



DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

LAWRENCE PROGRAM - GRADUATE STUDENT HANDBOOK



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TABLE OF CONTENTS

	PAGE
Faculty, Emeritus Faculty and Staff.....	4
1. Overview of the Lawrence Based Graduate Program.....	6
2. Selection of Research Advisor	7
3. Coursework Requirements.....	8
A) Entering Requirements.....	8
B) Required Courses	8
C) Research Skill (RS2) requirements	11
D) Electives	11
E) Curriculum summary by year.....	13
F) Seminar Requirements.....	14
G) Course Progress Form	14
4. Milestone Examinations	15
A) Foundation Exam	15
B) Oral Qualifying Exam.....	16
C) Requirements for the M.S. Degree	17
5. Performance Reviews and Policies	18
A) Pre-Foundation and Pre-Oral Exam Period.....	18
B) Post-Oral Qualifying Exam Reviews.....	19
C) Required academic performance	19
D) Background remediation.....	19
E) Research performance	20
F) Doctoral dissertation preparation and defense.....	20
G) Graduate Learner Outcomes - Dissertation Evaluation.....	21
6. Enrollment Guidelines	22
7. Internships and International Study.....	23

8. Additional Departmental Policies and Guidelines.....	23
A) Outside student employment.....	23
B) Scientific Meetings.....	23
C) Vacation and Holidays.....	23
D) Safety Regulations.....	24
E) Academic & Scholarly Misconduct.....	24
F) Special Policies for International Students.....	24
G) Student Participation in Departmental Activities.....	24
H) Equipment and Supplies Policies.....	25
9. Departmental Services.....	26
A) Ordering.....	26
B) Copiers.....	26
C) Laboratory Shipments.....	26
D) Keys.....	26
E) Fax.....	26
Appendix I Advising International Students.....	27
Appendix II Globalization of Pharmaceutical Education Network (GPEN).....	31
Appendix III (Evaluation Forms).....	32
Appendix IV (Advisor Selection Form).....	37
Appendix V (Acknowledgement Form).....	38

Pharmaceutical Chemistry Faculty and Staff

Faculty	Location
Audus, Kenneth Professor and Dean	174 SL
Berkland, Cory University Distinguished Professor	320G MRB
DeKosky, Brandon Assistant Professor	158 SL
Forrest, Laird Professor	150 SL
Hageman, Michael Stella Distinguished Professor	274 SL
Krise, Jeff Associate Professor	256 SL
Lunte, Susan M. Adams Distinguished Professor	220E MRB
Middaugh, C. Russell Distinguished Professor	320G MRB
Picking, Wendy Professor	320F MRB
Picking, William Foundation Distinguished Professor	320B MRB
Schöneich, Christian Takeru and Aya Higuchi Distinguished Professor	272 SL
Siahaan, Teruna Higuchi Distinguished Professor	258 SL
Stobaugh, John F. Professor and Associate Dean	266 SL & 2050A P
Tolbert, Thomas Associate Professor	250 SL
Volkin, David Ronald T. Borchardt Distinguished Professor	200B MRB
Wang, Michael Associate Professor	252 SL

Emeritus Faculty	Location
Borchardt, Ronald T. Emeritus Distinguished Professor	201 SL
Schowen, Richard L. Emeritus Distinguished Professor	–
Stella, Valentino Emeritus Distinguished Professor	280 SL
Wilson, George Emeritus Distinguished Professor	–

Staff	Location
Brooks, Nicole Administrative Associate Sr.	182 SL
Hall, Karen Accountant	182 SL
Huslig, Michelle Program Coordinator	182A SL

*P (Pharmacy Building)

*MRB (Multidisciplinary Research Building)

*SL (Simons Laboratories)

1. OVERVIEW OF LAWRENCE BASED GRADUATE PROGRAM

The Department Pharmaceutical Chemistry is comprised of nationally and internationally recognized faculty specializing in diverse areas of research including Physical Pharmacy, Biopharmaceutics, Cellular and Molecular Pharmacokinetics Nanotechnology, Macromolecular Pharmaceutics, Vaccines, Pharmaceutical Biotechnology, and Analytical Sciences (Bioanalysis and Pharmaceutical Analysis).

The past successes of the Department, which have allowed it to gain an international reputation as a leader in the board discipline of Pharmaceutical Chemistry, have rested on the shoulders of former graduate students. Realizing this, the Department continues to emphasize the recruiting and training of graduate students as its number one priority. The graduate program is designed to prepare students for productive careers in the private sector, academia, and government agencies.

The required courses serve to provide a comprehensive background in the above noted foundation scientific fields. Further, students are encouraged to explore not only the courses offered within Pharmaceutical Chemistry but also those offered by other departments, including Medicinal Chemistry, Chemistry, Chemical & Petroleum Engineering, and Molecular Biosciences, and others per the students research topic and interests. This broad selection allows students to tailor their education to mesh with their specific areas of scientific research and interests.

A. The Ph.D. degree

The Department of Pharmaceutical Chemistry conducts a Ph.D. program for the training of future scientists suitable to pursue careers in the private, government and academic sectors. Accordingly, efforts are directed towards the recruitment of students whose goal is the attainment of the Ph.D. degree. All activities required of the Ph.D. students (coursework, exams, research reviews, presentations and participation in departmental events are delineated in the following sections).

B. The M.S. degree

While the department does not recruit on-site M.S. students, on occasion a student may elect to terminate graduate studies at the M.S. level or be counseled towards the M.S. as the terminal degree by the faculty or the student's M.S. thesis committee. In these cases the student must have satisfactorily completed most of the core courses and sufficient research to support an M.S. thesis and oral defense. Alternatively, provision may be made for the preparation of an extensive research report based on laboratory investigations, which is presented in an oral examination.

2. SELECTION OF RESEARCH ADVISOR

Each student must report to a research advisor who is responsible for assigning a dissertation research project and assessing progress in the research-based courses, PHCH 899 (Masters Thesis) and PHCH 999 (Doctoral Dissertation). The research advisor also serves as the chairperson of the student's comprehensive oral examination committee and dissertation defense committee. Upon entering the program, students will be assigned to an initial laboratory placement for the fall semester.

During this initial semester students are required to attend a series of presentations by the faculty that describes their specific research interests (typically the start of these presentations do not coincide with the beginning of the semester). These presentations serve to inform the student of current research interests and projects being conducted in the various faculty laboratories and as such will serve as a basis for the selection of a permanent research mentor.

As a component of the research mentor selection, students are encouraged to make additional visits to faculty members with whom they are interested in working prior to making their final selections. Students are asked to prioritize these faculty selections as 1st, 2nd, and 3rd choices using the form on Appendix IV to indicate their rank order of preferences. To the extent that it is possible, students will be assigned to a research advisor according to their expressed interest. For reasons of limitations in funding and space, it may not always be possible to honor a student's first choice; however, very effort will be made to accommodate a student's interest.

Further, during the initial fall semester, for students who wish to gain first hand exposure to more than one laboratory, one may opt to do a rotation various laboratories prior to making their final decision. Individuals with such interest should discuss this with the faculty whom would be involved and the graduate director.

Similarly, students have the freedom to change advisors at any time while in the program. A student should not hesitate to make such a change if it is in his or her best interest and should not be concerned with offending the former advisor. Typically, a change in advisor can be beneficial to the student for many reasons; however, it should be recognized that a change in research mentor might extend the time required to complete dissertation research suitable for the Ph.D. degree.

3. COURSEWORK REQUIREMENTS

The faculty collectively decides on a series of courses that they consider being of fundamental importance for all students regardless of their area of specialization. These are referred to as foundation courses, which are to be successfully completed by all students enrolled in the program. Students are additionally required to complete at least one elective course that ideally is related to their research interests. In addition, the institution has what is termed an RS2 requirement (research skills, two required) that must be completed prior to undertaking the Comprehensive Oral Examination. Refer to the appropriate following sections for more detail as to how the RS2 requirement is fulfilled.

A. Entering Background Course Requirements

It is expected that entering students have mathematics capabilities equivalent to having completed a standard two-semester sequence in calculus undertaken by STEM discipline majors and knowledge equivalent to that obtained from completion of one-semester of physical chemistry where classical thermodynamics is introduced.

The following are specific University of Kansas courses that would address these expectations.

CHEM 510 (Biological Physical Chemistry, 3 hours)

MATH 125 (Calculus I, 4 hours) and MATH 126 (Calculus II, 4 hours) or
MATH 115 (Calculus I, 3 hours) and MATH 116 (Calculus II, 3 hours)

If the student is deficient in any of these areas upon entering the program, the graduate director will work with the student to determine an appropriate course of action to address these issues.

B. Required Courses

All students participating in the pharmaceutical chemistry Ph.D. program are required to take a series of courses, which are designed to ensure that graduates maintain the department's long-standing reputation for strength in the physical-chemical and pharmaceutical biosciences as they relate to modern research in Pharmaceutical Chemistry. The each student must take **eight (8) required courses** and achieve an overall satisfactory performance to be eligible to undertake the **Foundation Exam**, which is offered in January after the completion of their third semester in the program. These courses are offered every year and must be completed in the first three semesters in the program. These required foundation courses are as follows:

YEAR ONE

FALL SEMESTER

1. CHEM 740 Principles of Organic Reactions (3 credits)

A course that presents the structural features and driving forces that control the course of chemical reactions. Topics will include acid and base properties of functional groups; qualitative aspects of strain, steric, inductive, resonance, and solvent effects on reactivity; stereochemistry and conformations; an introduction to orbital symmetry control; basic thermodynamic and kinetic concepts; and an overview of some important classes of mechanisms.

2. PHCH 730 Pharmacokinetics I (3 credits)*

This course provides a discussion of the basic concepts of biopharmaceutics and pharmacokinetics; including classical compartmental models, clearance concepts, vascular and extravascular dosing, and the use of pharmacokinetics in dosage regimen design and adjustment.

**graduate students who have completed a similar course at a prior institution are not required to take PHCH 730; however, students will be responsible for the conceptual content of this course as part of the foundation examination.*

3. PHCH 862 Physical Chemistry of Solutions, Solids and Surfaces (3 credits)

A lecture-discussion course concerned with the equilibrium of molecular species interacting in aqueous solutions, at interfaces of multi-phasic systems and in condensed and crystalline phases. Problem setup and solving techniques will be discussed in detail. Additional concepts include mixed aqueous-organic systems, salt complex formation, gas/liquid equilibrium, pH solubility effects, heterogeneous systems and colloidal systems, enzymatic systems, including amorphous and crystalline solid phases.

SPRING SEMESTER

4. CHEM 840 Physical Organic Chemistry (3 credits)

An examination of the methods used to probe the mechanisms of organic reactions and of the chemistry of some important reactive intermediates. Topics will include isotope effects, kinetics, linear free energy relationships, solvent effects, a continuing discussion of orbital symmetry, rearrangements, carbocations, carbanions, carbenes, radicals, excited states, and strained molecules.

5. PHCH 920 Chemical Kinetics (2 credits)

A course providing the principles of kinetic data analysis as applied to problems in pharmaceutical chemistry. Topics include the setup and solution of rate equations related to chemical reactions; simplifications and approximations in complex equation systems; isotope, solvent and salt rate effects; and diffusion and activation controlled reactions.

6. PHCH 972 Mechanisms of Drug Deterioration and Stabilization (3 credits)

This course emphasizes the principles of physical organic chemistry as relevant to mechanisms and chemical kinetics of drug degradation and the rational development for approaches to drug stabilization. Topics includes a survey of commonly encountered degradation reactions, pH-rate profiles, kinetic isotope effects, publications detailing the degradation of various drug substances and oxidative and photochemical mediated drug degradation processes.

YEAR TWO

FALL SEMESTER

7. PHCH 864 Pharmaceutical Analysis (4 credits)

This course presents various aspects of analytical chemistry that are utilized on a routine basis by scientists in various areas of biomedical research and drug discovery and development. Emphasis will be on chromatography, electrophoresis and mass spectrometry, which reflect the preeminent position that these techniques occupy in the field of pharmaceutical and biomedical analysis. The course additionally addresses the statistical used to validate analytical methods for the determination of drugs in the bulk form, pharmaceutical formulations, biological samples, and other relevant media.

8. PHCH 870 Advanced Pharmaceutical Biotechnology (4 credits)

A course designed to emphasize the important facets of recombinant proteins as well as oligonucleotides as pharmaceutical agents. Biophysical methods will be used to analyze the protein structure and stability. Methods of large-scale protein production, isolation, and purification will be covered. Potential chemical and physical degradation processes and strategies for circumventing these degradations will be discussed. Finally, procedures for handling regulatory guidelines for biotechnology products will also be addressed.

C. Research Skill (RS2) requirement

All doctoral students must meet the requirement for Research Skills and Responsible Scholarship (RS2) before proceeding to oral comprehensive exam. Each doctoral student is required to take a course in **Responsible Conduct of Research** (fulfilled by PHCH 801) and to obtain research skills pertinent to the doctoral level of research in their field. The research skills component of this requirement may be fulfilled by successfully completing an acceptable skills development course. After completing the RS2 requirement, please see Ms. Huslig to complete the progress to degree form, indicating completion of the requirement. Courses commonly used for the RS2 requirement can also serve as electives; however, note that a single course cannot serve in two differing categories.

1. PHCH 801 Issues of Scientific Integrity* (1 credit, offered fall of even years)

Lectures and discussion on ethical issues in the conduct of a scientific career, with emphasis on practical topics of special importance in molecular-level research in the chemical, biological, and pharmaceutical sciences. Topics will include the nature of ethics, the scientist in the laboratory, and the scientist as author, grantee, reviewer, employer/ employee, teacher/student, and citizen. Discussions will focus on case histories (**partially fulfills the institutional RS2 requirement**).

E. Electives

(TO BE TAKEN IN AT THE FIRST OPPORTUNITY)

Graduate students are required to take **one elective course** in addition to the previously listed requirements. The elective course may be from the additional courses offered by the department of Pharmaceutical Chemistry (see below) or it can be from any other department on campus with prior approval from the student's research advisor. **Electives can also be chosen from the courses listed as fulfilling the RS2 requirement, but a given course cannot be used for elective and RS2 fulfillment.** In other instances, the student may request that a course not listed in these groups be recognized as a Pharmaceutical Chemistry elective, with the exception that any such course should be of the 600 level or higher.

1. PHCH 705 Pharmaceutical Chemistry - Writing and Communications Training for Science Graduate Students (3 credits, offered in the spring semester)

Communicating research proposals and experimental findings is a critical skill for scientists. Successful communication depends on clarity of thought and careful use of language. This course will use class discussions with examples and homework assignments to help prepare the graduate student to successfully communicate in both academia and industry settings. Graded on a satisfactory/unsatisfactory basis. ***This course can serve to fulfill one research skill (RS2) requirement.***

2. PHCH 715 Drug Delivery (3 credits, offered in the spring semester)

Drug Delivery surveys the latest technology for delivering pharmaceuticals and biologicals to reduce side effects and enhance drug efficacy. The course will review the latest research in this area and examine more classical delivery methods. A qualitative and quantitative understanding of drug delivery practice and theory is the goal.

3. PHCH 718 Physical Chemical Principles of Solution Dosage Forms (3 credits, offered in the spring semester)

Physical properties of pharmaceutical solutions and their physiological compatibility will be discussed (intermolecular interactions, thermodynamics, colligative properties, isotonicity, pH, buffers and drug solubility). Kinetics and mechanisms of drug degradation in solution will also be introduced.

4. PHCH 725. Molecular Cell Biology (3 credits, offered in the spring semester)

Fundamentals and advanced concepts in cell biology and the molecular interactions responsible for cell functions, homeostasis and disease will be presented. Current analytical methods for examining cells and their molecular components will be discussed. Emphasis will be placed on the chemical and physical properties of individual proteins, nucleic acids and lipids and their assembly into cellular and subcellular structures. (Same as C&PE 725.) Prerequisite: Graduate standing or consent of instructor. LEC.

5. PHCH 816. Careers in the Biomedical Sciences (1 credit, offered every semester) Required for Biotechnology training grant fellows.

Advanced course examining career options open to PhD scientists in the biomedical sciences, and providing preparation for the different career paths. Extensive student/faculty interaction is emphasized utilizing lectures, class discussion of assigned reading, and oral presentation. This course will be graded satisfactory/unsatisfactory (Same as BIOL 816, CHEM 816 and MDCM 816).

6. PHCH 860 Principles and Practice of Chemical Biology (3 credits, offered in the fall semester)

A survey of topics investigated by chemical biology methods including: transcription and translation, cell signaling, genetic and genomics, biochemical pathways, macromolecular structure, and the biosynthesis of peptides, carbohydrates, natural products, and nucleic acids. Concepts of thermodynamics and kinetics, bioconjugations and bioorthogonal chemistry will also be presented. (Same as BIOL 860, CHEM 860 and MDCM 860.) Prerequisite: Permission of instructor.

D. Curriculum Sequence Summary

First Year*

CHEM 740 (3 hrs) Organic Chemistry

PHCH 730 (3 hrs) Pharmacokinetics¹.

PHCH 801 (1 hr) Ethics²

PHCH 862 (3 hrs) Phys Chem SSS

CHEM 840 (3 hrs) Phys Org Chem

PHCH 920 (2 hrs) Kinetics

PHCH 972 (3 hrs) Drug Stability

*Pharmacy degree holders should take a course in Physical Chemistry if not previously taken. Refer to entering background requirements.

¹Not required of Pharmacy degree holders who have had a similar course; however the student will be responsible for content at this level on the foundation examination.

²Taken at the first opportunity, currently offered in the fall semester of even calendar years (partially fulfills the institutional RS2 requirement)

Second Year

Fall Semester

PHCH 870 (4 hrs) Biotechnology

PHCH 864 (4 hrs) Analysis

Spring Semester

PHCH 705 (3 hrs) Writing³

Elective

³A course that is not required; however, useful in the preparation of the research proposal. May be used to fulfill the RS2 requirement

E. Seminar Requirements

All students are required to attend Pharmaceutical Chemistry Seminar, which is to include those given by any visiting speaker and/or candidates for positions, until completion of their program of study in order to remain in good standing.

Seminar is normally scheduled on Tuesday from 3:30-5:00 p.m. in Simons Laboratories Auditorium (Rm 100). Variance to this schedule may occur due to special situations, such as visiting speakers and/or interviews, or simply extra-special seminars. All students are expected to attend all of such special events.

Students are required to present at least one seminar during their time in the department prior to defense of the doctoral dissertation. Students should discuss their seminar presentations with their advisors. The seminar is typically based on the progress achieved in their research project. The development of communication skills is considered to be an important aspect of graduate training. Accordingly, the ability to present seminars clearly and effectively will be an important aspect of the student's training process.

F. Coursework Progress Form

In an effort to aid students in making sure they have completed all of the course requirements, the student is required to continuously update the **Department of Pharmaceutical Chemistry Coursework Progress Form** (students should keep this summary form continuously updated and provide an electronic copy to the department's program assistant, Ms. Huslig). **A slide of this form should be presented to members of the faculty and/or review committee at the beginning of each progress review meeting** (refer to appendix III for the form).

4. Milestone Examinations

A. Foundation Exam

Each year the faculty will meet to discuss progress of students who have completed the first three (3) semesters of graduate study. Students who have successfully completed the three semester sequence of required courses will be eligible to undertake the foundation examination, which will be offered in January of each year. The foundation exam will consist of written and oral components.

The written exam will be based on the contents of three (3) publications selected by the faculty that broadly address areas covered in the three semester coursework sequence: Biopharmaceutics and Pharmacokinetics, Pharmaceutical Equilibria, Chemical Kinetics, Drug Stability, Pharmaceutical Analysis and Pharmaceutical Biotechnology. Each of the three (3) publications should cover a combination of at least two areas. As an example, a paper may be selected that covers Biopharmaceutics/Pharmacokinetics and Pharmaceutical Biotechnology. The second paper covers Equilibria and Pharmaceutical Analysis and the third paper covers Chemical Kinetics and Drug Stability. Each paper will be selected by a group of faculty members in the respective area. After all faculty members agree on the three (3) papers, the written questions for each paper will be developed by the faculty group that selected the paper. After all faculty members agree with these questions, the papers and the questions will be distributed to the student.

The written exam questions are used as a guidance and they will cover inquiries such as, (a) the scientific rationale and premise of the investigation, (b) attributes and/or limitations of the results, (c) possible ways to improve the investigation, and (d) where applicable, how the publication relates to the principles addressed in the required coursework. The student will be given seven (7) days to provide answers to the questions posed for each publication. In answering the questions, the student should work as if the exam is an open book exam. Various resources may be utilized, but the student should not seek help from any other individuals. The faculty group that provided the questions will grade the written answers.

Subsequent to the written examination, each student will undertake an oral examination by a committee that is composed of three (3) faculty members (student advisor plus two faculties) of the Pharmaceutical Chemistry Department. The oral examination will focus on an elaboration to the written exam questions as deemed necessary by the committee. The oral exam is not intended to examine research methods, but rather to examine the basic science knowledge of the student from coursework that has been completed. Should the student's performance be judged unsatisfactory, as determined by the faculty committee, this may result in the student being asked to repeat the process in May, be dismissed from the graduate program or be counseled to terminate with the M.S. degree (subject to meeting requirements as delineated in a following section).

In cases where the student is required to retake the Foundation Exam, the student should use this time to self-remediate in areas identified as problematic. Subsequent to a satisfactory performance in May, the student will then be eligible to undertake the Oral Qualifying Examination in August.

The results of the Foundation Examination will be documented using the "**Student Evaluation and Scoring Guide - Foundation Examination in Pharmaceutical Chemistry**", which is presented in Appendix III.

B. The Oral Qualifying Examination

Prior to undertaking the oral comprehensive exam, the student is required to complete **RS2** requirements.

The exam is typically conducted at the conclusion of four fall and spring semesters in the graduate program, during the week immediately following the annual KU May graduation. The examination chairperson will be the student's advisor; in addition, the committee will consist of three other faculty members from the department and one committee member from another department. The names and affiliation of the outside member of this committee should be provided to Ms. Huslig prior to the exam for completion of the PTD (progress to degree) Form. In addition to the research advisor, the remaining three departmental faculty members will be randomly assigned to serve on the committee. This exam will be composed of a series of oral questions that focus primarily upon the student's research presentation and a **9-page (double-spaced)** prospectus. For the prospectus, create a title page that includes the proposed title of the research, the student's name, the mentor's name and a listing of the oral examination committee members. Organize the prospectus in the following manner and provide a copy to all of your committee members at least two weeks in advance of the exam.

- a. **Specific Aims:** List the broad, long-term objectives and what the specific research proposed in this proposal is intended to accomplish. State the hypotheses to be tested, and/or technique or operation to be improved (**one page**).
- b. **Background and Significance:** Describe the background leading to the proposed research, critically evaluate existing knowledge and limitations of existing approaches and/or technologies, and specifically identify the lack of knowledge and/or limitations which the project is intended to address. State concisely the importance and the scientific and/or technological relevance of the investigation described in the proposal by relating the specific aims to the broad, long term objectives (**four pages**).
- c. **Approach:** In this section describe what you have accomplished (preliminary results) and include a very brief description of the methods used. Relate these accomplishments back to your specific aims and how these accomplishments relate to either proving or disproving your hypotheses and/or contribute to the technique or process that you are seeking to advance. Provide a brief outline of your future work based on results to date (**four pages**).

In preparing the document, you may seek some guidance from your mentor with respect to the project outline and goals; however, the written portion is to be solely

your product. You may, however, consult your graduate student peers on writing and grammar issues.

Prepare the document single-sided and double-spaced with margins of one inch, on top, bottom, and both sides. (The height of the letters must not be smaller than 10 point, the density of character must not be greater than 15 characters per inch, and no more than 6 lines per inch, please!)

The purpose of the oral exam is to examine your ability to formulate a sound research proposal and be knowledgeable about all aspects of the selected topic. Those students who pass this examination will be granted a non-thesis M.S. degree and will then be considered a candidate for the Ph.D. degree. Those students not successfully passing this exam will be asked to terminate the program with the M.S. degree (see requirements below).

The result of the comprehensive oral examination will be documented utilizing the “Student Evaluation and Scoring Guide - Research Proposal Defense & Comprehensive Oral Examination for Doctoral Candidacy in Pharmaceutical Chemistry” contained in appendix IV.

C. Requirements for Students Receiving the M.S. Degree

Candidates for the M.S. degree must satisfy the general requirements of the Graduate School as well as fulfill one of the following options.

1. Students who are continuing on toward the Ph.D. degree will receive a non-thesis M.S. degree upon successfully passing the written and oral comprehensive examinations. To officially receive this degree, the student must submit an application for degree. Refer to the Graduate Studies and Research website or contact the appropriate individual in the School of Pharmacy Dean’s office (864-3591) for information.
2. Students who terminate from the program with the M.S. degree must have satisfactorily completed most of the required courses and sufficient research to support an M.S. thesis and oral defense. Alternatively, the student may prepare an extensive research report based on laboratory investigations, which is defended in an oral presentation. Under extenuating circumstances, the student may prepare an extensive literature review of a specific subject approved by an M.S. evaluation committee, which is defended in an oral examination.

The result of the oral presentation will be reported using the **Student Evaluation Form - Thesis / Dissertation Defense in Pharmaceutical Chemistry**” form that is in appendix III.

5. PERFORMANCE REVIEWS & POLICIES

A. Pre-Foundation and Pre-Oral Exam Period

January Review

First-year students

This group is required to meet (~10 minutes) with the entire faculty just prior to the start of the spring semester (typically the second week of January). The purpose is to review the student's progress in coursework and discuss the direction of the student's research project. During these meetings, students are highly encouraged to express any concerns he or she may have with any aspect of the program. For the review, students should present their coursework record using the [Department of Pharmaceutical Chemistry Coursework Progress Form](#), which is available in appendix III.

Second-year students

The second-year students who have successfully completed the prescribed first three semester of coursework will be in a position to undertake the Foundation Exam in mid-January. During the review (~10 minutes), the faculty will review the students' progress in graduate coursework to confirm eligibility for the Foundation Exam (Students should present an up to date [Department of Pharmaceutical Chemistry Coursework Progress Form](#)). Further discussion will focus on the students' plans to complete RS2 requirements and elective coursework, to determination eligibility to undertake the Oral Qualifying Exam (both RS2 requirements must be completed prior to the exam).

Fall Retreat

(First- & Second-year students)

During the fall break period, typically a Monday-Tuesday period in mid-October, the department holds an annual retreat. Attendance and participation is mandatory. Second-year students are expected to prepare a poster presentation that documents progress on their research project. One week prior to the retreat an electronic file of the poster presentation should be sent to selected faculty that are responsible for reviewing the student posters and providing feedback utilizing the [Annual Review Assessment Form](#) (Appendix III). The faculty reviewers will be selected by the department and provided to students. The reviews are to be collected in the department office, and subsequently shared with the student and his/or her research mentor for their review and discussion. Copies of the reviews are to remain in the student's departmental file.

B. Post-Oral Qualifying Exam Reviews

After successful completion of the oral examination, the student is charged with selecting a dissertation committee. The committee composition shall include four faculty members in the department (research advisor plus other faculty) plus one faculty from an outside department. Depending on the student's research project, additional faculty external to the Lawrence campus or institution may be added to the dissertation committee. During this period the student will complete any elective requirements as necessary.

Fall Retreat

(post-oral qualifying exam students)

Post oral qualifying examination students are expected to prepare a poster presentation that documents progress on their research project for each fall retreat until completion of graduate studies. An exception to this are the students selected by the faculty to provide an oral presentation. For the students preparing posters, one week prior to the retreat an electronic file of the poster presentation should now be sent to the student's dissertation committee who are now responsible for reviewing the student posters.

As has previously done, faculty reviewers (dissertation committee) will be responsible for providing feedback utilizing the **Annual Review Assessment Form** (Appendix III). The reviews are to be collected in the department office, and subsequently shared with the student and his/or her research mentor for their review and discussion. Copies of the reviews are to remain in the student's departmental file.

C. Required Academic Performance

Graduate students are expected to receive a grade of B or better in all courses undertaken. A grade of C (or lower) is considered unsatisfactory. To remain in good standing academically, it is expected that the graduate student will receive only A or B grades for each class taken. According to standards described in the Graduate School Catalog, the student must maintain an overall GPA ≥ 3.0 at all times.

In the event that the students receives a grade (or multiple course grades) below a B in a given course, which results in a cumulative GPA of less than 3.0, the student is automatically placed on probation by the Graduate School. The Graduate School requires that the student's cumulative GPA to be raised to 3.0 by the end of the next semester of enrollment in order for the student to be removed from probation. The faculty on a case-by-case basis will deal with any variances from this scenario.

D. Background Remediation

On occasion students have been admitted to the graduate program with an academic background that requires additional coursework to provide the student with the necessary tools to be successful in the coursework prescribed above. This may or may not be apparent upon entry, but such deficiencies are normally revealed during the first year in the graduate

program. Once accepted, the department is committed to providing the strongest opportunity for any student to succeed. Therefore, in such situations, the graduate director, together with the student's mentor and the department chairperson will work with the student to develop a remediation plan that once successfully completed will place the student in a position to be successful in the program. Should the student not succeed in the remediation effort program termination will be recommended.

E. Research Performance

Students' performance in the laboratory is additionally monitored post-prelims by the research advisor. The student will first register for an appropriate amount of master's research with their particular research mentor. Similarly, subsequent to successfully passing the oral qualifying examination, the student will enroll in doctoral dissertation credit hours. In each case the number of hours of enrollment is dependent on whether the student is undertaking other courses and how many hours the student has completed subsequent to the post-comprehensive exam. In all cases, enrollment shall be such that the student is continuously enrolled as a full time student. Masters research credit hours are graded on the following basis: S, satisfactory; F, failure; I, incomplete; WG, withheld grade. In contrast, doctoral dissertation credit hours are assigned grades by the traditional letter-grade format.

It is in the best interest of the student to aggressively pursue their laboratory research and hopefully to rapidly and continually achieve high quality results. However, it is understandable that research progress is not predictable and delays do happen even for the most motivated student. However, it is the Department's responsibility to set deadlines to make sure that projects do not continue on unproductively for extended periods of time.

F. Doctoral Dissertation Preparation and Defense

No later than the start of year five (5), the student should plan an August/September dissertation committee meeting. At this time an outline should be presented that describes the remaining experimental work to be accomplished and provides an anticipated timeframe for completion of remaining research and a projected dissertation defense date. The department's goal is for students to complete the program by approximately 5 years. Dissertations completed within less than or five years will be considered as a highly positive performance.

Upon the conclusion of experimental activities, the student will devote full time to the preparation of the doctoral dissertation document. The dissertation will need to comply with that required guidelines according to Graduate Studies (refer to their website). For additional information, the student may confer with the School of Pharmacy Graduate Assistant in the Dean's Office (Room 2050 Pharmacy; 4-3591). The department's Administrative Associate, Ms. Huslig, may also be consulted on issues regarding the public announcement of the dissertation defense.

As noted previously, the doctoral dissertation defense committee will consist of the research advisor (committee chairperson) three other departmental faculty members and one external

committee member. Please note that this committee can be selected by the student and does not need to be the same individuals that previously served during the oral qualifying examination, but except under extenuating circumstances should be the same individuals that have been serving on the student's dissertation committee that was constituted subsequent to the comprehensive exam. Through discussion with the research advisor and the dissertation committee, a mutually agreed upon date for the defense will be chosen. Once this date is known, the student should immediately contact the graduate program representative, Ms. Steffan, in the School of Pharmacy Dean's office with this information.

G. Graduate Learner Outcomes - Dissertation Evaluation

As of the fall 2011 semester, the University of Kansas has instituted a process for the evaluation of all doctoral dissertations. The basic science departments of the School of Pharmacy have adopted common evaluation criteria in order to satisfy this policy. While a tool serving to allow examination committee's to evaluate an individual's dissertation in a uniform fashion, there are clearly elements of the adopted criteria that the student should familiarize himself or herself with from the onset of graduate study in an effort to strive for the highest possible evaluation during the defense of their doctoral dissertation. The results of the doctoral dissertation examination will be documented utilizing the "Student Evaluation and Scoring Guide - Ph.D. Thesis Defense in Pharmaceutical Chemistry" that is provided in appendix III.

In summary it is the goal of the faculty that all students successfully defend their dissertation within approximately a 5-year timeframe. Students who have performed exceptionally in coursework, made significant intellectual contributions in their research, developed independence and displayed scientific maturity, and have prepared a dissertation of high quality during this timeframe will be considered as outstanding performers and may be considered for "Honors" at the conclusion of their dissertation defense by the examination committee.

6. ENROLLMENT GUIDELINES (important - must read)

Definitions regarding graduate student status:

Students in the department who are not receiving financial aid from any source outside the department are considered GRAs (Graduate Research Assistants). Students are not considered GRAs if they receive any funding from an outside source; this includes Trainee appointments on any Training Grant and all non-departmental fellowships (e.g., PhRMA Fellows). Any student who receives a foreign government fellowship cannot be considered to be a GRA.

All students not considered being GRAs must enroll as if they are foreign or non-resident students (even if they are Kansas residents). Therefore, all students should use this information to determine their classification since it will have a significant impact on how many credits they must enroll in each semester.

GRA Appointments

As a GRA, and to be considered full-time, a student must enroll for a total of 6 credits for spring and fall semesters and 3 credits in the summer. In years prior to taking the qualifying exam, students need not enroll in PHCH 899 (Master's Thesis) unless they need additional credits to meet the aforementioned total credit requirements. Students, who have completed the comprehensive exam, will need to complete coursework requirements and electives should any remain at this point, and enroll in PHCH 999 (Doctoral Dissertation) to meet minimum credit requirements. **Subsequent to meeting the aforementioned requirements and upon completion of 18 post-comprehensive credit hours, a doctoral student is considered full-time by enrolling in just one credit hour of PHCH 999 (Doctoral Dissertation).**

Any student not qualified as a GRA

As a non-GRA, and to be considered full-time, students must enroll in 9 credit hours for spring and fall semesters and 6 credit hours in the summer. It is not necessary to enroll in either PHCH 899 (Master's Thesis) during the years before prelims nor is it necessary to enroll in PHCH 999 (Doctoral Dissertation) after prelims unless the total number of credits from coursework falls short of the credit limits. **Upon completion of 18 post-comprehensive credit hours, a doctoral student is considered full-time by enrolling in just one credit hour of PHCH 999 (Doctoral Dissertation).**

For clarification on your student status and for specific enrollment information, please contact Nancy Helm in the departmental office for guidance.

Late enrollment

Students who are late in their enrollment for classes will be responsible for any fees incurred.

7. INTERNSHIPS AND INTERNATIONAL STUDY OPPORTUNITIES

In addition to conventional study completed entirely at the department, students can potentially participate in the Takeru Higuchi and Nigel Manning Intersearch Program. This allows students to conduct a portion of their research at the Victorian College of Pharmacy (<http://www.vcp.monash.edu.au/>), which is a part of Monash University located in Melbourne, Australia. Ideally, the students select a surrogate advisor who specializes in an area of research outside that of the primary advisor, thus allowing for more breadth to their overall research project. There are no strict guidelines regarding the length of time for the experience; however, it has generally ranged from a few months to a year.

Any student in the program may participate in an internship at a pharmaceutical company after discussion with the student's research advisor. Participants in these programs have generally found the experiences to be extremely beneficial to their overall experience at KU.

8. ADDITIONAL DEPARTMENTAL POLICIES AND GUIDELINES

A. Outside Student Employment

Students in the department receive a stipend that is very competitive compared to those of our peer institutions. It is only fair that the faculty expect hard work and dedication in return. Also, for a student to make acceptable progress, it is essential that they focus 100% of their efforts on their project. Outside employment not only takes away from time to study for classes and perform research in the lab but is also an additional obligation that interferes with the ability of the student to concentrate on his/her project. Considering the above, outside employment is highly discouraged.

B. Scientific Meetings

Scientific meeting attendance is not to be taken for granted, i.e., attendance must be earned as a result of research effort. In general, sufficient research progress should be in hand to support a scientific presentation, and the researcher should present a polished abstract to the respective research advisor at least four weeks prior to the abstract submission deadline. Moreover, attendance at scientific meetings is considered an educational, work-related activity; as such, individuals should plan to arrive and leave within the specified period of the meeting and attend a significant percent of the sessions offered.

C. Vacation and Holidays

Each individual student is entitled to two (2) weeks of vacation per year plus the holidays determined by the state. Spring break, fall break, the periods between the fall and spring semesters and the period between the spring and fall semesters (summer months) is not considered as vacation or holiday periods. Unless, using a portion of these periods as part of the two week of vacation period, students should always be aggressively initiating their research project during such periods. Due to potential interruption in the planning, conduct and interpretation of

laboratory experiments, **the student should explicitly discuss any planned absences with their research advisor and follow the established policy established by their individual advisor.**

D. Safety Regulations

Students are required to visit and are responsible for all content contained in the Environmental Health and Safety (EHS) website that pertains to the type of research they plan to conduct (no exceptions). The website address is <http://www.ehs.ku.edu/>. The EHS director is Mike Russell; his phone number and email address are 785-864-2854 and mjrusell@ku.edu, respectively. In addition, students may contact Professor Tolbert, the departmental lab safety officer, if they have questions pertaining to specific departmental policies/procedures that are not covered on the website. **Before any student begins work in the laboratory, it is essential that he or she visit the EHS website and arrange for the proper training.**

EHS provides various on-line courses that are to be completed prior to undertaking laboratory activities and typically require refreshing every two years. The details of these requirements are typically disseminated in each semester in the seminar series. Beyond the general EHS courses special training is required for students planning to work with radioisotopes, highly infectious biological materials, lasers, etc. In addition, **it should be noted that before a student ships anything, he/she should go to the website and contact the appropriate person regarding special procedures.** Ignorance of the safety information included on the website is not a valid excuse for making errors that could jeopardize the safety of the student or that of others. In addition, failure to adhere to these safety guidelines can result in very expensive fines that could come directly to the department.

E. Academic and Scholarly Misconduct

Any student involved in academic or scholarly misconduct will be subjected to disciplinary action or termination from the program. For official institutional definitions, policies and procedures refer to following websites: School of Pharmacy (<http://www.pharm.ku.edu>) and the University of Kansas (<http://www.policy.ku.edu/academic.shtml>).

F. Special Policies for International Students

International students will be responsible for an International Student Service fee (i.e., \$15/semester). The department is not allowed to pay this fee.

International Student and Scholar Services (ISSS) now have the responsibility to report that international students have, in fact, enrolled each semester. Please read the guidelines in Appendix I for additional information

G. Student Participation in Departmental Activities

Students have traditionally done an outstanding job in coordinating and/or helping with a variety of departmental activities ranging from “big events” such as coordinating GPEN to “smaller events” such as an ice-cream social. Regardless of the size of the event, student participation is highly valued by the departmental faculty. However, it is clear to us that the distribution of student involvement in various

activities often has been unbalanced; typically, a handful of students take on the bulk of the work while many students do not contribute at all. It is important that all students share coordination and execution of all events. A partial list of such activities is listed below:

1. Recruiting: Assisting the Director of Graduate Studies and student leader with the process of recruiting new graduate students.
2. Company Visits: Students who have passed their preliminary exams are expected to participate in interviews with industrial representatives during their visits to the department.
3. Summer Undergraduate Research Program (URP): Graduate students should actively participate in the training of URPs as well as participate in all presentations given by them throughout the program.
4. Senior students are strongly encouraged to apply for and participate at the GPEN meeting that is conducted every two years (see Appendix II).

H. Equipment and Supplies Policies

It is expected that all equipment will be treated with respect and it is the student's responsibility to report all malfunctions of shared departmental equipment to Nicole Brooks or to the owner if it belongs to a specific lab. The purpose of this regulation is to assure that the equipment is restored to proper function—not to assess blame. Students should always sign log-books (if available) when using equipment and always ask for permission before using any instrument that does not belong to their group. Likewise, students should never take or borrow reagents or supplies from another laboratory without first getting appropriate permission.

9. DEPARTMENTAL SERVICES

A. Ordering

Ordering of research supplies, chemicals, etc. should be coordinated through ones research mentor and follow the most current procedures prescribed at the University of Kansas. Assistance with ordering special items, coordinating repairs at external sites, etc. will be provided by Ms. Nicole Brooks, Rm 182 Simons. **NO** orders are to be called in or authorized by individuals without prior approval from your research mentor and/or Ms. Brooks (this includes in-town purchases, i.e., KU Bookstore, Westlake Hardware, etc.).

B. Copiers

The copy machine is located in 182 Simons Labs. Stationery supplies should not be taken from the offices; these should be ordered. The departmental copier should not be used for making copies of dissertations.

C. Laboratory Shipments

Shipments are received in the hallway adjacent to the loading dock in the Simons building. See Mr. André Faucher for assistance and with any questions. He is always more than happy to help in whatever way he can. Dry ice can be obtained from the first floor of Simons in the hallway outside McCollum Laboratories (ML) 107.

D. Keys

Each student is issued a key to the building that they are assigned. For individuals assigned to Simons Laboratories keys can be obtained from André Faucher, HBC Research Services Support Manager, in McCollum Laboratories (ML) 107 and for those assigned to the Multi-Disciplinary Laboratories (MRB) from Ann Smith, Facilities Manager, in the building lobby area. The student's KU ID will be used to access the departmental laboratories and instrument rooms. These are intended for the individual student's use only, and are not to be loaned to others.

E. Fax

The fax machine is located in 182 Simons and the logbook must also be signed.

APPENDIX I

Advising International Students - Effective January 1, 2003

REPORTING ARRIVAL/No Shows

New students MUST report to International Student Services (ISS) and check in upon arrival. Failure to report to ISS could result in the student being reported to the Immigration and Naturalization Service (INS) as a "No Show." ISS must also notify the INS if a student fails to enroll in subsequent semesters. Students must be enrolled full time by the 20th day of classes in order for ISSS to report them as such.

MANDATORY FULL TIME ENROLLMENT

International students are required to continually maintain full-time enrollment between the 20th day of classes and the last day of finals. If an international student drops below full time without approval from ISS for even one day, KU is required to report this to the INS. The student then loses legal status, and options for regaining legal status are now extremely limited.

Definitions of Full-Time Enrollment for Immigration Purposes

GRADUATE STUDENTS

- Generally, 9 hours each fall and spring or
- 50% GRA + 6 hours or
- 40% GRA + 7 hours or
- 30% GRA + 8 hours or
- Any number of hours required by the department for a student who has completed all the required course work and is working on a thesis, dissertation, or equivalent.

SUMMER TERMS

- Summer enrollment is optional unless it is the student's first or final term.
- For international students should consult with Ms. Huslig as to current requirements.

EXCEPTIONS TO THE FULL-TIME ENROLLMENT REQUIREMENT

There are a few approvable reasons for an international student to legally drop below full time. In order to legally drop below full time, an international student **must obtain permission from ISS prior to withdrawing** from the class. If the approval is not obtained prior to dropping below full time, the student must be reported to the government as having dropped below full time.

A student may request permission to drop below full time for the following reasons. In such situations, ISSS will ask for an academic advisor's verification.

- Student's final term
- Initial difficulty with English language
- Initial difficulty with reading requirements
- Unfamiliarity with U.S. teaching methods
- Improper course level placement (including if student is unprepared or in jeopardy of failing)

Students are allowed to drop below full time enrollment only one semester per degree for any of the latter four academic reasons listed above.

"INCOMPLETES"/PASS-FAIL/CREDIT-NO CREDIT

International students should not take "incompletes" in courses that are needed to meet the full-time enrollment requirement. For immigration purposes, receiving an "incomplete" grade in hours needed for full-time enrollment would have the same effect as withdrawing from the course. The student would then have violated legal status and KU would be required to report the student as under-enrolled. The same is true for a grade of "NC" (no credit). Students may count credit/no-credit courses toward full-time enrollment only if they earn credit ("CR") for the course. **NOTE:** grades of "P" and "F" do count toward full time enrollment.

DISTANCE EDUCATION AND ONLINE COURSES (INCLUDING INDEPENDENT STUDY) LIMITS

Undergraduates and graduates may only count one distance education or on-line course (up to 3 hours) toward full-time enrollment. This includes all independent study courses taken through KU Continuing Education. Approval for any such classes **must be obtained from ISS before the 20th day of classes**. There is no limit to the number of distance education hours taken in addition to full time enrollment. AEC students may not count any distance education or online courses count toward full time enrollment.

In addition to the one class (or 3 hour) limit, international students must complete such courses before the end of the semester for which the credit will be counted toward full-time enrollment. Continuing Education typically allows 9 months to complete a course, but international students must complete the course within the time frame of the semester in which the hours are needed for full-time enrollment.

CONCURRENT ENROLLMENT ELSEWHERE

International students may take courses at two institutions simultaneously and have the combined enrollment count toward full time enrollment, but **must receive approval to do so from ISS before the 20th day of classes.**

TOTAL WITHDRAWAL FROM THE UNIVERSITY

If an international student needs to withdraw totally from KU, the student should **notify ISS prior to dropping all classes.** If ISS is notified beforehand, the student will be given a 15-day grace period to legally depart the U.S. If ISS is not notified before the student fully withdraws, the student must leave the U.S. the same day of withdrawal or the student will become illegal.

POSSIBLE DELAYS DURING TRAVEL OUTSIDE THE U.S.

If an international student travels outside the U.S. they will need a new visa to reenter and security checks will be conducted. Sometimes security checks clear within a day, but they can also take several months. A few students have waited up to seven months. **Students need to understand the time risks involved in applying for a new visa, as nothing can be done to expedite a security check.** Things that can trigger a more lengthy check include 1) having a name similar to someone on an alert list, 2) having criminal charges in the past, 3) having a major or research area that is included on the “technology alert list.” These areas are: ceramics; advanced computer/microelectronic technology; aircraft and missile propulsion and vehicular systems; chemical and biotechnology engineering; conventional munitions; high-performance metals and alloys; information security; lasers and directed energy systems; marine technology; materials technology; missile/missile technology; navigation and guidance control; nuclear technology; remote imaging and reconnaissance; robotics; and sensors.

REPORTING THE COMPLETION DATE OF ALL DEGREE REQUIREMENTS

ISS is required to report the date a student completes all requirements for a degree. INS does not consider the date a degree was conferred or the date of a graduation ceremony, so ISS will need to know the specific date the department considers the student to have completed all degree requirements.

INS also requires an estimated date of completion for some types of work permission. ISS will depend on the department to provide the expected date of completion. In these instances it is better to guess long rather than short. Predicting a completion date that turns out to be premature could be harmful to the student.

We hope you agree that the enrichment and diversity international students bring to our campus outweighs the additional reporting burdens our government has placed upon us. We appreciate the role you play in helping students.

If you have any questions, please contact International Student and Scholar Services at 864-3617.

IMPORTANT IMMIGRATION INFORMATION

Incompletes

Previously ISS announced that incompletes couldn't count toward full-time enrollment for international students. This is still true; however, ISS has implemented a system that will allow incompletes to be assigned temporarily without harming the student. ISS has devised a short form that can be completed by the instructor awarding the "I". The form certifies the instructor will award a letter grade by the end of the following semester. Any letter grade (A, B, C, D, F) assigned will count toward full-time enrollment. For more information, ISS at their KU web-site: <https://iss.ku.edu/>

APPENDIX II

Globalization of Pharmaceuticals Education Network (GPEN), Inc.

The Department of Pharmaceutical Chemistry at The University of Kansas (Lawrence, KS) founded GPEN, Inc. in 1996. This was accomplished via cooperation with several educational institutions in Europe and Asia. The rationale for creating GPEN, Inc. was based on the fact that pharmaceutical and biotechnology companies, which hire the graduates of these educational institutions, had become highly globalized. Therefore, the founders of GPEN, Inc. felt that graduate students and postdoctoral fellows being trained at their institutions needed increased exposure to science and culture at an international level.

GPEN, Inc. was created for the sole purpose of fostering and facilitating international scientific exchange in the following areas of the pharmaceutical sciences:

- physical pharmacy
- bioanalysis
- animal and human biopharmaceutics, pharmacokinetics, pharmacodynamics, and pharmacogenomics
- cellular and molecular biopharmaceutics
- drug delivery
- drug targeting
- pharmaceutical biotechnology
- pharmaceutical engineering
- materials science
- computational and modeling approaches drug formulation and delivery.

Educational institutions holding membership in GPEN, Inc. have demonstrated research excellence in one or more of these areas of the pharmaceutical sciences. In addition, these institutions have a proven commitment to the training of predoctoral students and postdoctoral fellows for careers in universities, government institutions and pharmaceutical and biotechnology companies.

GPEN, Inc. specifically sponsors biannual meetings designed to foster and facilitate international scientific exchange in the pharmaceutical sciences:

GPEN, Inc. works closely with host institutions in the organization of international meetings of the faculty, graduate students and postdoctoral fellows from the participating educational institutions. These meetings include two days of scientific presentations by graduate students and postdoctoral fellows and one day of short courses taught by the participating faculty. Selected industrial representatives are invited as observers.

For up-to-date information, information concerning member institutions, and sites of upcoming meetings refer to the GPEN website: <http://gpenconference.com>

APPENDIX III

The various forms utilized to track and evaluate a graduate students progress, in all aspects of the graduate program, are provided on the following pages. Where applicable, it is the student's responsibility to continuously update progress in the program utilizing the various forms and to provide an electronic copy to the department's administrative assistant. For all other cases, the faculty as a whole, or the appropriate examination or review committee, will complete the evaluation form, which will be kept as part of the student's permanent record of progress and performance.

Department of Pharmaceutical Chemistry Course Progress Form

Student Name _____

Review Date _____

1. Entering Coursework Requirements

Course Name	Institution	Date	Grade
Pharmacokinetics			
Physical Chemistry			

2. Core Courses

Course Name	Date	Grade
CHEM 740 Principles of Organic Reactions		
CHEM 840 Physical Organic Chemistry		
PHCH 730 Pharmacokinetics		
PHCH 862 Physical Chemistry of Solutions, Solids and Surfaces		
PHCH 870 Pharmaceutical Biotechnology		
PHCH 864 Pharmaceutical Analysis		
PHCH 921 Chemical Kinetics		
PHCH 972 Mechanisms of Drug Deterioration and Stabilization		

3. Research Skill Requirements*

Course Name	Date	Grade
PHCH 801 Issues in Scientific Integrity		

*two required

4. Electives

Course Name	Date	Grade

*one required

Student Evaluation and Scoring Guide - Foundation Examination in Pharmaceutical Chemistry

Candidate Name: _____ Date: _____

Evaluation	Unacceptable	Acceptable	Very Good	Outstanding
1. Biotechnology, Biopharmaceutics and Pharmacokinetics: Understands important facets of recombinant proteins, oligonucleotides and vaccines as pharmaceutical agents and understands PK concepts related to basic modeling, drug absorption, distribution and clearance, including associated quantitative relationships				
2. Equilibria and Analysis: Understands relevant physical chemistry of solutions and solids, principles of equilibria as applicable to pharmaceutical dosage forms and drug delivery and understands the basic principles of separation science and mass spectrometry as applied to problems in the pharmaceutical sciences				
3. Chemical Kinetics and Stability: Understands the principles and mathematics required for the kinetic analysis of chemical reactions and how to apply the principles of physical organic chemistry to the study of drug degradation from a kinetic and mechanistic perspective.				
4. Critical Thinking: Responded thoughtfully, fully, and clearly to questions				

Overall Assessment

Criteria	Performance Ratings for the Foundation Examination		
	Does NOT PASS Exam	PASSES Exam	
<i>Overall Foundation Knowledge</i>	Does not meet expectations	Meets expectations	Exceeds expectations
Committee Members			
Signature, Academic Advisor			
Signature, Graduate Advisor			

Pharmaceutical Chemistry Annual Review Form

Student:
Year in Program:
Research Mentor:
Date:
Project Title:
Reviewer:
Evaluation Comments (evaluations send to research mentor and shared with student, then

Student Evaluation Form - Thesis / Dissertation Defense in Pharmaceutical Chemistry

Candidate Name: _____ Date: _____

Degree Sought:				
Evaluation	Unacceptable	Acceptable	Very Good	Outstanding
1. Problem Definition: States the research hypothesis and understands gap in the knowledge				
2. Background: Demonstrates sound knowledge of the literature and of prior work on the specific research problem				
3. Impact of Proposed Research: Explains the significance of the research and its value in advancing knowledge within the area of study and significance to improving human health				
4. Approach: Used appropriate and state-of-the-art research methods/tools to test the hypothesis, and can explain the principles behind the methods and limitations				
5. Results: Data was appropriately analyzed and interpreted. Figures were clear, complete and indicated appropriate statistical analysis				
6. Discussion: The results were connected with prior research in the field in a detailed and scholarly manner				
7. Quality of Written Communication: The written presentation was written clearly and professionally with minimal technical errors				
8. Quality of Oral Communication: The oral presentation of the dissertation was clear and professional				
9. Critical Thinking: Responded thoughtfully, fully, and clearly to questions				

Overall Assessment

Criteria	Performance Ratings for Thesis Defense		
	Does NOT PASS Exam	PASSES Exam	
Overall Performance	Does not meet expectations	Meets expectations	Exceeds expectations
	Committee Members		
Signature, Academic Advisor			
Signature, Graduate Advisor			

APPENDIX IV

Advisor Selection Form

To be turned into the Director of Graduate Studies at a time to be specified. Students will be notified of decisions as soon as possible.

Faculty Members*

Cory Berkland
Brandon DeKosky
Laird Forrest
Michael Hageman
Jeff Krise
Susan Lunte
Wendy Picking
William Picking
Christian Schöneich
Teruna Siahaan
David Volkin
Thomas Tolbert
Michael Wang

*Note that some of the members on this list may not be taking students at time of the selection. The faculty members typically announce this during their presentation; however, it is imperative to confirm this with the faculty member in person prior to including him or her on this list.

Advisor Preference

First Choice _____

Second Choice _____

Third Choice _____

Student Name _____

Signature _____

Date _____

APPENDIX V

Acknowledgement of Understanding & Acceptance of Policies & Obligations of the Department of Pharmaceutical Chemistry

By signing below I attest to have read and understood the contents of this handbook. Please be aware that the contents of the handbook are subject to change and students will be notified accordingly.

Name (printed): _____

Date: _____

Signature: _____