# 2014 – 2015 Student Handbook

## Biological Sciences Graduate Program

Graduate Program Office
2101 Bioscience Research Building
301.405.6905
bisi@umd.edu
www.bisi.umd.edu

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# BIOLOGICAL SCIENCES (BISI) GRADUATE PROGRAM

This handbook provides the policies and procedures for the Biological Sciences Graduate Program. University policies, some of which are copied in this handbook, can be seen in their entirety on the Graduate School website: http://www.gradschool.umd.edu/catalog/

## OVERVIEW OF GRADUATE PROGRAM

### Program Structure

The Biological Sciences Graduate Program (BISI) is an interdepartmental umbrella graduate program that was established in 2009 and includes four areas of concentration:

- Behavior, Ecology, Evolution, and Systematics (BEES)
- Computational Biology, Bioinformatics, and Genomics (CBBG)
- Molecular and Cellular Biology (MOCB)
- Physiological Systems (PSYS)

The program's administrative structure includes a Director of Graduate Studies (DGS), an Associate Director of Graduate Studies (ADGS), and four concentration area (CA) directors. This core makes up the central Executive Committee (the ADGS is an ex officio, non-voting member of the group). The DGS reports to the chairs from the Biology (BIOL), Cell Biology & Molecular Genetics (CBMG), and Entomology (ENTM) Departments and is responsible for the overarching goals of the program. The ADGS, with the assistance of a program coordinator, handles all of the administrative work and data management associated with the program. The CA Directors work with their faculty to develop the content and policies for each concentration area.

### Admission

The admissions process for BISI is designed to determine whether the program is a good fit for the applicant's background, education, and research interests. Our goal is to ensure that admitted students will be successful in the program.

Admission to graduate study in the Biological Sciences (BISI) requires

- An earned Baccalaureate degree from an accredited college or university including coursework in calculus, physics, and organic chemistry,
- At least a 3.0 grade point average (on a 4.0 scale)
- One year of research experience
- Strong letters of recommendation from people that can speak to their academic and research strengths
- International applicants must also complete the Test of English as a Foreign Language exam.[1]

[1] *Students who will be awarded a degree from the U.S., United Kingdom, Anglophone Africa, Anglophone Canada, Ireland, Australia, New Zealand, Singapore, and the Commonwealth Caribbean prior to enrolling in the University of Maryland are not required to submit TOEFL or IELTS.*

These characteristics describe many successful BISI applicants, however they are not fixed metrics. During application review, we strive to look at the entire application to assess how well each applicant's academic background and research experiences and interests fit with the opportunities provided by our program.

Students are admitted to one of four concentration areas: BEES, CBBG, MOCB, and PSYS, each of which has its own independent admissions committee; final offers are determined by the BISI Executive Committee.

Students may find that their research interests overlap several of these concentration areas and, once admitted, are free to move from one area to another.

Outstanding students who lack preparation in particular areas may be admitted to the program, contingent upon prior arrangements made to correct said deficiencies with the Director of Graduate Studies, in consultation with the prospective student's faculty advisor and the Graduate Admissions committee. Any deficiencies identified will be required to be made up within two years of the entrance date.

## Selection of an Advisor

Students may select an advisor prior to matriculation or may choose to do laboratory rotations during their first year to identify an appropriate lab. Students in the BEES and PSYS concentration areas often choose the former of these, but may also choose to do rotations if unable to decide on one particular lab.

Students are free to change advisors if it becomes appropriate to do so, but, after the first year, every student must have a committed faculty advisor(s) to remain in the Program.

## Research with Animals or Humans

Campus and Federal requirements stipulate that any research project using animals or humans must be approved by the appropriate Campus committees prior to the initiation of research. This applies not only to research being conducted on campus, but also to all research conducted by UMD faculty or students at other sites around the world. **Research conducted off-campus, even if covered by an approved protocol at the off-campus site, must also be approved by our campus committees. Students should discuss approvals with their on campus advisors before beginning research.**

## Degree Programs

There are three graduate degree options offered by the Biological Sciences Graduate Program: a Ph.D., a non-thesis Master's, and a thesis Master's. The detailed requirements for each program are described below.

## REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY IN BIOLOGICAL SCIENCES

The Ph.D. program is primarily a research-oriented program. It is designed to provide maximal opportunity for students to evolve and develop their capacity for scholarship and independent work. The program is individually tailored to each student to enable him or her to explore a specific area of research "in-depth", and to make an original contribution to that particular field of science. Because the program is designed individually, it may be modified as research evolves.

### Advisement

Due to the individual nature of the Ph.D. program, the Faculty Advisor-Graduate Student relationship is fundamental to the education and growth of the graduate student.

Students may choose any BISI faculty member as an advisor. Students that choose to work with an off campus (adjunct) faculty member must have an on campus advisor. The student becomes a member of that faculty member's department. Students are also encouraged to seek advice, guidance, and help from several faculty members to gain additional knowledge, concepts, or techniques that may be useful to them in their research.

When appropriate, due to divergent research interests or other factors, either the student or the advisor is permitted to initiate a change in advisor. All parties involved must be notified in writing of the change, with a copy of the letter provided to the BISI Program office for inclusion in the student's file. It is the student's responsibility to obtain a new advisor within the same semester that the change occurred. Under exceptional circumstances, the Director of Graduate Studies may allow the student an additional semester to obtain another advisor. Failure to obtain a faculty advisor within a year of the change may result in cancellation of matriculation.

### Laboratory Rotations

All students can choose to perform laboratory rotations, even those that come into BISI with an advisor identified. The MOCB & CBBG Concentration Areas require two laboratory rotations in the first semester that last ~7 weeks each. A third rotation is required during the winter break. Students set up rotations after (1) identifying and meeting with faculty performing research that interests the student and (2) consulting with the CA Director.

Students are expected to prepare at least one oral or written report on their activities in each rotation laboratory. This could take the form of a group meeting or a written final report. The rotation laboratory PI will be asked to evaluate the student's rotation as satisfactory or unsatisfactory and this evaluation will be factored into a grade of satisfactory or unsatisfactory for the "Research Experiences" course.

After the three required rotations, a student, with the consent and agreement of the lab director, may join that lab. Additional rotations can be performed, with the CA Director's permission, if the student does not join a lab.

## Teaching

All BISI students are required to teach for two semesters during their tenure in the program. Waivers of this requirement must be requested in writing by the student's advisor and approved by the Director of Graduate Studies.

## Course Requirements

A doctoral candidate must complete a minimum of 12 semester hours of post-candidacy doctoral research (BISI899), and a total of 30 hours of graduate academic credit. These courses should include:

- At least 9 credits of advanced coursework
- At least 3 credits of graduate seminar courses
- At least 2 credits of a professional development course (e.g Bioethics, Teaching Science)

*Additional course requirements by CA*

BEES

- BEES608a graduate seminar
- Participation in an approved Statistics course (600-level or higher), or a more appropriate graduate-level quantitative course in consultation with First and Second Advisory Committee members.
- Regular attendance at the weekly BEES seminar series.

CBBG

- CBMG688Y-Bioinformatics and Genomics (2 credits, 7 weeks), Fall
- CBMG688P-Programming for Biology (2 credits, 7 weeks), Fall
- CBMG699D-Bioinformatics and Computation Biology Seminar Series (1 credit Fall, 1 credit Spring)
- CBMG688B-Bioethics (1 credit), Fall or Spring
- MOCB699-Laboratory Rotations (2 credits), Fall
- CBMG688Z - Teaching Science (1 credit), Fall (*required for all TAs*)
- 5 credits of electives

MOCB

*Required core courses in the 1st year:*

- CBMG 688D: Cell Biology I: Structure and Function (2 credits, 7 weeks) - Fall
- BCHM 661: Nucleic acids I (2 credits, 7 weeks), Fall
- CBMG 688F: Gene Expression (2 credits, 7 weeks), Spring
- CBMG 688I: Genetic Analysis (2 credits, 7 weeks), Spring

*Additional courses required for all MOCB students:*

- CBMG 688B: Bioethics (1 credit), Fall or Spring
- CBMG 688Z: Teaching Science (1 credit), Fall *(required for all TAs)*

*Additional elective coursework (8 credits) is required. These credits can be a combination of 2 credit modular courses and 3 credit semester courses. All electives must be in science courses, 600 and above.*

Students are also expected to attend MOCB seminars. In some cases attendance may conflict with a teaching assistantship assignment. If this occurs the student should attend a seminar from one of the other BISI or Departmental seminar series. The general policy is that students should attend at least one seminar a week as part of their scientific development. The expectation is that this will continue through the student's time in the program.

PSYS

Since PSYS spans biological disciplines, *only two specific courses are required***:** an ethics course and the graduate seminar. In addition, students should choose three core courses to provide training in their research area, in consultation with their Advisory Committee:

- PSYS graduate seminar
- Bioethics
- Three core graduate level courses (2-4 credits each) that address contemporary issues in physiology, biophysics, biomechanics, computational biology, development, endocrinology, neuroscience, and physiology.
- Participation in an approved Statistics course (600-level or higher), or more appropriate graduate-level quantitative course in consultation with Advisory Committee members.

*Additional courses may be added with the permission of the Concentration Area Director and the first year committee.*

## Registration:

All graduate students must register for courses and pay fees each semester, not including summer and winter sessions, until the degree is awarded.

A student who fails to register and who has not requested and received a waiver of registration or "Leave of Absence for Childbearing, Adoption, Illness or Dependent Care" will be notified by the Graduate School after the first day of classes that they must register for the current semester. If the student does not register, they will be dismissed from the Graduate School at the end of the semester for failure to comply with the continuous registration requirement.

Full time enrollment**:** Students must enroll for 48 units of coursework each semester. A full time TA or RA counts as 24 units; an additional 24 units of coursework is required to be full time. Students that work and are funded off campus will need to enroll for the full 48 units of coursework. The following table converts the conventional credit hours to units:

- Courses in the series: 000-399 carry 2 units per credit hour.
- Courses in the series: 400-499 carry 4 units per credit hour.
- Courses in the series: 500-599 carry 5 units per credit hour.
- Courses in the series: 600-897 carry 6 units per credit hour.
- Master's Research course: 799 carries 12 units per credit hour.
- Pre-candidacy Doctoral Research courses: 898 carries 18 units per credit hour.
- Doctoral Dissertation Research: 899 carries 18 units per credit hour. All doctoral

candidates must pay candidacy tuition for which they will be registered for six (6) credit hours of 899; this defines all currently registered doctoral candidates as full-time.

Upon reaching candidacy, students will automatically be enrolled for 6 credits of BISI 899 each semester until they graduate**. It is the student's responsibility to ensure that they are enrolled each semester.**

## Student Support & Stipends

All BISI students admitted to the program are guaranteed 5 years of support providing that they remain in good standing in the program. Financial support can be in the form of teaching, research, or administrative assistantships, fellowships, or scholarships. Once a student chooses an advisor, that advisor and his/her department are responsible for providing this support. Students that choose advisors in the Biology and Cell Biology & Molecular Genetics departments have priority to teaching assistantships in these departments, however all BISI students can request one of these positions. Students that have an off campus advisor may receive support from that organization (e.g. National Institutes of Health) or through the University. Students that choose off campus advisor should meet with the ADGS to discuss options for support.

Students that receive all of their support from either external or internal fellowships may still receive full tuition remission or may request full tuition remission from the Graduate School. Students that receive a fellowship should consult with the BISI Office to ensure that they receive tuition remission. Because fellowship recipients are not considered University employees, they are not eligible for employee insurance. There is student insurance that is available through the University Health Center.

## Advisory Committee

The Advisory Committee is usually composed during the student's second year. The on campus advisor chairs the committee. However, if a student has both an off and on campus advisor, then permission to allow both advisors to *co-chair* the committee can be requested from the Graduate School.

Your committee must consist of *at least* five members of the Graduate Faculty, **three** of whom must be *full members.* All on campus, tenure track faculty members are full members of the Graduate Faculty. One of these full members must be identified as the Dean's Representative. The Dean's Rep must be a *tenured faculty member with an on campus tenure home different from your advisor and/or co-advisor* and is a voting member of the committee.

Additionally:

- Off campus scientists can serve on dissertation committees, but must be appointed as Special Members of the Graduate Faculty.
- On campus, non-tenure track faculty (e.g. research professors) can serve on dissertation committees, but must be appointed as an Adjunct Member of the Graduate Faculty.

See the appendix for procedures for procuring Graduate Faculty status for off campus and, or, non-tenure track members of your committee.

## Mandatory Advisory Committee Meetings

The number and frequency of advisory committee meetings depends on concentration area.

BEES & PSYS

- 1st Committee Meeting*
  - Occurs prior to registration in semester 1
  - Student meets with advisor and a senior graduate student
  - Purpose: To review the student's academic background and research interests prior to developing an appropriate schedule of classes for the first semester.
- 2nd Committee Meeting*
  - Occurs during in late in semester 2
  - Student meets with advisor(s), three additional faculty members, and a senior graduate student (note that this group should form the beginning of the student's advisory committee)
  - Student should print and bring a current copy of their transcripts
  - This meeting is intended to review the student's background in their proposed research area and help develop research plans in anticipation of the student's preliminary meeting.
- Preliminary meeting*
  - Occurs during 4th semester.
  - Student should print and bring a current copy of their transcripts
  - See policies below.
- Qualifying exam*
  - Occurs during 5th semester
  - Student should print and bring a current copy of their transcripts
  - See policies below
- Yearly Advisory Committee meetings (after advancing to candidacy)*

CBBG & MOCB

- Semester 1
  - Student meets with Concentration Area Director
  - Purpose is to review the student's academic background and research interests prior to developing an appropriate schedule of classes for the first semester
- Semester 3
  - The adviser and the student should agree on suitable committee members, and it is the student's responsibility to contact potential committee members.
  - The CA Director approves the Committee
  - Students must submit the committee names and affiliations to the BISI

Program Office.

- Semester 4
    - The students must meet with their Advisory Committee to introduce themselves and their project and to get feedback on what background areas of knowledge the committee believes will be important to their success.
    - The adviser must submit a written report on the meeting to the BISI Program Office. The report should address the committee's evaluation of the student's project and whether the student is making adequate progress consistent with their current standing in the program. Specific recommendations for improvement (if relevant) should also be included.
- Preliminary meeting*
    - Occurs during 5th semester.
    - Student should print and bring a current copy of their transcripts
    - See policies below.
- Qualifying exam*
    - Occurs during 6th semester
    - Student should print and bring a current copy of their transcripts
    - See policies below
- Yearly Advisory Committee meetings (after advancing to candidacy)*

*Please file the appropriate paperwork with the BISI Office following each meeting.

# PRELIMINARY MEETING

The goal of the preliminary meeting, which is not a test and is not assessed, is to give the student an opportunity to present their research proposal and meet with their committee in a relaxed setting to receive constructive feedback on the proposal and project, and to discuss clear expectations for topics and lines of questioning for the qualifying exam. The tone of this meeting is to be supportive, although with high standards communicated openly and honestly. The student should leave the preliminary meeting with the scope of the qualifying exam clarified, and empowered with advice, guidance, and strategies to strengthen the dissertation proposal and prepare for the exam.

## Timing

The preliminary meeting takes place no later than the end of the student's 5th semester (4th semester for BEES), and is generally 2-3 months in advance of the qualifying exam. A relatively short interval between the two meetings is strongly encouraged to maximize the value and retention of the information exchange facilitated at the preliminary meeting.

Preliminary meetings will generally be about 1.5 hrs long (flexible of course).

Extensions for the preliminary meeting (beyond semester 5) are rare. Students who must delay their preliminary meeting past the end of their 5th semester must submit a written request for an extension, as do their mentors. This request is due 60 days before the end of the student's 5th semester and requires a justification for the extension, acknowledgment from the advisor that the student is on track and making good progress, and a proposed revised date for the preliminary meeting. The CA Director as well as the DGS must approve this request.

Note: Students do not need to have substantial amounts of preliminary data prior to their preliminary meeting; lack of sufficient data is not considered a valid excuse for delaying this meeting. By semester 5, students should have their thesis direction in reasonable focus. Those research questions and initiatives should enable students to proceed with this meeting on schedule even if work on all aspects of the project have not yet been designed or commenced.

## Advisory Committee

The student's advisor will chair the preliminary meeting. All other thesis committee members will attend (telecommute attendance permitted). At least 2 of the attending members of the advisory committee must be full members of the BISI faculty. While it is not required that the Dean's Rep attend the preliminary meeting, it is highly suggested that the entire advisory committee be in attendance for both the preliminary meeting and the qualifying exam.

## Written Proposal & Oral Presentation

Students will prepare a dissertation proposal according to their major advisor's instructions, often following either NIH or NSF guidelines. This proposal must be distributed to the student's preliminary meeting committee two weeks before the meeting.

Students should prepare 15-20 minute overview (around 15 slides) of the proposed thesis research, including questions and hypotheses, methods and experimental design, preliminary data, and broader context / significance of the project. Students should expect to be interrupted with questions during their presentation, so the actual duration of the presentation may be substantially longer than 20 minutes.

## Committee Recommendations

Following the oral presentation, the committee will provide the student with feedback (strengths and weaknesses; constructive suggestions for improvements) on the research project, the written proposal, the oral presentation, and the student's overall knowledge of the subject matter. The meeting will conclude with the committee providing the student with a list of up to 3 areas of specialization (level of breadth at the discretion of the committee) that will be focal topics for questioning at the Qualifying Exam. Topics directly pertaining to the student's research proposal will also be appropriate lines of questioning during the Qualifying Exam, as will general knowledge areas drawn from the student's graduate course work.

# QUALIFYING EXAM

## Timing

The qualifying exam takes place by the end of the student's 6th semester (5th semester for BEES), and generally within 2-3 months of the preliminary meeting.
Extensions beyond semester 6 are rare, and require an approved written request for extension from the student and faculty advisor, as described above for the preliminary meeting.

## Committee

The exam committee will be chaired by the student's advisor, and should include all members of the student's doctoral committee (telecommute attendance is permitted). At least 2 of the committee members must be full members of the BISI faculty.

## Objectives & Scope

To advance to candidacy, students must pass the qualifying exam.

The qualifying exam is a defense of the student's doctoral research proposal, including its context and significance, as well as an assessment of the student's understanding of broader biological concepts.

The developing thesis project provides the framework for the qualifying exam, but questioning will also focus on determining whether the student has sufficient background knowledge, along with the abilities to think, synthesize, integrate, and communicate information, required for successfully completing the Ph.D. degree.

## The Exam

Revised Written Proposal
(The format as described for preliminary meeting; document revised following first draft edits / suggestions discussed at the preliminary meeting). The revised proposal is due to the committee two weeks prior to the qualifying exam.

## Oral Presentation (may be waived by the Advisory Committee)

Students normally present at least a brief review of their research proposal at the qualifying exam to help initiate and guide discussion. Depending upon the student's performance at the preliminary meeting and following the advisor's and committee's recommendation, the student may be asked to provide a full presentation of their proposal. A full research presentation is particularly important if:

- There were significant deficiencies in the student's presentation at the preliminary meeting, or
- Enough time has passed since the preliminary meeting that the committee will need to be refreshed on the student's plans, or
- The substance of the proposal has changed.

## Questions from Committee

The student is expected to answer questions that cover the dissertation proposal, its broader context and significance, and general knowledge within the areas of specialization identified at the preliminary meeting. The role of the chair is to facilitate discussion and ensure that all members of the committee have an opportunity to participate fully. The chair is expected to maintain an impartial tone, but may participate in questioning as appropriate.

## Evaluation

The committee will conclude that the student has passed or failed the exam on the basis of the student's performance during the qualifying examination and on the basis of the written research proposal. The exam should cover both defense of the research proposal and a test of general knowledge. The following outcomes are possible:

- Pass
- Pass with recommendations (not requirements)
- Does not pass, with requirements, but no need to retake the formal exam
- Does not pass, with the option to retake the formal exam
- Does not pass, without option to retake the formal exam (results in dismissal from the program)

The student passes if all, or all but one, of the committee members cast positive votes. A vote to pass a student for admission to candidacy reflects an assessment that the student is now ready to move on to uninterrupted dissertation research. If the committee feels that the student is required to do something to achieve readiness, then this must be accompanied by a "no" vote (option 3). Any number of recommendations can accompany a "yes" vote, but these must not be mandatory. In the event that a student does not pass, the committee can detail whatever remedies it deems appropriate. Whether or not it is necessary to meet a second time is at the discretion of the committee.

The second (retake) exam will be scheduled when the major advisor considers appropriate, but no later than 9 months following the first exam. Failure to pass the second qualifying exam results in dismissal from the program.

If the committee chooses option 5 above, the student will be dismissed from the program.

In no case may a student repeat the exam a third time.

### Outcome

A written report of the qualifying exam results must be given to the BISI Office for inclusion in the student's file.

The research proposal written by a student who successfully completes the qualifying examination shall automatically fulfill the scholarly paper requirement for the non-thesis M.S. degree. The student can apply for that degree if the 30-credit coursework requirements have also been satisfied.

## ADVANCEMENT TO CANDIDACY

After passing the qualifying exam, the student must complete the Advance to Candidacy form; this completed form must be submitted to the BISI Office within one week of passing the Qualifying Exam. The BISI Office will submit that form to the Graduate School. Please note that, for forms submitted prior to the 25th of the month, advancement to candidacy becomes effective on the first day of the following month. A copy of this form must be included in the student's file.

Students must be officially admitted to candidacy at least six months prior to the conferring of their Ph.D. degree.

# DISSERTATION SEMINAR

All Ph.D. candidates must give a formal seminar that presents the final results of their dissertation research. The seminar is open to faculty, students, and other interested parties. It will be presented immediately preceding the oral dissertation defense. Dissertation seminars may be scheduled as one of the regular seminars as long as that venue precedes the defense. The BISI program staff will ensure that the dissertation seminar is announced in accordance with the policies of the Graduate School.

## Scheduling the Defense

Students usually have a meeting with their advisory committee prior to planning their defense. At this meeting the advisor, student, and committee decide on a timeframe for the defense. The student should work with the advisory committee and advisor to find an acceptable day and time for the defense. The student is responsible for distributing a complete copy of the dissertation to each member of the committee at least ten working days before the examination.

The doctoral dissertation must be completed and defended within four years after passing the qualifying examination, but no later than nine years after admission to the program. Students requiring additional time may appeal to the Dean of the Graduate School.

Extensions of time for doctoral students must be requested from the Graduate School by the doctoral program. The first request for an extension of the deadline for completion of the doctoral dissertation requires a letter of support from the Graduate Director. The letter must include a timetable listing specific goals to be accomplished at various points during the extension period. Normally, the extension will be for a maximum of one year.

The request for a second extension requires a letter of support from the Graduate Director that includes a statement that the graduate program has approved the request. Departmental approval may be either a vote of the department as a whole or of a committee designated to deal with such matters, such as the Graduate Committee. The letter must include a timetable that lists specific goals to be accomplished at various points during the extension period. Typically this extension will be for a maximum of one year.

## Composition of Examining Committee

The Dissertation Examining Committee requires nomination by the student's advisor and the Graduate Director of the student's graduate program, and approval by the Dean of the Graduate School. The nomination of a Dissertation Examining Committee should be provided to the Graduate School at least six weeks before the date of the expected dissertation examination. The dissertation examination cannot be held until the Graduate School approves the composition of the Dissertation Examining Committee. Furthermore, if the Graduate Faculty status of any member of an approved Dissertation Examining Committee changes, the approval of the Dissertation Examining Committee may be void, and a new Dissertation Examining Committee nomination form may be required to be approved by the Graduate School.

## Suggested Procedures for the Final Oral Examination

The student's major advisor is responsible for chairing the examination. The chairperson has some latitude in the manner of conducting the examination, but the following major steps are usually to be followed. Of paramount importance is consideration for the candidate. He or she may be under considerable strain, and it is particularly inadvisable to let the meeting run on for an unreasonably
long period of time.

- Any member of the Graduate Faculty is permitted to attend a doctoral examination, but only members of the appointed committee may question the student and vote at the conclusion of the examination.
- The student, the committee, and any attending members of the Graduate Faculty convene in closed session.
- The Dean's Representative is identified, and his/her special functions explained.
- The student may briefly present high points of the dissertation, emphasizing the important aspects and giving an explanation of the reasoning that led to the conclusions reached.
- The chairperson invites questions in turn from members of the Committee, going through the whole group. The questioning may continue as long as the Committee feels necessary to properly examine the student.

## Conclusion of the Defense

After questioning has been completed, the student is asked to leave the room, and the Committee discusses whether the defense has been satisfactory. The committee has the following alternatives:

- To accept the dissertation without any recommended changes and sign the Report of Examining Committee.
- To accept the dissertation with recommendations for changes and, except for the chair, sign the Report of the Examining Committee. The chair will check the dissertation and, upon his or her approval, sign the Report of Examining Committee.
- To recommend revisions of the dissertation and not sign the Report of Examining Committee until the student has made the changes and submitted the revised dissertation for the Dissertation Examining Committee's approval. The Dissertation Examining Committee members sign the Report of the Examining Committee if they approve the revised dissertation.
- To recommend revisions and convene a second meeting of the Dissertation Examining Committee to review the dissertation and complete the student's defense.
- To rule the dissertation (including its defense) unsatisfactory. In that circumstance, the student fails.

Following the defense, the chair, in the presence of the Dean's Representative, must inform the student of the outcome of the defense. The chair and the Dean's Representative both sign a statement indicating which of the above alternatives has been adopted. A copy of the statement is to be included in the student's file at the graduate program office, and a copy is given to the student.

## Passage or Failure

The student passes if one member refuses to sign the Report, but the other members of the Dissertation Examining Committee agree to sign, before or after the approval of recommended changes. Two or more negative votes constitute a failure of the candidate to meet the dissertation requirement. In cases of failure, the Dissertation Examining Committee must specify in detail and in writing the nature of the deficiencies in the dissertation and/or the oral performance that led to failure. This statement is to be submitted to the program's director of graduate studies, the Dean of the Graduate School, and the student. A second defense is permitted if the student will be in good standing at the time of the proposed second defense. A second defense requires the approval of the program's director of graduate studies and the Dean of the Graduate School. If the student fails this second defense, or if a second defense is not permitted, the student's admission to the graduate program is terminated.

If the defense is satisfactory, then the dissertation in its final form is to be submitted electronically to the Graduate School by the announced deadline.

# REVIEW OF GRADUATE STUDENT PROGRESS

## Graduate Student Activity Reports (GSAR)

Each Spring, the student must submit an electronic student activity report; this report includes a short synapsis of the research carried out in the previous year as well as a listing of student awards, presentations, and publications. The student's advisor will then review the GSAR and write an evaluative statement about the student's progress. The student and advisor should then meet to review the report and both student and faculty member sign the report (this can occur concurrently with the student's annual advisory committee meeting). A copy of the signed report is then filed with the BISI Office to be placed in the student's file. Failure to submit all requested forms by required deadlines will result in "administrative probation."

## Review of Graduate Student Progress

At the end of each semester, the cumulative grade point average (GPA) is examined to determine whether or not the student has maintained a GPA of 3.0 in courses receiving graduate credit.

Once each academic year, the CA Directors and the graduate office conducts an analysis of the student's progress toward the completion of the degree by reviewing all files to insure that adequate progress is being made toward the completion of his or her degree program and, in conjunction with the DGS, ADGS, and student advisor, may place a student on academic probation for failure to make satisfactory progress toward the degree. In this case, both the advisor and the student are notified of the student's probationary status, the conditions for retention in the graduate program and the date by which they must be met.

# ACADEMIC PROBATION

## Grades/GPA

Students whose cumulative grade point average falls below 3.0* are placed on academic probation by the Graduate School. Both the student and the BISI Graduate Director will be notified; BISI will then inform the student's advisor and CA Director. Permission of the student's faculty mentor and the BISI CA Director are required for a student on probation to register for courses. Probation is lifted when the student achieves a cumulative GPA of 3.0.

Consistent with Graduate School policy, students who have completed either fewer than 12 credits, or two semesters or less, and have a cumulative GPA less than 3.0 will have until the end of their first year to raise their GPA to 3.0 or higher before the Graduate School places the student on academic probation. Once on academic probation, the student will have one semester to raise his or her GPA to 3.0. Students who have completed 16 or more hours of course work and whose cumulative GPA falls below 3.0 will also have one semester in which to raise his or her GPA to 3.0. Failure to meet these timelines will result in dismissal from the program.

The BISI graduate program requires that the student, his/her advisor (or a faculty member in the student's general field of interest if an advisor has not yet been selected), and the CA Director create a specific plan, including timeline, to provide the student with the opportunity to raise his/her GPA above 3.0. Copies of this plan, signed by student, mentor, and CA Director, must be given to the BISI Office Administrative Assistant to be placed in the student's file and to inform the BISI Director and Associate Director. BISI will send a copy to of the plan to Assistant Dean of the Graduate School.

Graduate students who receive a grade below a B- in a course required either by the program or advisory committee must repeat that course and earn a B- or higher. Students who repeat required courses and fail to achieve that B- or higher mark in that course will be dismissed from the program.

If a grade below B- is earned in a course that is not required, the student is not required to repeat the course, however cumulative GPA requirements hold.*

While B- (2.7) grades are accepted for required courses, students must maintain a GPA $\geq$ 3.0 or risk being placed on academic probation, as described above.

Independent study (699) courses count toward cumulative GPA, however students may enroll in a 699 course only after the CA Director has discussed ramifications of such a course with the mentor. The courses must have clear, written (brief sentences or bullets are fine) objectives and expectations discussed in advance with the student and approved by the CA Director.

## Research

BISI students must make satisfactory progress in meeting programmatic requirements and benchmarks, must demonstrate the ability to succeed in his/her research, and must attain performance minima as specified by the program and the advisor.

If an advisor feels that a student is making insufficient progress, the advisor must notify the student of the concern, in writing (email fine) or via comments in the annual progress report (to be shared with the student). Following discussions with the CA Director and other colleagues if desired, the faculty mentor must develop a reasonable plan for the student to attempt to remediate. This plan should include benchmarks for the student to meet and a timeline for completion (within 1 semester; a summer counts as 1 semester). Ramifications for not completing the plan within the given time limit should be stated clearly. The student, advisor, and CA Director must sign the plan and a copy will be placed in the student's record.

Students may remain on Probation for a particular problem for a maximum of 1 academic

* B+, B and B- count as 3.0 for the 2011-2012 AY, but will be used in cumulative GPA calculations beginning in Fall 2012

semester (summers do not count as a semester in this context) before they are dismissed from the program.[#]

### University policies

There are additional policies on campus that affect the status of graduate students:

- Graduate Assistantship Policies (teaching and research) can be found at www.gradschool.umd.edu/catalog/assistantship_policies.htm
- Code of Academic Integrity: www.president.umd.edu/policies/doc/III-100A.pdf
- Code of Student Conduct: www.president.umd.edu/policies/docs/v100b.pdf
- University Policy & Procedures on Sexual Harassment: www.president.umd.edu/policies/docs/VI-120A.pdf
- Human Relations Code: http://www.ohrp.umd.edu/compliance/hrc/intro.html

## ADMINISTRATIVE PROBATION

All graduate students in the BISI program must submit annual progress reports. Timely response to important deadlines is part of professional training, responsibility, and success. Failure to submit the annual report following two reminders from the BISI administrative staff results in *Administrative Probation.*

Students placed on Administrative Probation are considered not in good standing with the program and therefore:

- Have low priority in opportunity and course choice in TA assignments
- BISI will not participate in nominating the student for campus / college / program / external awards (including travel awards), and
- Will not receive supporting letters from the BISI Graduate Program

Students who remain on Administrative Probation for 2 consecutive semesters (in this case a summer counts as 1 semester) will be considered to be making unsatisfactory progress and thus fall under the Probation policy pertaining to unsatisfactory progress (as above)

## MEDIATION, CONFLICT RESOLUTIONS, AND APPEALS

Students experiencing conflict with their advisor, committee members, other faculty, or with lab members should discuss their concerns with their Concentration Area Director and/or the BISI Associate Director or Director as soon as possible. The student may meet with the Graduate School Ombudsperson at any time for advice and guidance.

[#] Students that are placed on probation during fall (spring, summer) semester have until the end of spring (summer, fall) semester to remediate.

## Consultation with the campus' Ombudsperson for Graduate Students

Students are invited to consult with the University's Ombudsperson for Graduate Students at any time regarding any issue, options, to help resolve conflicts, and to work toward resolution of any area of concern. For further information, please visit http://www.gradschool.umd.edu/current_students/ombudsperson_for_graduate_students.html

## Appeals

If a student wishes to appeal any BISI Probation decision or consequence, the appeal must be submitted directly to the Graduate School.

## Changing Research Labs Due to Personality Conflicts or Insufficient Progress Issues

*Student initiated:* In some cases students may opt to leave a research group if mediation and conflict resolution do not solve issues. In order to retain departmental/programmatic support, the student should secure a position in another research group before resigning a position in their current lab. Written notification of the change from both the student and the student's new mentor is required and should be sent to the CA Director and copied to the BISI Director and Associate Director.

*Advisor initiated:* In some cases, students may be asked to leave their research group. If an advisor requests that a student leave his/her research group, the student must take initiative to find another advisor within 1 semester (summer counts as 1 semester). Failure to join another lab group will result in withdrawal of financial support and dismissal from the graduate program.

# REQUIREMENTS FOR MASTER OF SCIENCE IN BIOLOGICAL SCIENCES (NON-THESIS OPTION)

The non-thesis Master of Science degree option is available only for doctoral students who wish to leave the graduate program without completing the Ph.D. External applications for the non-thesis master's option are not accepted. In addition, the non-thesis master's degree program provides the opportunity for Ph.D. candidates to earn an M.S. degree while completing the course work appropriate for their Ph.D. program.

## Advisement

Students that decide to leave the Ph.D. program should meet with the Associate Director of Graduate Studies. The ADGS will review the student's academic background and specify any additional preparatory work deemed necessary. The ADGS will annotate the student's electronic record to reflect the change in status.

## Course and Credit Requirements

- Any deficiencies noted by the ADGS must be addressed by taking the recommended courses.
- Completion of no fewer than 30 hours of course work with an average of "B" (3.0).
    - Of these 30 hours, at least l8 hours must be at the 600-level or above (BISI799, Master's Thesis Research, and BISI898/899, Dissertation Research, do not count in this program). The other l2 hours can be at the 400-level or above.
    - Of these 30 hours, no fewer than l6 hours must be in biological sciences.
    - Of these l6 hours, three courses should be in a single area of specialization within biology.
- All requirements for the Master's degree should be completed within a three-year period. In no case will an exception be made to extend the time beyond the five-year Graduate School limit.

## Scholarly Paper

One scholarly paper must be written in an area of biology approved by the student's advisor. The paper is to be developed apart from course work. The source material for the paper can be current scientific literature, laboratory work, or field observations, and must contain a synthesis of the subject that goes beyond the current literature. During the semester before the paper is to be written, the student, advisor, and an additional faculty member, who will serve as a second reader of the paper, will meet to decide the area, topic, and scope of the paper. After this meeting, the student will write the paper obtaining advice from the advisor as necessary. The final paper must be submitted for approval by the advisor and second reader at least 2 weeks prior to the final date specified by the Graduate School for submission of forms certifying degree completion. The paper must receive the written approval of both faculty members. After such approval is obtained, an electronic copy of the paper must be placed in the student's file in the BISI Program Office.

The thesis from a failed M.S. thesis defense may not be submitted to fulfill the scholarly paper requirement for the non-thesis M.S. unless appropriate revision has occurred. Such papers require signed approval by two BISI faculty members.

The proposal prepared for a successful preliminary examination for Ph.D. candidacy shall automatically satisfy the scholarly paper requirement for the non-thesis M.S.

## Completing the Program

Prospective candidates for the non-thesis Master's degree must submit an application for their diploma and other required paperwork to the Graduate School by deadlines announced each semester.

# REQUIREMENTS FOR MASTER OF SCIENCE IN BIOLOGICAL SCIENCES (THESIS OPTION)

The thesis Master of Science degree option is available only for doctoral students who wish to leave the graduate program without completing the Ph.D. External applications for the thesis master's option are not accepted. The thesis Master of Science degree program provides qualified students with the opportunity to enroll in advanced course work and to undertake a research project.

## Advisement

Students that decide to leave the Ph.D. program should meet with the Associate Director of Graduate Studies. The ADGS will review the student's academic background and specify any additional preparatory work deemed necessary. The ADGS will annotate the student's electronic record to reflect the change in status.

Each student's thesis project is developed individually with a faculty advisor. If it is appropriate, at any point during the degree program, the student or the advisor is free to initiate a change in advisor. A student whose thesis research is being done under the direction of an adjunct (i.e. off campus) professor must have an on campus advisor.

## Course and Credit Requirements

- Any deficiencies noted by the ADGS must be addressed by taking and passing the recommended courses
- Completion of 30 credits of courses distributed as follows:
- 6 hours must be thesis research (BISI 799).
- Of the remaining 24 hours of course work:
- 12 must be at the 600-level or above;
- 12 hours can be at the 400-level or above;
- 12 hours must be in the biological sciences courses;
- None can include thesis research credit (BIOL799).
- All requirements for the Master's degree are to be completed within a three-year period. In no case will exceptions be made to extend the time beyond the 5-year Graduate School limit.

## Thesis Defense

### Submission of Thesis

It is the student's responsibility to furnish copies of the thesis to the committee members at least seven working days before the examination. The oral examination may be conducted whenever the thesis is completed to the satisfaction of the advisor, providing the student has completed all other requirements for the degree and has at least a "B" average on all graduate work.

### Composition of the Examining Committee

The oral defense of the Master's thesis is conducted before a committee composed of a minimum of three members. The student's advisor chairs the committee. The other members of the committee are persons who are familiar with the student's program of study. Students must submit a signed Nomination of Thesis Committee form, signed by the committee chair, according to the deadlines set by the Graduate School. Once the defense has been scheduled, a copy of the abstract of the thesis must be submitted to the BISI program office. Office personnel will announce the defense approximately 10 days prior the scheduled date.

### Evaluation of Thesis

*The committee vote to pass a student on their oral examination must be unanimous. One dissent constitutes a failure.* At the discretion of the committee, the student who fails may be permitted a second examination after acting on suggestions for improvement of the thesis (collection of more data, use of a different statistical analysis, rewriting of the discussion, etc.) and at such time as the major advisor may consider appropriate.

### Outcome

The report of the examining committee is submitted to the Graduate School and a copy placed in the student's program file.

## Completing the Program

It is the responsibility of both student and advisor to meet the Graduate School deadlines for certification of thesis completion and for the report on the outcome of the oral examination. The thesis in its final form (incorporating changes required by the committee) must be submitted electronically to the Graduate School by the announced deadline.

# APPENDIX

## Course electives

**MOCB Electives:**
Current elective offerings include:

- Virology
- Microbial Pathogenesis
- Microbial Genetics
- Immunology and Host Defense
- Bioinformatics
- Cell biology II (Signal Transduction)
- Plant Biology: Plant Development and Physiology

**PSYS Electives**
Additional courses may be added with the permission of the Concentration Area Director and the first year committee (all are 3 credits except where noted:

- BIOE603: Electrophysiology of the Cell
- BIOE602: Cellular and Tissue Biomechanics
- BIOL622: Membrane Transport Phenomena
- BIOL651: Physical Chemistry for Biologists
- BIOL708L: Quantitative Analysis of Biological Data (4 cr)
- BIOL708o: Cell Biology from a Biophysical Perspective
- CBMG688W: principles of Microscopy (2 cr)
- NACS643: Computational Neuroscience (4 cr)
- NACS644: Cellular and Molecular Neuroscience (4 cr)
- Developmental Biology
- Microscopy

**CBBG Electives**
Current elective offerings suggested for CBBG elective credit include (but are not limited to):

- BIOM688E: Topics in Biometrics: Computational and Statistical Genomics (Sp. Song)
- CMSC422: Introduction to Machine Learning (Sp.; Subrahmanian)
- CMSC432: Bioinformatic Algorithms, Databases, and Tools (F; Corrada-Bravo)
- CMSC702: Computational Systems Biology (Sp.; Corrada-Bravo)
- CMSC858D: Advanced Topics in Theory of Computing; Computational Proteomics (Sp.; Khan)
- STAT420: Introduction to Statistics (Sp.; Xu, Ren)
- CBMG688F: Gene Expression (Sp., Dinman)
- CBMG688I: Genetic Analysis (Sp.; Mount)
- BIOL608K Characterization and Evolution of Developmental Networks (Sp.; Kocher)
- BIOL671: Molecular Evolution (F.; Cummings)
- BIOL709E: Developmental Genetics (Sp.; Haag)
- ENTM798V: Introduction to R for Computation and Analysis in Ecology and Evolutionary Biology (F.; Gruner)
- BSCI410: Molecular Genetics (F & Sp; Mount, Pick)

**BEES Electives**

ANSC 446 Physiology of Mammalian Reproduction
ANSC 447 Physiology of Mammalian Reproduction Lab
ANSC 455 Applied Animal Behavior
ANSC 608 Seminar in Animal Sciences
ANSC 661 Physiology of Reproduction
ANTH 420 Origins of Human Evolution
ANTH 428 Special Topics in Bioanthropology
ANTH 428 Fieldwork in Bioanthropology
BIOL 625 Mathematical Biology
BIOL 627 Behavioral Endocrinology
BIOL 677 Ecology of Marine Communities
BIOL 708 Advanced Topics in BEES
BSCI 410 Molecular Genetices
BSCI 495 Animal-Plant Interactions Lab
BSCI 4XX Bioinformatics and Genomics in Evolution
BSCI 4XX Photosynthetic Life
BIOM 603 Biostatistics III: Linear Models/Regression
BIOM 688B Multivariate Statistics
CMSC 421 Introduction to Artificial Intelligence
CMSC 723 Natural Language Processing
CMSC 726 Machine Learning
CMSC 727 Neural Modeling
CMSC 762 Numerical Solution of Nonlinear Equations
ENTM 798 Seminar in Entomology
GEOL 432 Biostratigraphy
GEOL 434 Micropaleontology

BSCI 460 Plant Ecology
BSCI 461 Plant Ecology Lab
BSCI 462 Advanced Population Ecology
BSCI 463 Laboratory and Field Ecology
BSCI 464 Microbial Ecology
BSCI 466 Experimental Aquatic Ecology
BSCI 467 Freshwater Biology
BSCI 471 Molecular Evolution
BSCI 472 Evolutionary Biology of Plants
BSCI 473 Marine Ecology
BSCI 480 Insect Form and Function
BSCI 481 Insect Diversity and Classification
BSCI 484 Biology of Marine and Estuarine Invertabrates
BSCI 485 Protozoology
BSCI 486 Systematic Microbiology
BSCI 487 Managing Pests without Pesticides
BSCI 491 Advanced Plant Taxonomy
BSCI 494 Animal-Plant Interactions
GEOL 472 Tectronics
GEOL 632 Biostratigraphy and Paleoecology
GEOL 634 Micropaleontology
MEES 611 Systems Ecology of Estauries
MEES 621 Ecology of Estaurine and Marine Environments
MEES 650 Wetland Ecology
MEES 721 Plankton Dynamics
MEES 698R Community and Ecosystem Ecology
MOCB 630 Advanced Eukaryotic Genetics
MOCB 639 Advanced Cell Biology
MOCB 640 Protein Structure and Function
PHIL 456 Philosophy of Biology
PHIL 458 Topics in Philosophy of Science
PSYC 401 Biological Basis of Behavior Lab
PSYC 403 Animal Behavior
PSYC 759 Seminar in Auditory Mechanisms
PSYC 764 Comparative Neuroanatomy
PSYC 888 Research Methods in Psychology

## Program Directory

| Name | Position/Department | Contact information | Can answer questions about… |
|---|---|---|---|
| Dr. Charles Delwiche | Director, BISI Grad Prog. Professor, CBMG Dept. | delwiche@umd.edu | Issues with the BISI office staff/assoc. director, faculty mentors, or course instructors; |
| Dr. Michelle Brooks | Assoc. Director, BISI | mmbrooks@umd.edu<br>301.405.3273 | Program and university policy; Academic and administrative probation; Teaching/TA assignments; general graduate school angst |
| Ms. Gwen Warman | Program Coordinator, BISI | gwarman@umd.edu<br>301.405.6905 | Registration, forms, student accounts, courses, graduation, prelim meeting, qualifying exam, required paperwork |
| Diane Leason | BISI GA | bisi@umd.edu | Paperwork needed for meetings, general questions |
| Magna Gray | CMNS Payroll | msgray@umd.edu | Payroll for students that TA 105/106/207/222/103/189i |
| KeCia Harper | BIOL Payroll | kharper1@umd.edu | Payroll & Benefits for Biology Department or Biology TAs (see your contract letter) |
| Molly Burke | CBMG Payroll | | Payroll & Benefits for CBMG Department or CBMG TAs (see your contract letter) |
| Judy Leung | CMNS | | Dean's or University Fellowship disbursement |

## Additional Contacts

**Biology Department**

| | | |
|---|---|---|
| Dr. Bill Fagan | Department Chairperson | bfagan@umd.edu |
| Bonnie Miranda | Executive Admin. Assistant | mirandab@umd.edu |
| Amanda Grimes | Exec. Dir. of Admin & Operations | agrimes@umd.edu |
| KeCia Harper | Payroll Coordinator -Payroll and benefits for Biology Department RAs and TAs. | kharper1@umd.edu |
| Janie Brown | Grants coordinator for Biology | |
| James Parker | Handles key distribution for students with Biology Dept advisors | |
| Cecilia Jordan | Undergraduate Office - Handles summer TA assignments for bsci201 and bsci202 | cjordan@umd.edu |
| Wan Chan | IT Manager-Handles IT issues for BIOL department faculty and their graduate students | wanchan@umd.edu |
| Timothy Maugel | Dir., Lab for Biol Ultrastructure Manages the operation of the CCLS central facility for biological electron microscopy | tmaugel@umd.edu |

## Graduation Checklist

You're ready to take the steps toward graduation. Use this checklist to assist you in navigating the rough administrative waters of graduation.

☐ Notify the BISI office that you're planning to graduate in the upcoming semester!
**Important Dissertation & Defense Deadlines are posted at the Graduate School website.**

☐ Apply for graduation through Testudo. Applications roll over in the event that you do not complete the requirements for graduation in your chosen semester.

☐ Complete a "Nomination of Thesis or Dissertation Committee" form. Found on the Graduate School Forms page

- Your committee must consist of 5 (or 6, if you have a co-advisor) faculty members.
  - 3 must be UMD tenure track faculty
  - Dean's rep must be a full professor whose tenure home is different from your on campus advisor's tenure home (e.g. your advisor is in CBMG, the Dean's rep cannot be a faculty member in CBMG)
  - Off campus members must be members of the Graduate Faculty (BISI office personnel can help you determine this). If your off campus committee members are NOT members of the Graduate Faculty, they must be nominated, approved by the entire BISI faculty, and then approved by the Graduate School. This takes between 6-8 weeks, so plan accordingly.
- Be sure to submit copies of any research assurances (e.g. IRB, ACUC) with this form to ensure that your committee is approved.
- Submit by the deadline on the Grad School site OR 6 weeks before you defend- whichever date is first.

☐ Determine a defense date.
This is a complex process of balancing your needs, the schedules of your committee members, & the availability of rooms on campus. The sooner you start, the easier it is to make everyone happy.

- Tell the BISI office you are starting the scheduling process!
- To schedule in BRB or BPS book through the BISI Office.
- To schedule in another building on campus, book through that department but CC the BISI Office.
- Check with the seminar coordinators to see if there are any open dates for student defenses during a BISI or Dept. seminar time.
- Be sure that you have enough time to defend, complete your corrections, and submit your dissertation before the deadline. Deadlines can be found here (we suggest 3 weeks)

☐ Register for Commencement – Once you schedule your defense notify CMNS you want to walk (via this RSVP Form). Then email bisi@umd.edu with your name, as you would like it to appear in the program, and the name of the person that will hood you.

☐ Provide your committee with a complete version of your dissertation at least 2 weeks prior to your defense. Send your abstract to bisi@umd.edu at the same time.

☐ Before your defense: you/your advisor needs to pick up your file and the necessary paperwork from the BISI office. This will include the Report of the Examining Committee and the Interim Exam Report forms.

☐ Immediately after your defense: your advisor should return your file and all forms to the BISI Office.

☐ Complete your corrections and format your dissertation to fit the style guide (at the Grad School site).

☐ Submit an Electronic Thesis and Dissertation Electronic Submission Form to the Graduation Clearance Office.

☐ Submit dissertation on the ProQuest website (http://www.etdadmin.com/cgi-bin/school?siteId=76

Contact the BISI Graduate Office with any questions, 2101 Bioscience Research Building, 301.405.6905