

QUALIFYING/ADVANCEMENT TO CANDIDACY POLICIES FOR THE BIOSCIENCES PHD PROGRAM

Guidelines are effective as of March 4, 2015, with the exception of the written qualifying exam guidelines (Section C), which have been effective since September 11, 2012

A. Overview

All of the forms referenced within this document can be found online at <https://science.gmu.edu/academics/departments-units/systems-biology/student-forms>.

In order to advance to candidacy (register for BIOS 999) students must:

1. Pass their written comprehensive exam
2. Write and successfully defend their proposal
3. Pass their oral comprehensive exam
4. Submit updated Program of Study form

Students are required to complete all three of these items the semester prior to registering for BIOS 999 by the following deadlines:

For summer registration in BIOS 999 – **March 1st**

For fall registration in BIOS 999 – **June 1st**

For spring registration in BIOS 999 – **October 1st**

B. Committee

The first step in advancing to candidacy is to form your committee. Your committee is responsible for administering your written comprehensive exam, proposal defense and oral comprehensive exam. Your primary mentor is present at your proposal defense and oral comprehensive exam, but should not participate in asking or answering questions. Following advancement to candidacy, it is expected that you meet with your committee members on a regular basis (once or twice a year) to update them on your progress.

A ***committee formation form*** is required to finalize your committee. **Committees must be formed at least one semester prior to taking the comprehensive exams and performing the proposal defense.**

Your committee must consist of at least **4** total members, including your primary mentor as follows:

Committee Chair: Typically, the position is filled by your primary mentor. However, your primary mentor must have a primary appointment with the School of Systems Biology (SSB) to serve as the Committee Chair. In the event that your primary mentor does not have a primary appointment with SSB, another SSB faculty member must serve as your committee chair. Your primary mentor would serve as Co-chair.

Outside member: At least one member of your committee must be from outside of the SSB. The outside member may have a primary appointment within another department at Mason or may be employed outside of the University.

1-2 additional members: The remaining members of your committee should consist of Mason graduate faculty. Graduate faculty include tenure or tenure-track faculty. Other Mason faculty (including research faculty) may be appointed as graduate faculty, which allows them to serve on a student's dissertation committee.

Please see university catalog <https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-10> for additional information.

C. Written Qualifying Exams

The written comprehensive examination for Biosciences Ph.D. students should be scheduled after completion of all core and concentration coursework with the exception of seminar credits.

The written exam is to be administered by the student's doctoral dissertation committee members with the Committee Chair responsible for compiling the exam.

The exam format is "take-home" – open books, notes, and internet resources. The student will have 7 calendar days to complete the exam and upon completion will submit copies of the exam to both the dissertation advisor and the Graduate Program Director for the records.

The exam may be scheduled at any time with the express consent of the dissertation committee members and after completion of coursework as described above.

ALL WRITTEN EXAMS WILL USE THE FOLLOWING FOUR SECTIONS:

- 1. General Content**
- 2. Research Methods**
- 3. Recent Trends**
- 4. Specialized Content – Related to the student's dissertation topic**

Typically, on four-member committees each committee member will choose a given subsection from the four listed above and write at least (2) questions from that area.

Student responses will take the form of written essays that are fully referenced with articles from the primary literature as well as relevant review articles. Answers should be well organized and logically presented. Statements in response to the question should be supported by the use of relevant reference sources.

Students are required to answer at least one question from each of the (4) subsections, although depending upon the scope of the question, faculty may require students to respond to more than one question in a given area.

Responses will be scored on a scale of 1-5 with 5 being a superior response. In order for a student to successfully pass the written exam, they will have to score at least a **3** in each section. Committee members may elect to assign individual scores to all questions, or score only their specific section. In the case where committee members score questions other than those they have written; the overall score will be reflected by the average faculty score for a given question/section.

Should a student fail any given subsection (*i.e.* receive a score of <3), the student will be allowed **ONE** opportunity to retest in that subsection and must obtain a passing score of 3 or better to successfully pass the written exam. The re-test will be scheduled at the faculty member's discretion but no later than one semester after the first exam.

D. Written Proposal

- Students should prepare a dissertation proposal according to their advisor's instructions. Generally it is recommended that it be written in an NIH R01 format.
- The proposal must be provided to the student's committee at least **2 weeks** prior to the proposal defense.
- The proposal should include the following components: introduction, hypotheses, preliminary data, methods and experimental design, and significance of the research.

E. Proposal Defense and Oral Comprehensive Exam

The proposal defense and oral comprehensive exam may be combined into one meeting; however this is not required. If combined, the typical meeting lasts 1.5 to 2 hours. All committee members must be present (if necessary web-based participation or conference calling are viable options).

It is important to keep in mind that there are two different objectives of each portion. The proposal defense is meant to provide a platform to present your intended research. The committee is expected to provide critical feedback on the proposed studies. This presentation can also serve as a springboard for the oral comprehensive exam. However, the oral comprehensive exam is aimed at testing the student's overall knowledge and may be comprised of questions outside the scope of the material contained within the proposal defense.

Proposal Defense

For the proposal defense, the student should prepare a 30-45 minute overview of the proposed dissertation research, including introduction, hypotheses, preliminary data, methods and experimental design, and significance of the research. Committee members are encouraged to ask question during this presentation. **While your primary mentor is present at your proposal defense, they should not participate in asking or answering questions.**

If the proposal defense is successful (see committee recommendations below), the student should have the committee members sign the ***PhD Proposal Approval Form***.

Oral Comprehensive Exam

The oral comprehensive exam is aimed at testing the breadth and depth of the student's knowledge. Typically a round table format is used, where each committee member ask a question or a series of questions, followed by the next committee member and so on. This sequence is repeated until the committee members have had the opportunity to ask a sufficient number of questions. Depending on the number of questions asked during the proposal defense portion, the length of this questioning may vary. However, it is important that each committee member be provided sufficient opportunity to ask questions and evaluate the student. **While your primary mentor is present at your oral comprehensive exam, they should not participate in asking or answering questions.**

If the proposal defense is successful (see committee recommendations below), the student should have the committee chair submit ***Oral Comprehensive Exam Results*** to Graduate Coordinator.

Committee Recommendations

Rubrics to aid in the evaluation of students are available on the SSB website.

Following the proposal defense and oral comprehensive exam, the committee will make a recommendation. Your primary mentor does not get a vote. The following outcomes are possible:

1. Pass
2. Pass with recommendations (not requirements)
3. Does not pass, with the option to retake the formal exam or redo the proposal defense

The student passes if all, or all but one, of the committee members vote for option #1 and #2. The committee can provide recommendations to the student, but these should not be misunderstood as requirements. If two or more of the committee members vote for option #3, the student does not pass and will be permitted to retake the exam. The exam retake should be scheduled when the primary advisor feels it is appropriate, but no later than 6 months following the first exam. Failure to pass the second qualifying exam will result in dismissal from the program.