



Graduate Student Handbook

2018-2019

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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: <http://www.rackham.umich.edu/current-students/policies/academic-policies> .

BIOPHYSICS GRADUATE PROGRAM REQUIREMENTS

TYPICAL CHRONOLOGY OF PH.D. DEGREE

Year 1

Complete at least 4 courses [typically these would be the core required courses], including research ethics requirement and Biophysics seminar (801).

Two research rotations (Biophysics 890 – Fall and Winter terms).

Select thesis advisor by May 1 deadline

Start thesis research.

Year 2

Complete remaining courses [typically any remaining core requirements and/or cognates].

Continue thesis research (Biophysics 990).

Assemble Dissertation Committee (by mid-Feb.).

Complete Oral Preliminary (“Candidacy”) exam.

Achieve Candidacy status by May 1 (**see page 10 for details**)

Year 3

Continue seminar requirement (Biophysics 801)

Continue thesis research (Biophysics 995).

Data meetings (report to committee).

Present public seminar (if ready).

Year 4-5

Complete seminar requirement (Biophysics 801)

Continue thesis research (Biophysics 995).

Data Meetings (report to committee).

Present public seminar (during 4th year).

Dissertation defense.

REGISTRATION POLICY

Ph.D. students are expected to register during each fall and winter semester from matriculation to degree completion, unless on an approved leave of absence or on Extramural Study status. If a student does not register for a term, he or she will be considered to have withdrawn and therefore, discontinued from the Ph.D. program. Please see Rackham's website for more details: <http://www.rackham.umich.edu/current-students/policies/doctoral/phd-students/understanding-registration> .

DEGREE REQUIREMENTS

The basic requirements for a Biophysics Ph.D. degree include:

- ❖ Completion of required coursework (at least 18 hours graded graduate coursework on the Ann Arbor campus), including:
 - Completion of the RCRS (Responsible Conduct of Research & Scholarship) requirement
 - Completion of a minimum of 4 credits hours of cognate/elective coursework
 - Completion of the seminar requirement (at least **7** credits of Biophysics 801)
- ❖ Good standing
- ❖ Attainment of Candidacy (passing of the Candidacy Exam)
- ❖ Completion of a public seminar in the third or fourth year of graduate study
- ❖ Approval of the written dissertation by the Thesis Committee and Rackham, and a final oral examination by the Thesis Committee

The minimum requirement for the Ph.D. degree is 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

It is the goal of the Program to make sure the student acquires a solid background in biology, biochemistry, chemistry, physics, and biophysics, by including a selection of 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.

Because of the interdisciplinary nature of Biophysics, students enter the program from a variety of undergraduate backgrounds. All students must complete the required courses, along with any necessary additional coursework (determined by the outcome of their placement exams). Most students, unless they have an unusually strong background in biology, will be expected to complete one course in cell biology and one course in biochemistry. Students that lack a strong foundation in the physical sciences should take appropriate advanced undergraduate courses or introductory graduate courses in quantum mechanics or quantum chemistry and in thermodynamics or statistical physics. **Pre-candidates must be registered for a minimum of 9 credit hours.**

Courses are counted towards the Biophysics Requirements only when they are passed; for undergraduate courses (400-level) passing grade is "B" or above, in graduate courses (500-level and above), passing grade is "**B**" or above. Be aware that failed courses keep counting towards your cumulative grade-point-average (GPA), which has to remain "B" or above at all times. (See Good Standing Policy)

Grades in research courses accepted by the Graduate School are "S" (satisfactory) and "U" (unsatisfactory). No credit is given for a "U." 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.

A minimum of 18 credits must be accumulated prior to achieving candidacy. These hours include all regular required program courses, any courses in which the student registers and pays fees as a visitor **but exclude** Biophysics 890 (Rotation Research) and 990 (Pre-Candidate Research). A minimum of 6 credits of 890 must be completed in order to achieve candidacy. After achieving candidacy, **candidates must register in the fall and winter terms for 8 hours of research (995).**

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 before and after Candidacy must be discussed with the thesis advisor or with the Graduate Chair when the student has not chosen a home lab.

Biophysics Core Curriculum

Biophysics 520 (Biophysical Chemistry I)
Biophysics 521 (Biophysical Chemistry II)
Biophysics 550 (Biophysics Laboratory Techniques)
Biophysics 595 (Professional Development in Biophysics)

All students must take the four core courses [Biophys 520 (Fall), Biophys 550 (Fall or Winter), Biophys 521 (Winter) and Biophysics 595 (Fall)]; and if needed, **2 electives and 2 courses in Biochemistry and Cell Biology**. These courses can be decided in consultation with your advisor. Individual requirements may be waived based on prior coursework.

Research credits: During the first year, students must register for two (2) research rotations: Biophysics 890 (Fall and Winter). In the second year, when a research advisor has been chosen, they will register for Biophysics 990. After achieving candidacy, students enroll in Biophysics 995.

Students must enroll in one Research Ethics Course: PIBS 503 or UC 415 (offered by LSA, either the Chemistry or Physics sections depending on the nature of your interests/research). *Note: this requirement must be fulfilled prior to achieving candidacy.*

Seminar requirement: at least 1 credit of Biophysics 801 must be completed prior to achieving candidacy; at least 7 credits are required for the degree*.

* Only students whose first year is F2017 and after are required to take at least 7 credits of 801. Students who began the program F2016 and before are being 'grandfathered' in, as follows:

- 2nd Years (beg. F2016): 3 credits required
- 3rd Years (beg. F2015): 2 credits required
- 4th Years (beg. F2014): 1 credit required
- 5th+ Years (beg. F2013 or before): EXEMPT

Cognate/Elective requirement: At least 4 credits of cognate/elective courses must be completed prior to achieving candidacy. **Note:** not all electives count as cognates, but all cognates can count as electives. Cognate courses are non-Biophysics courses **OR** Biophysics

courses that are cross-listed with other programs (provided the courses are not one of the 4 core courses). **Required courses from a student's program may not be used to fulfill the cognate requirement.**

First-year students are encouraged to consult with a Biophysics faculty advisor (often the Graduate Chair) with any course-related questions.

Students with a **background in Physics** will probably need to take:

Biochemistry: BiolChem 550 (Fall)

Additional courses could be:

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)

Dynamical Processes in Biophysics: Physics 417 (Winter)

Students with a **background in Biology** will need to obtain a solid background in Mechanics, Electricity and Magnetism, Statistical/Thermal Physics, and Quantum Mechanics. Choose courses in your weakest area(s):

Mechanics: **Physics 401** (Fall or Winter – Intermediate Mechanics)

E&M: **Physics 405** (Fall or Winter – Intermediate Electricity and Magnetism)

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)

Once you've passed the prelims/chosen a lab, there are a number of courses related to specific areas of research, which should probably be chosen after discussion with your advisor/thesis committee, for example:

X-ray Crystallography: **Biophys 602**

NMR: **Biophys 503**

Kinetics: **Chem 673**

Spectroscopy: **Chem 580**

And other courses in Math (463), Statistics (401), Bioinformatics, Applied Physics, etc.

CANDIDACY PROGRESSION CHECKLIST

- COURSE WORK: Complete all required coursework.
- I. Core: 12 hours of Biophysics core courses with a B or better:
- 520 [Theory & Methods of Biophysical Chemistry] 3 credits
 - 521 [Techniques in Biophysical Chemistry] 3 credits
 - 550 [Lab Techniques in Biophysics] 3 credits
 - 595 [Professional Development in Biophysics] 3 credits
- 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
- SEMINAR REQUIREMENT: Take and pass at least 1 credit hour of Biophysics 801
- COGNATE and/or ELECTIVES: Take and pass **at least 4 credit hours** of cognate/elective coursework with a B or better. **NOTE: cognates can count as electives, but not all electives are cognates!** Please contact the Student Services Office for more information.
- ____ credit(s) of _____ ____ credit(s) of _____
- ____ 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
- PRELIM: Take and pass your Preliminary Exam
- Form a Prelim Exam Committee, comprised of at least 4 professors, including your research advisor as Chair. Complete the Oral Prelim/Dissertation Committee Selection form and hand it in to the Student Services Office.
 - Write a Research Proposal (expected length is around 10 pages, see Graduate Handbook for more details) and distribute to members of your Prelim Exam Committee well in advance of the Prelim Exam (two weeks prior).
 - Just prior to your prelim, pick up a Candidacy Exam Report form from the Student Services Office. Take the form to your Prelim Exam, obtain signatures from your committee, have your committee chair complete the form and return the form to the Student Services Office.
- CANDIDACY: Upon receipt of the Biophysics Candidacy Exam Report form—if you have completed all of the above requirements—the Student Services office will complete your online Recommendation for Candidacy form with Rackham. Students are expected to achieve candidacy by the end of their second year.
- View the Candidacy Deadline list from the Rackham website and know your deadlines!
<http://www.rackham.umich.edu/current-students/policies/doctoral/phd-students/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.***

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 must choose their home lab by May 1 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. You should register for Biophysics 990 (Pre-Candidate Research) during each semester of dissertation work as long as you are a pre-Candidate. **It is recommended that you choose a lab within 2 weeks of the May 1st 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. ***Students are encouraged to switch only after serious reconsideration.***

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.

PRELIM/CANDIDACY EXAM & COMMITTEE

Biophysics graduate students much achieve Ph.D. candidacy by successfully passing an oral candidacy examination by his/her Prelim Exam Committee. The 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).**

This examination is held during the second year of enrollment and can be completed either by the end of the Fall term (December) or by the end of the spring term (May). The timing of the exam should be decided via a discussion between the graduate student and his/her Ph.D. advisor.

The basic steps are:

1. Form your committee by February of your second year (preferred)
 - a. Complete the Oral Prelim/Candidacy Committee Selection form to hand in to the Biophysics Student Services Office
2. Write and submit a research proposal
 - a. The proposal must be submitted to your committee at least 2 weeks prior to the exam
3. Take the oral examination
 - a. Remember to contact Biophysics Student Services if you need help with scheduling a room
 - b. Remember to bring with you a "Candidacy Report Form" (obtained from Biophysics Student Services)

Form Your Committee

In preparation for the candidacy exam, each student should assemble a suitable Prelim Committee (faculty will sign a form agreeing to serve on said committee) **by mid-February of the second year (preferred deadline)**. Please note that those students who are doing early candidacy (during the Fall term of their second year) should assemble their committee by **mid-October**. The Committee must have the following:

- At least 4 members in total
- Thesis advisor is the Chair
- Two Core Biophysics faculty members (one of whom can be the Committee Chair)
- 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)

The Prelim Committee will often be identical to the candidate's Ph.D. committee (although this is not required). The Prelim Committee must be approved by the Graduate Chair.

Write and Submit Your Research Proposal

As part of the candidacy exam, each student must submit a written proposal to his/her Prelim Committee. The proposal should be sufficiently detailed so that the nature of the chosen research problem and the direction of the effort is clearly defined. The expected length is around **ten double-spaced typed pages** (including all text and figures [sections a-d]). Literature references are then added at the end (not included in the page limit).

The proposal should contain:

- a) Background and Significance
- b) Project Goals
- c) Research Plans
- d) Preliminary Data
- e) Literature References

Students should distribute their proposal to their Prelim Committee at least two weeks prior to the candidacy exam.

Take the Oral Exam

In the candidacy exam, students present a brief summary of their research proposal. The presentation may include an introduction to the chosen research problem, goals, hypotheses and preliminary results; but it should not be a seminar style presentation. Students will be examined on knowledge of the background subject areas and on their research plans. Students are expected to have a good understanding of the goals, directions, importance, potential pitfalls and potential pathways of the proposed research. Students should be prepared to propose alternatives and discuss background material concerned with that proposal. Students should also show that they are making reasonable progress towards their doctoral research. The Prelim Committee will determine a Chair (other than the research advisor) for the meeting and that Chair will be responsible for the conduct of the exam. The research advisor will be present, but will not participate in the examination except in limited consultation.

The Prelim Committee also reviews the student's coursework and any progress reports. The Committee determines what additional courses, reports or other study are required if, for any reason, the examination is not satisfactory. The Committee may decide to re-examine the student at a later time or recommend dismissal from the program. A subsequent review by the student's research advisor as to whether any additional requirements have been met does not necessarily require another meeting of the Committee with the student. Students should inform the Biophysics Graduate Coordinator when their candidacy exams are scheduled. A report to the Committee will be prepared and given to the research advisor before the exam takes place.

NOTE: Students are responsible for ensuring that their faculty mentors are aware of Biophysics candidacy exam procedures and requirements.

ANNUAL PROGRESS REPORTS

All students from the second year to the completion of the Ph.D. degree requirements 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 also have the opportunity to meet annually with the Biophysics Graduate Chair to go over 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.

In addition to *presenting* a seminar, all students are **required** to attend the Biophysics Seminar Series. The serious student will take advantage of all learning opportunities, and the Seminar Series represents excellent sources of up-to-date results and ideas.

COMMITTEE (DATA) MEETINGS

Annual meetings of the thesis committee are mandatory for all doctoral students after achieving candidacy. The timing of this meeting will be determined for each student based on discussion with their faculty advisor. At this meeting, the student must present a detailed discussion of his/her data in a clear and logical fashion, including major findings and a detailed outline of the thesis. At the meeting, the committee chair and/or co-chairs must summarize the student's progress on, and sign the Candidacy Progress Report Form (obtained prior to the meeting from the Graduate Coordinator) and the student must (1) attach a written progress report and, (2) sign the form indicating that he/she has reviewed their comments. The form must then be submitted to the Graduate Coordinator.

NOTE: the final committee meeting report form MUST have "permission to defend" checked before the student may schedule a defense. Failure to do so could delay the student's ability to defend their thesis on their target defense date.

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

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 28 credit hours of course work (average "B"), and 4 credit hours of cognate studies ("C-" or better). **990, 995 or "VI" courses do not count towards this total** – student should also see the Rackham Handbook section on Masters Degrees.

GOOD STANDING POLICY

It is critical for students to comply with the 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 graduate student in the Biophysics Graduate Program at the University of Michigan is considered to be “in good standing” if the following conditions are met:

1. The student complies with all rules and regulations of the University, Rackham, and the Biophysics graduate program.
2. The student meets all applicable standards of academic and professional integrity.
3. The student continues to demonstrate an ability to succeed in the Biophysics degree program.
4. The student demonstrates readiness and capability to do original and independent research.
5. The student performs the duties and responsibilities of their GSI, GSRA, or Fellowship appointment in Biophysics in a professional and timely manner.
6. The student remains in good academic standing by making satisfactory progress towards the completion of degree requirements and is within the time limits of the degree program. This includes all of the following:
 - a. The student maintains 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 more details on Academic Probation.*
 - b. The student, during their first year, must take two terms of the Biophysics Graduate Research rotation course (890) and receive a “B” or better in both terms. Students are required to go through formal rotation advisement during the Biophysics Orientation session, and their rotation selection form must be submitted to the Biophysics Office by the University’s Drop/Add deadline of their first term (normally the 3rd week of a term).
 - c. By the end of their second term (normally May 1st of their first year) in the Biophysics program, the student is required to have found a Biophysics core or affiliated faculty mentor who has agreed to oversee their Ph.D. research and committed to supporting them effective May 1st for the remainder of the student’s Ph.D. studies in Biophysics.
 - d. The student must achieve Ph.D. candidacy by May 31st of their second year in residence, per guidelines explained in this Handbook (see pp. 9). *In the event that the student does not pass their Oral Preliminary Exam by the May 31st deadline on their first attempt, they will then be deemed “not in good standing.” The student will then have until August 31st of that year to re-take the exam and regain good standing status.*

- e. The student must demonstrate that they are making good progress towards their degree requirements in their laboratory, in addition to meeting all requirements set forth by their faculty mentor (lab presentations, meetings, etc.). This includes:
- The student must receive Satisfactory (S) grades for all terms enrolled in Biophysics 990 or 995.
 - The student is required to meet with their mentor to prepare, review, and submit their annual progress report to the Biophysics office by the end of each winter term.
 - The student must receive a "Satisfactory" assessment of progress by their faculty mentor on their annual progress report.
 - The student is required to meet with their dissertation committee at least once per year after obtaining candidacy.

When it is determined that a graduate student has not met the conditions above or has a special situation that could put them in **"not in good standing"** status, Biophysics will take immediate action to review the issue and reach a decision/course of action. Please note that failure by a student to not actively resolve "not in good standing" issues could result in the loss of financial support and/or dismissal from the program. Additional detail includes:

1. The following will trigger an immediate review of the student's "good standing" status by the Biophysics Program Director and Graduate Chair:
 - a. If a first-year student receives unsatisfactory grades from both rotation courses (890).
2. The following will trigger an immediate review of the student's "good standing" status by the student's dissertation committee:
 - a. If the student of second year or above receives an unsatisfactory grade (U) in Biophysics 990 or 995.
 - b. If the student receives a "Marginal" rating on their annual progress report, or fails to submit their annual progress report in a timely manner.

The student's dissertation committee will meet within four weeks to review the student's progress, and then will report back to the Biophysics Graduate Chair. If the student does not yet have a committee, the Graduate Chair will meet with the student's faculty mentor or faculty rotators and/or the Biophysics Director.

Based on the above report and other findings, Biophysics may determine that the student is "not in good standing" and put the student on probation for one semester. Near the end of the probationary semester, the student will be required to meet with their dissertation committee again, after which a decision will be made on whether the student is back on track with their progress and can be reinstated to "in good standing" status.

3. In special circumstances, the Biophysics program can elect to recommend that a student find a new faculty mentor. In this case, the student will have one semester to find a new Biophysics faculty mentor. 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 student will be deemed "not in good standing" and may be dismissed from the program.

4. If the student fails to meet with their dissertation committee in a timely manner (at least once per year), the Graduate Chair will be notified and from that point forward the student will have two months in which to have their committee meeting. If at the end of the two months the student has still not met with their committee, the Graduate Chair will call an immediate meeting between the student and their committee, which the student will be required to attend. Failure to do so will result in immediate "not in good standing" status.
5. 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 by Rackham for the following term or half-term of enrollment, or may be denied permission to register. (Refer to Rackham's website for details on Academic Probation.)
6. In the event that the student does not pass their Oral Preliminary Exam by the May 31st deadline on their first attempt, they will be deemed "not in good standing." The student will then have until August 31st of that year to re-take the exam and regain "good standing" status.

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.

Fellowship Funding & Support Beyond the First Year

First-year students entering the Biophysics program directly can expect financial support for full coverage of stipend, tuition and healthcare during their first two terms (fall and winter, 8 months). After their 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. Students on training grants and other types of scholarships, such as Rackham Merit Fellowships and NSF awards, are also paid from fellowships.

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.

Taxes

All stipends are taxable so many students will need to pay estimated income taxes quarterly. Students are also required to report their stipends as income on their income tax returns (although they do not receive a W-2 form). More information can be found on Rackham's website: http://www.rackham.umich.edu/help/funding_and_awards/tax_information/.

There are also instructions and forms online at (www.irs.ustreas.gov), Publication 970 or you can call the IRS at 800/829-1040 and the Michigan Treasury Department at 517/373-3200.

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.

Graduate Student Instructors (Teaching)

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. This course is usually offered the last week in August or in early January.

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 at <http://benefits.umich.edu/benefitgroups/grads.html> to inquire about off-site or emergency coverage.

Please see the Student Services Administrator if you have ANY questions or problems.

STUDENT REPRESENTATION

The Biophysics program has annual elections in which they elect a candidate to represent the graduate students on the Curriculum Committee and at the Biophysics faculty meetings (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.

PROGRAM INFORMATION

Copy Room

The copy room (#4029) is located on the 4th 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 4th 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 office.*

Building Access

The Chemistry Building is normally open during business hours Monday through Friday. Graduate students who are working (or rotating) in Chemistry Building labs will have access to the building during the following hours with their current 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 for 1 week. If you need more time, please contact Biophysics Student Services.

DEPARTMENTAL ADMINISTRATION

		<u>Room</u>	<u>Telephone*</u>
Program Chair (Director)	Charles L. Brooks, III	4028C or 2006a	4-1146
Graduate Chair:	Sarah Veatch	3038 Chem	5-2099
Chief Administrator	Cornelius Wright	4040	5-7056
Executive Secretary	Sandra Moing	4028b	4-1146
Student Services Manager	Sara Grosky	4028f	3-6722
Events & Communications Coordinator	Liz Michalski	4028e	7-4636
IT	LSA IT	A541	7-2867
Laboratories & Facilities	Tracy Stevenson	1500c	5-2724

* When dialing from a campus phone, only the last five digits are used

CORE AND AFFILIATED FACULTY MEMBERS

(* indicates core faculty member)

<u>Name</u>	<u>Department/s</u>
Anantharam, Arun	Pharmacology
Bardwell, James	Biology
Biteen, Julie	Chemistry
Brooks, Charles*	Chemistry, Biophysics
Cai, Dawen	Cellular & Developmental Biology
Carlson, Heather A.	Medicinal Chemistry
Chapman, Matt	Molecular, Cellular & Developmental Biology
Chen, Zhan	Chemistry
Cheng, Wei	College of Pharmacy
Cho, Uhn-Soo	Biological Chemistry
Cianfrocco, Michael	Biological Chemistry, Life Sciences Institute
Cierpicki, Tomasz	Pathology (Medical School)
Frank, Aaron*	Biophysics, Chemistry
Horowitz, Jordan*	Biophysics, Complex Systems (<i>beg. W19</i>)
Joglekar, Ajit	Cellular & Developmental Biology
Keane, Sarah*	Biophysics, Chemistry
Kerppola, Tom	Biological Chemistry
Kopelman, Raoul	Chemistry, Physics
Kubarych, Kevin	Chemistry
Lehnert, Nicolai	Chemistry
Liu, Allen	Biomedical & Mechanical Engineering
Lubensky, David	Physics
Meiners, Jens-Christian*	Biophysics, Physics
Ogilvie, Jennifer	Physics
Palfey, Bruce	Biological Chemistry
Pecoraro, Vincent	Chemistry
Penner-Hahn, James*	Biophysics, Chemistry
Raghavan, Malini	Microbiology & Immunology (Medical School)
Ramamoorthy, Ayyalusamy*	Biophysics, Chemistry
Saper, Mark	Biophysics, Biological Chemistry
Scott, Emily	Medicinal Chemistry
Sension, Roseanne	Chemistry
Smith, Janet	Biological Chemistry
Stockbridge, Randy*	Biophysics, MCDB
Stuckey, Jeanne	Biological Chemistry, Life Sciences Institute
Triebel, Ray	Biological Chemistry
Veatch, Sarah*	Biophysics
Verhey, Kristen	Cellular & Developmental Biology, Life Sciences Institute
Violi, Angela	Biomedical & Chemical Engineering
Walter, Nils	Chemistry
Wood, Kevin*	Biophysics
Yang, Qiong*	Biophysics
Zhang, Yang	Bioinformatics, Biological Chemistry
Zochowski, Michal R.*	Biophysics, Physics

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 Resources

- **Rackham Graduate Student Success:** <http://www.rackham.umich.edu/current-students/graduate-student-success>
- ***How to Get the Mentoring You Want***
<http://www.rackham.umich.edu/downloads/publications/mentoring.pdf>
A general guide for graduate students about the importance of the student-mentor relationship.
- **Rackham-CRLT Graduate Student and Postdoc Mentorship Program**
<http://www.crlt.umich.edu/imp/overview>
Provides an opportunity to extend networks and mentoring opportunities by working with faculty at regional colleges and universities.

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
- **Knowledge Navigation Center (KNC)** <http://www.lib.umich.edu/knowledge-navigation-center>
The KNC teaches individuals how to use technology in coursework, teaching, or research.
 - One-on-one technology consultations
 - Workshops
 - Digitalization of documents
- **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.

- Borrowing and circulation
- Course reserves
- Instruction and workshops

Funding Resources

- **Rackham & UM:** <http://www.rackham.umich.edu/prospective-students/funding>
- **NSF Graduate Fellowship Program:** <https://www.nsfgrfp.org/>
- **HHMI – Gilliam Fellowship Program:** <http://www.hhmi.org/programs/gilliam-fellowships-for-advanced-study>
- **HHMI – International Student Research Fellowships:**
<http://www.hhmi.org/programs/international-student-research-fellowships>

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/>
- **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/>
- **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/>
- **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/>

*****For a more comprehensive list of 'Mental Health and Wellness' resources, please see:***
<http://www.umich.edu/~mhealth/students.html>

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:** <http://www.rackham.umich.edu/current-students/help/resolution>
- **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
- **Graduate Student Affairs**, 1530 Rackham, Phone: (734) 647-7548

VACATION POLICY & HOLIDAYS

As a Biophysics student, you are allowed to take off on all official university holidays (defined below). Any additional vacation must be discussed with and approved by your thesis advisor. First year students would consult their current rotation mentor **and** the Biophysics Graduate Chair.

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.

LEAVE OF ABSENCE POLICY

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.

The Leave of Absence Policy, a checklist for Ph.D. students, and a checklist for faculty and staff are available at the following site:

http://www.rackham.umich.edu/current_students/doctoral_students/phd_students/leave_of_absence/