

## 2026-27 Academic Catalog/Class of 2029 Graduation Requirements

# Doctor of Philosophy in Applied Life Sciences (PhD)

The mission of KGI's PhD in Applied Life Sciences is to endow a select group of students with expertise in research areas relevant to applied bioscience, with the ability to use interdisciplinary tools and approaches to solve problems, and with the motivation to translate knowledge to beneficial applications to advance new horizons in the applied biosciences. Students complete milestones based on their corresponding year in the program, which culminates in the student delivering their final Dissertation Defense presentation to the public and a Committee-approved final published Dissertation.

### Program Learning Outcomes

After completing the PhD, students should be able to:

- Apply rigorous, reproducible, and hypothesis-driven research methodologies to design and conduct original, independent experimental, computational, theoretical, and/or translational investigations in applied bioscience.
- Integrate advanced quantitative, computational, and biomolecular technologies, including data science, systems biology, artificial intelligence/machine learning, engineering principles, and high-throughput methodologies, to address complex problems in applied life sciences.
- Communicate complex scientific concepts and research findings effectively across academic, clinical, regulatory, and industry environments through written, oral, and visual formats.
- Demonstrate leadership, strategic thinking, and project management skills necessary to guide interdisciplinary research teams and execute complex scientific projects within academic and applied bioscience environments.
- Develop deep disciplinary expertise and broad interdisciplinary understanding sufficient to identify knowledge gaps, formulate innovative research questions, and advance the field of applied bioscience.
- Evaluate or advance the translation of scientific and engineering discoveries into scalable products, processes, therapeutics, diagnostics, or technologies that benefit society.
- Uphold the highest standards of ethical conduct in research, data management, intellectual property, regulatory compliance, and business practices within academic and industry settings

### Graduation Requirements

The PhD program operates on a trimester basis with Fall, Spring, and Summer trimesters. In the Fall and Spring semester, PhD students are required to pass PDEV 7200 Current Topics in Applied Life Sciences, a 1.5-credit course, that addresses bioindustry ethics, biomedical ethics, and serves as a weekly research seminar for all researchers at KGI. Requirements based on the student research progress and the semester of their due dates follow and are administered through RES 7000 PhD Research and Milestones, a 13.5-credit course.

## First Year

First Year Research Symposium Poster Presentation. Each year, PhD students are required to participate in the KGI Research Symposium. Students in their first and second PhD years are required to present a research poster outlining their dissertation status, while students in their third PhD year are required to give an oral podium presentation. The research symposia will foster communication among students and faculty, aid the development of interdisciplinary ties and create a strong research community. Students must create a poster of their dissertation research that follows scientific format and that is approved by their advisor. Students must complete the PhD Milestones Reporting form and submit the form and poster to the Canvas PhD

### First Trimester

1. PhD Dissertation Committee Established. Within the first three months, your committee should be established.
2. PhD Student and Committee Chair Contract. Within the first three months, the PhD student and committee chair contract must be signed.

### Second Trimester

1. Dissertation Literature Mastery Seminar on Dissertation Topic. By the end of second trimester of the second year of the program, you are required to present a background overview of your research topic. The presentation should cover the background and in-depth analysis of literature relevant to the dissertation field of study. The presentation should be scheduled by yourself to ensure all Committee members can attend either in person or by remote access. An abstract and reference list should be provided for presentation. All presentation content must be approved by the advisor. The Committee must be provided with presentation material at least two weeks in advance.

### Third Trimester

1. Dissertation Progress Presentation: Qualifier. By the end of their first year, students must give a comprehensive presentation to their committee. By the end of first semester of the program, the student is required to present a background overview of their research topic. The presentation should cover the background and in-depth analysis of literature relevant to the dissertation field of study. This presentation should be scheduled by the student to make sure all Committee members can attend either in person or by remote access. An abstract and reference list should be provided for presentation. All presentation content must be approved by the advisor.

## Second Year

Second Year Research Symposium Poster Presentation.

### First Trimester

1. Transferable Skills Proposal/Business Plan Topic Approval. Meet with committee members to decide if you will be writing a research proposal or business plan and on what topic. Should be something related to your field. The topic may be chosen by the student preferably away from the topic directly involving one's research, with the approval of their PI. This provides background for the Transferrable Skills Research Proposal or Business Plan due at the beginning of the third year. The research proposal or business plan is due in the first trimester of third year. Students should start working on the research proposal or business plan during this time.

## Second Trimester

1. Dissertation Literature Mastery Report on Dissertation. In the second trimester of the student's second PhD year, the Dissertation Literature Mastery Report needs to be submitted to the Committee for a review. At least two weeks prior to the presentation, a six-page minimum Dissertation Progress Report in a faculty advisor-approved format needs to be submitted to the Thesis Committee for a review. The report should cover but is not limited to the following:
  1. Background and significance
  2. Detailed discussion of project aims and experimental design
  3. Detailed discussion of early results
  4. Overview of project timeline (updated with future milestones)
  5. Conclusion

## Third Trimester

1. Dissertation Progress Report and Presentation to Committee. Before the end of their second year, each student must do a comprehensive presentation to their Committee and the KGI community. Two weeks prior to the presentation, a six-page minimum Dissertation Progress Report needs to be submitted to the Committee for review. The student is responsible for scheduling the presentation with all committee members (in person or remotely), and content must be approved by the advisor.

## Third Year

Research Symposium Oral Presentation.

## First Trimester

1. Transferable Skills – Research Proposal or Business Plan. In the second year of first trimester the committee approved the topic of the research proposal or business plan. A written research proposal (RP) or business plan (BP) must be submitted to the Thesis Committee, including an abstract, a substantial technical component, and references. The RP/BP must be distinct from the dissertation topic. The RP or BP is due at the end of the first trimester of the third year.
2. Publication-Quality Draft Research Manuscript. In order to graduate, students must have at least one publishable manuscript or paper to which they have been the major contributor. Students are not required to have a manuscript already published in order to graduate; however, the paper must be ready or in the final stages for submission to a journal. The manuscript or publication is due at the end of the first trimester of third year.

## Second Trimester

1. Dissertation Draft due to the Committee. Submit eight weeks prior to graduation.
2. Dissertation Defense to be scheduled two weeks prior to the required Committee Approval Date.
3. Dissertation Completion. Documented by PhD Dissertation Completion form signed by all Committee members after corrections/editing post defense AND confirmation from Proquest ETD that the final Dissertation has been posted.