Program-Level Assessment Plan

Program: Ph.D. in Pharmacology & Physiology	Degree Level (e.g.UG or GR certificate, UG major, master's program, doctoral program): Doctoral Program
Department: Pharmacology & Physiology	College/School: School of Medicine
Date (Month/Year): December 2022	Primary Assessment Contact: Heather Macarthur

Note: Each cell in the table below will expand as needed to accommodate your responses.

#	Student Learning Outcomes What do the program faculty expect all students to know or be able to do as a result of completing this program? Note: These should be measurable and manageable in number (typically 4-6 are sufficient).	Curriculum Mapping In which courses will faculty intentionally work to foster some level of student development toward achievement of the outcome? Please clarify the level at which student development is expected in each course (e.g., introduced, developed, reinforced, achieved, etc.).	Assessment Methods	
			Artifacts of Student Learning (What) 1. What artifacts of student learning will be used to determine if students have achieved this outcome? 2. In which courses will these artifacts be collected?	Evaluation Process (How) 1. What process will be used to evaluate the artifacts, and by whom? 2. What tools(s) (e.g., a rubric) will be used in the process? Note: Please include any rubrics as part of the submitted plan documents.
1	Students will show competency in the basic principles of Pharmacology and Physiology.	There are three advanced level graduate courses that students take when entering the Pharmacology and Physiology graduate program: Introduction to Pharmacology (PPY 5110), Systems Physiology and Pharmacology I and II (PPY 5120 and 5130). The first of these courses as stated is an introduction to basic pharmacological principles the students need to understand before progressing to the systems-based courses that will further develop and reinforce the application of pharmacology within the context of health and disease. Concurrent to taking these advanced level courses, the students will begin research on their dissertation project with the assistance of their specific faculty mentor. As their project progresses students will develop skills in critically evaluating scientific literature,	The artifacts of student learning used to determine achievement of outcome will include regular attendance in all courses, regular participation in journal club presentation and discussion as well as answers to written exam questions for the advanced level courses.	There will be several methods employed to determine student achievement of the stated outcomes. These include regular written tests in their advanced level coursework, faculty evaluation sheets of journal club presentations, and general scientific discussions with peers and faculty, and visiting seminar speakers

		designing and carrying out experiments, and discussing their ideas and findings with their mentor, lab colleagues and other faculty. Students will also attend departmental seminars (PPY 6800) and participate in journal clubs (PPY 6900).		
2	Students will write a research proposal and become competent at the basic essentials of grant writing, specifically in how to formulate and test scientific hypotheses.	Students will write a grant proposal based on NIH guidelines for the R01 application mechanism. They will take a structured grant writing course (PPY 5140) where they will learn, with faculty input, the format and parts that make up a grant proposal. With advice and regular feedback from their mentor and up to two other faculty members, they will write their own proposal based on the student's own research plan. Students will also review and critique several past NIH proposals written by faculty and meet in a mock study section to present and discuss their critiques.	The artifacts of student learning used to determine achievement of outcome will include regular attendance in all formal class sessions of PPY 5140, regular communication with their mentoring team, their final written proposal, critiques of their assigned faculty grants, and participation in mock study section.	The written research proposal is evaluated by two independent faculty members based on agreed review criteria (attached).
3	Students will write a preliminary exam proposal and show competence in the science undergirding said proposal.	At the conclusion of successfully completing their prescribed advanced coursework (PPY 5110 thru 5140), students will write a grant proposal based on NIH guidelines for the R21 application mechanism. The students will construct the grant proposal based on their research ideas for their dissertation work, or they may choose to write the proposal on a completely independent plan. The student will defend their proposal in front of a committee of five faculty members and demonstrate their knowledge and understanding of the science the proposal is based upon.	The artifacts of student learning used to determine achievement will be the timely production of their written document. Students are given one month from acceptance of their Specific Aims to produce this document.	The written research proposal is evaluated for acceptability by the five membered preliminary exam committee assembled for that purpose. If the written document is deemed acceptable, the oral defense exam will be scheduled. During that exam the committee members ask questions pertinent to the research proposal and its scientific basis. A successful will be formally reported to the SLU Graduate Education Department, and they will advance the student to candidacy status.
4	Students will acquire laboratory research skills. They will collect and critically evaluate data, present such data orally, and	Students will be enrolled in Dissertation Research (PPY 6990) and their day-to-day progress will be monitored by their mentor. In addition, they will form a 3–5-member	The artifact of student learning used to determine achievement will be their final written dissertation document. A student's progress to that end will be	The final written dissertation document, and its oral defense, is evaluated by the Dissertation Committee in an examination meeting where students are questioned

	write up their data for peer reviewed publication.	Dissertation committee chaired by their mentor, that will monitor their progress on a biannual basis. Students will also have annual opportunities to present their data at scientific meetings. Finally, students must write up and defend their completed project before their Dissertation committee.	monitored by their individual dissertation committee that will meet regularly to review acquired data and evaluate progress AS well as advise the student on their scientific direction. Ultimately the committee will recommend suitability for submission of the written document for oral defense.	about their findings and how those findings fit in the larger scientific field.
5	Students will understand the responsible conduct inresearch.	Students will attend at least eight hours of face- to-face Responsible Conduct in Research training in a workshop setting. Subjects covered include conflict of interest, intellectual property, authorship and peer review,scientific misconduct, IRB, animals inresearch and data confidentiality. Each interactive workshop consistsof instruction in the topic, engaged discussion, and applied cases.	Online training and attendance at four workshops are a university requirement and students cannot graduate without attending the required number of sessions. Attendance is taken and tracked carefully for federal compliance.	The Saint Louis University Office for Research Integrity maintains aspreadsheet of attendance records. Primary responsibility formeeting the contract requirementsfor RCR training is in the hands ofthe PI.

Use of Assessment Data

1. How and when will analyzed data be used by program faculty to make changes in pedagogy, curriculum design, and/or assessment practices?

   The overall program and curriculum will be reviewed thoroughly on a five-year cycle. As the number of graduate students in our program averages about three per year, so it will take about five years to gather meaningful data that can be used to review.

   The department has a Graduate Steering Committee that oversees graduate student progress as well as an Education Committee comprised of teaching faculty plus two student members, that reviews our education efforts across curricula and these bodies will monitor data on a yearly basis. These are also the two groups that will be responsible for reviewing the data thoroughly every 5 years and proposing any changes.

   Any proposed changes to our program, pedagogy, curriculum design and assessment practices are ultimately brought to the entire departmental faculty for final approval.

2. How and when will the program faculty evaluate the impact of assessment-informed changes made in previous years?

As stated in the answer to q. 1 any assessment-informed changes made in previous years would be reviewed when enough data have been gathered that can be evaluated meaningfully. For our program this would probably not occur until at least 3 years of classes have passed through our program. However, both the departmental Graduate Steering Committee as well as the education committee will be monitoring and reviewing that data on an annual basis.

Additional Questions

1. On what schedule/cycle will program faculty assess each of the program's student learning outcomes? (Please note: It is not recommended to try to assess every outcome every year.)

The program faculty will assess at least one of the program's student learning outcomes on an annual basis. The Graduate Steering Committee as well as the Departmental Education Committee will be responsible for this.

2. Describe how, and the extent to which, program faculty contributed to the development of this plan.

   This plan was developed by the Departmental Education Committee (Drs. Ariel, Butler (Chair), Chrivia, Lechner and Macarthur (Co-Chair)) in consultation with the Departmental Graduate Steering Committee (Drs Macarthur (Chair), Egan, Lechner, Yosten, and Zhang).

IMPORTANT: Please remember to submit any rubrics or other assessment tools along with this plan.