



# **Graduate Student Handbook**

Fall 2023 Orientation

Academic Year 2023-2024

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## INTRODUCTION

The Biophysics graduate program at Michigan is interdisciplinary and consists of multidisciplinary research, distinct from the Ph.D. Programs in Physics, Chemistry, Biological Chemistry, or Biology. It encompasses fields as different as structural biology (X-ray and NMR structure determinations), biomolecular spectroscopy (NMR, IR, UV, EPR), computational biophysics (protein structure prediction, ab initio forcefield calculations), cellular biophysics (biomolecular mechanics, manipulation of single protein molecules, receptor diffusion in membranes) and biophysical chemistry (peptide design, protein folding, thermodynamics). The degree in Biophysics is conferred in recognition of independent, insightful and physically-oriented investigations of biological processes, matter or theories as demonstrated in a thesis based upon original research and creative scholarship.

This handbook is to be used as a guide to the rules and regulations that govern the graduate program both here in the Biophysics program as well as the University of Michigan. As a student you must familiarize yourself with requirements of the Program and the Rackham graduate school.

Throughout the Handbook references are made to **Rackham** rules and regulations which can be found in their entirety on their website: <https://rackham.umich.edu/academic-policies/> .

## **BIOPHYSICS GRADUATE PROGRAM REQUIREMENTS**

### **General Timetable to Ph.D. Conferral**

#### **Year 1 (pre-candidate)**

- Complete at least 18 credit hours of course work, including all required classes. Rotations are considered classes and count towards this limit.
- Conduct at least 2 lab rotations (typically one per semester)
- Complete of the Responsible Conduct of Research & Scholarship requirement
- Select a lab/mentor by end of first summer (before Fall term of 2<sup>nd</sup> yr)
- Take at least 1 semester of the biophysics seminar course (801)
- Complete preliminary examination: Checkpoint 1 (first offered in spring of first year)

#### **Year 2**

- Assemble dissertation committee (Form due at end of fall semester)
- Take at least 1 semester of the biophysics seminar course (801)
- Complete annual evaluation form with mentor (Form due spring term)
- Defend thesis proposal: Checkpoint 2 (First session held in Winter term)

#### **Year 3**

- Hold annual meeting of the dissertation committee.
- Take at least 1 semester of the biophysics seminar course (801)
- Complete annual evaluation form with mentor (Form due during spring term)

#### **Year 4**

- Present 20 min public seminar (Fall semester)
- Hold annual meeting of the dissertation committee.
- Take at least 1 semester of the biophysics seminar course (801)
- Complete annual evaluation form with mentor (Form due during spring term)

#### **Year 5 and beyond:**

- Hold annual meeting of the dissertation committee. When appropriate, the committee grants permission to schedule the PhD defense.
- Complete annual evaluation form with mentor (Form due during spring term)
- When appropriate, schedule and take the Thesis Defense.

## REGISTRATION POLICY

Students in Ph.D. programs must register for each fall and winter term until final completion of degree requirements unless they have received an authorized leave of absence or have been approved for extramural study. Students enrolled in the fall and winter terms are entitled to services during the spring and summer half terms whether or not they are registered. A student who takes candidacy or preliminary exams in a spring or summer half term must register in that half term. A student who defends the dissertation and/or finalizes degree requirements in a spring or summer half term must register for the full spring/summer term and submit the final dissertation and all materials by the published deadline to avoid registering for another term. For more information, see [Rackham's registration policy](#).

The minimum requirement for the Biophysics Ph.D. degree is usually seven (eight including the Final Term – six with a relevant Masters) full time terms of study (min. 8 credit hrs) and research beyond the bachelor's degree. A graduate student research or teaching assistant must be a full-time student.

## COURSE REQUIREMENTS

### **For students in their first year:**

Students in their first year are considered pre-candidates by the Rackham Graduate School. This classification indicates that students are in the process of gaining experiences and knowledge required to conduct their PhD dissertation work. Pre-candidates therefore are required to spend more time on course-work and preliminary exams than candidate students.

It is the goal of the Biophysics Program for the pre-candidate student to acquire a solid background in biology, biochemistry, chemistry, physics, and biophysics, through core courses and electives/cognate courses on the graduate or senior undergraduate level. Establishing a solid academic foundation is especially important in a rapidly changing interdisciplinary field such as Biophysics.

In order to achieve candidacy, pre-candidate students must complete courses that make up the Biophysics core curriculum in addition to two rotation courses and at least 2 electives, of which at least **3 credits** must be taken outside of Biophysics (cognate). In some cases, required courses can be substituted with prior approval of the graduate program director, with the exception of the 3 cognate credits, which is a Rackham requirement. Upon completion of these courses, students will have earned the **18 credits required to achieve candidacy**. In addition to conventional coursework, pre-candidate students must complete 2 research rotations as well as training in responsible conduct of research & scholarship, and at least one semester of the Biophysics seminar course 801. Once completed, pre-candidates are eligible to take the preliminary (checkpoint 1) exam. Students become candidates upon successful completion of the checkpoint 1 exam.

Detailed requirements for pre-candidate students are outlined below. *Pre-candidates must be registered for a minimum of 9 credit hours per semester*, but typically will take at least 12 credits. This typically includes 3 traditional courses, 3 credits of research rotation, and a seminar course. Taking only 9 credits is expected and especially encouraged if the student is also doing a GSI that semester.

## Biophysics Core Curriculum (3 courses + 1 seminar)

Biophysics 520 (Biophysical Chemistry I) Offered in Fall

Biophysics 521 (Biophysical Chemistry II) Offered in Winter

Biophysics 595 (Professional Development in Biophysics) Offered Fall

Biophysics 801 (1 credit Seminar) Offered Fall and Winter

## Electives/Cognates (at least 2 courses)

It is suggested that students take elective courses in consultation with their graduate advisor or program director, in order to fill gaps in preparation or gain specific knowledge relevant to anticipated thesis projects. Courses must be approved by the graduate program director in order to count towards the elective requirement.

The Rackham Graduate School has an additional cognate requirement that requires that at least 3 credits be taken outside of Biophysics. This can take the form of a single 3 credit course, or a 2 credit course plus a 1 credit seminar. The PIBS 503 course (described below under Responsible Conduct of Research) can be counted as a one-credit course towards the cognate requirement. Courses that satisfy the cognate requirement will also count as an elective, as long as they are approved by the graduate program director. *Elective courses within biophysics that are not cross-listed in another program cannot be used to satisfy the cognate requirement.*

Students with a background in Physics may consider taking:

- Biochemistry: Biolchem 550 (Fall)
- Biophysics: Biophys 550 (Fall and Winter)
- Cell Biology: MCDB 428 (Winter, Biological focus) or BiomedE 418 (Winter, Quantitative/Engineering focus)
- Macromolecular Structure/Function: Chembio 501 (Fall) / Chembio 502 (Winter) or BiolChem 515 (Fall)

Students with a background in Biology may consider taking:

- Statistical/Thermal: Chem 463/575 (Fall – Thermodynamics), or Chem 576 (Winter – Statistical Mechanics), or Physics 406 (Fall or Winter – Statistical and Thermal Physics)
- Quantum: Chem 461/570 (Fall or Winter – Physical Chemistry) or Physics 453 (Fall or Winter – Quantum Mechanics)
- Mechanics: Physics 401 (Fall or Winter – Intermediate Mechanics)
- E&M: Physics 405 (Fall or Winter – Intermediate Electricity and Magnetism)

## Research Rotations (two)

During the first year, students must register for two research rotations: Biophysics 890 (Fall and Winter). Six credits of 890 must be completed in order to achieve candidacy.

## Responsible Conduct of Research & Scholarship

As federally mandated, students must enroll in one Research Ethics Course: PIBS 503, CHEM 415 or UC 415 (offered by LSA, choose the appropriate section depending on the nature of your interests/research). *Note: this requirement must be fulfilled prior to achieving candidacy.*

### Biophysics 801 Seminar:

At least 1 credit of Biophysics 801 must be completed prior to achieving candidacy. 7 credits total are needed for the PhD degree.

### Weekly Biophysics seminar series:

All students are required to participate in the Biophysics seminar series, which is not taken for credit but an important opportunity to learn about cutting edge biophysics research outside of your direct research area. It also provides an opportunity to interact with other program members across campus.

### **For students beyond their first year:**

#### Dissertation research (Biophysics 995)

Candidates must register in the fall and winter terms for 8 hours of research.

#### Biophysics 801 Seminar:

At least 7 credits of Biophysics 801 is required for the PhD degree.

#### Additional courses:

Candidates can also take either one additional course per term **or** more than one course for a total of no more than four credits without paying additional tuition beyond candidacy tuition (as per Rackham guidelines). Other classes may be taken as a visit (audit). Taking extra courses after Candidacy must be discussed with the thesis advisor.

#### Weekly Biophysics seminar series:

All students are required to participate in the Biophysics seminar series, which is not taken for credit but an important opportunity to learn about cutting edge biophysics research outside of your direct research area. It also provides an opportunity to interact with other program members across campus.

### **Grades (For all students)**

Grades in typical courses are typically A-F, including the research rotation. Grades in research courses after students achieved candidacy (biophysics 995) accepted by the Graduate School are "S" (satisfactory) and "U" (unsatisfactory). Grades below cannot be used to satisfy degree requirements and no credit is given for a "U."

In order to maintain good academic standing, as defined by Rackham Graduate School, students must maintain a 3.0 GPA. See [Rackham's policy](#) for more details. It is generally expected that graduate students will not will not receive less than a B- in any given course.

An "I" grade may be given in any lecture or laboratory course when a minor part of the course work remains undone at the end of the term. If the work is made up within two complete semesters, a supplementary report of the appropriate letter grade may be filed; after the second semester the supplementary report will not be accepted and the "I" remains permanently on your record.

### **FIRST YEAR GSI TEACHING REQUIREMENT**

During the first year, financial support will be provided via both a Fellowship and one .25 Teaching Assistantship (GSI) in an introductory course. Students who were awarded a Rackham Merit Fellowship (RMF) or other fellowship that fully covers first year funding requirements are not required to GSI.



## CANDIDACY PROGRESSION CHECKLIST

- COURSE WORK: Complete all required coursework.
- I. Core: 10 hours of Biophysics core courses & seminar with a B or better:
- 520 [Theory & Methods of Biophysical Chemistry] 3 credits
  - 521 [Techniques in Biophysical Chemistry] 3 credits
  - 595 [Professional Development in Biophysics] 3 credits
  - 801 [Biophysics Seminar] 1 credit
- II. 6 credits of Biophysics 890 (Intro to Research): Students are required to register for this class in the fall and winter terms of their first year.
- Fall     Winter
- COGNATE REQUIREMENT: Take and pass **at least 3 credit hours** of cognate coursework with a B or better. *Please contact the Student Services Office for more information.*
- \_\_\_\_ credit(s) of \_\_\_\_\_     \_\_\_\_ credit(s) of \_\_\_\_\_
- \_\_\_\_ credit(s) of \_\_\_\_\_     \_\_\_\_ credit(s) of \_\_\_\_\_
- ELECTIVE REQUIREMENT: Take and pass **at least 3 credit hours** of elective coursework with a B or better. *Please contact the Student Services Office for more information.*
- \_\_\_\_ credit(s) of \_\_\_\_\_     \_\_\_\_ credit(s) of \_\_\_\_\_
- ETHICS REQUIREMENT: Take and pass 1 credit hour of RCRS/Ethics requirement with a B or better
- 1   credit of PIBS 503       1   credit of UC 415       1   credit of CHEM 415
- CANDIDACY, CHECKPOINT 1: Paper Discussion/proposal (end of first year)  
Students who receive a "Pass" (and meet all other candidacy requirements) will advance to Ph.D. candidacy.

**View the Candidacy Deadline list from the Rackham website and know your deadlines!**  
<https://rackham.umich.edu/navigating-your-degree/candidacy-deadlines/>

## RESEARCH

The Ph.D. signifies the completion of a significant body of original publishable research, performed under the supervision of a research advisor. The choice of a research advisor and thesis project is a major decision. This choice is facilitated by our rotation program, which allows students to explore various research laboratories and areas of Biophysics research during their first year. Students must register for two terms of Biophysics 890 (Introduction to Research), each consisting of a laboratory rotation in the laboratory of any Biophysics Program faculty member upon mutual agreement. Students must enroll for at least 3 credits. ***Even if students are sure of their choice of thesis advisor, they must take advantage of this opportunity to broaden their exposure to different research efforts on campus.***

## ROTATIONS

Only two lab rotations are required before joining a lab. **Students are expected to identify a PhD lab after their second rotation.** If a student needs to do a third lab rotation, they must first seek approval of both the Graduate Chair and the Program Chair. **NOTE: funding isn't always available for third rotations.**

### BEFORE Deciding on a Lab Rotation:

1. Research your potential faculty mentor's research interests (whether online or via research papers, etc.).
2. Interview at least 4 faculty members whom you are interested in rotating with, keeping in mind the following things:
  - a. How closely do their research interests match yours?
  - b. Personality (can you work with this person)?
  - c. Publication record (do students in the lab have a history of productivity?)
  - d. Try to gain an idea of how welcome you'll be in the lab and how much guidance you'll get.
3. Speak with students currently in the lab, or those who have done rotations in the lab before.

### BEFORE Joining a Lab:

1. Interview other lab members and post-doctoral fellows to get a "first-hand" account of the conditions and expectations of the lab
2. Attend at least 1 group meeting prior to the deadline for joining a lab (April 30).
3. Make sure the PI is capable of providing funding support for new students.

**Direct-admit students are expected to choose their home lab by May 31 during their first year. You may join in the laboratory of any of the regular or associated Biophysics faculty.** Since the thesis advisor will be responsible for the majority of stipend, tuition and fringe benefits expenditures, it behooves the student to consider the financial position as well as the scientific interest when choosing a lab. **It is recommended that you choose a lab within 2 weeks of the deadline to avoid gaps in pay or benefit coverage.**

Some students may decide at some point that they want to switch thesis labs; this is permissible, pending approval of the Graduate Chair. The decision is consequential because the choice of a lab amounts to the choice of a research field that will affect much of their future career. In some cases, leaving a lab will result in the loss of a student's good standing status. See the good standing policy for more information.

The student and the thesis advisor are jointly responsible for following the Program and Graduate School requirements for the Ph.D. The mentor's responsibilities begin at the time of his/her agreement to accept the student for research. In addition to supervising the research, the thesis advisor is expected to advise the student on course elections, examinations, independent study pertinent to his/her general development as a scientist and any other matters affecting his/her general progress toward a degree.

## **THESIS RESEARCH**

Once you have obtained Candidacy, your main activity in Biophysics will be thesis research. Every semester you should register for Biophysics 995 for 8 credit hours. You will also want to attend many of the numerous specialized lectures and seminars at Michigan, and you may also want to take or audit additional courses of interest to you.

The thesis research should involve original and significant advances of our understanding of an important area in Biophysics. It is expected that your work will result in papers published in peer-reviewed scientific journals. In fact, the experiencing of presenting your work in written and oral form is an important part of the graduate experience.

## **MENTORING PLANS**

First-year students will be able to view mentoring plans from faculty who are accepting rotation students.

Once the student joins a lab, they will be required to develop a personalized mentoring plan with their dissertation mentor, and attend at least (1) Rackham MORE workshop during their second year in the program.

Every year following, the student and their dissertation mentor will review and/or revise their mentoring plan as part of the annual progress report process.

## PRELIMINARY EXAMINATION & CANDIDACY

### Preliminary Examination (Checkpoint 1)

To demonstrate that they are qualified to proceed in the Ph.D. program, first-year Biophysics students are given a preliminary examination during the spring term. This examination is based on primary research articles that are distributed in advance. Students are expected to read and understand the material in the research papers, including the background and experimental methods. They are also expected to write an NSF GRSP-style (2 page) research proposal on a topic related to the paper materials. The preliminary exam is administered and graded by the members of the Graduate Prelim Committee.

#### Format

Approximately 3 weeks before the prelim exam, the Grad program chair/co-chair will meet with all first-year students and provide specific guidance on the format of the exam. The Graduate Program Committee will offer a selection of five primary research articles from which the students must CHOOSE ONE for their oral exam. These papers will represent a breadth of topics, covering subjects that have been taught in Biophysics classes during the first year. Students will have 3 days to choose a paper and inform the Grad program chair/co-chair of their decision. The prelim exam will take place two weeks later. Students are expected to prepare a slide presentation (approx. 30 minutes) to communicate the main findings of the paper and the student's proposal for future research to the prelim exam committee. Prelim committee members will ask questions to assess the student's mastery of fundamental principles and experimental methods in biophysics, cell biology, biochemistry, and physics.

#### Preparation

Students may discuss these research articles with anyone they wish prior to the exam, except members of the prelim committee.

#### Written component:

Students are expected to submit a 2 page research proposal based on the selected paper. The proposal should follow the guidelines of NSF GRFP, with the exception of allowing cited references to be placed on a separate (3<sup>rd</sup>) page. Written proposals will be due prior to the exam.

#### Oral component:

During the oral examination the students will be expected to:

- Briefly summarize the main findings of the paper;
- Be cognizant of the literature related to the paper;
- Discuss the methods used, including strengths and weaknesses;
- Understand statistical/analytical methods used;
- Propose and justify experiments for a future study following up on these findings;
- Be cognizant of fundamental principles in biophysics, cell biology, biochemistry and physics (even if some these topics may not be used in the paper selected by the student).

## Evaluation

The prelim committee will prepare a written report on the strengths and weaknesses of each student's performance with a recommendation of "Pass", "Conditional Pass", or "Fail". Students who receive a "Pass" and meet all other candidacy requirements will advance to Ph.D. candidacy. Students who receive a "Conditional Pass" will be given specific recommendations to obtain a passing grade.

## Remediation

If the prelim committee determines that the student has failed to satisfy the requirements listed above, s/he will be invited to submit and defend a second paper. If the student again fails to satisfactorily address the requirements above, the student will have failed the prelim, with no additional opportunity for remediation. For students who fail prelim but have accumulated 24 credit hours, there is a path to earn a master's degree.

## **DISSERTATION PROPOSAL & ORAL DEFENSE (Checkpoint 2)**

The checkpoint 2 exam is a defense of the student's thesis proposal to their dissertation committee. The written component consists of a NIH F31 style proposal of their proposed research project. The oral exam consists of a brief presentation on a research project of the student's choosing (related to what the student plans to accomplish during their Ph.D.). During and after the presentation, students will be asked questions related to, and possibly beyond the scope of their research. **The goal of this exam is to ensure that students possess the necessary formal background to successfully implement their proposed research project(s).**

## Timing and Eligibility

Students in good academic standing who have advanced to candidacy will take their "checkpoint 2 exam" in the winter semester of their second year.

## Committee

In the fall of their second year, the student will, in consultation with their dissertation mentor, assemble a Dissertation Advisory Committee. The committee will administer the Checkpoint 2 exam and will regularly serve in an advisory role throughout the student's graduate career. The make-up of this committee is as follows:

- At least 4 members in total
- The Committee Chair (cannot be the student's dissertation mentor but must be a core faculty member)
- One Core Biophysics faculty member that is not the primary mentor\*
- One Cognate member (a UM faculty member who does not hold any appointment in Biophysics; can hold appointment in related department as long as he/she isn't affiliated with Biophysics however they also must be affiliated with a Rackham program)

*\*if primary mentor is core, than a second core faculty member is needed; if primary mentor is affiliated, only one core member is needed.*

Students should email their proposed committee members to the graduate program coordinator for formal approval.

Please refer to **Appendix 2** for more information about the dissertation committee.

### Written Component:

Students will prepare a written proposal consisting of one page of Specific Aims and six pages of Research Strategy, following the guidelines of an NIH F31 fellowship proposal. This document must be distributed to the committee at most 2 weeks prior to the scheduled oral exam. Students are encouraged to discuss their research project with their mentor. The Specific Aims page needs to be approved by the mentor. However, the 6-page written proposal must be prepared exclusively by the student, without any rewriting or editing by the mentor, co-mentor, or any faculty member. Students are encouraged to solicit feedback from their student peers.

### Oral Defense:

The student will present background and preliminary results of the proposal, using slides and/or the whiteboard, and introduce the hypothesis that will be tested. The student is expected to explain the design of experiments to test the hypothesis, discuss how experimental outcomes will inform on the hypothesis, and discuss potential pitfalls and alternative approaches to test the hypothesis. The student is expected to be cognizant of the relevant literature and to explain the potential scientific and/or health impact of the proposed work. The student's mentor will be present during the exam, but may not ask or answer questions.

### Evaluation:

The chair of the dissertation advisory committee will prepare a written report on the strengths and weaknesses of the student's performance with a recommendation of "Pass", "Conditional Pass", or "Fail". If a conditional pass is given, the committee will present the student with a path towards resolving the condition as part of the written feedback. If a student fails the exam, or fails to resolve the conditions for passing within the specified time-frame, then the exam can be retaken once, typically before the beginning of the student's 3<sup>rd</sup> year. In addition to members of the dissertation committee, the Grad committee chair or co-chair will attend the retake of the exam.

For students who fail the retake but have accumulated 24 credit hours, there is a path to earn a master's degree.

## COMMITTEE (DATA) MEETINGS

Annual meetings of the thesis committee are mandatory for all doctoral students after passing the checkpoint 2 exam. The timing of this meeting will be determined for each student based on discussion with their faculty advisor and committee, but must take place at most 1 year from the previous meeting (either Checkpoint 2 or past data meeting). At the data meeting, the student presents a detailed discussion of his/her data in a clear and logical fashion, including major findings and a detailed outline of the thesis.

The objective of annual committee meetings in the biophysics graduate program is to ensure that the student is on track for a successful PhD in a reasonable time. At the end of the meeting, the committee is asked to evaluate the student's progress towards their PhD and, if appropriate, grant the student permission to schedule their defense. This evaluation is communicated to the student and the program through the 'Data Meeting Report Form.' **This form is to be signed by the committee chair (and co-chair, if applicable) and the student, and submitted to the graduate coordinator immediately following the meeting.** The committee is asked to decide on the timing for the next meeting, which can be scheduled for at most 12 months from meeting date. The committee should only grant permission to defend if they are confident the student will be able to produce and defend a successful dissertation in the required time. Committees and students are encouraged to meet more frequently if the committee feels this could provide benefit to the student. Committees can also request additional materials (e.g. a written progress report submitted prior to the meeting).

At the end of the meeting, the committee is asked to determine if the student is making adequate progress towards their PhD. What constitutes 'adequate progress' will depend on the number of years the student has been in the program and is left to the discretion of the committee. The goal is for biophysics students to successfully defend a PhD within 6 years. If a student does not appear to be on track to accomplish this, it is requested that the committee notify the program by indicating that the student is making 'inadequate progress towards their PhD' on the data meeting evaluation form along with a description of the specific concerns. When this occurs, committee members also establish criteria for the student to demonstrate progress prior to the next committee meeting.

The current policy of the biophysics graduate program is that candidate students deemed to show inadequate progress towards their PhD by their committee have their 'good standing' status in the program revoked. This status is internal to the program and does not appear in the student's formal academic record, and is intended to alert both the student and program to possible obstacles without necessarily being punitive. Loss of a student's 'good standing' status triggers a probationary period that can last up to 1 semester (4 months). At the end of this period, the student is required to again meet with the committee. The committee can then choose to either reinstate the students 'good standing' status or recommend that the student be dismissed from the graduate program.

**NOTE: the final committee meeting report form MUST have "permission to defend" checked before the student may schedule a defense.**



## **ANNUAL PROGRESS REPORTS**

All students from the second year to the completion of the Ph.D. degree participates in an annual evaluation of their progress towards the degree with their dissertation advisor. In the spring of each year, students and faculty will receive via email the evaluation form, instructions for completing the form and a deadline by which it must be submitted to the Student Services Administrator. The form is completed jointly by the student and advisor and reviewed by the Graduate Chair. The goal of this process is to assist students and advisors in overcoming any barriers to success and to facilitate open communication about degree and research requirements. **If the student receives an unsatisfactory evaluation, this will trigger an immediate meeting of their dissertation committee to review the student's progress, and report back to the Graduate Chair.**

Students are also expected to meet annually with the Biophysics Graduate Chair to discuss the review and/or any questions or issues they may have.

## **PUBLIC SEMINAR REQUIREMENT**

Students are required to present a seminar to faculty and fellow students during their fourth year. The seminars are given as part of a Graduate Student Symposium during the Fall or Winter term. The student must present their own research. They may be invited to give yet another seminar in the regular Biophysics Seminar Series or other departments in the later stages of their career. Students are encouraged to accept these invitations as they help develop good communication skills.

## **PRESENTATION AT THE ANNUAL RETREAT**

Graduate students are required to attend and present at the Biophysics annual retreat. Students currently in their 1<sup>st</sup> and 4<sup>th</sup> years are exempted from presentations.

## **DISSERTATION PREPARATION AND DEFENSE**

Upon completion of research, students write a dissertation in accordance with the requirements of the Rackham Graduate School. In general, the Dissertation is a comprehensive treatment of the student's thesis research. It is possible for the Dissertation to include material from journal articles previously published by the student, however the Dissertation should also include contextual information regarding the significance of the question being addressed, a discussion of other approaches used by previous researchers, and the importance of the thesis research.

Rackham offers explicit formatting guidelines and other helpful information on their website (<http://www.rackham.umich.edu/current-students/dissertation/the-dissertation>). The Graduate School requires that every doctoral dissertation and abstract be published. Students will sign an agreement to this end to make the dissertation available in print and online. If desired, dissertations may be embargoed for a period of time; please check the Rackham Dissertation resources at the URL above for guidelines. **Students are required to submit**



**their dissertation to their committee at least two weeks prior to their scheduled defense.**

Following the submission of the dissertation to the student's committee, he/she must defend the Dissertation in an oral presentation. Students must have a pre-defense meeting with the Office of Academic Records and Dissertations at least 10 working days before the defense. Students can register online for this, and must be registered to defend and finish all requirements. The oral defense generally consists of an open presentation of the thesis research to the University Community followed by a closed session with the Committee. At least four members of the Committee must be present at the oral defense. Including the Chair or one Co-Chair and Cognate Member. All members are required to read and comment on the submitted Dissertation before the Defense.

### **Use of Copyrighted Materials in Your Dissertation**

Students are required to receive written permission from the copyright owner for any material used in the dissertation that falls outside the guidelines of "fair use," and are responsible for full compliance with proper use of copyrighted material. Availability of materials on the internet does not change copyright status.

For information about copyrighted material and fair use, see:

[http://www.umi.com/assets/downloads/products/UMI\\_CopyrightGuide.pdf](http://www.umi.com/assets/downloads/products/UMI_CopyrightGuide.pdf)

University of Michigan Copyright Information is provided at:

<http://www.copyright.umich.edu>

Students should retain full documentation of every instance for which they have received permission to use copyrighted material.

## **MASTERS DEGREE**

There is *no* terminal Master of Science (M.S.) program in the Biophysics Graduate Program and the Program will not admit students intending to obtain a terminal Master of Science Degree. However, the degree can be granted in the extenuating cases of students who have either unsuccessfully attempted to pass the preliminary examination requirements or are leaving our program for other reasons. It can also be conferred as a non-terminal degree to students who are working to complete the Ph.D. degree.

The Master of Science Degree in Biophysics, when granted by Biophysics Graduate Program, requires successful completion of a minimum of 24 credit hours of in-residence course work (average "B"), and 4 credit hours of cognate studies ("C-" or better). **990, 995 or courses elected as a visit (audit) do not count towards this total** – student should also see the Rackham Handbook section on Masters Degrees.

## **GOOD STANDING POLICY & ACADEMIC PROBATION**

It is critical for students to comply with these requirements to maintain a record of “good standing” within the Biophysics Graduate Program. Failure to maintain “good standing” status can result in loss of financial support and/or dismissal from the program.

### **A. OVERVIEW AND GOALS:**

The goal of the Biophysics Graduate Program is to maintain a supportive and constructive training experience for all enrolled students in which all students are in good standing. In some circumstances, students are placed in ‘unsatisfactory academic standing’ status when certain expectations are not met (please refer to Rackham’s Good Academic Standing policy). Several outcomes are possible when good standing status is revoked after a probationary period. These include regaining good standing status or dismissal from the program. This document describes the guidelines and procedures for maintaining, losing, and regaining good standing status for graduate students at all degree stages in the Biophysics program.

Overall, students that are in good standing will:

1. Comply with all rules and regulations of the University, Rackham, and the Biophysics graduate program.
2. Meet all applicable standards of academic and professional integrity.
3. Demonstrate an ability to succeed in the Biophysics PhD program.
4. Demonstrate readiness and capability to do original and independent research, in a manner appropriate to their degree stage.
5. When applicable, perform the duties and responsibilities of their GSI, GSRA, or Fellowship appointment in Biophysics in a professional and timely manner.

Compliance with the above guidelines will be evaluated by the Graduate Chair, Program Director and one faculty member from the Graduate Prelim Committee for pre-candidate students, and by the student’s dissertation committee for students who have achieved candidacy. The remainder of this document describes detailed guidelines regarding the requirements to retain good standing, as well as procedures for assigning and resolving unsatisfactory standing status for all students in the Biophysics graduate program.

This document describes departmental specific policies and is distinct from the existing good standing policy set forth by the Rackham Graduate School. A major component of maintaining academic good standing is that students maintain a cumulative grade point average (GPA) of greater than or equal to 3.0 (B or better). This includes all academic courses taken, including cognate courses, throughout their residence in the program. *A student whose cumulative grade point average falls below a “B” (3.0 on a 4.0 point scale) in a given term or half-term will be placed on academic probation for the following term or half-term of enrollment, or may*

*be denied permission to register. Please refer to Rackham's website for a detailed description of Academic Probation.*

## **B. Expectations and Benchmarks for maintaining 'good standing' within the Biophysics Graduate program.**

The following student expectations are separated by degree stage within the graduate program:

**First year students** are expected to demonstrate that they are making good progress towards their degree requirements. This includes:

1. Take two terms of the Biophysics Graduate Research rotation course (890) during their first year and receive a "B" or better in both terms.
2. Find a Biophysics core or affiliated faculty mentor who has agreed to oversee their Ph.D. research and is committed to supporting them effective May 1<sup>st</sup> of their first year (i.e. by the end of their second term) for the remainder of the student's Ph.D. studies in Biophysics.
3. Achieve Ph.D. candidacy by May 31<sup>st</sup> of their first year in residence, per guidelines explained in the Biophysics Graduate Student Handbook. In the event the student does not pass their candidacy (checkpoint 1) by the May 31<sup>st</sup> deadline on their first attempt, they will then be deemed "not in good standing." The student will then have until August 31<sup>st</sup> of that year to re-take the exam and regain good standing status. If the student does not pass their candidacy (checkpoint 1) exam on their second attempt, or does not convene an exam by the August 31 deadline, they will be dismissed from the program.

**Candidate students** are expected to demonstrate that they are making good progress towards their degree requirements in order to maintain good standing. This includes:

1. Receive satisfactory (S) grades for all terms enrolled in Biophysics 995.
2. Present a public seminar to the department in their fourth year.
3. Meet with their mentor to prepare, review, and submit their annual progress report to the Biophysics office by the start of each spring term and receive a "Satisfactory" assessment of progress by their faculty mentor on their annual progress report.
4. Hold meetings with their dissertation committee at least annually and receive a 'making sufficient progress towards PhD' assessment from the committee on the Data Meeting Report form. Selection of this option by the committee automatically revokes a student's good standing status (see below).

## **C. Determination and Resolution of Probationary Status & Regaining of Good Standing**

If it is brought to the attention of the program that a student has not met one or more of the conditions stated above, or if a special situation occurs that brings into question a student's good standing status, then the biophysics graduate program will review the issue and reach a decision/course of action following the procedures outlined below, which may result in the student being put on probation. Student financial support will be maintained during the

probationary period. Failure of the student to regain good-standing status within a probationary period may result in the loss of financial support and/or dismissal from the program.

**Pre-candidate students:** the Biophysics Program Director and the Graduate Program Director are responsible for determining whether students “good standing” status should be revoked. The following will trigger an immediate review:

1. If the student receives unsatisfactory grade in the rotation course (890)
2. If a significant issue is reported in the Rotation Evaluation Form or a significant issue is brought to the attention of the Biophysics program during the rotation;
3. If the student is unable to find a Biophysics core or affiliated faculty mentor by the May 1<sup>st</sup> deadline.

If any of the above occur then the Program Director and Associate Chair will convene a meeting to decide whether the student’s good standing status should be revoked and the student placed on probation. At this time, students will be provided with an individualized letter describing the criteria needed to regain good standing in a specified time-period.

Probationary period and procedure for regaining good standing status: Pre-candidate students are given one semester of probation to resolve any issues related to their good standing status in the program. Near the end of this probationary period, the Program Director and Associate Chair will decide if student has successfully met the criteria set out at the start of the probationary period in order to regain good standing status. Otherwise the student will be dismissed from the program.

### **Candidate students in their 2<sup>nd</sup> year:**

Students are expected to assemble their dissertation committee and defend their thesis proposal to their committee by May 31 of their second year (checkpoint 2). Failure to successfully defend their thesis proposal by this day will result in immediate loss of good standing and the student will be placed on probation. At this time, the committee to establish written guidelines regarding criteria required for the student successfully defend their dissertation proposal at the end of a probationary period which ends on Aug 31 of the same year.

Probationary period and procedure for regaining good standing status: The student will regain good standing status upon successful defense of the dissertation proposal (checkpoint 2) before the start of their 3<sup>rd</sup> year (Aug 31). If the student is unsuccessful in defending their dissertation proposal by this date, or if they fail to schedule or attend a second committee meeting to defend their dissertation proposal, then they will be dismissed by the program.

**Candidate students beyond their 2<sup>nd</sup> year:** The student’s dissertation committee is responsible for determining whether student’s good standing status should be revoked.

At the completion of dissertation committee meetings, the committee is asked to fill out a data meeting report form that includes the question “Is the student making sufficient progress

towards their PhD?" Students will lose good standing status and will be placed on probation upon receipt of a 'not making sufficient progress towards PhD' assessment. The dissertation committee can revoke a student's good-standing status at an annual committee meeting or at a special committee meeting called by the program in response to one of the triggers listed below:

1. If the student receives an unsatisfactory grade (U) in Biophysics 995.
2. If the student receives a "marginal" or "no" response to the question "Is the student making progress towards completing their doctoral degree" on their annual progress report; or fails to submit their annual progress report in a timely manner.
3. If the student fails to meet with their dissertation committee in a timely manner (at least annually.)

If any of these conditions occur, the Graduate Chair will be notified and the program will schedule the dissertation committee meeting on the student's behalf to convene as soon as possible (typically within 4 weeks). Failure of the student to attend this meeting will result in immediate loss of good standing status.

Probationary period and procedure for regaining good standing status: If a student's committee decides that they are not making sufficient progress towards their PhD, then the program will work with the committee to establish written guidelines regarding the criteria required for the student to regain good standing in the probationary time-period to be determined by the committee, which is a maximum of one semester.

Near the end of the probationary period, the program will schedule a second dissertation committee meeting in which a decision will be made as to whether the student has successfully met the criteria set out by the committee to be reinstated to good standing status. Specifically, the student will regain good standing status upon receipt of a 'making sufficient progress towards PhD' assessment on the Data Meeting Report form filled out at the end of a dissertation committee meeting at the end of the probationary period. If the committee determines that the student is not making progress towards their PhD at this committee meeting, then the student will be dismissed from the program.

In special circumstances, the Biophysics program can elect to request that a student find a new faculty mentor. In this case, the student's good standing status will be revoked and the student will have one semester to find a new faculty mentor. In this special case, it's possible to return to good standing through communication between the Biophysics Program and the new mentor (without a formal committee meeting). If after one semester the student has failed to find a new faculty mentor to oversee their PhD research and financially support them during their duration in the Biophysics Graduate Program, the program (possibly in collaboration with the student's committee) will come to a final decision regarding whether the student should be dismissed from the program.

For cases when a student initiates a request to switch laboratories after the checkpoint 2 exam is completed, the request will trigger the scheduling of a committee meeting, and the committee will be asked to advise the program on whether to grant the student's request. Exceptions are expected in cases where neglect or abuse are indicated.

### **Appeals Process**

In accordance with Rackham policy, students have the opportunity to appeal a probation or subsequent dismissal decision. They must notify the Biophysics Student Services office in writing of their intent to appeal, **within two weeks of their probation or dismissal decision**. A separate Biophysics Appeals Committee will review the appeal request.

## **FINANCIAL SUPPORT & BENEFITS**

The Biophysics Graduate Program is committed to seek continued support for your stipend, tuition, and health insurance throughout your graduate training. To be eligible for such financial support, students must be in “Good Standing” (see above). Students are expected to continue to make progress in their thesis research independent of the source of their funding.

### **First Year Funding Support**

First-year students entering the Biophysics program can expect financial support for full coverage of stipend, tuition and healthcare during their first two terms (fall and winter, 8 months). This support will be provided by some mix of the following funding mechanisms: (1) Department fellowship; (2) .25 Teaching Assistantship (GSI); (3) External Fellowship (RMF or other).

### **Support Beyond the First Year**

After the student’s first winter term, following the choice of a thesis advisor, support will be provided by some mix of the following funding mechanisms: (1) a Research Assistantship (GSRA) supported by an individual grant of their thesis advisor; (2) a Teaching Assistantship (GSI) in a relevant academic department; or (3) an extramural fellowship. Fellowship students can expect their paychecks to be deposited some time during the middle of each month (see Appendix 4 for schedule). Students on training grants and other types of scholarships, such as Rackham Merit Fellowships and NSF awards, are also paid from fellowships. This funding is contingent on satisfactory academic performance and good standing in the program and progress towards the Ph.D. degree, including achievement of candidacy by the end of the first year.

### **Graduate Student Research Assistants (GSRAs)**

Students who are not on fellowships are generally paid as Graduate Student Research Assistants (GSRAs) or, if helping to teach a course, as Graduate Student Instructors (GSIs). The source of funding for all GSRA appointments is via their thesis advisor. GSRAs and GSIs are considered “employees” of the university and as such, will have taxes deducted from their paychecks, and they will receive a W-2 form. GSRAs and GSIs are not eligible for UM employee parking.

### **Graduate Student Instructors (GSI)**

Although there are no formal teaching requirements, as part of their training students are strongly encouraged to teach at least one semester as a Graduate Student Instructor (GSI) in Biophysics, Chemistry, Biology, Biochemistry, or Physics. This experience is especially important for those interested in a future career in academia, although all students can gain from the opportunity for presenting technical material in a pedagogical context. It may happen that you are asked to teach in later stages of your study as well, depending on financial resources of your thesis advisor. Students are strongly encouraged to serve as teaching assistants in a form that includes direct contact hours with a class (rather than



grading). It is mandatory for students assigned teaching positions for the first time to attend the GSI Training Orientation offered by the Center for Research on Learning & Teaching.

International students whose undergraduate language of instruction was not English must take and pass the GSI OET in order to GSI in Biophysics. Student usually prep for this by enrolling in the ELI 994 course. This course is usually offered the last week in August or in early January.

## **Taxes**

As Fellowship recipients, Ph.D. students will not have income taxes withheld from their paychecks. Students will be responsible for paying these taxes when they file their annual Income Tax Return. To avoid additional fees, students should plan to pay estimated taxes during the year. Consult Rackham's website (<https://rackham.umich.edu/rackham-life/finances/>) for more information on taxation and estimated tax payments.

May through August, when students are not enrolled, social security and Medicare *are* deducted from paychecks. Social security and Medicare will *not* be deducted September through April, the months in which students are enrolled.

## **Tuition**

Graduate students holding at least a 25% appointment as a Graduate Student Instructor (GSI) or Research Assistant (GSRA) will have the full tuition waived. However, you will be liable for the various mandatory (and registration) fees. Students in the Molecular Biophysics Training Grant Program will have these fees waived.

## **GradCare (Health) and Dental Insurance**

All graduate students, regardless of their funding source, are entitled to GradCare health and Dental option 1. You will receive an email telling you to select benefits on Wolverine Access. Students are responsible for selecting benefits within 30 days of their appointment.

**If you plan to leave the State of Michigan for any length of time, please contact the Benefits Office (615-2000) or visit the [benefits office website](#) to inquire about off-site or emergency coverage.** Please see the Graduate Coordinator if you have ANY questions or problems.

## **Other Employment**

Due to visa restrictions, international students are limited to 20 hours per week of employment, which is supplied by the regular half-time assistantship. This does not allow international students to hold any additional employment.

For equity considerations, the program strongly discourages domestic students from seeking additional employment, as the appointment to a half-time research assistantship, a teaching assistantship, or an equivalent fellowship is intended to provide sufficient financial support to enable a student to devote themselves full time to their graduate program. If additional work is to be taken on, it must be limited to no more than 10 additional hours/week; the student must obtain approval for additional employment from their Research Advisor (who can evaluate the student's ability to progress toward degree) and the Graduate Program Director.



Failure to obtain approval for additional employment will lead to loss of good standing in the Biophysics PhD program.

## **STUDENT REPRESENTATION**

### **Biophysics Graduate Student Representative**

Every year, the graduate student cohort elects a candidate to represent them at the core faculty meetings and other events as warranted (One year term).

### **Biophysics Graduate Student Council**

The Biophysics Graduate Student Council (GSC) deals with academic and other issues of concern to graduate students in the Program. It serves as a tie between the faculty, graduate students, and staff. The GSC also sponsors social events for faculty, graduate students, staff and their families from time to time. Any student interested in being on the GSC should contact the present members for further information at [Biophysics.gsc@umich.edu](mailto:Biophysics.gsc@umich.edu).

## PROGRAM INFORMATION

### Copy Room

The copy room (#4029) is located on the 4<sup>th</sup> floor directly across from the Biophysics administrative office (#4028). If you need to make copies that are course or lab related, stop in the Administrative Office and you will be given a code for the copy machine. Once you join a lab, you will be given a lab-specific copy code to use.

### Graduate Student Mailboxes

Every graduate student has their own mailbox located in the Biophysics lounge on the 4<sup>th</sup> floor (room 4041). Any mail addressed to you here in Biophysics will be put there, as well as any messages from faculty, Academic Services staff, Technical staff or Rackham will be put in your mailbox. Please check your mailbox regularly. *First-year PIBS student's mailboxes are located in the PIBS program office.*

### Building Access

The Chemistry Building is open during business hours Monday through Friday. There is **no** 24-7 access to the building. Graduate students who are working (or rotating) in Chemistry Building labs will have access to the building during the following hours with their valid MCard:

M-TH: 7AM – 10PM  
Fri: 7AM – 6PM  
Sat: 11:30AM – 6PM  
Sun: 11:30AM – 10PM

### Biophysics Library

Our library contains various Biophysics and related texts for student use. Please see someone in the Administrative Office for a key. The usual loan period is 1 week. Longer loans are subject to approval by the Student Services Administrator.

**DEPARTMENTAL ADMINISTRATION**

|   |                        | <b>Room</b>          | <b>Email</b>       |
|---|------------------------|----------------------|--------------------|
| Program Chair<br>(Director)               | Charles L. Brooks, III | 4028C<br>or<br>2006a | brookcl            |
| Graduate Chair:                           | Sarah Veatch           | 3038                 | sveatch            |
| Biophysics Manager                        | John Field             | 4028a                | biophys-<br>cadmin |
| Executive Secretary                       | Sandra Moing           | 4028b                | camoing            |
| Student Services<br>Administrator         | Sara Grosky            | 4028f                | saramin            |
| Events &<br>Communications<br>Coordinator | Rebecca Dieker         | 4028e                | rdieker            |
| Biophysics<br>Equipment                   | Dan Eyler              | 2054                 | deyler             |
| Chemistry<br>Laboratories &<br>Facilities | Tracy Stevenson        | 1500c                | steventi           |

## CORE AND AFFILIATED FACULTY MEMBERS

### CORE

| <u>Name</u>             | <u>Dept/College</u>         | <u>Email</u> |
|-------------------------|-----------------------------|--------------|
| Brooks, Charlie         | Biophysics, Chemistry       | brooksci     |
| Horowitz, Jordan        | Biophysics, Complex Systems | jmhorow      |
| Keane, Sarah            | Biophysics, Chemistry       | sckeane      |
| Koutmos, Markos         | Biophysics, Chemistry       | mkoutmos     |
| Meiners, Jens-Christian | Biophysics, Physics         | meiners      |
| Penner-Hahn, James      | Biophysics, Chemistry       | jeph         |
| Veatch, Sarah           | Biophysics                  | sveatch      |
| Wood, Kevin             | Biophysics                  | kbwood       |
| Yang, Qiong             | Biophysics                  | qiongy       |
| Zochowski, Michal       | Biophysics, Physics         | michalz      |

### AFFILIATED

| <u>Name</u>           | <u>Dept/College</u>                       | <u>Email</u> |
|-----------------------|---|--------------|
| Biteen, Julie         | Chemistry                                 | jsbiteen     |
| Cai, Dawen            | CDB                                       | dwcai        |
| Chen, Zhan            | Chemistry                                 | zhanc        |
| Cianfrocco, Michael   | Biological Chemistry/LSI                  | mcianfro     |
| Cierpicki, Tomasz     | Pathology (Med School)                    | tomaszsc     |
| Joglekar, Ajit        | CDB                                       | ajitj        |
| Lehnert, Nicolai      | Chemistry                                 | lehnertn     |
| Liu, Allen            | Biomed & Mech Engineering                 | allenliu     |
| Lubensky, David       | Physics                                   | dkluben      |
| Mosalaganti, Shyamal  | CDB, LSI                                  | mosalaga     |
| Ogilvie, Jennifer     | Physics                                   | jogilvie     |
| Raghavan, Malini      | Microbiology & Immunology<br>(Med School) | malinir      |
| Scott, Emily          | Medicinal Chemistry                       | scottee      |
| Sept, David           | Biomedical Engineering                    | dsept        |
| Smith, Janet          | Biological Chemistry/LSI                  | janetsmi     |
| Smrcka, Alan          | Pharmacology                              | smrcka       |
| Stockbridge, Randy    | MCDB                                      | stockbr      |
| Stuckey, Jeanne       | Biological Chemistry/LSA                  | jass         |
| Triebel, Ray          | Biological Chemistry                      | rtriebel     |
| Vecchiarelli, Anthony | MCDB                                      | ave          |
| Verhey, Kristen       | CDB/LSI                                   | kjverhey     |
| Walter, Nils          | Chemistry                                 | nwalter      |

## CAMPUS RESOURCES

In addition to your Advisor, the Student Services staff, the Graduate Chair and the Rackham Graduate School staff; there are many resources on campus to help you succeed in the Biophysics Ph.D. program.

### Mentoring, Career & Campus Community Resources

- **OGPS Career & Professional Development** <https://ogps.med.umich.edu/resources/cpd/>

The PIBS Office of Graduate & Postdoctoral Studies website has lots of career and professional development events and workshops throughout the year, plus career advising!

- **How to Get the Mentoring You Want** <https://rackham.umich.edu/wp-content/uploads/2018/11/mentoring.pdf>

A general guide for graduate students about the importance of the student-mentor relationship.

- **Maize Pages** <https://maizepages.umich.edu/organizations>  
UM Student Organizations listing with 571 related to Graduate/Professional students

## **Selected Campus Academic Resources**

- **Center for Research on Learning and Teaching (CRLT)** <http://www.crlt.umich.edu/index.php>  
CRLT offers programs and services designed to support graduate students in all stages of their teaching careers from training for their first teaching experience through preparation for the academic job market.
  - Preparing Future Faculty Conference
  - U-M Graduate Teacher Certificate
  - Seminars for Graduate Student Instructors
- **Sweetland Center for Writing** <http://www.lsa.umich.edu/sweetland/>  
The Sweetland Center for Writing supplements formal writing instruction by providing free programs that help students understand assignments, develop ideas, support arguments and claims, cite sources, and revise at the paragraph and sentence level.
  - Writing workshops
  - Writing references and resources
  - Peer tutoring
  - Dissertation Writing Institute
- **English Language Institute (ELI)** <http://www.lsa.umich.edu/eli/>  
The English Language Institute offers opportunities for students to participate in courses and workshops aimed at improving their language and communication skills.
  - English for Academic Purposes Courses
  - Workshops
  - Writing Clinics
  - English Learning Links
- **Center for Statistical Consultation and Research (CSCAR)** <http://www.cscar.research.umich.edu/>  
CSCAR emphasizes an integrated, comprehensive statistical consulting service, covering all aspects of a quantitative research project ranging from the initial study design through to the presentation of the final research conclusions.
  - Workshops and seminars
  - Software help
  - Software access
  - Spatial Analysis/GIS
- **ScholarSpace** <https://www.lib.umich.edu/scholarspace>  
ScholarSpace is a community-driven learning space built to support initiatives that bridge disciplines, build networks, and discover new contexts for scholarship
- **University of Michigan Library** <http://www.lib.umich.edu/>  
MLibrary supports, enhances, and collaborates in the instructional, research, and service activities of the faculty, students, and staff, and contributes to the common good by collecting, organizing, preserving, communicating, and sharing the record of human knowledge.

## **Funding Resources**

- **Rackham & UM:** <https://rackham.umich.edu/funding/>
- **NSF Graduate Fellowship Program:** <https://www.nsfgrfp.org/>

## **Mental Health & Wellness**

- **University Health Service (UHS)** is a health care facility, located on central campus that offers many outpatient services in one building for U-M students, faculty, and staff. Many of UHS services provided to registered students are covered by the Health Service fee. <http://www.uhs.umich.edu/>
- **Wolverine Wellness** is a whole-health program offered by the UHS. <https://uhs.umich.edu/wolverine-wellness>
- **Counseling and Psychological Services (CAPS)** offers a variety of confidential services to help students resolve personal difficulties. Services include brief counseling for individuals, couples and groups. <http://www.umich.edu/~caps/>
  - **CAPS-Embedded Counselor for Rackham:** Laura Monschau (764-8312; lauralm)
  - **CAPS-Embedded Counselor for LSA grad students:** Ashley Jacob (764-8312; ashjacob)
- **Psychological Clinic** provides psychological care for students. Services include consultation, short-term and long-term therapy for individual adults and couples. <http://www.psychclinic.org/>
- **Services for Students with Disabilities (SSWD)** provides services to students with visual impairments, learning disabilities, mobility impairments, hearing impairments, chronic health problems and psychological disabilities, so they may enjoy a complete range of academic and non academic opportunities. <http://ssd.umich.edu/>
- **Dean of Students:** <https://deanofstudents.umich.edu/>
- **Department of Recreational Sports** is the place for fun and fitness on campus. Rec Sports offers both informal activities and structured programs: Club Sports, Challenge Program, Drop-in Program, Intramural Sports and/or Outdoor Adventures. <http://www.recsports.umich.edu/>

## **Selected Sources of Campus Support**

- **International Center** provides a variety of services to assist international students, scholars, faculty and staff. <http://internationalcenter.umich.edu/>
- **The Career Center** is committed to preparing U-M students and alumni to be active, life-long learners in developing and implementing their career decisions. <http://www.careercenter.umich.edu/>
- **Center for the Education of Women (CEW)** offers support services to students, faculty, staff and community members. <http://www.cew.umich.edu>
- **Department of Public Safety (DPS)** provides information on crime prevention strategies, the law enforcement authority of the University police, and policies and statistics about crime on campus. <http://police.umich.edu/>
- **Sexual Assault Prevention and Awareness Center (SAPAC)** provides educational and supportive services for the University of Michigan community related to sexual assault, dating and domestic violence, sexual harassment, and stalking. <http://www.umich.edu/~sapac/>

## **Conflict Resolution**

- **Rackham:** <https://rackham.umich.edu/rackham-life/conflict-resolution-and-student-grievances/>
- **Office of the Ombuds** is a place where student questions, complaints and concerns about the functioning of the University can be discussed confidentially in a safe environment. 6015 Fleming, Phone: (734) 763-3545 <http://www.ombuds.umich.edu>
- **Office of Student Conflict Resolution (OSCR)** <http://www.oscr.umich.edu/>  
Promotes justice by facilitating conflict resolution for the Michigan community and creating a just and safe campus climate. 600 East Madison, Phone: (734) 936-6308

## **VACATION & HOLIDAYS**

Graduate students are entitled to University-designated holidays. First year students must obtain approval from the Graduate Chair and/or the prelim committee for any additional vacation time. Students beyond their first year must obtain approval from their research mentor for any additional vacation time.

### **Holidays (University-wide):**

- New Year's Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- The day following Thanksgiving
- Christmas

University-designated holidays will be observed on the calendar day on which each falls except that holidays falling on Sunday will be observed on the following Monday and holidays falling on Saturday will be observed on the preceding Friday.

## **LEAVES**

Ph.D. students may request a temporary leave of absence (of more than a month) when certain life events prevent continued active participation in their degree program. Rackham's Leave of Absence Policy enables students to officially suspend work toward their degree for a limited time. Students may request a leave of absence as early as six months prior to the term the leave is to start. A leave will be granted to students for illness (either physical or mental) or injury, to enable them to provide care or assistance for family or dependents, to allow them to meet military service obligations, or for other personal reasons.

**More information including the Leave of Absence Policy, a checklist for Ph.D. students,** is available at the following site: <https://rackham.umich.edu/navigating-your-degree/leave-of-absence/>



## APPENDIX 1 – Fellowship/Stipend Payment Schedule

First-year Ph.D students are appointed to Department Fellowships. As such, students are not considered to be University employees and therefore the pay dates will differ from University employees (i.e. GSIs, GSRAs). For the academic year 2022-23 the pay dates for first-year fellowships will be:

| <b>2023</b>               | <b>2024</b>            |  |
|---------------------------|------------------------|--|
| 8/24/23 (early September) | 1/5/24 (early January) |  |
| 9/25/23                   | 1/22/24                |  |
| 10/23/23                  | 2/20/24                |  |
| 11/20/23                  | 3/18/24                |  |
| 12/8/23                   | 4/15/24                |  |

## APPENDIX 2 – Criteria for Dissertation Committees

### FORMING THE DISSERTATION COMMITTEE

After successful completion of the checkpoint 2 exam, the student’s dissertation advisory committee becomes their “dissertation committee.” The dissertation committee will be responsible for evaluating the student’s progress in the program on an annual basis as well as the final dissertation defense.

The student is able to make changes to this committee up until two weeks prior to their scheduled defense. The make-up of the committee must be as follows:

- At least 4 members in total
- Dissertation mentor is the Chair
- One Core Biophysics faculty member that is not the primary mentor\*
- One Cognate member (a UM faculty member who does not hold any appointment in Biophysics; can hold appointment in related department as long as he/she isn’t affiliated with Biophysics)

Students should email their proposed committee members to the graduate program coordinator for formal approval.

*\*if primary mentor is core, than a second core faculty member is needed; if primary mentor is affiliated, only one core member is needed.*

## **APPENDIX 3 – Criteria for Committee (Data) Meetings**

*The following information is shared with the student's committee prior to the meeting.*

The objective of annual committee meetings in the biophysics graduate program is to ensure that the student is on track for a successful PhD in a reasonable time. At the end of the meeting, the committee is asked to evaluate the student's progress towards their PhD and, if appropriate, grant the student permission to schedule their defense. The committee also asked to decide on the timing for the next meeting, which can be scheduled for at most 12 months from meeting date. The committee should only grant permission to defend if they are confident the student will be able to produce and defend a successful dissertation in the required time.

At the end of the meeting, the committee is asked to determine if the student is making adequate progress towards their PhD. What constitutes 'adequate progress' will depend on the number of years the student has been in the program and is left to the discretion of the committee. The goal is for biophysics students to successfully defend a PhD within 6 years. If a student does not appear to be on track to accomplish this, it is requested that the committee notify the program by indicating that the student is making 'inadequate progress towards their PhD' on the data meeting evaluation form along with a description of the specific concerns. When this occurs, the program requests that committee members determine criteria for the student to demonstrate progress prior to the next committee meeting.

The current policy of the biophysics graduate program is that candidate students deemed to show inadequate progress towards their PhD by their committee have their 'good standing' status in the program revoked. This status is internal to the program and does not appear in the student's formal academic record, and is intended to alert both the student and program to possible obstacles without necessarily being punitive. Loss of a student's 'good standing' status triggers a probationary period that can last up to 1 semester (4 months). At the end of this period, the student is required to again meet with the committee. The committee can then choose to either reinstate the students 'good standing' status or recommend that the student be dismissed from the graduate program.

## APPENDIX 4 – SAMPLE REPORT ON PROGRESS IN CANDIDACY

Name: \_\_\_\_\_  
*Please Print*

Candidacy: \_\_\_\_\_  
*Term and Year*

**Members of Dissertation Committee:**

\_\_\_\_\_, Chair  
*Please Print*

\_\_\_\_\_, Cognate  
*Please Print*

\_\_\_\_\_, Member  
*Please Print*

\_\_\_\_\_, Member  
*Please Print*

\_\_\_\_\_, Member  
*Please Print*

\_\_\_\_\_, Member  
*Please Print*

**To Be Completed by Chair of Dissertation Committee**

Is the student making adequate progress towards their degree?  Yes  No

**If not**, please explain why, and indicate what actions will be taken to address these deficiencies (attach separate sheet if necessary).

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**The Dissertation Committee recommends a follow-up meeting in:**

\_\_\_ 3 months    \_\_\_ 6 months    \_\_\_ 9 months    \_\_\_ 12 months **OR** \_\_\_ Permission to defend

\_\_\_\_\_  
*Signature of Thesis Committee Chair*

\_\_\_\_\_  
*Date*

\_\_\_\_\_  
*Signature of Committee Cognate*

\_\_\_\_\_  
*Signature of Committee Member*

\_\_\_\_\_  
*Signature of Committee Member*

\_\_\_\_\_  
*Signature of Committee Member*

**To Be Completed by Student After Meeting with Committee Members**

Students reply to committee comments, if any (attach separate sheet).

\_\_\_\_\_  
*Signature of Student*

\_\_\_\_\_  
*Date*

*Please return the signed form and attachments to Sara Grosky, saramin@umich.edu/4028 CHEM, immediately after the meeting.*

## APPENDIX 5 – CHECKPOINT 1 TIMELINE, EXAM OVERVIEW, GUIDELINES & FAQ

*The following information was shared with students prior to the 2022 Checkpoint 1 exam.*

### **Important dates and deadlines:**

**May 3:** Paper options are released and Prof. Veatch will hold an info session to discuss exam details and answer questions.

**May 6:** Students must email their paper choice to Prof. Veatch before 6pm.

**May 10:** Oral exam schedule will be communicated to students via email.

**May 20:** Proposals and collaboration statement emailed to Prof. Veatch before 6pm.

**May 24-26:** Oral exams held.

**May 31 (or before):** Exam results communicated to students.

### **Exam Overview:**

Digging into the literature and thinking about the implications of published work are critical skills in scientific research and are the focus of the checkpoint 1 exam.

In this exam, you will select a recent paper from a collection of papers chosen by the exam committee. Over roughly 2 weeks, your job will be to dig into the paper material to understand the methods, results, and the context of this work within its larger research area. This preparation will most likely involve drawing on additional sources (other papers, review articles, wiki pages, google searches, fellow students, etc.).

In addition to reading and understanding the chosen paper, you will propose an extension of the published study and write a 2 page NSF GRFP style proposal to be evaluated by the committee. More information about the proposal is included below. The written proposal must be submitted prior to the exam deadline specified above. Failure to meet the specified deadline will result in automatic failure of the exam.

Prior to the oral exam, you should prepare a brief journal-club style powerpoint (or similar) presentation of the main paper findings. You should also include a few slides describing your proposal. During the oral exam, you will use these slides to guide a discussion of the paper and your proposal. We recommend aiming for a 20 min uninterrupted presentation or <12 slides. The oral exam will begin with a brief discussion amongst the faculty panel regarding your written proposal and coursework. You will then use your prepared slides to guide a discussion of the paper and your proposed studies. Your presentation will be interrupted by questions from the faculty panel aimed to evaluate your understanding of the paper's methods, results, and impact and/or related topics. You will also be expected to defend your proposed future studies by answering questions related to its feasibility, the expected results and/or the projected impact. This oral exam will last 1-1.5 hours, after which the faculty panel will meet to assemble written feedback and make a recommendation to the exam committee regarding the exam outcome.

The exam outcome will be decided by the exam committee considering both the written proposal and the evaluation of the oral exam. The faculty members that administer the oral exam will provide written feedback to the student and will make a recommendation to the exam committee regarding the exam outcome. After all of the exams are held, the exam committee will assess if students will pass, conditionally pass, or fail. On or before the date specified above, exam outcomes will be communicated to students via email. Students will be given written feedback on the exam and written proposal, and if relevant, the conditions that need to be met in order to resolve a conditional pass.

## **Proposal Guidelines:**

The goal of the proposal is to demonstrate your understanding of the paper and your ability to extend it to a larger context. Your goal need not be to invent a completely new method, paradigm, or to initiate a novel field – you only have 2 pages and you are not expected to be an expert yet in the particular topics or methods covered. Your proposal could apply the techniques used in the paper to a different (related or unrelated) research question, or could propose different experimental/analytical/theoretical approaches to investigate the same (or a similar) research question. It is fine if your proposed research focuses on a narrow aspect of the paper or a subset of the techniques. You could try to answer the question – what is a next step in this research project? You could also apply some aspect of the results or approach to a specific research question that interests you. You should not propose something that is already in the literature (e.g. something that can easily be found with a google/pubmed search). You are welcome to discuss your proposal with other students (including those who chose the same paper), but students working together should not submit similar proposals.

Your proposal should follow the guidelines detailed in the [NSF GRFP 'graduate research plan statement'](#) with the exception that references can be placed on a separate page. Specifically, your proposal should use:

- standard 8.5" x 11" page size
- 12-point, Times New Roman font
- 10-point font may be used for figure captions and text within figures
- 1" margins on all sides
- Single-spaced (approximately 5 lines per inch) or greater line spacing. Do not use line spacing options such as "exactly 12 point," that are less than single spaced.
- 2 pages maximum (including figures and tables, if present). References are allowed on a 3<sup>rd</sup> page.

You are welcome to get feedback from others on your proposal content and writing, but the work should be your own. When submitting your proposal via email, include a statement in the body of the email identifying the people you consulted while preparing for this exam, and in what capacity.

## **Answers to some questions that you might have:**

**Who can I talk to about the paper and my ideas for the proposal?** Anyone, as long as they are not faculty members involved in exam administration or your research mentor. Even though you can discuss your proposal with other students, each proposal submitted should be distinct. You must disclose the people you worked with to understand the paper and prepare the proposal.

**What is the collaboration statement and why are we asked to submit it?** The collaboration statement is just a way of communicating to the program who you worked with in preparing for the exam. It gives the exam committee some context for the material evaluated. Its presence should not discourage students from working together.

**Which faculty are administering exams?** Biophysics program core faculty plus Professors Stockbridge and Biteen.

**What is the exam committee:** A group of faculty who have been working over the course of the semester to define the exam. This group of faculty is also responsible for deciding exam outcomes for all students with the advice of the faculty administering individual exams.

**What is the difference between the exam committee and faculty administering exams?:** 3 faculty members will administer each exam. Typically at least two of these are also members of the exam committee.

**What if my presentation goes over 20 min?** 20 min is a rough guideline for how long it should take for you to make it through your presentation without interruption. During the exam, faculty will ask questions that result in the presentation lasting beyond the 20 min guideline.

**Can I ask my friend to edit my proposal?** Friends/lab-mates/etc can comment on your work but should not write any text that is submitted. You can also seek help from the [Sweetland center for writing](#) if you want. You need to disclose these contributions when submitting your proposal.

**Will my research mentor administer my exam?** No

**Will any of my rotation mentors administer my exam?** No

**What am I expected to know for the oral exam?** You are expected to deeply understand and critically evaluate the paper's methods and results. You should understand the paper supplementary material if present, and be knowledgeable of key cited references. What are the limitations of the methods and approaches? How does this inform the conclusions that can be and are drawn? What is presented that was not known or possible before? What does this new advance enable? You should be well acquainted with the specific research questions and why they are important. You should also be familiar with the general research area. You are not expected to know all corners of biophysics (who does?).

**What is being done to standardize the exam across students?** At least 2 of the evaluators on your exam will be members of the exam committee where exam criteria are established and where all student outcomes will be determined. These evaluators will have taken part in the selection of papers and will evaluate multiple exams. Student outcomes will be discussed with the exam committee as a whole.

**I am having a hard time writing the proposal. Does it mean I will fail the exam?:** No! Writing the proposal should be hard. Making an argument for a new project in just 2 pages is a difficult task even for faculty with lots of proposal writing experience. Hang in there -- you got this!

**Any advice on writing the proposal?** A few tips: 1) Make sure you know what question(s) you are posing and that your proposed approach addresses those questions. 2) Keep the scope narrow: you don't need many aims or to pose field-shifting questions. 3) Answer the question: "what's the point?"

**Will I find out if I passed at the end of the exam?** No, exam outcomes will be communicated after all students have completed the exam.

**What are possible outcomes of the exam?** There are three possible outcomes:

- **Pass** – as long as you have the required classes, you will advance to candidacy in the Fall
- **Conditional pass** – the committee will define specific criteria that you will be required to meet prior to your advancing to candidacy for the Fall semester. The deadline will be given to meet this criteria, otherwise the outcome will default to fail. It is expected that many students will conditionally pass. We see this exam as an opportunity for useful feedback rather than another hoop to pass through. A conditional pass outcome should not be seen as a failure, rather an opportunity to address deficiencies that otherwise you might carry through your PhD
- **Fail** – you will be offered the opportunity to choose a second paper and retake the exam on a schedule decided by the exam committee. Failing the exam on the second attempt results in dismissal from the biophysics graduate program. You must pass the checkpoint 1 exam prior to the start of Fall semester in order to retain status in the graduate program.

## APPENDIX 6 –CHECKPOINT 2 EXAM OVERVIEW, GUIDELINES & FAQ

*The following information was shared with students prior to the 2022 Checkpoint 2 exam.*

### **Important dates and deadlines:**

**By end of Fall term of the second year:** Set up your dissertation advisory committee.

**Two weeks before your oral exam:** Share your written proposal with your committee.

**June 25:** (end of Spring half-semester) Last day to schedule your oral exam.

### **Exam Overview:**

Now that you have spent some time in your dissertation lab it is time to demonstrate your readiness to dive into your dissertation projects.

The goal of this exam is to outline a plan for your dissertation research and to communicate and defend this plan to your committee.

There are two components to this exam:

**Written:** you will write a NIH F31 formatted research proposal (Specific Aims page + 6 page max proposal including, Significance, Innovation, and Approach sections, references on additional pages). Many details about the F31 proposal can be found [here](#). Your proposal does not need to contain any additional documents associated with the F31. (No abstract, goals for fellowship training and career, research experience, biosketch, etc). NIAID has [posted](#) a few example applications that might be useful.

The Specifics Aims page should frame the questions that you want to answer in your future research and outline your goals and approach. Typically it is one or two motivating paragraphs followed by a list of specific aims, each described in a few sentences.

Your Proposal should motivate why the proposed studies are important (under Significance) and should describe how they fit into existing literature. Usually the Innovation section is used to describe why methods are appropriate, but this could also be a place where you highlight particularly innovative ideas. You should include figures with preliminary data of your own and/or from the literature to support your ideas and to communicate that you will be able to conduct the proposed research. You can also include other figures to help the reader understand your methods or approach. Your approach sections should describe what you will actually do, including enough detail to communicate that your proposed goals are achievable. Proposals do not need to be hypothesis driven, but do need to be well motivated and should contain clear objectives. Oftentimes, expected results and alternate approaches are included in the approach section.

Your mentor can help frame and/or edit the specific aim page, but the main part of the proposal should be your own work.

**Oral:** You will introduce and defend your proposal to your committee in the oral exam. Similar to your proposal, you should motivate why your proposed project is important and introduce the relevant background material so that your committee can understand how your proposed work fits into the larger field(s). You should present relevant preliminary data and explain your methods and approaches. You should also walk through the details of your specific aims. You should be prepared to answer questions related to the background literature, biophysical concepts related to your proposed studies,



methods you present, and expected outcomes and alternate approaches. Your exam will be scheduled for 2h, but only plan on presenting ~40min of slides as there will be many questions and side discussions.

At the end of the exam, your committee will meet to discuss the oral defense and assemble written feedback related to both the oral and written components of the exam that will be shared with both you and the program. The committee's assessment of the exam outcome will be shared with you after this discussion.

During the oral exam, your direct research mentor(s) will be discouraged from contributing to the discussion or asking questions. The meeting will be run by a member of the core biophysics faculty that is not your mentor(s). Your mentor will contribute to discussions with the committee after the exam is concluded.

### **Answers to some questions that you might have:**

**Who can I talk to about my proposal and preparing for my oral defense?** Anyone! You are welcome to talk to other people in your lab (including Faculty) and students who have taken the old candidacy exam.

**Which faculty are administering exams?** The faculty on your dissertation committee.

**Who decides the outcome of the exam?** The faculty on your dissertation committee.

**What if my presentation goes over 40 min?** The core faculty member chairing the exam should help you stay on track related to time.

**Can I ask my friend to edit my proposal?** Friends/lab-mates/etc can comment on your work but should not write any text that is submitted. You can also seek help from the [Sweetland center for writing](#) if you want.

**Will my research mentor administer my exam?** They will be there most likely but will be discouraged from participating in the discussion or asking questions. Another core faculty member in biophysics will be responsible for running the exam meeting.

**What am I expected to know for the oral exam?** You are expected to be knowledgeable of the background material in your field, and to understand the methods you plan to use including their strengths and limitations. You should know why what your doing is important to your field and ideally beyond. You should be able to explain what you plan to do, what you expect to happen, and what you will do if something is unexpected.

**What is being done to standardize the exam across students?** This is pretty hard to accomplish since the composition of your committees will be different. Having the chair of the exam be different from your research advisor is the main way this exam is standardized. Also, the requirement for written feedback from faculty standardizes the exam to some extent.

**I am having a hard time writing the proposal. Does it mean I will fail the exam?:** No! Writing the proposal should be hard. For me, being forced to write it out helps to formalize my thinking.

**Any advice on writing the proposal?** A few tips: 1) Make sure you know what question(s) you are posing and that your proposed approach addresses those questions. 2) Keep the scope realistic, you only have a few years to accomplish what you propose! 3) Answer the question: "what's the point?"

**Will I find out if I passed at the end of the exam?** Yes

**What are possible outcomes of the exam?** There are three possible outcomes:

- **Pass** – Your committee thinks you are ready to proceed with your proposed studies.
- **Conditional pass** – the committee will define specific criteria that you will be required to meet prior to passing the exam. This might involve re-writing parts of your proposal or providing additional documentation in a specific area. This could involve being required to take a particular class or type of class to build up your background knowledge. The exact criteria is left to the discretion of the committee.
- **Fail** – you will be offered the opportunity to retake the exam by the end of the summer. A representative from the program (Prof. Veatch and/or Prof. Brooks) will participate in any re-takes that occur.