



GRADUATE STUDIES GUIDE

CONTENTS

I. Requirements	2
Prerequisites for Advancement to Candidacy	2
Prerequisites for Graduation	2
II. Advising & Mentoring	2
1st Year Students	2
2nd Year until Candidacy	2
Post-Candidacy	3
III. Course of Study	3
First Year	3
Fall Semester	3
Spring Semester	3
Summer Semester	3
Second Year	3
Third through Fifth Years	3
IV. Research Rotations	4
V. Candidacy Requirements	5
Qualifying Exam	5
Research Proposal, Oral Presentation, and Advancing to Candidacy	5
VI. Dissertation Defense	7

I. Requirements

Prerequisites for [Advancement to Candidacy](#)

- Three laboratory rotations & two semesters of Research in Biophysics (**BIPH699**)
- Two semesters of Biophysics Seminar (**BIPH698L**)
- Cell Biology (**BIPH704**)
- Chemical Thermodynamics (**CHEM684**)
- Statistical Mechanics (**CHEM687**)
- Elective course of choice (Spring first year) roughly related to research area
- [Qualifying Examination](#) passed at the Ph.D. level and normally taken at the beginning of the second year
- GPA Requirement: B average
- Find an advisor and join his/her group
- Pre-Candidacy Research (**BIPH898**) (2 credits are typical if not taking other courses)
- Collection of preliminary data and preparation of a [Research Proposal](#)
- [Oral presentation](#) of Research Proposal

Prerequisites for Graduation

- 12 credits of **BIPH899**
- Preparation of written [doctoral dissertation and oral defense](#)

II. Advising & Mentoring

Students will be assigned a 2-member advisory committee at the time they enroll in the Biophysics program. One of the purposes of this committee is for students to get to know faculty members who they can ask for advice and to expand the range of available expertise. Each student is expected to have an advisory committee throughout the entire period of the student's education.

1st Year Students

Students must **meet** with their 2-member advisory committee once per semester during their first year of enrollment. The committee meeting form must be completed and emailed to the Program Directors and Coordinator each semester.

- [Fall Form](#)
- [Spring Form](#)

2nd Year until Candidacy

All students must complete a [progress survey](#) each semester. This survey asks students to report their publications, presentations, and research progress. Once completed, the survey will generate an

email to the student's advisor and **advisory committee** members outlining his/her progress for the semester.

Post-Candidacy

Students who have advanced to candidacy will complete the same **progress survey** each semester. This survey asks students to report their publications, presentations, and research progress. Once completed, the survey will generate an email to the student's advisor and **dissertation committee** members outlining his/her progress for the semester.

III. Course of Study

First Year

By the end of the first year the student is expected to find an advisor and join his/her research group.

Fall Semester

- **BIPH698L**: Biophysics Seminar (1 credit) -- **required course**
- **BIPH699**: Biophysics Laboratory Rotation (2 credits) -- **required course**
>> **Section 1201 with Dr. Jeffery Klauda.** *You need to communicate with Biophysics (BIPH) faculty members to select a lab for your first rotation.*
- **BIPH704**: Cell Biology from a Biophysical Perspective (3 credits)
- **CHEM684**: Chemical Thermodynamics (3 credits)

Spring Semester

- **CHEM687**: Statistical Mechanics and Chemistry (3 credits)
- **BIPH699**: Biophysics Laboratory Rotation (2 credits) -- **required course**
>> **Section 1201 with Dr. Jeffery Klauda.**
- **Elective course of your choosing**

Summer Semester

- Join research lab
- Study for Qualifying Examination
- Qualifying Examination (week before the start of Fall classes or the early Fall semester)

Second Year

- Pre-candidacy Research (**BIPH898**)
- Collection of preliminary data and preparation of **Research Proposal**

Third through Fifth Years

- Oral Presentation and Admission to Candidacy

- Ph.D. Research
- Preparation of written doctoral dissertation
- 12 credits of **BIPH899**
- Dissertation oral defense

It is strongly recommended that **by the end of the sixth semester** the student present a [Research Proposal](#) and defend the proposal ([Advancement to Candidacy](#)). The student continues and completes his/her research which resolves in a Ph.D. defense. It is highly encouraged that the student gives a public seminar approximately 6 months before the defense.

IV. Research Rotations

Students are expected to complete 3 rotations during their first academic year. Students will begin research rotations their first semester of study. All students must produce a small presentation at the end of each rotation. Students are responsible for communicating with faculty to arrange their rotations, and each rotation must be approved by the Program Directors.

The purpose of having three rotations is to learn about research topics and tools used in various labs, develop laboratory skills, and find a thesis mentor. Rotations require a minimum of 8 hours per week presence in the lab/office. One of the rotations can be with a faculty/adjunct faculty outside the Biophysics program.

A student may opt-out of their 3rd rotation and continue working in their 2nd rotation or return to their 1st rotation placement, only with approval by both the 1) Biophysics Program Director(s) and 2) Lab PI. If a student completes two rotations in the same lab during the Spring Semester, it is expected that there has been a commitment made to support the student during the summer.

Rotations are 8-10 weeks each, with student presentations at the end of each rotation period. Students will be evaluated based on their presentations and comments from rotation advisers. After starting the third rotation, you will be able to choose your summer research and a thesis mentor (advisor).

Rotation 1: Suggested time: **Sept 6 - Nov 11** -- Fall semester grade.

Rotation 2: Suggested time: **Nov 14 - Feb 10** -- 1/2 of Spring semester grade.

Rotation 3: Suggested time: **Feb 13 - April 21** -- 1/2 of Spring semester grade.

V. Candidacy Requirements

Qualifying Exam

The Biophysics Qualifying Exam is taken in the late summer/early fall after the first year in the program when the student finds an advisor and chooses a field/area of research. The purpose of this two-hour oral examination is to determine whether or not the student is ready to embark on a research project in that specific field. The scope of examination does not emphasize students' future research plans, but rather basic knowledge in a particular field and the material of relevant courses taken by students during their first year.

A committee of 3-4 faculty, including the primary advisor, is assembled according to the research area and expertise. The areas of specialization include (but are not limited to) Biophysical Chemistry and Structural Biology, Computational Molecular Biophysics, Theoretical Biophysics, Cell Biophysics, and Neuroscience.

If the student passed **CHEM684** (Chemical Thermodynamics) and **CHEM687** (Statistical Mechanics) courses **with at least a B**, the examination will emphasize the biological/biochemical/cellular aspects of the field, as well as material of elective courses recently taken by the student. Otherwise, the committee **is free to** test the student in the subjects of Chemical Thermodynamics and Statistical Mechanics as well.

Each of the 3-4 members of the committee contribute one priming question that is meant to initiate a ~10-15 min conversation on a specific topic, with more questions to follow. The advisor chairing the committee finalizes the scope of examination with other committee members and the set of priming questions is given to the student one month before the examination. The priming and following questions should be broad enough to probe the student's general background in a specific topic but at the same time should reflect the depth of the courses taken by the student. The expected passing answers should be at the level deemed satisfactory by all committee members.

If significant gaps in student knowledge are identified and the committee decides that the student failed, one retake is scheduled with an appropriate time and amount of remedial work in the interim.

Research Proposal, Oral Presentation, and Advancing to Candidacy

Students are expected to complete the preliminary stage of their research and present a research proposal **by the end of the sixth semester**.

The research proposal is a document that demonstrates the ability of the candidate to analyze the topic/subject of their research, present preliminary data, and propose a realistic plan for the project.

We do not stipulate the length or specific format, but the written proposal must have elements of a typical grant application: background and significance, problem statement, aims, preliminary data, and a research plan.

The **Proposal Examining Committee** should consist of at least **4 faculty with at least 2 faculty from the biophysics program** (including the advisor). An exemption from the number of biophysics faculty can be granted under special cases by the Director(s) of the program. **Ideally this should be the same committee for the final Ph.D. dissertation defense.**

For the oral presentation, students should prepare an overview of the proposed thesis research, including questions and hypotheses, methods, preliminary studies, outline of proposed work and broader context of their project.

The presentation format is similar to that of the doctoral defense. Part 1 may be a public presentation, where the student and advisor may choose to invite attendees in addition to the members of the Proposal Examining Committee. Part 2 will be open only to the Proposal Examining Committee.

The written proposal should be sent to the Committee at least a week before the presentation.

The written document and formal oral presentation of the research proposal are judged and discussed by the Proposal Examining Committee, which then provides recommendations for the dissertation completion.

Advancement to candidacy occurs after the student passes the oral [Qualifying Examination](#), submits a Research Proposal, and the committee determines that the student passed the oral presentation. This cannot be less than six months prior to the student's Ph.D. defense.

It is the responsibility of the student to submit an application for admission to candidacy when all the requirements for candidacy have been fulfilled. Applications for admission to candidacy are made in duplicate by the student and submitted to the graduate program for further action and transmission to the Graduate School.

The [Application for Admission to Candidacy](#) must be received by the Office of the Registrar prior to the 25th of the month in order for the advancement to be effective the first day of the following month.

VI. Dissertation Defense

Within 12 to 18 months after beginning Ph.D. research the candidate is to select a Ph.D. Thesis Examination Committee. It is strongly encouraged that the Ph.D. Thesis committee be the same as the advancement to candidacy committee. To complete the Ph.D. candidates must earn 12 credits of BIPH899 (Ph.D. dissertation research, only available after advancement to Ph.D. candidacy) and prepare a written Ph.D. dissertation, the format of which (font, margins, etc.) must follow the [University of Maryland Thesis and Dissertation Style Guide](#).

The [policies and procedures for the oral dissertation examination](#) are set by the Graduate School.