

GRADUATE STUDENT POLICIES AND PROCEDURES

DEPARTMENT OF PHARMACOLOGY AND PHYSIOLOGY

SAINT LOUIS UNIVERSITY SCHOOL OF MEDICINE

IMPORTANT CONTACTS

For questions regarding the preliminary qualifying examination, contact Michael Ariel, Ph.D. (michael.ariel@health.slu.edu).

For questions regarding, registration, health insurance, and assistantships, contact Bryan Gerau (bryan.gerau@health.slu.edu).

For questions regarding MyIDP, contact Ian De Vera, Ph.D. (ian.devera@health.slu.edu)

For questions regarding Responsible Conduct of Research, contact Andrew Butler, Ph.D. (andrew.butler@health.slu.edu)

In all other instances, contact the Director of Graduate Studies for the Department of Pharmacology and Physiology (Heather Macarthur, Ph.D. (heather.macarthur@health.slu.edu)).

Please note that many of the forms referenced in this handbook can be found at: <https://www.slu.edu/academics/graduate/current-students/index.php>.

TABLE OF CONTENTS

Chapter	pages
Introduction	3
Objective of the training program	3
Overview of the training program	3
Financial commitment	3
The Doctoral Program in Pharmacology and Physiology	4-11
<i>Entry into the program and Overview</i>	4-7
Grading policy	6
Responsible conduct of research	7
<i>Preliminary examination</i>	7-9
Formation of preliminary committee and timeline to exam	8
<i>Advancement to doctoral candidacy status</i>	10-11
Dissertation Committee and defense of doctoral dissertation	10
Teaching Responsibility	11
Academic and behavioral standards	11
Individual Development Plan	12
Remediation and grounds for dismissal	12
Terminal masters	12-13
Department sponsored travel	13
Summary of curriculum for M.D./Ph.D. students	13-14
University policies and resources for graduate students	15

Introduction. This handbook provides a concise guide to the process and policies of the doctoral graduate program of the Department of Pharmacology and Physiology of the Saint Louis University School of Medicine. While specifically tailored to the department, the standards outlined here are guided by the policies of the Graduate Program of Biomedical Sciences, the School of Medicine, and Saint Louis University, which are the ultimate authorities in matters requiring remediation. Students should refer to the documents obtained in the appendices for further information regarding University Policy. Under the direction of Chair of the Department, Daniela Salvemini, the doctoral graduate program is overseen by the Graduate Steering Committee, chaired by Departmental Graduate Director Dr. Heather Macarthur, and composed of Drs. Vincenza Cifarelli, Aubin Moutal, Andrew Lechner and Gina Yosten.

The Objective of the Training Program. The objective of the Saint Louis University Doctoral Training Program in Pharmacology and Physiology is to provide individuals with the opportunity to achieve a high degree of competence in these disciplines regardless of the student's background, thus preparing them to pursue productive careers in academics and industry. The five defining goals of the program are to: (1) instill enthusiasm for discovery and the scientific process; (2) foster the development of critical thinking skills; (3) develop laboratory research competence; (4) develop oral and written communication skills; and (5) promote a commitment to scholarship. This program is designed to provide students with a strong foundation in all aspects of basic biomedical science and the freedom to explore diverse research opportunities.

Overview of the Training Program. The program uses a multidisciplinary and integrative approach to provide a strong foundation in basic biomedical science and the freedom to explore diverse research opportunities. During the first year of study, all traditional doctoral students enroll in the Core Graduate Program in Biomedical Sciences. Upon successful completion of the first-year curriculum, students petition to enter the department under the guidance of a chosen mentor. If accepted, these students complete formal training in pharmacology and physiology, successfully defend a preliminary qualifying examination and undertake a research project leading to a doctoral dissertation. Students with advanced standing enter the department as second year students and pursue an individualized training program based on their previous experience and accomplishments. In the case of students with advanced standing, the dissertation research project cannot include or consist of experiments conducted prior to admission into the Pharmacology and Physiology doctoral program.

Financial Commitment. Graduate Research Assistantships are subject to the rules outlined in the [*Policies and Procedures Manual for Graduate Assistants and Fellows*](#) (or see also webpage [link](#)). Financial support for assistantships in Years 1 and 2 is provided and administered by the Core Graduate Program in Biomedical Sciences. Financial support for assistantships in Years 3-5 is guaranteed by the Department of Pharmacology and Physiology. Financial support for assistantships for students who take longer than five years to complete their training is not guaranteed but will be considered on a case by case basis; in this instance, the dissertation mentor is the preferred funding source. In all cases and years, the dissertation mentor is the primary source of funding for laboratory supplies and other expenses incurred during the course of the doctoral dissertation project.

CORE GRADUATE PROGRAM IN BIOMEDICAL SCIENCES

Overview. The Core Graduate Program in Biomedical Sciences was established by the Departments of Biochemistry and Molecular Biology, Molecular Microbiology and Immunology, Pathology, and Pharmacology and Physiology. The program is directed by Dr. Willis K. Samson (Caroline Building Room 207A; phone, 314-977-8678; email (willis.samson@health.slu.edu)). The objectives of this program are to provide students with a broad foundation in basic biomedical science. At the same time, the program provides a diverse range of research experiences designed to help students identify potential dissertation projects. The one-year curriculum combines lectures, small groups discussion sessions, and seminars, and runs from August of the first year to July of the second year. The first-year curriculum consists of: BBSG-5010, 5020, 5030, 5040, , 5920, and 5970, 5100, BCHM-6280 and ORES 5200. Details are here: [Basic Biomedical Science Curriculum](#)

THE DOCTORAL PROGRAM IN PHARMACOLOGY AND PHYSIOLOGY

Entry into the Program. The Department of Pharmacology and Physiology admits traditional, non-traditional, and M.D./Ph.D. students. In all cases, the requirements for entry are: (1) selection of a dissertation research advisor from amongst the Pharmacology and Physiology faculty (see below concerning faculty with secondary appointments); (2) written acknowledgement by the student and advisor of the expectations and responsibilities required by the Department of Pharmacology and Physiology (see page 6); and (3) written permission of the Chair (Daniela Salvemini, Ph.D.). Additional requirements for each group are:

Traditional Students. Traditional doctoral students are admitted to the department after successfully completing the Fall and Spring Semesters in the Core Graduate Program in Biomedical Sciences with a grade point average of "B" or better (3.0 on a 4-point scale) in the Core Curriculum.

Non-traditional Students. Non-traditional students enter the program at the discretion of the Graduate Steering Committee and the Chair of the department. They must have completed an advanced degree (Master or Doctoral) in a relevant discipline, while maintaining a GPA of "B" or better.

M.D./Ph.D. Students. M.D./Ph.D. students enter the program at the discretion of the Chair of the department after successful completion of the pre-clerkship phase of the medical school curriculum.

Overview of the Program. The following description describes the program followed by traditional students entering through the Core Program. M.D./Ph.D. students follow modified schedules. Depending upon their qualifications, non-traditional students may follow a modified curriculum approved by the Graduate Committee, otherwise they will follow the program outlined below.

After successfully completing the Core Graduate Program in Biomedical Sciences curriculum, students in good standing (GPA of 3.0 or above) may elect to complete their Ph.D. studies in the Graduate Program in Pharmacology and Physiology. Students who enter the doctoral program take an additional seven credit hours in advanced coursework (PPY-5110, -5120, -5130 and -5140), and attend seminar (PPY-6800) and journal club (PPY-6900) presentations. After completing the required coursework, the students assemble a Preliminary Proposal Defense Committee, write their Preliminary Examination Proposal, and defend it before the end of February of their second year in the department.

At the same time, students begin research on their dissertation project under the direction of their faculty advisor. After successfully defending their preliminary examination, students select a Dissertation Committee who oversees their research efforts until graduation. Students are required to meet with their dissertation committee **at least twice each year**. Continued participation in weekly departmental Journal

Club and Seminars is also required, as is participation as teachers in the undergraduate course *Drugs We Use and Abuse* (PPY 1450). Students are expected to complete their dissertation work, including the oral defense of the written document, by the end of their fifth year (fourth year in Pharmacology and Physiology). Students must present a public seminar on their work upon successful defense of their dissertation.

PPY 5110 - Introduction to Pharmacology (1 credit hour) This course meets during in the Fall semester. It covers the topics of: binding theory; concepts of ligand efficacy and potency; partial agonists and antagonists; allosteric modulators; quantitative pharmacology (technology & statistical tools); biotransformation; drug pharmacokinetics; basic principles of medicinal chemistry; and structure/function relationships in drug design. In class time includes two sessions of problem-based practice and review; two in-class exams comprise the final course grade.

PPY 5120 - Systems Physiology and Pharmacology I (2 credit hours). This course meets in the Fall semester. The course will cover the neurophysiology and pharmacology of sensory systems, motor systems, mood and sleep pathways, memory and cognition, pain pathways, and the autonomic nervous system. Classes will consist mainly of paper discussions with some didactic lectures for context. There will be two in-class exams based on the information covered in the class discussions/lectures that will comprise 80% of the final course grade. The final part of the course will consist of independent in-depth topic research. Students will spend two weeks researching a topic chosen from those submitted by teaching faculty. They will prepare a presentation to be given at the end of the course that will be assessed and graded by the teaching faculty for 20 % of their final course grade.

PPY 5130 - Systems Physiology and Pharmacology II (3 credit hours). This course meets during the Spring semester. The first part of the course will cover the physiology and pharmacology of the respiratory, cardiovascular, renal, endocrine, and gastrointestinal systems. Classes will consist mainly of paper discussions with some didactic lectures for context. There will be two in-class exams comprising 80% of the final course grade that will be based on the information covered in the class discussions/lectures. The final part of the course will consist of independent in-depth topic research. Students will spend two weeks researching a topic chosen from those submitted by teaching faculty. They will prepare a presentation to be given at the end of the course that will be assessed and graded by the teaching faculty for 20 % of their final course grade.

PPY 5140 - Fundamentals of Effective Grant Construction (1 credit hour). This course meets during the spring and summer semesters. Its lecture and in-class mentored student activities cover the topics of: funding agencies and programs; developing and editing a proposal's Specific Aims; drafting and revising a proposal's Significance section; identifying a project's elements of Innovations; developing and revising a proposal's Research Design; completing a proposal's complementary elements of statistics, alternative outcomes, animal care/biohazard sections, etc. Students work both in class and on their own to finalize a final proposal that conforms to NIH F31 guidelines. The final course grade is based upon class participation, construction of a grant proposal, and participation in a mock study section.

PPY 6800 - Pharmacology and Physiology Weekly Seminar (0-1 credit hour). This course meets weekly during both the Fall and Spring semesters. Research seminars are presented by faculty and investigators from other departments of the University, or by guest speakers from other institutions. Roundtable lunch-time discussions with students and the speaker are regularly scheduled.

PPY 6900 - Pharmacology and Physiology Journal Club (0-1 credit hour). This course is scheduled weekly during the Fall and Spring semesters. It consists of weekly journal club presentations at which students discuss recent research findings and papers from the literature. The results of the faculty evaluation forms are discussed with each student individually by the Journal Club course director.

Grading Policy and Remediation. Course grades are awarded at the discretion of the course director. Below is a general outline of departmental policies.

PPY- 5110, 5120, 5130, and 5140 Course Directors report the letter grade assigned to each student determined by the consensus of all faculty who taught in the section.

- ≥ 95.0% = **A+** (an honorific grade, not affecting GPA calculations)
- ≥ 90.0% = **A**
- ≥ 85.0% = **A-**
- ≥ 80.0% = **B**
- ≥ 75.0% = **B-**
- ≥ 70.0%, < 75.0% = **incomplete.**

Remediation is permitted during first week of January (PPY-5110, PPY-5120), or by the second week of May (PPY-5130). Re-testing will focus on specific deficient areas as identified by the teaching faculty. Students who successfully remediate will be assigned a final grade of **B-**. Students who fail this remediation will be assigned a final grade of **F**.

< 70.0% = **F**. No remediation is permitted in that semester.

Failing students must re-take the course at the next available opportunity. Students who fail on a course may enroll in any subsequent courses in the series for that academic year, but they must pass all four courses before advancing to the preliminary examination for advancement to doctoral candidacy. Students who receive a grade of “F” in more than one course face dismissal from the program. These students will meet with the Graduate Steering Committee who will take any extenuating circumstances under consideration in their final recommendation to the Chair. After considering the circumstances, the Chair decides the fate of the student.

PPY-6800 Student grades are based on attendance only, with a sign-up sheet outside the door of the lecture hall. Students are allowed to miss two lectures, after which a grade point is subtracted for each lecture missed. Missing five or more seminars results in a failing grade of D. Final letter grades are assigned by the course director using the following scale:

- ≤2 missed seminars = **A**
- 3 missed seminars = **B**
- 4 missed seminars = **C**
- ≥5 missed seminars = **D**

PPY-6900 Each student must give **four presentations** during their time enrolled in the program. Students are graded based on attendance and presentation quality. Faculty are asked to complete a presentation evaluation sheet for each journal club presentation, using scores that range from “1” for unacceptable to “4.25” for outstanding. The values for all categories are then averaged. An attendance score of 3.75 is given for perfect attendance. Class participation is graded in 0.025 increments, and unexcused absences result in 0.25 deductions. Final letter grades are assigned by the course director using the following scale:

4.0 and above =	A+
3.85-3.99 =	A
3.75-3.84 =	A-
3.5-3.74 =	B+
3.0-3.49 =	B
2.75-2.99 =	B-
2.0-2.74 =	C
0-1.99 =	D

Responsible Conduct of Research. Training in the responsible conduct of research is required of all Ph.D. students at Saint Louis University and by the National Institutes of Health ([policy link](#)). Training takes place in four phases and consists of the following activities:

Phase 1: Phase 1 is BBSG-5100, Ethics for Research Scientists. All students are required to complete the course by the end of their first year in the Core Program.

Phase 2: Saint Louis University policy requires completion of the RCR online modules through the [Collaborative Institutional Training Initiative \(CITI program\)](#). You will be required to register if new to the site. Further, SLU requires a minimum of eight hours of face-to-face RCR training, consistent with NIH and NSF requirements. All required training must be completed prior to the end of the third year of graduate training. Early completion is encouraged. In order to meet the in-person requirement, Saint Louis University provides a series of two-hour topic focused workshops throughout the year for individuals to attend. Attending a minimum of four workshops will attain compliance with the eight-hour requirement for that person. Although this is a not-for-credit class, attendance at all of the presentations is mandatory. For further information regarding departmental RCR requirements, please contact Andrew Butler, Ph.D. (andrew.butler@health.slu.edu).

Phase 3: Phase 3 occurs in the setting of the laboratory group responsible for the student's dissertation project. consists of discussion of topics pertinent to the Responsible Conduct of Research by individual training faculty in their laboratory meetings. In addition, advanced students (years 3-5 of their training program) are required to participate in 1-2 small group case discussions designed for 2nd year graduate students (Phase 2) discussed above. Documentation that appropriate topics have been covered in these lab meetings will be provided by students during their biannual meeting with the graduate committee.

Phase 4: All trainees who have not finished requirements for the Ph.D. in four years after they complete the Phase 2 course must participate in a Refresher Course on the Responsible Conduct of Research (RCR). The Refresher requires participation in the Responsible Conduct of Research workshops sponsored by the Office of the Vice President for Research and Office of Compliance of the Saint Louis University . Workshops are held throughout the Fall and Spring semesters. Each workshop will cover at least one of the major topics in RCR and count two hours for the eight hours of face-to-face training required by the NSF/NIH workshop consist of a panel of faculty and/or staff members representing different disciplines and areas of expertise on the topic.

PRELIMINARY EXAMINATION FOR ADVANCEMENT TO DOCTORAL CANDIDACY.

Overview of the Preliminary Examination. Each traditional student in the Department of Pharmacology and Physiology must successfully complete before the end of February of their second year in the department a written and oral examination in order to continue in the Ph.D. program and advance to doctoral candidacy. The Preliminary Examination has three components. The first component is a 1-page written proposal that is equivalent to the Specific Aims page of an NIH grant. The second component is a longer written proposal that follows the guidelines for the research proposal section of an NIH R21 grant

application. This includes background, any preliminary data including that found in the literature, and experimental design of proposed experiments. The third component is an oral examination/defense of the written proposal. The proposal may be based on either the student's expected dissertation research project or a topic of research that is totally independent and unrelated to that of the dissertation.

All M.D./Ph.D. students and students entering the program with advanced standing must successfully defend the Preliminary Examination within the timeframe described for traditional students. M.D./Ph.D. students must defend by the end of their first year in the department. Non-traditional students must defend within one year of completing coursework requirements.

Students are referred to Sections 1 and 2 of [Process for Students Pursuing a Doctor of Philosophy Saint Louis University](#) for discussion of the written and oral preliminary examinations.

Preliminary Standing Committee –Drs. Michael Ariel (michael.ariel@health.slu.edu)Chair, Anutosh Chakraborty (anutosh.chakraborty@health.slu.edu), Andy Lechner, (andy.lechner@health.slu.edu), and John Walker (john.walker@health.slu.edu).

Purpose of the Preliminary Examination. The goal of the preliminary examination is to assess the ability of the graduate student to formulate a hypothesis and to design an experimental approach. The written examination tests the student's ability to think independently and survey the appropriate literature, and to probe the student's knowledge in research areas considered essential for understanding the chosen research topic. The oral examination is to provide the student with an opportunity to present and defend the written proposal. The oral examination is not a comprehensive examination designed to test all information that the student has been exposed to throughout the graduate-level coursework, but rather is restricted to information that is pertinent to their preliminary proposal.

Formulation of the Preliminary Examination Committee. The Preliminary Examination Committee is assembled in two stages. The student must pick two members of the Preliminary Standing Committee who along with their mentor form a three-person *ad hoc* committee that reviews a one-page "Specific Aims" summary of the research proposal supplied by the student. One of the two Standing Committee members serves as chairperson (see below). If the mentor is a member of the Standing Committee, then an additional member of the Standing Committee is recruited (i.e. the committee must contain two independent members of the Standing Committee). All members of the committee must have Graduate Faculty Status. After the *ad hoc* committee accepts the written short proposal, the student's final preliminary examination committee is formed by the addition of two departmental faculty members. Identification of appropriate faculty is the responsibility of the student in consultation with his/her faculty mentor.

Timeline of Preliminary Examination and Deadlines. In the case of traditional and non-traditional students, the preliminary examination occurs after completion of the required course work. The deadline for an accepted version of the written proposal by the expanded committee is February 1st of the traditional graduate student's third year. The oral defense must occur by February 28th of the same year.

Components of the Preliminary Examination. The **first component** of the preliminary examination is a one-page Specific Aims component that describes the project in enough detail so that the initial three-person preliminary committee can judge the scientific merit and feasibility of the plan. Upon approval of the Specific Aims, the committee expands by addition of two departmental faculty mentors with expertise relevant to the research project. Then, the student has four weeks to complete the **second component** of the examination which is a 6-page Research Plan that resembles the research plan of an NIH R21-type application. The bibliography and title page do not affect page limits. The subject of the proposal is open and does not have to involve a current research project in the laboratory. Preliminary data are not

required of the student. However, the student is allowed to include data available from other sources (i.e., previous experiments from the mentor's laboratory that impact the proposal), or data gathered from the literature. Students are encouraged to present their ideas in a clear and concise manner and with proper grammar, spelling, and punctuation, as would be required if the proposal was to be reviewed by a regular NIH study section.

After receiving the full proposal, the 5-person Preliminary Examination Committee has one week to review the document after which they meet to decide if the document is acceptable and to plan the oral portion of the exam. The final date for the defense is no more than two weeks after the Preliminary Examination Committee approves the full 7-page (1 page of Specific Aims plus 6 pages of Research Plan. If the committee decides that the written document is not acceptable, the student is required to meet with all committee members, as a group or individually, so that clear understanding of the deficiencies in the written proposal is reached. The student is then given additional 30 days to correct the deficiencies and submit an acceptable written proposal. Failure to submit an acceptable proposal after two attempts is grounds for dismissal. This step must be passed before the oral defense can be scheduled.

The **third component** of the preliminary examination is the oral defense of the written long proposal. The oral examination occurs with 2 weeks of submitting an acceptable written proposal; the oral examination must not be scheduled before the written proposal is approved by all members of the Preliminary Examination Committee.

The purpose of the oral exam is to provide the student with an opportunity to present and discuss the written proposal, and to demonstrate how the proposed experiments fit within the larger context of pharmacology and physiology. In terms of methodology, the student will be examined on content of the proposal. For example, with regard to breadth of the examination: if the proposal discusses a topic such as catecholamines, the questions during the oral examination may relate to broader context and general knowledge of catecholamines that include synthesis, degradation, and release of this particular transmitter family. The oral exam is a test of the student's understanding of how the hypothesized questions, aims and experimental design fit within the context of the scientific field. It is not a comprehensive examination of everything covered in general classes. The date of the oral presentation should not be scheduled until the written proposal is fully approved by the examination committee.

The oral examination/defense begins with a 15-20 min presentation by the student in which key points of the written proposal are reviewed. It is not an all-inclusive presentation of the long proposal. The presentation should include discussion of: (1) the background, to establish relevance and to place the project within historical context; (2) the hypotheses; (3) the major elements of the experimental design; and (4) preliminary data, if available from previous work in the laboratory or from the literature. It is not expected that the student will have personally generated any preliminary data in order to write or present the preliminary exam. The oral presentation sets the stage for the questions that follow from the committee members. These questions will seek to clarify or expand on points made in the written or oral presentations of the proposal and to test the student's ability to place the research proposal in context of the larger scientific picture with specific emphasis on current knowledge in pharmacology and physiology. Further, students are expected to have a thorough understanding of the background of the project and the relevant literature. Successful completion of the oral defense is determined by a vote of the members of the Preliminary Examination Committee.

If the student fails the oral examination, then Should a student fail the oral exam, the exam may be repeated a second time. The second attempt may not be scheduled within the same academic term as the first. An outside committee member (a Saint Louis University faculty member from another program) must be present at the second exam/proposal defense. A student who fails the second attempt will not be permitted to continue in the doctoral program.

ADVANCEMENT TO DOCTORAL CANDIDACY STATUS

Upon successful completion of the written and oral examinations, the Doctoral Candidacy Advisor submits the [Doctoral Oral Examination Form](#) by email to Dr. Christine F. Harper (christine.harper@slu.edu), Doctoral Candidacy Specialist, Office of Graduate Education, DuBourg Hall, Room 420D (phone: 314-977-2243). Receipt of this form by the Graduate Education Office automatically advances the student to doctoral candidate status. Students are required to be enrolled in at least one hour of dissertation credit upon achieving doctoral candidacy status until completion of required credits (see “Advancement to Candidacy: Research Phase” under [Graduation Requirements for Doctor of Philosophy \(Ph.D.\) students](#)).

DISSERTATION COMMITTEE AND DEFENSE OF THE DOCTORAL DISSERTATION.

Students are referred to Sections 3-7 of [Process for Students Pursuing a Doctor of Philosophy Saint Louis University](#) for descriptions of the written requirements for successful completion of the doctoral candidacy; students are encouraged to strictly adhere to the guidelines presented there, including timely completion of the Degree Audit form, on-line application for degree through the Banner System, and the Notification of Readiness for the Public Oral Defense form.

Formation of the Dissertation Committee.

The chair of a Doctoral Committee (usually the Mentor of the student) must be from the student’s program and a member of the current Saint Louis University Graduate Faculty. The committee for the dissertation defense must have a minimum of three members and 50% of members must be SLU faculty. All committee members must hold Graduate Faculty status. A non-Saint Louis University faculty member or someone outside of the major field may serve as co-chair of a student’s Doctoral Committee. In order for a non-Saint Louis University faculty member to serve on a Doctoral committee, the person must have a terminal degree in the field and/or have significant expertise or experience of particular relevance to students’ dissertation. Non-SLU committee members must be approved to serve on an ad hoc basis by the associate dean or director of the college, school, or center. Approvals may be made upon written request by the dissertation committee chair. The request should include a brief rationale for the member’s service and the proposed member’s CV. Please send this to Willis K. Samson, Ph.D., Associate Dean for Graduate Education at the School of Medicine (willis.samson@health.slu.edu).

The Dissertation Committee. The first meeting of the Dissertation Committee should occur **within six months of passing the preliminary examination and before the end of the student’s third graduate year**. The primary purpose of the first meeting is to provide an outline the proposed project to the Dissertation Committee, including discussion of experimental aims, methodology, and expected outcomes. **Preliminary data is not required for this meeting.**

Committee Meetings. Doctoral candidates are required to meet with their Dissertation Committee at least twice a year. The charge of the Dissertation Committee is to approve, advise, and evaluate research progress, and recommend suitability for submission of the written document for oral defense.

Grading. Students must complete a minimum of 12 credit hours of PPY-6990 (Dissertation Research) to be eligible to graduate. The written dissertation must follow University guidelines set out in the manual, [Policies and Procedures for Dissertation, Project, and Dissertation Formatting](#). Upon agreement of the

committee, a "[Notification of Readiness for the Public Oral Presentation of the Dissertation Defense](#)" is provided to the student, mentor and Director of Graduate Studies.

Private and Public Oral Defenses. The Dissertation Committee will meet with the candidate to conduct a private defense of the dissertation. The student will present results if available, and answer any remaining questions asked by the committee. Then, the candidate will be excused from the meeting, after which the committee will discuss their evaluations of the candidate and complete the official results form.

Following the private defense, successful candidates are required to present a public oral presentation of their dissertation work as a formal seminar. The presentation should conclude after 45 minutes and is followed by a discussion/examination period at which time all members of the audience may examine the Ph.D. candidate. Spontaneous questions that arise during the presentation are encouraged.

If the committee requires major revisions of the dissertation following the defense, the ballot form will not be completed until every committee member is satisfied. A unanimous positive evaluation of the dissertation committee, that is, all members whose signatures appear on the Candidate's approved prospectus, is necessary for final approval of the dissertation. Should the candidate not be approved for graduation because of one negative vote from a dissertation committee member, the Candidate may appeal. The appeal process is described in the Catalog of the Graduate School.

TEACHING RESPONSIBILITY.

Graduate students in the Pharmacology and Physiology Doctoral Program are required to obtain formal teaching experience by participating as lecturers in *Drugs We Use and Abuse* (PPY 1450). This 3-credit undergraduate course for non-science majors is presented each Fall Semester, and meets Monday, Wednesday and Friday mornings. The course syllabus is prepared and revised annually with each block of lectures or chapter written by its graduate student lecturer.

ACADEMIC AND BEHAVIORAL STANDARDS.

Overview. Students are expected to comply with all academic coursework and research standards outlined in this document, unless specific requirements have been waived or substituted with the prior approval by their preliminary and/or dissertation committees and the departmental Graduate Steering Committee. All students are obliged to participate in regularly scheduled journal clubs, weekly seminars, teaching assignments, and departmental retreats/meetings when applicable, unless excused in advance by the Faculty Directors of those events or the Departmental Graduate Director. Furthermore, specific students may be encouraged or required to attend training seminars, technical or grant-writing workshops, and scientific meetings, as determined by consultations with their faculty advisor, preliminary exam and dissertation committees.

At all times, students are required to maintain a grade point average of "B" or better. Students who fail to do so will be placed on probation. Probationary status lasting two consecutive academic semesters (excluding the Summer semester) is grounds for dismissal.

In keeping with the policies outlined in the [Saint Louis University Student Handbook](#) and the [Academic Integrity Policy](#), students are expected to comport themselves in a professionally appropriate manner when interacting with colleagues within the department and throughout the School of Medicine, as well as in broader academic settings as those arise. Such events may include but are not limited to visits and luncheons with institutional guests such as seminar speakers and special lecturers, as well as during all their interactions with undergraduate, graduate, and postdoctoral trainees. Furthermore, all

students are expected to obtain and maintain institutional certifications relevant to their activities, in areas such as animal care, biosafety, human subjects, hazardous waste handling and disposal, and emergency preparedness.

Failure to comply with these standards is grounds for dismissal.

Monitoring Student Progress and Performance. While enrolled in the Pharmacology and Physiology Graduate Program, student progress is monitored by the departmental Graduate Steering Committee. Progress is gauged by grades awarded at the end of each semester, and during annual meetings of each student with the departmental Graduate Steering Committee.

The required Graduate School academic standard for all students receiving Fellowships is the maintenance of a B average (3.0 grade point average) in each academic year. A student with a grade point average below 3.0 is put on academic probation and may lose the Fellowship if this average is not restored to 3.0 in the next semester. At the time of the oral preliminary examination, the Doctoral Candidacy Advisor reviews the progress with the rest of the student Preliminary Defense Committee. From this point on, student's progress is monitored by the Doctoral Candidacy Advisor and Dissertation Committee, which meet at least twice per year.

Individual Development Plan. All students are required to develop an Individual Career Development Plan using [MyIDP](#) as soon as they complete their Preliminary Qualifying Exam. The goal is to help students and postdoctoral fellows define and pursue career goals. Progress through MyIDP is monitored by Dr. Ian De Vera (ian.devera@health.slu.edu).

Remediation of poor performance and grounds for dismissal. Students who fail to comply with the academic or behavioral standards outlined above will be required to meet with the Departmental Graduate Director and/or the relevant Course Director, Teaching Supervisor, or Preliminary Exam or Doctoral Defense Committee Chairperson. Issues that can result in such required meetings include but are not limited to poor classroom performance or participation, failing or substandard exam or course grades, unexcused absences, noncompliance with regulatory certification standards, and documented examples of inappropriate behavior. During a first such meeting, the infractions or other issues will be discussed with the student and minutes of the meeting taken for distribution to the trainee and mentor and other faculty members or supervisors that detail the specific remediation plan to be imposed. Follow-up meetings or other benchmarks may be imposed at that time, such as timelines to complete missed assignments, complete certification training sessions, or modify inappropriate behavior.

Depending upon the severity of the situation or the department's concerns about the student, a period of probation for up to a full semester may be imposed, so that the student can correct deficiencies or behavior. During an initial probationary period, a student's stipend will customarily not be at risk of immediate suspension. However, more serious matters including breaches of professional ethics may be brought to the full Departmental Graduate Committee for its deliberation. Students who require more than two such probationary periods during the entire course of their graduate studies will, at the discretion of the Graduate Committee and the Departmental Chair, be informed of the intent to initiate dismissal proceedings. After informing the student, the Department will follow the formal procedure for dismissal outlined in Procedure for Graduate Student Dismissal, Saint Louis University School of Medicine.

Procedure for terminal Masters in Science degree. Some doctoral students fail to achieve acceptable coursework grades, advancement to candidacy, or research progress by the timelines and rubrics outlined above. Most often this can occur due to scientific and technical difficulties with a project, unresolvable issues between the student and mentor, or personal matters such as a trainee's health or support system that develop once the trainee has begun the official doctoral research studies. Whenever

possible, the Department Graduate Committee and/or the Departmental Graduate Director will have met on several occasions with the student to recommend plans of action that facilitate continued progress in overcoming such obstacles. If such efforts by all parties fail to resolve issues that are impeding final completion of the doctoral dissertation, the Department reserves the right to recommend the awarding of a Masters in Science degree, so that the student can then move forward with other career plans.

Students are referred [here](#), which lists the degree requirements for a Masters in Science degree. In the Department of Pharmacology and Physiology, the student is required to have successfully completed the first (Core) and second (Departmental) year curriculum. Successful defense of the Preliminary Examination is not required. A written dissertation is required, which must be orally defended before a committee composed of the Doctoral Candidacy Advisor and at least two other departmental faculty members with Graduate Faculty Status. The written document can be a stand-alone dissertation, or a copy of a first-authored published or in press manuscript. Successful defense of the written document is judged by the dissertation committee. Once approved, the student must [apply online for graduation](#) at.

Department Sponsored Travel. The department will pay up to \$1,000 of department funds to 2nd year who have completed 1st year Core and now in 2nd year or above students who are registered with the department to present at one (1) domestic or international conference per fiscal year. A fiscal year at Saint Louis University begins July 1st and ends June 30th. The student must get the approval of the chair before booking flights (see Appendix H for full policy).

SUMMARY OF CURRICULUM FOR M.D./PH.D. STUDENTS (adapted from, *A Student Guide to the M.D./Ph.D. Program*; for more information, contact Dr. Jane McHowat (jane.mchowat@health.slu.edu), Director, M.D./Ph.D. program, Saint Louis University School of Medicine)

The Department of Pharmacology and Physiology provides a Ph.D. program that trains students to be independent investigators in the interrelated disciplines of physiology and pharmacology. The department also contains the Center for Neuroscience. The overall goals of the Ph.D. program are to: instill enthusiasm for discovery and the scientific process; foster critical thinking, research competence, and oral and written communication skills; and promote a commitment to lifelong scholarship. Diverse research interests of the department faculty ensure that trainees can select projects that span physiology and pharmacology from the subcellular through integrative levels. M.D./Ph.D. trainees join this graduate program with 30 credits transferred from the Phase 1 and 2 M.D. curricula toward the total of 36 credits and 12 dissertation credits required for the Ph.D. degree by the Office of Graduate Education. The remaining six coursework credits are satisfied through completion of two 1-credit required courses described below, and by regular participation in the Department's scheduled journal clubs and seminar series that are also detailed below. Journal clubs cover a broad range of subjects, as do the weekly departmental seminars that feature outstanding speakers from the U.S. and abroad.

Preliminary Examination

Every M.D./Ph.D. trainee in the Department must pass written and oral exams that are based on a research proposal written by the student as a grant application. Following a satisfactory performance in PPY-5110 and PPY-5140, the trainee develops an original proposal that complies with NIH R21 page limits (Specific Aims + six pages + bibliography). The requirements are identical to that described above for standard Ph.D. students except that the preliminary examination committee must include a Pharm/Phys faculty member who is also a member of the M.D./Ph.D. steering committee.

Dissertation Committee

Completion of the preliminary exam permits the M.D./Ph.D. trainee and mentor to assemble a

Dissertation Committee and to file formal Ph.D. candidacy papers with the Graduate School. Again the requirements for this process are identical to those described above for standard departmental Ph.D. students except one member of the dissertation committee must serve on the M.D./Ph.D. steering committee (not the mentor).

Prerequisites: Successful completion of Phases 1 and 2 of the M.D. Curriculum and USMLE Step 1. M.D./Ph.D. trainees receive up to 30 graduate credits that are transferred from Phases 1 and 2 courses as listed elsewhere in this Guidebook.

Required Didactic and Participatory Department of Pharmacology and Physiology Courses during Ph.D. Training Years:

- PPY-5110 Introduction to Pharmacology and Drug Discovery
- PPY-5140 Fundamentals of Effective Grant Construction
- PPY-6800 Pharmacology and Physiology Departmental Seminar
- PPY-6900 Pharmacology and Physiology Colloquium Journal Club

PPY-5110 Introduction to Pharmacology (PPY-5110) (1 credit). This course meets during Aug-Sep of the Fall semester. It covers the topics of: binding theory; concepts of ligand efficacy and potency; partial agonists and antagonists; allosteric modulators; quantitative pharmacology (technology & statistical tools); biotransformation; drug pharmacokinetics; basic principles of medicinal chemistry; and structure/function relationships in drug design. In class time includes two sessions of problem-based practice and review; two in-class exams comprise the final course grade.

PPY-5140 Fundamentals of Effective Grant Construction (1 credit). Beginning at the end of the spring semester and extending through mid-summer, this 12-week course includes didactic lectures, one-on-one mentoring sessions, and dedicated proposal writing time, culminating in a 20 – 30 min oral presentation followed by questions and faculty critiques. The final proposal must include all main narrative sections of an NIH- formatted R01 grant application (12 pages + bibliography). Students may use a shortened revision of their PPY-5140 proposals for their Preliminary Exam for advancement to doctoral candidacy (see above).

PPY-6800 Pharmacology and Physiology Departmental Seminar (0-1 credit per semester). Selected topics in pharmacology and physiology are presented by local, national, and international guest speakers. Seminars are held at least twice monthly and usually more often. Attendance and participation are required for all Ph.D. students for this yearlong course.

PPY-6900 Physiology and Pharmacology Colloquium Journal Club (0-1 credit per semester). Selected topics in pharmacology and physiology are discussed from the current literature in these fields. Colloquial journal clubs are held at least twice monthly and usually more often. Attendance and participation are required for all Ph.D. students.

PPY-6990 Dissertation Research (0 – 6 credits per semester).

Responsible Conduct of Research. Training in the responsible conduct of research is required of all Ph.D. students at Saint Louis University and by the National Institutes of Health. Training takes place in three phases (see page 9).

UNIVERSITY POLICIES AND RESOURCES FOR GRADUATE STUDENTS.

Office of Professional Oversight. The Office of Professional Oversight is responsible for providing all stakeholders (students, trainees, faculty and physicians) a fair and neutral environment to seek assistance and support, file a grievance, or report acts of unprofessional behavior or concerns. In addition, the Director of the Office of Professional Oversight also serves as the Ombudsperson for Saint Louis University School of Medicine. The Office of Professional Oversight can assist all members of the School of Medicine community with issues related to conflict resolution, interpersonal communication, academic, professional, or administrative concerns. The goal is to provide each of these services in an environment that is built upon trust, confidentiality and neutrality.

<https://www.slu.edu/medicine/professional-oversight/index.php>

Graduate Student Parental Leave Policy. This policy establishes guidelines to protect the interests of graduate students who, while in the course of their graduate academic program, become the primary caregiver to a newborn or adopted child.

https://www.slu.edu/academics/graduate/pdfs/g_s_parental_leave_policy.pdf