the proposal meets their expectations. If the written proposal is not unanimously approved, the Candidacy Examination Committee will meet with the student individually or as a group to discuss improvements that should be made to the document. A second and final proposal will be prepared by the student and evaluated by the original Committee. The second proposal may be a new proposal or a revision of the first proposal. Failure of the second proposal to gain the approval of the Committee disqualifies a student from advancement to doctoral candidacy status.

Proposal Evaluation Criteria

Significance: Does this study address a scientifically important problem? If the aims of the proposal are achieved, how will scientific knowledge be advanced?

Innovation: How would the proposed studies add to the existing concepts or methods in the field? Does the proposal employ novel concepts, approaches or methods?

Approach: Are the conceptual framework, design (including composition of study population), methods, and analyses adequately developed, well-integrated, and appropriate to the aims of the project? Are problem areas acknowledged and alternative tactics considered?

B. Oral Part

The oral portion of the candidacy examination is held after completion of the written portion and must be completed within one month of the written portion. To schedule the oral exam, the student must submit an Application for Candidacy on GRADFORMS and have this approved by their program and advisor at least two weeks before the oral's proposed date. The oral examination must take place during announced university business hours, Monday through Friday. Candidacy examinations must be held on Ohio State's Columbus or Wooster campus, or via video conference, dependent upon unanimous agreement by the student and committee. The purpose of the oral exam is to further evaluate the student's knowledge and capacity for critical thinking about the pharmaceutical sciences problem proposed in the written proposal. The student's oral presentation could consist of up to 12 PowerPoint Slides based on the advisor's recommendation. The committee members can ask questions throughout the presentation as well as require explanation of concepts and experimental strategy on a blackboard or drywall board. While the written proposal may function as a starting point for the examination, questions from examiners will not be constrained to the proposal. Questioning of the student should occupy the entire period of the examination. Upon recommendation by the Candidacy Examination Committee, a student failing the oral exam may be permitted to retake the oral exam, which must be taken during the subsequent semester; a maximum of two examinations will be allowed. A second failure of the oral examination disqualifies a student from advancing to doctoral candidacy status.

Required courses for ALL students (those in bold count for PharmD electives):

A. Fundamentals of Drug Disposition (PHR 8005, 3 credit hours) OR Fundamentals of

Pharmacology (PHR 5010 on-line, 3 credit hours)

B. Biostatistics (e.g., STAT 5301, MOLGEN 5650, VISSCI 7980 or equivalent, 2 credit hours minimum).

C. Pharmaceutical Sciences Research and Communication (Pharmacy 8008, 1 credit hour).

D. Research Ethics (PHR 8520; 1 credit hour).

E. Seminar (OTS students are to register for the Pharmaceutics and Pharmacology seminar until an OTS seminar is established.) *

F. Individual study in the pharmaceutical Sciences (pre-candidacy: Pharmacy 8993) or Research in the Pharmaceutical Sciences (post-candidacy: Pharmacy 8999) is required every semester as a full-time graduate student.

*Graduate students are required to attend the College of Pharmacy "All-College Seminar Series" and are required to make at least one presentation a year in a course.

Translational Sciences Elective Courses

A minimum of three graduate level courses are required as electives for each student. Any graduate level course relevant to the student's research focus area may be acceptable as an elective. However, the student must obtain the advisor/advisory committee's approval for all elective courses that are taken to ensure both the student and advisor/advisory committee agree about the coursework relevant to the student's training. Students should confer with their advisors to evaluate prior coursework relative to the student's focus area of research and determine if there are any gaps in basic knowledge that could be filled with courses inside or outside the College of Pharmacy.

Some suggestions are listed below:

Electives within the College of Pharmacy

Pharmacometrics, PHR 8025
Advanced Drug Delivery Systems, PHR 8070
Drug Discovery and Drug Design, PHR 7350
Principles of Safety Pharmacology, PHR 5780
Organ System Toxicology, PHR 7582
Chemotherapy of Infectious Diseases, PHR 8370
CNS Drug Discovery, PHR 7180
Introduction to Bioinformatics: Introduction to the structure, analyses and interpretation of genomic data studies, PHR 8194
Clinical Trials I: Design and Regulation, PHR 7560
Clinical Trials II: Site Management and Study Leadership, PHR 7561
Design and Management of Preclinical Studies Pharmacy, PHR 7562
Advanced Organ Systems Toxicology and Risk Assessment, PHR 7583
Applied Pharmacokinetics & Pharmacodynamics, PHR 7584
Integrative in Vivo Modeling for Drug Development: Application for Safety and Clinical Pharmacology, PHR 7586
Scientific Writing: Preclinical Study Protocol and Manuscript Development, PHR 7597

Elective Courses outside the College of Pharmacy
The Ohio State University has a large number of graduate courses that may be appropriate for students in Pharmaceutics to take as electives. Examples of subject areas and some specific courses are listed below:

Biochemistry (e.g., BIOCHEM 5613/5614, 5721/5722)
Biostatistics/statistics (e.g., STAT 5301/5302, MOLGEN 5650, STAT 6201, STAT 6450, STAT 6730)
Cell Biology (e.g., MOLGEN 5623)
Bioinformatics (e.g., BMI 5730)
Biomedical Engineering (e.g., BIOMEDE 4610)
Fundamentals of Oncology (e.g., PATHOL 6640)
Grant Writing (e.g., BSGP 7070 and 7080)
Introduction to General Pharmacology (BIOPHARM 5600)
Molecular Biology (e.g., CHEM 6230)
Molecular Genetics (e.g., MOLGEN 5623).
Physical Chemistry (e.g., CHEM 4300/4310)
Physics (Physics 5740)
Signal Transduction (MOLGEN 5796)

Pharmaceutical Outcomes Elective Courses
A minimum of ten graduate level courses are required as electives for each student. Any graduate level course relevant to the student's research focus area may be acceptable as an elective. However, the student must obtain the advisor/advisory committee's approval for all elective courses that are taken to ensure both the student and advisor/advisory committee agree about the coursework relevant to the student's training. Students should confer with their advisors to evaluate prior coursework relative to the student's focus area of research and determine if there are any gaps in basic knowledge that could be filled with courses inside or outside the College of Pharmacy.

Some suggestions are listed below:

Pharmacoepidemiology Focus
PUBHEPI 6430: Epidemiology I (3 credits)
PUBHEPI 7410: Epidemiology II (4 credits)
PUBHBIO 6270: Intro SAS for Public Health Students (2 credits)
PUBHHMP 6625: Healthcare Data Analytics (Macarius teaches) (3 credits)
PUBHBIO 7220: Applied Logistic Regression (3 credits)
PUBHBIO 7235: Applied Survival Analysis (3 credits)
PUBHBIO 7230: Applied Longitudinal Analysis (3 credits)
PUBHBIO 7255: Introduction to Causal Inference in Health Science Research (3 credits)
BSGP 7070: Fundamentals of Grant Writing (4 credits)

Social & Behavioral Sciences Focus
PUBHBIO 6210: Design and Analysis of Studies in the Health Sciences (3 credits)
PUBHBIO 6211: Design & Analysis of Studies in the Health Sciences II (3 credits)
PUBHBIO 6270: Intro SAS for Public Health Students (2 credits)
PUBHHMP 7601: Economic Analysis of Health Services (3 credits) OR PUBHHMP 7603: Economic Evaluation of Healthcare Programs (3 credits)

PUBHHMP 8671: Health Care Outcomes Measurement (2 credits) (Research design - evaluation of specific techniques for measuring outcomes in clinical and health services research studies).
ACEL 8855: Research Methods and Design (3 credits)
ACEL 8877 Data Collection, Analysis & Interpretation (3 credits)
PUBHEPI 6431: Design & Implement Health Surveys (3 credits)
PUBHEPI 6401: Health Data Sources and Uses (3 credits)
BSGP 7070: Fundamentals of Grant Writing (4 credits)

Dissertation and Final Oral Examination

Please see the University Graduate School Handbook sections 7.8 and 7.9 regarding the Dissertation and Final Oral Examination procedures.

In accordance with section 7.9.8 of the University Graduate Handbook, the final oral examination lasts no longer than 2 hours. At least one hour of the two-hour examination period must be allotted to discussion of the research and to questions of the committee and answers by the doctoral candidate. This one hour closed examination period will be preceded by a public presentation lasting approximately 45 minutes. It is recommended that committee members hold substantial questions for the oral examination in the closed questioning after the public presentation. This public presentation is considered to be the program's required exit seminar.

Normal Progress for Graduate Students in Doctoral Program

1. Students holding half-time associateship appointments are expected to complete an average of eight (8) credits of course work (excluding S/U graded courses) per semester during the first two years of enrollment (i.e. until the candidacy exam is completed). Grades of B or better are expected in required courses. Information on graduate standing and academic standards can be found at https://gradsch.osu.edu/graduate-school-handbook-gsh/gsh-section-5-academic-and-professional-standardsfor academic standards.
2. Students are expected to complete the candidacy examination according to the schedule outlined in the 'Candidacy Examination' section of this handbook.
3. Students are expected to make progress on their dissertation research. Evidence of such progress includes publication of papers and abstracts, written research reports, and presentations at local, regional and national scientific meetings. Students are required to publish at least one first-author research (non-review) publication prior to graduation.
4. Students are expected to complete all requirements for the Ph.D. degree within 15 semesters.
5. Students not making normal progress will be considered by Division faculty for reassessment of status in the graduate program. Possible changes in status include enrollment in the M.S. degree program and conclusion of graduate studies with a M.S. with or without Thesis Curriculum and/or discontinuation of enrollment. If the student is supported by division funds (GTA or Fellowship), determination will be made of whether support will be continued.

APPENDIX II

Policy Concerning 25% Graduate Associate Appointments

The norm of graduate associate appointments in the College of Pharmacy is a 50 percent time appointment. However, students wishing to be considered for a 25% appointment should apply to the Graduate Studies Committee. The following policy should be noted before applications are made.

1. GAs holding 25 percent appointments will be entitled to one-half of a full fee authorization. If the GA changes his or her schedule, the amount charged or reimbursed will be divided equally between the GA and the fee authorization.

2. The number of 25 percent appointments must never exceed 10 percent of all GA appointments at any one time.

3. No GA who has started at 50 percent time or more may be cut to 25 percent time except at his or her own request.

4. GRAs who are working on their theses or dissertations as part of their GRA appointments may not be appointed for less than 50 percent time.

5. The Graduate School is responsible for implementing and monitoring this proposal and for approving all 25 percent GA appointments. The Graduate Dean must report the distribution of GA appointments to the Provost on an annual basis at the time of budget considerations.

APPENDIX III
Graduate Student Code of Research and Scholarly Conduct

Graduate students and graduate faculty aspire to professional behavior that is consistent with the highest ethical and moral standards. The Graduate School at The Ohio State University expects that graduate students will demonstrate responsibility and integrity in pursuing their creative and scholarly interests. The academic enterprise is dependent upon such behavior. Graduate students are responsible for learning about appropriate standards for ethical research and scholarly conduct and for following all university policies related to ethical research and scholarly conduct (GSH II.4.15). When graduate students join the Ohio State community, they become members of disciplinary, scholarly, and professional communities that extend beyond the university. Graduate students are expected to learn, respect, and abide by the professional codes of ethics and responsibilities that are commonly accepted in their field of study or area of research. These codes include but are not limited to the following: a responsibility to contribute an original body of work to one's chosen discipline and the recognition that one's work is based on the work of others which must be respected and properly acknowledged. Graduate students also have the responsibility to treat university faculty, staff, and other students respectfully and professionally.

Graduate faculty, advisors, and graduate programs should actively encourage their students to participate as members of their chosen disciplinary, scholarly, and professional communities. Graduate students should be encouraged to seek and share knowledge wherever and whenever possible. Academic advisors and other faculty members should educate graduate students through example and discussion, addressing such issues as academic honesty, research, publication, recruitment, and hiring practices, and applicable fellowship and graduate associateship responsibilities. Disciplinary codes of ethics and norms should be discussed among graduate students and faculty. Such communication is a means of setting high standards of behavior in graduate study and beyond.

Graduate students are expected to be familiar with relevant policies and procedures at Ohio State, many of which are listed below. Graduate School staff may be contacted at (614) 292-6031 for additional assistance.

Web-based resources for student conduct, including academic and research misconduct
Code of Student Conduct:
https://studentconduct.osu.edu/CodeofStudentConductVersions
Student Conduct *formerly the office of Student Judicial Affairs*
https://www.studentconduct.osu.edu/
Committee on Academic Misconduct:
https://oaa.osu.edu/coam.html
University Research Committee Interim Policy and Procedures Concerning Misconduct in Research or Scholarly Activities:
https://orc.osu.edu/files/Misconduct_Policy.pdf
Research Standards and Scholarly Conducthttps://gradsch.osu.edu/graduate-school-handbook-gsh/gsh-appendix-c-research-standards-and-scholarly-conduct
University policy on Alcohol and other drugs
https://policies.osu.edu/assets/policies/alcohol-other-drugs-policy.pdf

RESEARCH POLICIES AND RESOURCES

The Office of Responsible Research Practices (ORRP) provides information on policies and procedures for research involving humans, animals, or potentially hazardous biological agents. The ORRP website also includes the conflict of interest policy, information about Institutional Review Board (IRB) processes, and access to training and workshop opportunities (http://orrp.osu.edu/). For additional information, contact the following related offices:

The Enterprise for Research, Innovation, and Knowledge:
https://research.osu.edu/
The Office of Sponsored Programs:
https://research.osu.edu/about-us/administration-and-units/office-sponsored-programs Technology Commercialization:
https://oied.osu.edu/technology-commercialization Student Records and Privacy, FERPA (Family Educational Rights and Privacy Act):
https://registrar.osu.edu/policies/releaseinfo.asp
Campus Climate, including nondiscrimination, sexual harassment, workplace violence, occupational health and safety, and nonsmoking:
https://equity.osu.edu/sites/default/files/documents/NDH-Policy-FAQ.pdf Information Technology Policies and Resources, Office of the Chief Information Officer:
https://ocio.osu.edu/policy/policies/
Policy on Responsible Use of University Computing Resources:
https://ocio.osu.edu/policy/policies/
Disability Policies and Resources Rights and Responsibilities of OSU Students and Employees:
https://ada.osu.edu/
Office for Disability Services:
https://slds.osu.edu/
Policy and Procedure Manual, Equal Employment for Individuals with Disabilities:
https://ada.osu.edu/resources/university-policieDigital Accessibility Center:
https://wac.osu.edu/

APPENDIX IV

Graduate Student Leave Guidelines
College of Pharmacy

Students who are supported with an appointment as a graduate teaching associate (GTA), a program-supported graduate research associate (GRA), or as a graduate fellow (GF) perform work and training activities that contribute to the mission of the university, including research, teaching, study for classes, and generally preparing for a professional career in science. While these activities are normally performed on campus, students may work at other locations and at home, when appropriate. During breaks between semesters, students are expected to engage in appropriate work and training activities.

A GA- or GF-supported student may take vacation leave for a maximum of 10 working days (two weeks) during the August 16 – August 15 (GA appointment timeframe), in addition to official university holidays. Leave cannot be carried forward to following academic years; i.e., unused leave in one year may not be used the next year.

For GRA- and GF-supported students their faculty advisor may establish guidelines that may be more or less restrictive than these guidelines. Each student, self-supporting students included, should discuss with the advisor his or her leave guidelines at the initiation of the student-advisor relationship.

A request to be absent must be submitted to the faculty advisor in writing prior to making travel arrangements and at least one month prior to departure. The request should include the dates of absence. The request must be approved by the advisor and, when a student is supported by a GTA, the division chair and the instructor(s) supported by the GTA appointment.

Leave for sickness or family illness is not part of the annual 10 days' leave and will be considered on an individual basis with the division chair and faculty advisor. Please refer to the Graduate School's "Guidelines for Short-Term Absences and Leaves of Absence for Graduate Students Appointed as Gas, Fellows and Trainees".

Vacation leave is not allowed if it interferes in any way with GA/GF duties, including training sessions, recitation or workshop sections, development of final grades for an instructor, and laboratory research activities. Leave for a GTA during a semester will only be allowed after suitable substitution arrangements have been approved by the instructor.

Beyond the 10 days in a given academic year additional leave may be allowed for special circumstances (e.g., important family gatherings overseas, weddings, etc.). Such leave will usually be negotiated as "leave of absence without pay" and must be approved by the division chair and faculty advisor. The graduate program coordinator must be informed of all such arrangements.

APPENDIX V

Monitoring Graduate Student Progress in the Pharmaceutical Sciences Doctoral Program

Introduction:

The College of Pharmacy Graduate Studies Committee (RGSC) is responsible for monitoring graduate student progress. This appendix outlines the process for monitoring student progress in the doctoral program in pharmaceutical sciences.

First year:

1. Some students are directly admitted to a graduate advisor's group, while others will perform rotations. All students enrolled in Pharmacy 8993 must submit the form (Pharmacy 8993 expectations) to the office of the graduate program coordinator by the end of the second week of the semester. This form is completed and signed by both the student and instructor (advisor or rotation supervisor).

2. By the midpoint of the first academic semester, students will meet with a designated faculty member from their respective graduate specialization to discuss coursework and any other concerns the student may have. The division chair, or specialization director, will designate the faculty member to meet with first year students.

3. By the end of the first academic semester, the student will meet with the appropriate faculty member (first year advisor, specialization director or designee) in their graduate specialization to discuss their coursework plan and progress toward advisor selection. This meeting is documented by the faculty member and signed by the student, and the document is turned in to the graduate program coordinator by the end of the second semester.

4. First year students will meet with a faculty committee (three or more faculty) no later than the first week of June (first year review). Students will document progress/accomplishments and provide this to the faculty prior to the meeting. Course performance and future coursework will be discussed. The remainder of the meeting will involve a discussion of the student's research (work that has already been carried out and work that is planned). A form summarizing the discussion should be filled out by the designated chair of this faculty committee, distributed to the student, and sent to the graduate program coordinator and the student's advisor, no later than the end of the 2nd week of June. These forms are reviewed by the graduate studies committee with feedback provided to the student and advisor prior to the second year of the program. These reviews are required as part of the graduate associate reappointment process.

Second year:

1. Students must meet with their advisor by the midpoint of fall semester of their second year to discuss the student's coursework and their research progress. A short form briefly summarizing the discussion will be filled out and signed by the student with comments and signature from the student's advisor. The form must be turned into the graduate program coordinator. All forms will be forwarded to the graduate studies committee for review.

2. Notification from the graduate program coordinator will be sent to each graduate student and advisor at the beginning of spring semester of the student's second year. This notification

will remind the student and the advisor that the candidacy exam is expected to be scheduled and taken by the end of the summer of the student's second year.

3. By the end of the first week of June of the student's second year, the student will meet with a committee from their area of specialization (three or more faculty) to discuss research progress and when the candidacy exam will be taken. This will serve as the annual review meeting. Students will document progress/accomplishments and provide this to the faculty prior to the meeting. Course performance and future coursework will be discussed. The remainder of the meeting will involve a discussion of the student's research (work that has already been carried out and work that is planned). A form summarizing the discussion should be filled out by the designated chair of this faculty committee, distributed to the student, and sent to the graduate program coordinator and the student's advisor, no later than the 2nd week of June. These forms are reviewed by the graduate studies committee with feedback to the student and advisor prior to the third year of the program.

4. Each student is expected to take the candidacy exam before beginning their third year in the program. Any delay in completion of candidacy must be reviewed by the graduate studies committee through discussion with the student and the advisor.

Post candidacy:

1. The student's dissertation committee will be formed within one month of passing the candidacy exam if this committee has not already been established.

2. Dissertation committee meetings will be scheduled every 6-12 months. At least one dissertation committee meeting must be held no later than the first week of June each year. At each meeting, students will describe their progress, accomplishments, and future research plans. Students will document progress and accomplishments on a form to be distributed to the committee prior to the meeting. The advisor's comments regarding the student's progress will also be provided on this form after the meeting. The form will be signed by the student, by all members of the dissertation committee, and will be distributed to the student and to the graduate program coordinator. These forms are reviewed by the graduate studies committee with feedback to the student and advisor, and serve as the basis for reappointment as a graduate associate for the following year.

Meetings to be documented* (use checklist template below):

1. **First year**: a) PHR 8993 form(s);b) end of first semester; c) annual review meeting to track progress no later than the first week of June.

2. **Second year**: a) with advisor by the middle of fall semester to discuss research progress and coursework; b) annual review meeting to track progress and to establish timeline for candidacy no later than the first week of June; c) candidacy exam by the end of the third semester of enrollment of the second year.

3. **Post Candidacy**: dissertation committee meeting every 6-12 months.

CHECKLIST OF FORMS AND DUE DATES		
YEAR ONE		**DATE**
Semester One	PH 8993 form: 2nd week of semester	
End of Semester one	Coursework plan	
Semester Two	PH 8993 form: 2nd week of semester	
Semester Three	PH 8993 form: 2nd week of semester	
By 2nd week of June	Annual review submitted	
YEAR TWO		
Semester one	Review with Advisor	
Semester two	Annual review and candidacy plan: Turn in by 2nd week of June	
CANDIDACY	By end of 3rd semester of enrollment in 2nd year	
YEAR THREE	**DATE**	
Dissertation committee meeting: Turn in by 2nd week of June		
YEAR FOUR		
Dissertation committee meeting: Turn in by 2nd week of June		
YEAR FIVE		
Dissertation committee meeting: Turn in by 2nd week of June		

APPENDIX VI

Rubrics for the Assessment of Graduate Students in the College of Pharmacy

Rubric for Evaluating PhD Dissertation and Defense (Final Oral Exam)
Rubric for Evaluating MS Thesis or PhD Candidacy Exam
College of Pharmacy Student Seminar Evaluation Form - For Student Use
College of Pharmacy Student Seminar Evaluation Form - For Faculty Use

Students Name: **Student's Graduate Program:**

Rubric for Evaluating PhD Dissertation and Defense (Final Oral Exam)

Committee Members, Readers and Students are responsible for being aware of the evaluation rubric in advance of the defense.

(This page will be completed by Graduate Committee and a copy of the rubric will be distributed to the committee, readers and student just prior to the defense)

Major Advisor Name: **Date of Dissertation Defense:**

Dissertation Title:

Graduate Committee Members

At the conclusion of the defense, **each committee member must complete the attached response sheets.**

For each attribute that a committee member feels is somewhat or very deficient, a short explanation should be provided. **Confidential Comment** sections at the bottom of the rubric are provided for explanations of the reasoning behind the overall evaluation of the examinee's performance if desired. Completed forms are to be treated as **confidential** and are to be **turned in to the graduate program coordinator,** not to the student.

All examination documents (rubrics and written comments) must be completed regardless of the outcome of the Dissertation Defense.

A summary of written comments and overall evaluation from the committee members **will be provided** to the student, Major Advisor, and Graduate Studies chair.

Students Name: **Student's Graduate Program:**

Dissertation and ORAL DEFENCE Rubric – Completed by: **Date:**

(To be completed by each committee member. Please check each evaluation criteria that you feel are appropriate within each attribute category)

Attribute for ORAL	Does Not Meet Expectations *Provide a short explanation for each attribute that you select in this category.*	Meets Expectations	Exceeds Expectations
Overall quality of presentation	☐ Poorly organized ☐ Poor presentation ☐ Poor communication skills ☐ Slides and handouts difficult to read	☐ Clearly organized ☐ Clear presentation ☐ Good communication skills ☐ Slides and handouts clear	☐ Well organized Professional presentation ☐ Excellent communication skills ☐ Slides and handouts outstanding
Overall breadth of knowledge	☐ Presentation unacceptable ☐ Presentation reveals critical weaknesses in depth of knowledge in subject matter ☐ Presentation does not reflect well developed critical thinking skills ☐ Presentation is narrow in scope	☐ Presentation acceptable ☐ Presentation reveals some depth of knowledge in subject matter ☐ Presentation reveals above average critical thinking skills ☐ Presentation reveals the ability to draw from knowledge in several disciplines	☐ Presentation superior ☐ Presentation reveals exceptional depth of subject knowledge ☐ Presentation reveals well developed critical thinking skills ☐ Presentation reveals the ability to interconnect and extend knowledge from multiple disciplines
Quality of response to questions	☐ Responses are incomplete or require prompting ☐ Arguments are poorly presented ☐ Respondent exhibits lack of knowledge in subject area ☐ Responses do not meet level expected of degree program of graduate (MS or PhD)	☐ Responses are complete ☐ Arguments are well organized ☐ Respondent exhibits adequate knowledge in subject area ☐ Responses meet level expected of degree program of graduate (MS or PhD)	☐ Responses are eloquent ☐ Arguments are skillfully presented ☐ Respondent exhibits superior knowledge in subject area ☐ Responses exceed level expected of degree program of graduate (MS or PhD)
Overall Assessment	☐ Does not meet expectations	☐ Meets Expectations	☐ Exceeds Expectations
Confidential Comments:			

Students Name: **Student's Graduate Program:**

WRITTEN Thesis/Dissertation Rubric – Completed by: **Date:**

(To be completed by each committee member and reader. Please check each evaluation criteria that you feel are appropriate within each attribute category)

Attribute for WRITTEN	Does Not Meet Expectations *Provide a short explanation for each attribute that you select in this category.*	Meets Expectations	Exceeds Expectations
Overall quality of science	☐ Arguments are incorrect, incoherent, or flawed ☐ Objectives are poorly defined ☐ Demonstrates rudimentary critical thinking skills ☐ Does not reflect understanding of subject matter and associated literature ☐ Demonstrates poor understanding of theoretical concepts ☐ Demonstrates limited originality ☐ Displays limited creativity and insight	☐ Arguments are coherent and clear ☐ Objectives are clear ☐ Demonstrates average critical thinking skills ☐ Reflects understanding of subject matter and associated literature ☐ Demonstrates understanding of theoretical concepts ☐ Demonstrates originality ☐ Displays creativity and insight	☐ Arguments are superior ☐ Objectives are well defined ☐ Exhibits mature, critical thinking skills ☐ Exhibits mastery of subject matter and associated literature. ☐ Demonstrates mastery of theoretical concepts ☐ Demonstrates exceptional originality ☐ Displays exceptional creativity and insight
Contribution to discipline	☐ Limited evidence of discovery ☐ Limited expansion upon previous research ☐ Limited theoretical or applied significance	☐ Some evidence of discovery ☐ Builds upon previous research ☐ Reasonable theoretical or applied significance	☐ Exceptional evidence of discovery ☐ Greatly extends previous research ☐ Exceptional theoretical or applied significance
Quality of writing	☐ Writing is weak ☐ Numerous grammatical and spelling errors apparent ☐ Organization is poor ☐ Documentation is poor	☐ Writing is adequate ☐ Some grammatical and spelling errors apparent ☐ Organization is logical ☐ Documentation is adequate	☐ Writing is publication quality ☐ No grammatical or spelling errors apparent ☐ Organization is excellent ☐ Documentation is excellent
Overall Assessment	☐ Does not meet expectations	☐ Meets Expectations	☐ Exceeds Expectations
Confidential Comments:			

Students Name: **Student's Graduate Program:**

Rubric for Evaluating MS Thesis or PhD Candidacy Exam

Committee Members, Readers and Students are responsible for being aware of the evaluation rubric in advance of the defense.

(This page will be completed by Graduate Committee and a copy of the rubric will be distributed to the committee, readers and student just prior to the defense)

Major Advisor Name: **Date of Exam:**

Title:

Graduate Committee Members

At the conclusion of the defense, **each committee member must complete the attached response sheets.**

For each attribute that a committee member feels is somewhat or very deficient, a short explanation should be provided. **Confidential Comment** sections at the bottom of the rubric are provided for explanations of the reasoning behind the overall evaluation of the examinee's performance if desired. Completed forms are to be treated as **confidential** and are to be **turned in to the graduate program coordinator,** not to the student.

All examination documents (rubrics and written comments) must be completed regardless of the outcome of the Dissertation Defense.

A summary of written comments and overall evaluation from the committee members **will be provided** to the student, Major Advisor, and Graduate studies chair.

Students Name: **Student's Graduate Program:**

Master's Thesis or Candidacy Examination Rubric – Completed by: **Date:**

(To be completed by each committee member. Please check each evaluation criteria that you feel are appropriate within each attribute category)

Attribute for ORAL	Does Not Meet Expectations *Provide a short explanation for each attribute that you select in this category.*	Meets Expectations	Exceeds Expectations
Overall quality of presentation	☐ Poorly organized ☐ Poor presentation ☐ Poor communication skills ☐ Slides and handouts difficult to read	☐ Clearly organized ☐ Clear presentation ☐ Good communication skills ☐ Slides and handouts clear	☐ Well organized Professional presentation ☐ Excellent communication skills ☐ Slides and handouts outstanding
Overall breadth of knowledge	☐ Presentation unacceptable ☐ Presentation reveals critical weaknesses in depth of knowledge in subject matter ☐ Presentation does not reflect well developed critical thinking skills ☐ Presentation is narrow in scope	☐ Presentation acceptable ☐ Presentation reveals some depth of knowledge in subject matter ☐ Presentation reveals above average critical thinking skills ☐ Presentation reveals the ability to draw from knowledge in several disciplines	☐ Presentation superior ☐ Presentation reveals exceptional depth of subject knowledge ☐ Presentation reveals well developed critical thinking skills ☐ Presentation reveals the ability to interconnect and extend knowledge from multiple disciplines
Quality of response to questions	☐ Responses are incomplete or require prompting ☐ Arguments are poorly presented ☐ Respondent exhibits lack of knowledge in subject area ☐ Responses do not meet level expected of degree program of graduate (MS or PhD)	☐ Responses are complete ☐ Arguments are well organized ☐ Respondent exhibits adequate knowledge in subject area ☐ Responses meet level expected of degree program of graduate (MS or PhD)	☐ Responses are eloquent ☐ Arguments are skillfully presented ☐ Respondent exhibits superior knowledge in subject area ☐ Responses exceed level expected of degree program of graduate (MS or PhD)
Overall Assessment	☐ Does not meet expectations	☐ Meets Expectations	☐ Exceeds Expectations
Confidential Comments:			

Students Name: **Student's Graduate Program:**

WRITTEN Candidacy Rubric – Completed by: **Date:**

(To be completed by each committee member and reader. Please check each evaluation criteria that you feel are appropriate within each attribute category)

Attribute for WRITTEN	Does Not Meet Expectations *Provide a short explanation for each attribute that you select in this category.*	Meets Expectations	Exceeds Expectations
Overall quality of science	☐ Arguments are incorrect, incoherent, or flawed ☐ Objectives are poorly defined ☐ Demonstrates rudimentary critical thinking skills ☐ Does not reflect understanding of subject matter and associated literature ☐ Demonstrates poor understanding of theoretical concepts ☐ Demonstrates limited originality ☐ Displays limited creativity and insight	☐ Arguments are coherent and clear ☐ Objectives are clear ☐ Demonstrates average critical thinking skills ☐ Reflects understanding of subject matter and associated literature ☐ Demonstrates understanding of theoretical concepts ☐ Demonstrates originality ☐ Displays creativity and insight	☐ Arguments are superior ☐ Objectives are well defined ☐ Exhibits mature, critical thinking skills ☐ Exhibits mastery of subject matter and associated literature. ☐ Demonstrates mastery of theoretical concepts ☐ Demonstrates exceptional originality ☐ Displays exceptional creativity and insight
Contribution to discipline	☐ Limited evidence of discovery ☐ Limited expansion upon previous research ☐ Limited theoretical or applied significance	☐ Some evidence of discovery ☐ Builds upon previous research ☐ Reasonable theoretical or applied significance	☐ Exceptional evidence of discovery ☐ Greatly extends previous research ☐ Exceptional theoretical or applied significance
Quality of writing	☐ Writing is weak ☐ Numerous grammatical and spelling errors apparent ☐ Organization is poor ☐ Documentation is poor	☐ Writing is adequate ☐ Some grammatical and spelling errors apparent ☐ Organization is logical ☐ Documentation is adequate	☐ Writing is publication quality ☐ No grammatical or spelling errors apparent ☐ Organization is excellent ☐ Documentation is excellent
Overall Assessment	☐ Does not meet expectations	☐ Meets Expectations	☐ Exceeds Expectations
Confidential Comments:			