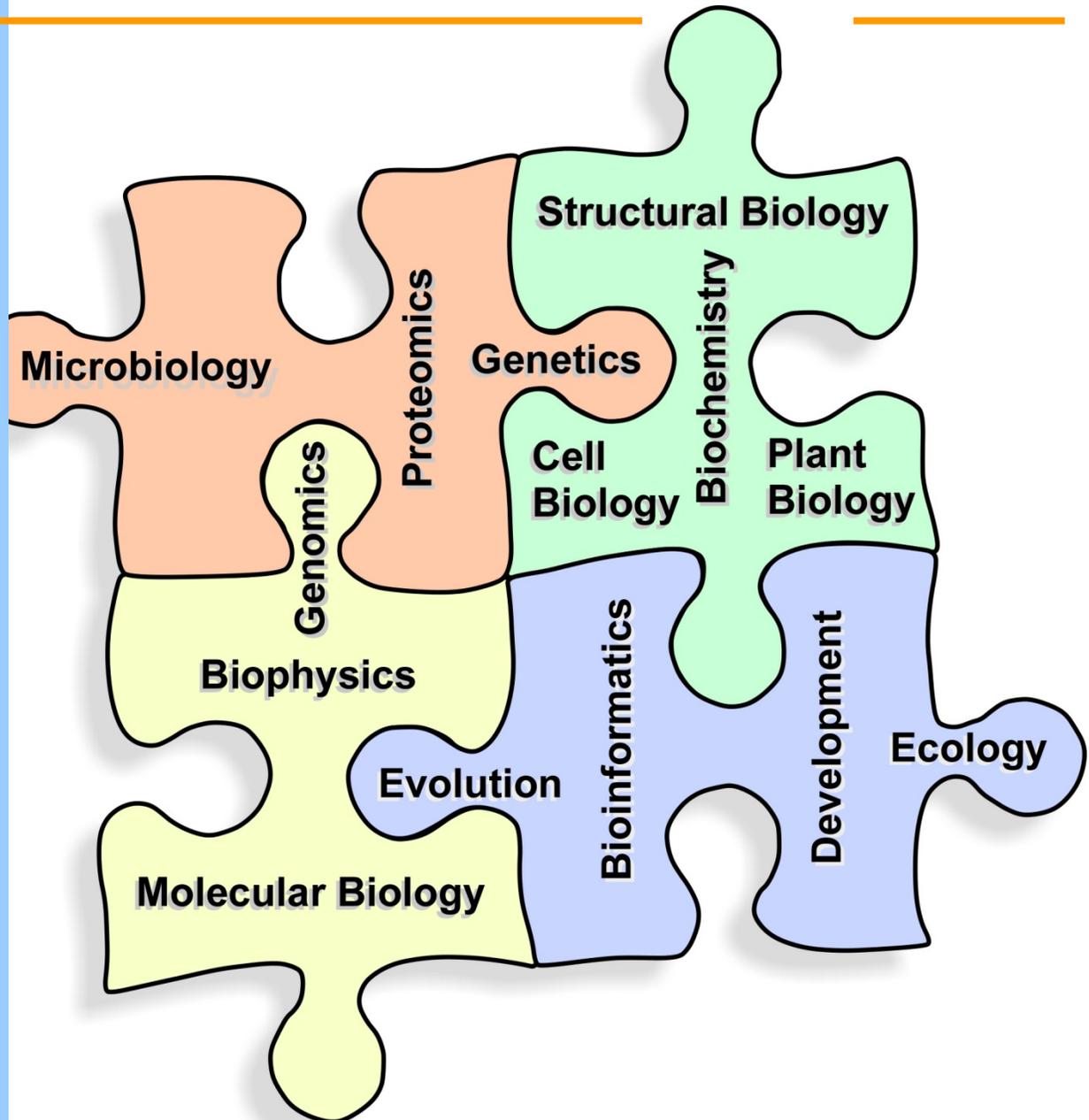




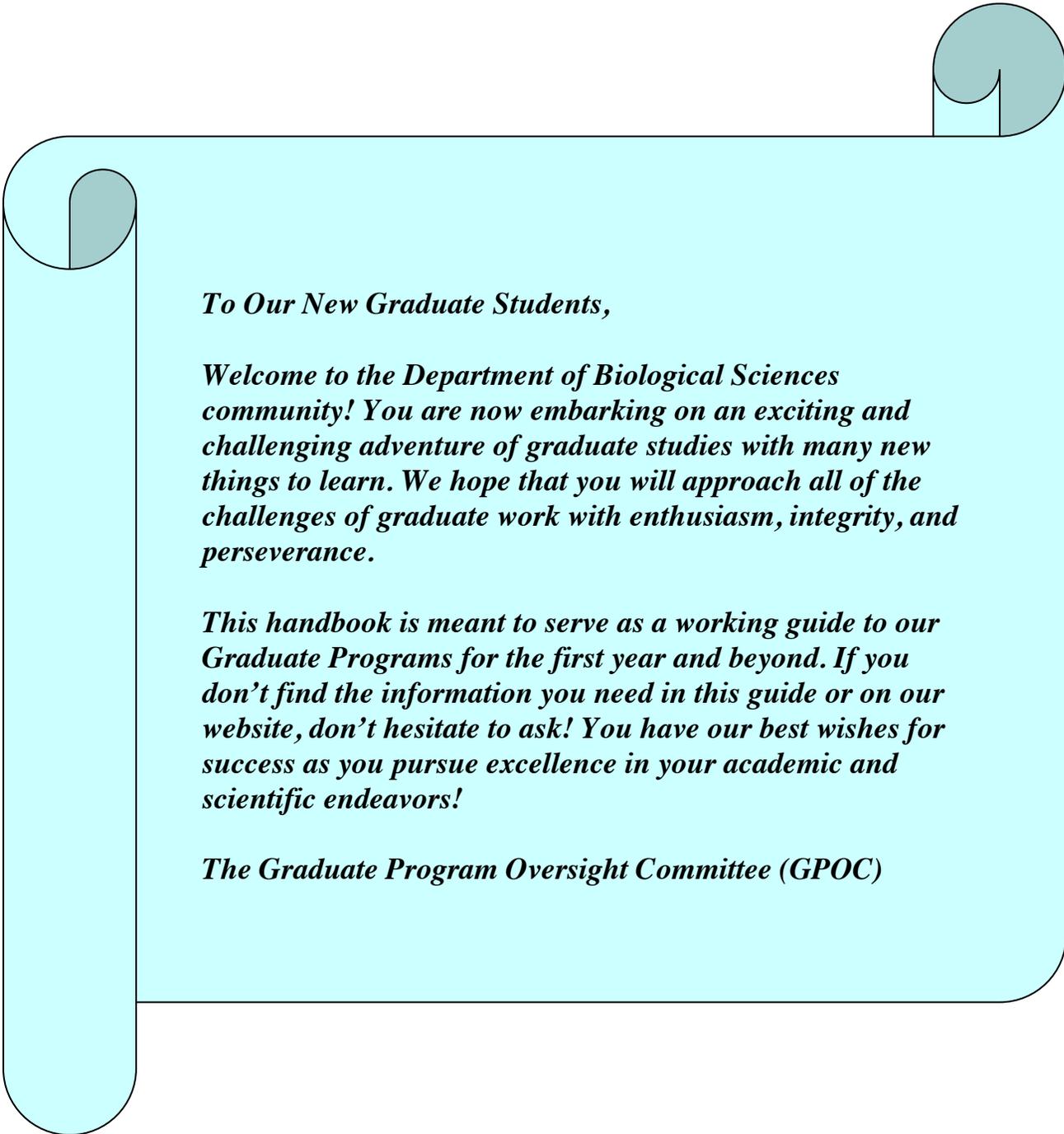
University of
Pittsburgh

Department of Biological
Sciences

Guide to Graduate Studies 2022-2024



Ecology & Evolution • Molecular, Cellular & Developmental Biology



To Our New Graduate Students,

Welcome to the Department of Biological Sciences community! You are now embarking on an exciting and challenging adventure of graduate studies with many new things to learn. We hope that you will approach all of the challenges of graduate work with enthusiasm, integrity, and perseverance.

This handbook is meant to serve as a working guide to our Graduate Programs for the first year and beyond. If you don't find the information you need in this guide or on our website, don't hesitate to ask! You have our best wishes for success as you pursue excellence in your academic and scientific endeavors!

The Graduate Program Oversight Committee (GPOC)

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1) Overview and Program Administration

a) Graduate Study in the Department of Biological Sciences at the University of Pittsburgh

i) Goals

The goals of Graduate Study in the Department of Biological Sciences are to provide students with the training, guidance, experience, and opportunities to participate in research that will allow them to make the transition from being interested consumers of biological knowledge to being full, participating members of the biological profession. As such, they will be able to recognize the limits of our current biological knowledge and to use that insight to design and conduct research that addresses those limits. They will carry out research with the skill and integrity necessary to advance our level of knowledge. They will be able to integrate new insights from their research with existing knowledge and with advances from other biologists to generate new levels of understanding. They will also have the ability to effectively share their new insights with their colleagues, students, and others by lectures, in writing, and other forms of teaching.

ii) Admission to the Program

Standard Level Entry (SLE). Most students who are accepted into the MCDB or EE graduate program have a BS as their most advanced degree and enter by the SLE method as described on the website. SLE students commence their studies at the beginning of the first year and, although EE students may have initiated a dialog with a faculty member, students join the program in August without having identified a faculty advisor and only do so in late April after having completed two or three research rotations and the required first year course work. Traditionally SLE students are supported in their first two semesters by a fellowship from the Dietrich School of Arts and Sciences.

Advanced Level Entry (ALE). This method allows students who have completed a Master's degree or equivalent to join either program; these students must have performed research and course work equivalent to that experienced by first year students in our own programs. Consequently, ALE students will have most of the requirements for the first year waived and will join a lab directly, having identified a Dissertation Advisor prior to applying to a program. ALE students are not eligible for support by the Dietrich School of Arts & Sciences first year fellowships. More information on entry via the ALE method can be found in Appendix E.

iii) Programs of Graduate Study

There are two Programs of Graduate Study in Biological Sciences, which operate with similar mechanisms for admission, advice, and guidance, first year courses, research rotations, teaching requirements, and dissertation research.

- **Molecular, Cellular and Developmental Biology (MCDB)**
- **Ecology and Evolution (EE)**

Features unique to each program are noted in the **Graduate Program Requirements** section below. A **Teaching Minor** is also available to all students in our Department (see below).

iv) Graduate Program Faculty

Students may pursue their degree within the MCDB or EE graduate program in one of the following laboratories within the Department of Biological Sciences:

Research Mentor Within the Department		Area of Expertise
Karen Arndt	Professor	Transcription and chromatin
Tia-Lynn Ashman	Distinguished Professor	Evolutionary ecology
Andrea Berman	Associate Professor	RNA binding proteins and translation regulation
Jon Boyle	Professor	<i>Toxoplasma</i> pathogenesis
Jeffrey Brodsky	Professor, Avinoff Chair	Protein quality control
Laty Cahoon	Assistant Professor	Host-pathogen Interactions
Gerard Campbell	Associate Professor	<i>Drosophila</i> development
Anne Carlson	Associate Professor	Fertilization and channels
Walter Carson	Associate Professor	Tropical forest ecology
Deborah Chapman	Associate Professor	Mouse development
Craig Kaplan	Associate Professor	Gene expression mechanisms
Jacob Durrant	Assistant Professor	Computational biology, protein-drug interactions
Graham Hatfull	Eberly Family Professor, HHMI Professor	Phages and tuberculosis
Sarah Hainer	Assistant Professor	Transcription and chromatin
Jeffrey Hildebrand	Associate Professor	Cell morphology
Kirill Kiselyov	Associate Professor	Organellar physiology
Justin Kitzes	Assistant Professor	Computational ecology
Kevin Kohl	Assistant Professor	Physiological ecology
Jeffrey Lawrence	Professor and Department Chair	Genome evolution
Miler Lee	Assistant Professor	Zebrafish development
Tera Levin	Assistant Professor	Evolution of immunity & pathogenesis
Allyson F. O'Donnell	Assistant Professor	Protein trafficking dynamics
James Pipas	Boyer Chair, Professor	Viral tumorigenesis
Mark Rebeiz	Professor	Evolutionary biology
Cori Richards-Zawacki	Professor	Evolutionary and behavioral ecology
Anthony Schwacha	Associate Professor	DNA replication
Jessica Stephenson	Assistant Professor	Disease ecology
Martin Turcotte	Assistant Professor	Evolutionary ecology
Andrew VanDemark	Associate Professor	Structural biology

Your choice of faculty mentor is not constrained by the graduate program (EE or MCDB) into which you matriculated.

v) Departmental Website

We maintain a current and easy to use website, biology.pitt.edu, with information about our Graduate Programs (biology.pitt.edu/graduate), Faculty research interests (biology.pitt.edu/people/all-faculty), and policies for admission to potential applicants (biology.pitt.edu/graduate/how-apply). The website is also useful for Department members, providing news and highlighting upcoming events (biology.pitt.edu/events). The *Guide to Graduate Studies* is revised and issued yearly. Information within this *Guide* may be superseded by information that is posted to the Departmental web site.

Additional information on graduate study is available at the University of Pittsburgh Regulations Governing Graduate Study website

vi) Departmental Graduate Committees

Director of Graduate Studies (DGS)	<i>Deborah Chapman</i>
Graduate Program Administrator (GPA)	<i>Cathy Barr</i>
Graduate Program Oversight Committee (GPOC)	<i>Debbie Chapman (Chair) Jeffrey Hildebrand Craig Kaplan Kirill Kisleyov Valerie Oke</i>
Graduate Mentoring and Advising Committee (GMAC)	<i>Karen Arndt (Chair) Jeffrey Brodsky Allyson O'Donnell Anne Carlson (spring) Andy VanDemark (spring)</i>
Graduate Funding and Fellowships (GFFC)	<i>Kirill Kiselyov (Chair) Miler Lee Jim Pipas Tony Schwacha</i>
Graduate Recruiting & Admissions Committee (GRAC)	<i>Jeffrey Hildebrand (Chair) Laty Cahoon Gerard Campbell Kevin Kohl Joel Rosenbaum Anne Carlson (spring) Andy VanDemark (spring)</i>
Graduate Curriculum & Assessment Committee (GCAC)	<i>Craig Kaplan (Chair) Jessica Stephenson Martin Turcotte Andy VanDemark (spring)</i>
TA Oversight Committee (TAOC)	<i>Valerie Oke (Chair) S. McSharry</i>

Committee on Diversity, Inclusion and Equity (CODIE)*

Andrea Berman (Chair)
Nathan Brouwer
Candice Damiani
Jennifer Grousd
Debbie Jacobs-Sera
Nancy Kaufmann
David Outomuro
Laurel Roberts
Jen Roccisana
Martin Turcotte
A. West
Jacob Durrant (spring)

*technically not a graduate committee, but important resource for grad students

b) Graduate Committee Duties

i) The Director of Graduate Studies (DGS)

The DGS is responsible for all administrative aspects of the graduate program and reports to the Chair of the Department. The DGS is also the Chair of GPOC and thus ensures that duties assigned to GPOC, as described below, are completed.

ii) The Graduate Program Oversight Committee (GPOC)

GPOC is the highest-level graduate committee, to which all graduate-associated committees, with the exception of GMAC and CODIE, reports. Substantive changes to the graduate program are discussed first by GPOC and then by the faculty as a whole. The specific functions of GPOC include, but are not restricted to:

- Coordinate an orientation program at the beginning of the academic year for incoming graduate students.
- Track graduate student academic performance and ensure that students adhere to all requirements outlined in the Graduate Guide.
- Monitor annual progress of each graduate student.
- Assign comprehensive examination committee chairs.
- Compile information for faculty at the end of each graduate students' first academic year to facilitate promotion to the second year.
- Review graduate student policy and make recommendations to the DGS on revisions to the Graduate Guide.
- Advise the DGS and Department Chair on new graduate student policies.
- Address graduate student academic irregularities.
- Approve major changes in a graduate student's direction of study and coursework.
- Approve requests for enrollment in the Teaching Minor program.
- Provide a liaison between the Graduate Student Organization and faculty.

iii) Graduate Recruiting and Admissions Committee (GRAC)

The primary goal of GRAC is to solicit applicants for graduate study and to recruit prospective students. The Chair of GRAC reports to the DGS. The specific duties include:

- Assist in updating graduate materials on the Department website.
- Organize large-scale mailings and emails to contacts at other universities and to prospective graduate students.
- Maintain and update a recruiting database.

- Review applications from individuals who are interested in graduate study.
- Schedule and coordinate visits to campus of prospective graduate students.
- Maintain contact with accepted students to actively recruit them to the Department.
- Respond to questions from the incoming student class prior to arrival.
- Coordinate with the GPA to ensure that the application information and pertinent data on incoming students is communicated to the Dietrich School of Arts and Sciences.

iv) Graduate Funding and Fellowships Committee (GFFC)

The goals of the GFFC subcommittee are to identify and procure external support for graduate students in the Department, and to help students identify and compete for internal fellowship opportunities. The Chair of GFFC reports to the DGS. Duties of the GFFC include:

- Write and submit applications for graduate student training grants.
- Solicit nominations and forward top-ranked applications for Andrew Mellon Fellowships to the Dietrich School of Arts of Sciences, and other fellowships like the Gutierrez and the Owedia (when offered).
- Maintain a database of external sources for graduate student funding.
- Distribute information to students and faculty on identified, external funding sources.

v) Graduate Curriculum and Assessment Committee (GCAC)

The GCAC coordinates the curriculum requirements for both the MCDB and EE programs. The Chair of GCAC reports to the DGS. Duties of GCAC include:

- Coordinate content and scope of graduate course offerings.
- Coordinate with the Chair and Associate Chair in staffing these courses.
- Monitor progress and proposed changes to graduate courses.
- Evaluate the effectiveness of the curriculum through student and faculty feedback.
- Recommend the addition and removal of courses so that the curriculum meets current Departmental needs.

vi) TA Oversight Committee (TAOC)

The TAOC is responsible for managing the Department Teaching Assistant (TA) program. The Chair of TAOC reports jointly to the DGS and the Chair of the Undergraduate Program Oversight Committee (UPOC). TAOC duties include:

- Coordinate assignment of Teaching Assistantships.
- Administer the Teaching Minor Program.
- Develop Department policies for appropriate TA distribution guidelines.
- Develop and implement a program for formal preparation in teaching.
- Coordinate an orientation program for all teaching assistants.
- Evaluate graduate student teaching assistants to ensure “satisfactory” performance.
- Provide students with feedback on their teaching abilities.
- Address graduate student teaching irregularities.

vii) Graduate Mentoring and Advising Committee (GMAC)

The GMAC provides a source of guidance for non-academic issues, including guidance on laboratory and departmental citizenship, serves as a sounding board for concerns students feel uncomfortable airing to their first-year mentor, DGS, or GPOC, and reinforces a sense of community and caring about student well-being which can facilitate the transition to graduate school. Possible interactions, either collectively or as individuals, include:

- Meetings with first year students to assess adaptation to graduate school and fit within the graduate community early in the fall semester and throughout the first year.

- Meeting with students midway through the third rotation to discuss the process of weighing choices when choosing dissertation labs.
- Meeting with second year students to discuss strategies for preparing for and managing stress levels during the Comprehensive Exam.
- Open availability for all students to discuss the following:
 - Balance of research and class obligations
 - Work/life balance and stress management
 - Resources and support for experiences with sexual harassment
 - Resources and support for mental health needs

viii) Committee on Diversity, Inclusion, and Equity (CODIE)

CODIE aims to coordinate diversity, equity, and inclusion initiatives for the Department, including mentoring the Hot Metal Bridge (HMB) Program postbaccalaureate students. CODIE provides an additional resource for students' well-being, with a focus on improving the environment for all Department members. Through an online and department presence, CODIE also maintains awareness of Departmental, School, University-wide, and local opportunities, and events. Duties of CODIE include:

- Review applications to the Hot Metal Bridge Program and make recommendations to the Dietrich School for offers of admission
- Implement an individualized mentoring and curriculum structure for Hot Metal Bridge students
- Solicit applicants for the department's Gilliam Fellowship nominee
- Survey departmental members for climate with respect to diversity and inclusion
- Invite a seminar speaker each semester to address issues of diversity, equity, and inclusion
- Assist the Department Chair in organizing the Kohr Lecture, which features a scientist from an underrepresented or historically excluded group.

2) Graduate Student Advising System

a) Advising in the First Year

i) General Orientation Meeting

During the week prior to the start of the Fall term, a General Orientation Meeting is conducted by the DGS or GPOC representatives to welcome students to the Department and provide information about the administrative organization of the Department, the advisory system, course registration, benefits, and student expectations and requirements. A faculty research roundtable, an introduction to the resources available from University Library System, and a tour of Departmental research facilities are also scheduled.

Orientation week includes a Title IX/Sexual Misconduct educational session and an anti-bias workshop. When appropriate, international students are evaluated for English language proficiency.

The Chair of the Mentoring committee (GMAC), the Department Chair, and the Director of Outreach Programs will hold sessions during Orientation week. During these meetings, we will discuss the goals of the graduate program, student activities, expectations, conflict and resolution, and procedures and forms. A Fellowship session conducted by the Chair of Funding and Fellowship committee (GFFC) will introduce the students to funding and grants application pertaining to their graduate career.

ii) Graduate Mentoring and Advising Committee (GMAC)

During Orientation week, students will also meet with GMAC. Here, questions regarding each student's individual curriculum may be discussed including the scope and content of graduate courses, preparation for graduate-level coursework, or integration of coursework and research within their first two years.

iii) Interim Advisor

First year graduate students in the MCDB and EE programs are assigned an Interim Advisor for the first two semesters of graduate study. The Interim Advisor is assigned as the faculty member with whom the student performs their first 10-week research rotation. Early in the first semester, the Interim Advisor evaluates the student's academic strengths and weaknesses and suggests additional coursework or reading as needed. Practical advice is given to the student about accurate documentation of the laboratory notebook, the design and interpretation of experiments, and performing literature searches relevant to the research project. In addition, the Interim Advisor provides guidance in the preparation of the research rotation presentations, which are meant to describe why the research project was undertaken, what approaches were used, what results were obtained, and what the results mean. The Interim Advisor completes a written evaluation of the student's progress in the first research rotation and discusses the evaluation in detail with the student.

In January of the first year, the Interim Advisor meets with the student to discuss their progress in course work and research rotations. This meeting ensures that the student understands in which areas they are doing well and what improvements need to be made. Subsequent to the meeting, the Interim Advisor completes a written evaluation of the student's progress. The evaluation is reviewed by GPOC and returned to the Interim Advisor so that they may review it with the students. Additional review with the DGS may also occur. The evaluation is also part of the review by the full Faculty at the end of the first year. Written evaluations of the student's performance in the second and third research rotations are also reviewed by the full Faculty.

If at any time in the first year the student feels that the advising system is failing their needs, they should contact GMAC for advice and the DGS for advice or reassignment to a new Interim Advisor.

In May of the first year, the performance of each student in coursework, specific Program activities, and laboratory rotations is evaluated at a faculty meeting, and the decision is made on whether (or not) to promote the student to the second year of study. This is known as the Preliminary Evaluation. Graduate students are normally required to select a Dissertation Advisor prior to this meeting (see below).

b) Advising in the Second Year and Beyond

i) Dissertation Advisor

At the end of the spring semester of the first year, each student selects a Dissertation Advisor, who will be the student's primary mentor. The Dissertation Advisor works closely with the student throughout their graduate studies to foster excellence and integrity in the student's performance, and to help the student develop laboratory skills, critical thinking, and independence. Selection of the advisor is one of the most important decisions a graduate student makes. Although there is no formula for choosing an Advisor, the student's interest in the proposed research topic, the laboratory environment, the ease with which the student interacts with the Dissertation Advisor, and the mentor's mentoring style are critical elements to consider in the selection process.

The Dissertation Advisor provides specific guidance on the direction of the research project, the appropriate methods to accomplish research goals, and a timetable for completion of each phase of the research project. The Advisor also helps the student with problem-solving to overcome roadblocks in the project. Advice is also given on the completion of specific Program requirements, such as in the selection of advanced topics courses.

It is expected that students will perform their dissertation research under the guidance of a mentor from within the Department of Biological Sciences. However, under extraordinary circumstances, students may perform their dissertation research under the guidance of a mentor from outside the Department of Biological Sciences. In these cases, seeking an outside mentor must be approved by GPOC, the outside mentor must be approved by the Department Chair, a co-mentor from within the Department must be a member of the student's dissertation committee.

ii) Dissertation Committee

*See **Appendix H** for the Dietrich School Doctoral Dissertation Committee Policy. *Note the Dietrich School policy outlines the minimum requirements for the dissertation committee. In some cases, the Departmental requirements exceed those listed in the Dietrich School Policy.*

Purpose

To provide feedback and expertise in topics related to the development of the dissertation project and professional development. The committee participates in Annual Meetings, the Comprehensive Exam, Overview Meeting and Dissertation Defense Meeting.

Membership

- Faculty Advisor
- Three faculty members from the Department of Biological Sciences (adjunct faculty members can serve only if they are also members of Pitt Graduate Faculty, see below). One

of these faculty members will be chosen to act as Chair of the committee (who will, thus, be someone other than the Faculty Advisor); this choice will be made by the DGS. Students may indicate a preference for their committee chair, although it is not always possible to accommodate these requests. The Dietrich School policy is that committee members who leave the university after a graduate student has been admitted to candidacy may stay on the committee in their original capacity, be it as an internal/external member, as long as they are willing and able to physically attend the defense (or have requested and received permission to attend remotely as described below), and providing that the defense is scheduled within 12 months of the faculty member's departure. The only exception to this rule is if the departed committee member is the Faculty Advisor, in which case a co-advisor from the department must be designated. If a committee member retires, they may remain on the committee as long as they are still willing to serve and are still active professionally in the academic community as reasonably determined by the Department Chair.

- Departmental Adjunct Faculty members. Adjunct faculty may serve as dissertation committee members as long as they have a primary appointment in another relevant department within the University of Pittsburgh. However, each student's committee is limited to a maximum of one Adjunct faculty member as a Departmental member of the committee. Additional Adjunct faculty may serve as outside members (see below). If a graduate faculty member has a primary appointment in one department and a secondary or joint appointment in another department, they may serve as either an internal or external committee member. They may also serve as a chair or co-chair of the committee.
- One outside faculty member. The outside faculty member should be selected on the basis of contributions they can make by virtue of the particular areas of scholarly interest or expertise relevant to the dissertation topic. Note: if the outside faculty member is not a member of the University of Pittsburgh Graduate Faculty (including School of Medicine faculty - a list of the University's Graduate Faculty is available online at <https://www.gradstudies.pitt.edu/academics/resources-research/graduate-faculty-roster>), then they must be approved in advance by the Associate Dean of Graduate Studies. Approval cannot be taken for granted; to be approved they must have the equivalent of graduate faculty status at another institution and must have some experience of teaching and mentoring at the graduate level, including previous experience on PhD Dissertation Committees. Consequently, it is important to be sure that a potential outside member meets these requirements before requesting permission. The best course of action is for the Advisor and student to ask a potential outside member if they would be willing to act in this capacity, but also inform them that if they do agree then for official approval they must meet the university requirements outlined above and need to provide a C.V. that includes details of this, including lists of any recent courses taught at the graduate level, graduate students mentored, and graduate student committees on which they have served as well as past and present positions and a list of publications. It is the responsibility of the Dissertation Advisor to obtain final approval by emailing a letter of request justifying the choice and a C.V. to the Coordinator of Graduate Student Services in the Dietrich School of Arts & Sciences Graduate Studies Office. Requests for external members must be approved by the Associate Dean in advance of the requested member's participation on the doctoral committee. The Associate Dean will review the material and either approve or reject the proposed external member. A graduate faculty member from another school or University, who has been approved by the Associate Dean, may serve as a co-chair of a dissertation committee. If the Associate Dean approves the outside member, the Dissertation Advisor must forward this email to the DGS and the Graduate Program Administrator (GPA). Any committee member, including the outside committee member, may attend the Overview Meeting and the Defense remotely as long as the Advisor and another committee member is

present in person to support the graduate student. Please note that the Dietrich School has formulated strict guidelines for remote attendance.

- No internal member can attend both the Overview and the Defense remotely. Please see Appendix H for details of the Dietrich School Policy on Remote Attendance. **For any committee meeting where a committee member is attending remotely, the Remote Attendance Certification form must be completed (see Appendix H). The form is also posted on the department website.**
- The Dissertation Committee often serves as the Examination Committee for the comprehensive exam. The Outside committee member does not attend the comprehensive exam.
- The committee can include additional members if desired. Non-faculty scholars with special competence in the area of research of the dissertation may also be appointed as an official member of the doctoral committee.

Choosing Committee Members

- Near the beginning of the second year in the Program, in consultation with the Faculty Advisor, the student invites faculty members from the department to serve on the Dissertation Committee. The outside member can be invited at this stage but can also be asked later. An outside member must have agreed to act on the committee before the Overview meeting.
- Committee composition should be reported to the DGS and the GPA by email as soon as the Departmental members have been identified and then later when the outside member has been chosen; if required, provide evidence of pre-approval from the Graduate Dean for the outside member (see above).

Changes to your Thesis Committee

Any changes to the committee after the thesis proposal/prospectus/Overview meeting must be approved by the Associate Dean for Graduate Studies before the defense. Any changes to the membership of the Dissertation Committee should be approved first by the DGS and then by the Chair of the Department who will forward any requests to the Associate Dean for Graduate Studies who will provide final approval. To this end, requests for changes in membership should be made by the Chair of the Dissertation Committee in an email to the DGS. In the email the reasons for any changes should be outlined and it should be confirmed that all present and proposed future members of the committee are in agreement with the new committee membership.

iii) Annual Committee Meetings

Beginning in the second year and every year until graduation, students are required to hold a meeting with their dissertation committee, thus at least once a year; it is most convenient to do this soon after the student's Annual Seminar Presentation. The meeting must be attended by the Faculty Advisor and the three Biological Sciences faculty; the outside member is encouraged to attend, but this is not mandatory. These meetings serve as an opportunity for the student to gain feedback and insight from committee members as the student develops their dissertation research and for the committee to evaluate the student's progress towards our Program requirements. Students or committees can request meetings to occur more than once per year to assist the student. Students should feel welcome to request a meeting at any point that they would benefit from one. Committees will determine when a meeting is required at each annual meeting – for example, a meeting in six months may be requested to assist the student.

One committee member and the advisor are required to be physically present at both the thesis proposal/prospectus/overview meeting and the defense.

Each year, the date and time of the meeting is initially scheduled for 1 pm on the same day as the student's research seminar (MCDB on Friday, EE on Wednesday). It is the responsibility of the student to inform the committee of the date of the seminar several weeks in advance and to remind the committee that the annual meeting will be held after the seminar. The time and date of the meeting can be changed if one or more of the committee members cannot attend after the seminar, but GPOC must be informed of the change via email to the DGS and the GPA.

Prior to each annual committee meeting, the student must complete a Student Annual Report form (available from the GPA and the Department website) and compose a 3-5 page report (including data figures/graphs) updating their progress since the last meeting (also including references, which do not contribute to the page limit). These must be forwarded to each committee member at least one week before the meeting.

At the start of the meeting the student will exit the room for the committee to discuss administrative details. At the end of the meeting the advisor will exit the room, and the committee will meet confidentially (excluding mandatory reporting duties) with the student alone.

At the end of the meeting the committee members will provide the student with an assessment of their:

- General knowledge in MCDB or EE
- Expertise in their chosen area of specialization
- Ability to design, execute and interpret experiments
- Ability to communicate scientific findings in writing and orally (including a report on their research seminar and their written summary of research)
- Progress on career development

The Committee Chair will complete an Annual Committee Meeting form (available from the GPA and Department website) detailing this assessment and, following approval by the attending committee including the advisor, will forward an electronic copy to the Graduate Program Administrator. (Note that in the beginning of the second year, the DGS may have yet to assign the Committee Chair, as they await committee information from all of the 2nd year students. In that case, the Dissertation Advisor has the responsibility of filling out the Meeting form. In all other cases, this is the duty of the Committee Chair.) Copies will be given to the student, all committee members, and the DGS. It is also the duty of the committee to review student compliance with course requirements and inform GPOC if the student has failed to complete a requirement in the stated timeframe.

GPOC reviews committee reports annually and, based on yearly progress in coursework and whether annual committee meetings have taken place, determines whether a graduate student is making sufficient progress. If not, GPOC can recommend that a student be terminated from the Graduate Program (see below).

3) Graduate Program Requirements

a) University Requirements for the PhD Degree

The requirements outlined in this guide for being awarded a PhD from the University of Pittsburgh in the EE or MCDB Program include requirements specific to each program as well as all requirements specified for all PhD programs in the University.

b) Programmatic Requirements for the PhD Degree

Listed here are the requirements that must be fulfilled to earn a PhD in the EE or MCDB program in the Department of Biological Sciences. Where appropriate, each is described in depth below.

- **Graduate courses:** A total of 8 credits in formal graduate coursework (e.g., four 2-credit courses) must be completed within the first two years. At least half of this requirement should be fulfilled in the first year.
- **Graduate Seminar Courses:** Two are required within the first two years, with at least one to be completed in the first year.
- **Graduate Communications Workshops:** Three are required, one (*Ethics* to be completed within the first year).
- **Statistics:** Basic training in statistics is required of all MCDB and EE students, which can be completed through an undergrad-level statistics course. This can be done prior to enrollment in the program (i.e., as an undergraduate or masters student). If the biostatistics requirement has not been met, first-year graduate student will enroll in a 3-credit undergraduate statistics course (e.g., STATS 1000), ideally during the fall or spring term in their first year. If taken as a graduate student, the student must achieve a B or better in the course.
- **Research Rotations:** In first year, three rotations are required (except HMBP and ALE students). For MCDB students, all three must take place in different laboratories; for EE students, they must be performed in at least two different laboratories.
- **Maintaining a GPA above 3.0.**
- **Compliance with Research Ethics requirements**
- **Graduate Seminar attendance each week:** These seminars take place on Wednesday (for EE students) or Friday (for MCDB students) at noon.
- **Seminar presentation:** Once each year starting in the second year.
- **Department Seminar attendance each week**
- **Attendance at Annual Department Retreat**
- **Successful Preliminary Evaluation:** At end of Spring semester of first year.
- **Comprehensive Exam:** During the second year.
- **Annual Committee meeting:** One of which must act as the Overview Meeting.
- **Teaching:** One term of satisfactory performance as a Teaching Assistant is required sometime after the first year.
- **Publication from thesis research:** Students are required to submit a first-author (or co-first author) manuscript based on their doctoral research project to a peer-reviewed journal prior to setting a date for the defense of their dissertation. Submission of a manuscript that does not describe original research (e.g., a review article) or a manuscript in which the student has the role of middle author will not satisfy the publication requirement.
- **Dissertation Research**
- **Dissertation Defense**

i) Graduate Courses

Graduate Courses Offered Within the Department

The Department runs a rotating series of graduate-level courses that are taken by our graduate students. A list of all classes regularly run by the department can be found in **Appendix C**; because changes may be made, it is recommended that students check that a course is being offered in any particular semester by consulting actual course listings on the Pitt website.

Students are required to complete 8 credits of formal coursework (not including seminar and communications courses, described in detail below) within the first two years; at least half of these credits (2 courses) should be completed during the first year.

Graduate Courses Offered Outside the Department

It is possible for students to take courses outside of the Department if these fulfill program requirements. GPOC, in collaboration with the GCAC, evaluates and decides on requests from graduate students to take courses outside the Department. GPOC has generated a list of pre-approved courses offered outside the Department that fulfill requirements toward students' degrees (**Appendix D**). If you are interested in taking a course outside the Department to fulfill a graduate course requirement toward your PhD that is not pre-approved, you must do the following:

1. Consult with your Faculty Advisor about appropriate courses.
2. Check if the course is on the past-courses-approved-by-GPOC list (**Appendix D**).
3. Obtain an electronic copy of the current course syllabus (and lecture topic schedule if possible) and send it to the DGS along with your request to take this course. Obtaining the current syllabus must be done even if a course was previously approved.
4. Ask your dissertation advisor to document their approval of the course by sending an email to the DGS stating their support of your enrollment in the course.

Upon receipt of the three documents (student request, current syllabus, Faculty Advisor approval), the DGS will circulate the documents to all members of GPOC for approval. The DGS will inform the student of the committee's decision.

ii) Graduate Seminar Courses

Students must complete 2 terms of Graduate Seminar (BIOSC 2450 or BIOSC 2540) within the first two years. If possible, it is strongly recommended that this be completed within the first year. Different sections of this class are offered each semester on different topics. Students read and present current research articles guided by two faculty members. The goal is to teach the student to critically evaluate the research of other scientists and to communicate both the research and this evaluation in orally. A writing component may be incorporated to aid students in developing skills in scientific writing.

iii) Graduate Communications Workshops

Three half-semester 1-credit sections of BIOSC 2055 are offered on a rotating basis that cover all aspects of communication: (a) grant proposals, (b) manuscript preparation for journal articles and book chapters, and (c) posters, seminars and outreach lectures. These workshop-style courses reinforce critical thinking and develop writing skills necessary for

publication and other modes of scientific communication through faculty and peer critique of students' written pieces or oral presentations.

Students are required to take each of the three sections and are encouraged to re-enroll in the workshops throughout their graduate career to increase their communication proficiency (*Publications & Grants*) and build skills needed for a successful career in science.

It is very strongly recommended that students complete the *Grants, Posters, and Presentations* workshops during the first 2 years; these workshops will prepare students for writing their comprehensive exam and presenting seminars. Proposals generated during the *Grants* workshop may be submitted to appropriate agencies for consideration for funding.

iv) Research Rotations

Students in both the MCDB and EE programs perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a 15-minute talk to the department. A rotation plan is proposed at the onset of the rotation and self- and PI-evaluations are conducted at the completion of the rotation. Forms are found here: <https://www.biology.pitt.edu/graduate/docs>.

The research rotation system is guided by several goals of the training program: to develop breadth of laboratory experience, to supplement classroom-based educational opportunities, to provide opportunities for several faculty members to assess the research potential of individual first-year students operating in different settings, and to enable first-year students to identify an appropriate laboratory and Dissertation Advisor.

To facilitate an open and clear discussion of procedures and expectations during a rotation the following list of key topics for discussion has been formulated. The lab PI should be clear on their lab philosophies, policies and expectations and the student should come prepared to ask follow-up questions if need be. Because striking a proper work-life balance is challenging, especially so for new graduate students performing research rotations, it is also recommended that student and PI discuss these topics as well.

To ensure open and clear channels of communication, be sure to communicate the lab's philosophy on mentoring.

- PI's mentoring style? (more hands-on vs. more hands-off?)
- How often will the student and PI meet to discuss the rotation project? recommendation – once per week is recommended
- Who will be mentoring the rotation student if not the PI? Understand how responsibilities are shared between co-mentor and the PI. For instance, what questions or concerns should be brought to one or the other?
- What is the best way to communicate with PI and other lab members? e.g., e-mail, slack, text
- When is the best time to communicate with PI or co-mentor? e.g., weekday hours, evenings, weekends

To ensure clear expectations be sure to develop and communicate specific goals and general timeline for the rotation.

- what are the top 3 skills and top 3 concepts the rotation student should obtain by the end of the rotation?
- what are the typical milestones and expected timelines? e.g., when are protocols meant to be mastered, results obtained
- what is the schedule of rotation check-ins to discuss progress and whether expectations are being met? e.g., weekly, biweekly, mid-rotation?
- when and how often is the student expected to present in lab meeting?
- what are the lab policies on data collection, organization, archiving and sharing?
- what are the key qualities of student success in the rotation (work ethic, organization, independence, strong presentation skills etc.)

To ensure smooth transition to lab life, the PI/co-mentor should communicate specific philosophies and policies.

- what are the expectations regarding working hours and vacation time? how many hours per week do people in the lab typically work?
- what time does everyone typically come in and leave each day? is there flexibility here? do people typically work weekends? how are holidays/time off scheduled?)
- what are the expectations for weekday time not spent in class?
- what is the lab division for labor for shared lab stocks, supplies or cultures?
- what is the lab division of labor on cleaning, autoclaving and maintenance tasks?
- are there any lab events/journal clubs/meetings the rotation student should attend during the rotation?
- is there anything else that would make the rotation go smoothly? Mention important information such as door codes, passwords, group chats, views on use of personal headphones.

Rotations must consist of scientific research undertaken by the student, including the formation of specific hypotheses, design of experiments to test these hypotheses, and interpretation of the results. Rotation projects cannot consist solely of a literature review or the preparation of a research paper or grant application.

Each rotation will be graded (letter grade) and is worth 1 credit. A minimum average grade of B- (2.75) is required for the first three rotations; any student with a grade below this will not be promoted to the second year. Research rotations start the first week of classes and each run 10 weeks with rotation talk usually in November, February, and April of the academic year.

Rotation Presentation Guidelines

Short (15 minute) oral presentations are required at the end of each rotation (dates indicated above). The purpose of the rotation presentation is to *concisely* describe the research question(s) or hypothesis was addressed and why, what experimental approaches were used, what results were obtained, and what the results mean. How well the results answer

the question, what new questions arise from the project, and how the experiments could continue if there was more time should be discussed at the end of the presentation. Information in the published literature should be integrated into the talk, if relevant. It is the responsibility of the student to seek advice from the Rotation Advisor about how to prepare for the presentation. A practice run-through of the talk with the Rotation Advisor and members of the host laboratory is strongly recommended. As in other facets of graduate work, it is expected that students will strive for excellence in their presentation.

Rotation advisors will provide a written report of the student's rotation performance to GPOC and the student will conduct a self-evaluation. Student performance will be discussed at the Faculty meeting at the end of the Spring semester as part of the Preliminary Evaluation.

v) Overall Graduate GPA

Students are expected to maintain a GPA at or above 3.0 during their entire tenure. If a student's GPA falls below 3.0, they are automatically placed on academic probation by the Dietrich School of Arts & Sciences. It is expected that the student's GPA will rise to 3.0 or above within one semester. Failure to do so may result in the student's discharge from the PhD program.

vi) Research Ethics

Training in the ethical performance of scientific research comprises three components.

1) Online training in Responsible Conduct in Research (RCR)

First, all first-year students must also complete an on-line RCR course before they can begin their studies. This course provides an in-depth review of the core RCR topics including authorship, collaborative research, conflict of interest, human subjects, and research misconduct. This on-line training is provided by the *Collaborative Institutional Training Initiative* (CITI).

To take the course, students should be able to login with their my.pitt.edu account. Access HSConnect and login here: <https://www.hsconnect.pitt.edu/HSC/home/index.htm>

Students can click onto the CITI access portal from the HSConnect home page. Instructions are available for accessing and navigating the CITI training modules. When the course has been passed, an electronic version of the certificate can be downloaded and must be e-mailed to the Graduate Program Administrator.

This requirement must be completed by the Friday of Orientation week (before classes start). Students failing to complete this requirement will not be eligible to register; continued failure to complete this requirement is grounds for dismissal from the program.

Students must also review The University of Pittsburgh 'Guidelines for Responsible Conduct of Research' which are published on-line: <http://www.pitt.edu/~provost/ethresearch.html>

The University policy on Research Integrity is published in *Policies, Procedures and Handbooks*: <http://www.bc.pitt.edu/policies/>

The relevant section (11-01-01) can be found at: <http://www.bc.pitt.edu/policies/policy/11/11-01-01.html>

This outlines the steps that will be taken cases of misconduct and student's rights.

In addition, individuals conducting or involved with Human Subject Research must complete additional training in research ethics also provided by CITI to satisfy IRB training requirements. For further information please visit <https://www.citi.pitt.edu/citi/about.aspx>.

2) Workshop in Scientific Ethics

All first-year students must successfully complete the Departmental workshop: Ethical Practices in Scientific Research, BIOSC 2058, which is offered in the Fall semester. Failure to complete this requirement with a grade of B- (2.75) or better will prevent promotion to the second year.

3) Preventing Harassment and Discrimination: Title IX/Clery

It is the responsibility of everyone in the University community to maintain a campus environment that is free from discrimination and harassment. This online training program is available to all University of Pittsburgh faculty and staff to help you identify, avoid, and report wrongful behaviors.

The program outlines basic legal considerations relating to employment discrimination and the University's policies and procedures that prohibit discrimination and harassment. [Access Preventing Harassment Discrimination: with Title IX/Clery](#). *This training is only available to new hires at the University. The course will be available to all new hires within 7 days of their hire date. If you are having trouble accessing the course, please contact rzepecki@pitt.edu.*

Policies and Procedures: <https://www.diversity.pitt.edu/civil-rights-title-ix/policies-procedures-and-practices>.

Making a Report: <https://www.diversity.pitt.edu/civil-rights-title-ix/make-report/report-form>

vii) Graduate Research Seminar

Seminar Attendance

Graduate Student Research Seminars are presented twice a week by graduate students within the Department. Students in the EE program typically present Wednesday at noon in the EE seminar series; students in the MCDB program (and other graduate programs with Biological Sciences Department faculty appointments) typically present on Friday at noon. Students are expected to attend at least one of these seminars weekly beginning in the first year.

Seminar Presentation

Beginning in the second year, each student must annually present a seminar of their research in progress (proposed projects, recent data, and experimental problems) to faculty, students, post-docs, and other interested members of the Department. Students in their first year who matriculate into their dissertation laboratory (e.g., ALE students or HMBP students who enter the PhD program and opt out of rotations) will present a seminar in the noon seminar series as well.

All members of the Dissertation Committee should be present and provide the student with feedback, and an assessment of the student's seminar performance should be included in the report for the Annual Committee Meeting. As described above, this meeting is scheduled to begin immediately after the Annual Seminar Presentation, although the time and date can be changed prior to their seminar by informing the DGS and the GPA of the new time and date.

Seminar Guidelines

Presentations for 3rd year students and above should be about 35 minutes long, while 2nd year students should aim for no longer than 25 minutes as two students will present each

week. Questions, comments, criticisms, and suggestions from the audience are encouraged during and after the seminar. After the seminar and general audience questions, all graduate students in attendance participate in an informal feedback session in the absence of faculty.

One week prior to the seminar, the student must prepare a 250-word abstract of their dissertation work and send this to the seminar coordinator, who will distribute it to other members of the Department. A list of speakers is circulated in advance.

All graduate students in the first year and beyond are expected to attend each and every Friday (MCDB students) or Wednesday (EE Students) noon seminar, and to participate in the informal feedback sessions. Attendance will be monitored.

viii) Departmental Seminar

All graduate students are expected to attend Department seminars (generally Monday at 11 am) and participate in associated activities throughout the course of their graduate study. Often, informal lunches or receptions are held for invited seminar speakers with graduate students and postdoctoral fellows. This is a valuable opportunity to interact with prominent scientists and to ask questions about the seminar, the research field, or job opportunities.

ix) Departmental Retreat

The annual Departmental Retreat, which is usually held in late September, offers an opportunity for interactions between graduate students, faculty, postdoctoral researchers, and other members of the Department. Departmental members present research talks and posters in an informal atmosphere. But don't let the informal atmosphere fool you! The talks and posters display the exciting research being accomplished by our next-door lab neighbors and colleagues on other floors. To add to the excitement, there is also a prize awarded for the best poster presentation by a graduate student.

x) Teaching

All students are required to teach for one term as a Teaching Assistant. More information on this and the Teaching Minor Program are presented in section 4.

xi) Dissertation Research

Dissertation research commences when the Dissertation Advisor is chosen and continues at least until the Dissertation Committee agrees that an acceptable body of work has been completed to prepare the dissertation. As described below, meetings between the student and the Dissertation Committee are required yearly to assess the student's research progress and to rectify any oversights in the design or execution of specific experiments.

xii) Training Milestones and Statutes of Limitations

As outlined by the Dietrich School of Arts and Sciences, students must complete their work and graduate within a specified time frame. These statutes of limitations are defined as follows:

Degree		Maximum time until graduation	Validity of comprehensive exam
On entry	Sought		
BS/BA	PhD	10 years	7 years
MS	PhD	8 years	7 years
BS	MS	4 years	4 years

If the statute elapses for the comprehensive exam, the exam must be retaken. Students should ensure completion of their degree by reaching important milestones in the recommended time frame. Milestones are outlined below for students entering without an MS degree; students entering with an MS are expected to finish somewhat earlier.

Training Milestone	Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Year 7		
	F	S	Su	F	S	Su	F	S	Su	F	S	Su	F	S	Su	F	S	Su	F	S	Su
First Apply for Fellowships	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	Red												
Complete Laboratory Rotations		Green	Yellow	Yellow	Red																
First Committee Meeting			Green	Green	Yellow	Yellow	Red														
Complete Coursework			Green	Green	Yellow	Yellow	Red														
Comprehensive Exam				Green	Green	Yellow	Yellow	Red													
Second Committee Meeting					Green	Green	Yellow	Yellow	Red												
Overview Meeting					Green	Green	Green	Yellow	Yellow	Red											
Apply for Candidacy							Green	Green	Green	Green	Yellow	Yellow	Red								
Third Committee Meeting								Green	Green	Yellow	Yellow	Red									
Fourth Committee Meeting										Green	Green	Yellow	Yellow	Red							
Thesis Defense													Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	Red

F, fall; S, spring; Su, summer

- On target for timely completion of the degree
- Running the potential to delay completion of the degree
- Problematically late

c) Committees, Exams and Meetings

During the course of their PhD programs in the Department of Biological Sciences, all students participate in a common series of committee meetings and examinations described in the following paragraphs. The purpose, the structure of the related committees and timetables for these common requirements, meetings and exams are summarized in the table above. Specific requirements of the EE or MCDB Programs are detailed in subsequent sections.

i) Preliminary Evaluation: First Year Review

A student's progress is evaluated each year that they are enrolled in graduate school in the Department of Biological Sciences. At the end of the Spring semester of the first year, each graduate student's performance in coursework and rotations is discussed at a special faculty meeting. At the end of the meeting the faculty vote to recommend promotion or dismissal of each student.

Promotion to the second year requires the following:

- A positive vote from the faculty in the meeting. Faculty votes that fail to reach a supermajority (2/3 of the voting graduate faculty) are considered ambiguous and final decisions will be made by GPOC.
- A GPA above 3.0. This is a University requirement: all students must maintain a GPA above 3.0 to remain a graduate student at the University of Pittsburgh.
- An average grade in rotations of B- (2.75) or above.
- Completion of the online course in Research Integrity and the workshop in Ethical Practices in Scientific Research (BIOSC 2058).
- Agreement from a faculty member to act as their dissertation advisor.
- Approval from the Dean; this is routine if the above requirements are met.

ii) Probation after Preliminary Evaluation/First Year Review

Any student who has a GPA below 3.0 at the end of the Spring semester may be placed on probation during the summer but only if they: 1) receive a positive vote from the faculty (see criteria above); 2) have identified a faculty member to act as their dissertation advisor; 3) have a GPA high enough that it could potentially be improved to 3.0 or above by grades

awarded for available credits (3) in the summer. It is advisable that students do not plan any extended vacation or absences for any other reason during the summer as this will make them ineligible for probation.

During the summer, students placed on probation will be given the opportunity to improve their GPA to 3.0 or above; if this is achieved, they will be promoted. The following procedure will be followed:

- Students will be registered for research for credit (3 credits).
- GPOC will assign another faculty member as a Co-advisor.
- The student will have a preliminary meeting with their Dissertation Advisor and Co-Advisor to plan a program of research for the summer. The advisors will also assign a Writing Assignment to be produced by the end of the summer that will include a documentation of the research conducted and may include additional tasks.
- The student will then write a brief one-page summary of these goals and present it to both advisors.
- The student will meet at least once a month with both advisors to discuss research progress.
- Before the end of June, the student will arrange for a Probation Seminar to be held in the first week of August (or last week of July if that is not possible) to be attended by both advisors and at least one other member of GPOC (if possible, other faculty should be invited and any other member of the department can also attend).
- At least three days before the Probation Seminar, the student will provide faculty that are attending the meeting with a copy of the Writing Assignment.
- Guidelines for the Probation Seminar are similar to those described above for Rotation Talks (although the advisors may make specific recommendations to the student as to what they should cover).
- The student will receive a grade based on the performance in the Probation Seminar and the quality of the Written Assignment. Any faculty present at the Probation Seminar will meet immediately after this has finished and decide on the grade to be awarded to the student.
- The student will be informed of the grade by the GPOC member and whether this is sufficient to increase their GPA to 3.0 and consequently whether they will be promoted to second year or not.
- In the situations where a student with a GPA above 3.0 and with a positive vote from faculty has not identified a Faculty Advisor, they will be given the opportunity to find a lab to do a fourth rotation. This rotation should be conducted with a faculty member within the department.

A student will be dismissed from the program if:

- At the end of the Spring semester, their GPA is so low that it could not be increased to at least 3.0 by the end of the summer even if they achieved an A grade (4.0) in the available 3 credits.
- They have a GPA below 3.0 following one term (Summer, Fall or Spring) on probation.
- They receive a negative vote from the faculty upon evaluation. Achieving a GPA of 3.0 does not guarantee promotion; the faculty judges other factors, including research performance, when considering promotion to the second year.
- They have failed to identify a faculty member who will act as their Dissertation Advisor.

iii) Comprehensive Exam

The Comprehensive Examination is designed to assess the student's mastery of the general field of doctoral study, the acquisition of both depth and breadth in the area of specialization within the general field, and the ability to use the research methods of the discipline to design and interpret experiments. It includes both a written and oral component. The Comprehensive Exam must be completed by the end of the second year, around the time of the completion of the formal course requirements (typically March or April of the second year).

Faculty attendance

The exam must be attended by the three Biological Sciences members of the student's Dissertation Committee. For MCDB comprehensive exams, the Faculty Advisor does not attend the exam. For EE comprehensive exams, the Faculty Advisor may be invited to attend and ask questions only after the other Committee members have finished their examination of the student. The Chair of the Dissertation Committee will also chair the exam. The exam must be attended by three faculty who are members of the University of Pittsburgh Graduate Faculty. In the unusual situation where this is not the case (generally only when one of the faculty has joined the department recently), an additional faculty member who is a member of the Graduate Faculty should be asked to join the exam committee (Graduate Faculty Status is a special Dietrich school designation that goes beyond simply being a member of the faculty); this additional member need not officially join the Dissertation Committee. The committee member who does not have Graduate Faculty Status can and should still participate in the exam. Outside committee members **do not** participate in comprehensive exams.

Timing of the exam

The comprehensive exam must be completed by the end of the Spring semester of the student's second year.

Scope of the exam

The student may be examined orally in topic areas suggested previously by the Committee as well as in general knowledge of Ecology and Evolution (EE students) or Molecular, Cellular, and Developmental Biology (for MCDB) as appropriate. Students should contact their mentors and members of their committee well ahead of the exam to determine which, if any, specific topic areas will be considered.

Format of the written proposal

Students are required to write and submit a grant proposal to their dissertation Committee **at least two weeks** prior to the date of their comprehensive exam. The proposal should be limited to 15 written pages including figures and/or tables but not including references.

Students should submit an NSF- or NIH-style grant proposal. Proposal guidelines can be found at the NSF website:

https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf20001 and NIH website: <https://researchtraining.nih.gov/programs/fellowships> See Part I. Grant Proposal Guide.

General procedure for the examination

The student will prepare the written proposal prior to the exam and schedule an oral examination after consultation with members of the committee. The student must inform the DGS and the GPA of the time, date, and location of the examination. The student must also bring to the examination a university report card (obtained from the Graduate Program

Administrator) that must be completed by the committee (if a reexamination is necessary this University report card should be completed then, not at the initial exam). The examination will begin with a short presentation from the student covering all the major points of the written proposal. The committee members will then orally examine a student, testing their expertise in the chosen field and also their general knowledge in EE or MCDB.

General advice on the proposal

- Begin with a clear introduction, providing the relevant facts to someone not an expert in this field and posing specific question(s) that remain to be answered.
- Justify why you have chosen a particular experimental system to address these questions. What alternatives could have been chosen?
- Present hypotheses that will be tested to address those questions; provide possible alternative hypotheses.
- List two or three specific aims. Although there may be overlap with ongoing research projects in the home laboratory, the expectation is that at least 1/3 of the document addresses independent ideas or approaches, and the student should clearly denote the aims and experiments that derive from these independent ideas.
- Within each specific aim, describe experimental approaches to address that aim and which will test one or more of the hypotheses you have proposed.
- Explain what the results will be if your hypotheses are correct. What alternative results could be obtained and will these refute your hypotheses or support alternative hypotheses?
- For each experimental approach: justify why you have chosen that approach, describe what potential problems you might encounter, and suggest alternative approaches that could be taken if these difficulties do occur. Has anyone ever used the approach you propose in the experimental system you have chosen? If not, justify why you expect this approach to work.
- Make sure you know the theory behind all of the experimental techniques you propose to use. Be aware of the advantages and disadvantages of each approach. Some details are important, particularly those related to feasibility. For example, how much tissue you do need for an experiment? Are the reagents you need to use readily available? If not, how will you generate them?
- Make sure you provide references for all the statements you make and to support all the experimental approaches you propose to use.

Comprehensive exam preparation – the process

1. It is suggested that the student prepare a one page 'specific aims page' and discuss the contents with their committee (but not their advisor) prior to initiating writing the document. This enables guidance on appropriate scope of independent content and the document as a whole.
2. It is recommended that the student conduct a 'mock' comprehensive exam. Participants may include graduate students and postdocs but not faculty or analogous individuals.
3. The formulation of hypotheses, experimental design, and written text should originate with the student. However, it is strongly advised that students have others review their proposal. This review may include students and post-docs but excludes faculty or analogous individuals. Response to review and revising the document is solely the students' responsibility and reviewers should not rewrite the document.
4. Students may be given readings by their committee to prepare for the oral portion of the exam.

The role of the Dissertation Advisor

Although the Dissertation Advisor is the primary mentor for the student, they should not have any direct input into the preparation and writing of the proposal that forms part of the examination; this written document should be the work of the student alone. The Advisor will already have had significant influence on the ability of the student to provide an acceptable document for the comprehensive exam via their mentoring of the student. After their examination the student is expected to discuss the report they receive with their Advisor, but if reexamination is required, the Advisor cannot read and directly comment on the written proposal or on a revised proposal.

Decision

At the end of the oral exam the student will be asked to leave the room. The Committee will discuss the performance of the student in the oral exam and the quality of the written document. Each member will then vote: pass unconditional, pass conditional, or fail. For an unconditional pass, support must be unanimous. To vote for a conditional pass, a member must be satisfied that the student has almost met the conditions necessary for a pass but has identified specific deficiencies that should be improved before a full pass is granted. If a conditional pass is the decision, the committee will then discuss what measures need to be taken by the student in order to pass. These could include rewriting part of the written document, with or without a second oral exam. If the decision is fail, the committee will discuss exactly what the reasons are for the failure. When the committee has completed the voting and discussion, the student will be asked to reenter the room and the Chair of the committee will inform the student of the decision. The Chair will then provide the student with details on the reason for the decision. If the decision was unconditional pass then the committee should sign the University examination card and this should be completed by the Chair and sent to the Graduate Program Administrator. Immediately after the meeting the Chair must inform the Dissertation Advisor (MCDB), the DGS and the GPA of the decision by email.

The decision of the committee should be unanimous; if a unanimous decision cannot be reached, the DGS will mediate and reach a final decision.

Report

Within one week of the oral examination, the Chair of the committee will complete a detailed Departmental report. This must be completed in consultation with the other members of the committee and will provide an evaluation of the written proposal and oral exam. If the decision was a conditional pass, the report will outline the areas that the student must improve or correct to pass the comprehensive exam. If the decision was fail, then the specific reasons for this must be provided. The report must be emailed to the student, the other members of the committee, the DGS, the GPA, and the Dissertation Advisor. The student is expected to discuss the report with members of the committee; this is essential if the student did not receive an unconditional pass.

Reexamination

If a student fails or only conditionally passes their comprehensive exam, then they can request a reexamination. For a fail, the student must go through the whole procedure again, i.e., produce a full revised written document and have a full oral examination. For a conditional pass, the reexamination will only involve specific requirements (as decided by the committee after the first examination). A conditional pass granted after the first examination does not guarantee that the student will pass the reexamination. If an oral

reexamination is required, the student must schedule the reexamination and inform the GPA and the DGS of the date, time, and location. Any reexamination must occur within three months of the original examination (unless there are unusual circumstances and, if so, this must be discussed with the DGS). It is recommended that the student receive mentoring from their committee during the resubmission process, but the proposal must still represent the student's own work.

The procedure for the reexamination will follow that for the initial comprehensive exam, with the exception that the Committee will vote pass or fail. As for the first exam, all decisions must be unanimous, and if this cannot be reached the DGS will mediate and reach a final decision. If the decision is fail, then the Committee will reassess the performance of the student to determine whether it reaches that expected for a Masters (MS) student. If the performance was at the MS level, then the student will be given the opportunity to petition GPOC for transfer to the MS track according to the rules found later in this guide. There is no guarantee that GPOC will agree to the request.

At the end of the examination, the committee members must sign the University examination card to be completed by the Chair and given to the Graduate Program Administrator. Immediately after the meeting the Chair must inform the Dissertation Advisor, the DGS and the GPA of the decision by email. Within one week after a reexamination, the Chair of the committee will complete a revised report that includes an evaluation of the reexamination.

iv) Overview Meeting and Admission to Candidacy for the PhD Degree

The Overview Meeting is designed to determine if a student has progressed sufficiently to be entered into candidacy for the doctoral degree. The meeting can be held any time after the comprehensive exam but must be completed (and an Admission to Candidacy form submitted) at least eight months before a defense. The outside committee member and all other members must attend the Overview meeting.

Each student must prepare a written dissertation proposal for presentation to the Dissertation Committee at a formal Dissertation Overview or Prospectus Meeting. The document will provide details on motivation, background, rationale, and plans for the proposed research. This permits the committee members to provide guidance in shaping the conceptualization and methodology of the proposed project. If the Dissertation Committee unanimously approves the dissertation proposal, the student can file an application for admission to candidacy for the Doctor of Philosophy degree, if they have also successfully completed their comprehensive exam and required course work. All members of the committee must sign the Admission to Candidacy form.

It is appropriate to use one of the Annual Committee meetings as an Overview meeting. The student and Dissertation Advisor will discuss whether an upcoming Annual Committee meeting will be used as an Overview meeting (typically this would be in late third year or fourth year).

v) Dissertation Defense

The PhD is awarded following successful defense of the dissertation with a public seminar and satisfaction of all other University, Department, and Program requirements. Students are required to provide their committee with a complete copy of their dissertation **at least 2 weeks in advance of the defense**. This two-week period is necessary for a complete evaluation of the written document and respecting this time frame ensures the integrity of the University of Pittsburgh as a degree-granting institution. If the thesis cannot be provided 2

weeks in advance of the defense date or if the committee and GPOC conclude that the submitted thesis is indefensible, the defense should be rescheduled.

At the University of Pittsburgh, all dissertations are submitted as PDFs and published electronically. The Electronic Theses and Dissertations (ETD) web site <http://etd.pitt.edu/> provides step-by-step instructions, workshops, tutorials, training and support to aid graduate students in this endeavor. Walk-in support is also available at Hillman Library.

The dissertation defense begins with a formal seminar presented by the doctoral candidate to the Department. The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee in private and occurs directly after the seminar. The outside committee member must attend the defense.

d) Masters Degree

The Department of Biological Sciences does not offer a master's degree program in either MCDB or EE. However, if a student does not complete all the requirements for a PhD, they may petition the Graduate Program Oversight Committee (GPOC) to be allowed to apply for a Non-continuing Master of Sciences (MS) Degree. If granted by GPOC, the student will be granted an MS Degree upon completing specific requirements (see below), including the defense of a research thesis.

Requirements for an MS Degree

- Students must successfully complete the first two years of requirements for either the MCDB or EE programs. This includes formal course work, at least two Seminar courses, at least two Communications courses, and the comprehensive exam. If a student fails the comprehensive exam, the exam committee must have decided that, although the level of performance was not sufficient to pass at the PhD level, it was sufficient to pass at the MS level.
- Students must have a Dissertation Committee consisting of their Faculty Advisor and three faculty members from the Department of Biological Sciences (adjunct faculty members can serve only if they are also members of Pitt Graduate Faculty, see above). One of these faculty members will act as Chair of the committee (who will, thus, be someone other than the Faculty Advisor); this choice will be made by the DGS. An outside member is not required. It is expected that, in most cases, students will retain the Dissertation Committee they selected for their PhD studies, prior to their transfer to the MS track.
- Overall GPA must be at or above 3.0, grades in all courses must be at or above a B-, and at least 8 credits must be with a grade of B or higher.
- Before considering transfer to the Masters program, the student must discuss this possibility with their Thesis Advisor and with the other members of their Dissertation Committee. The Dissertation Advisor and the Chair of the Dissertation Committee should indicate their approval or disapproval of the request for transfer and indicate as such in an email to the DGS. If either disapproves of the transfer, the student must meet with the DGS to discuss their options.
- The student must petition GPOC in writing (email is sufficient) for permission to transfer from the PhD track. The petition must include the specific reason for the request. GPOC must approve the transfer.
- If the petition to transfer to the MS track is supported by GPOC, the student will meet with their advisor and then with their committee to discuss a plan of research.
- Within two months after transfer to the MS track the student will hold the equivalent of an overview meeting, presenting a short 2-3 page thesis proposal to their committee.

- The student will conduct research and prepare a Dissertation according to University requirements, as described for a PhD Dissertation.
- The Dissertation will be defended publicly before the department and the student will be examined orally by the Dissertation Committee.

e) Responsibilities of the Student

- Students are expected to strive for excellence and operate with integrity in all aspects of their course work, research responsibilities, and Departmental citizenship throughout their graduate studies.
- It is the responsibility of the student to be aware of the requirements of their specific Graduate Program and to fulfill these requirements in a timely manner. Students should also be familiar with University of Pittsburgh policies related to Graduate Studies found in the Dietrich School of Arts & Sciences Graduate Student Handbook of Policies & Requirements.
- It is the responsibility of the student to communicate regularly with their Faculty Advisor and to seek specific advice about academic problems or concerns in a timely manner. Written and oral course work, performance of laboratory experiments, time management, balancing course work with laboratory duties, and career paths and opportunities are appropriate points of discussion.

Requirements for students to maintain good standing in the Program

- **Keep GPA above 3.0**
A GPA below 3.0 will preclude promotion to the second year. If a student's GPA falls below 3.0 after the first year they will automatically be placed on probation and will become ineligible to take the comprehensive exam, to be admitted to candidacy for the PhD degree, and to receive teaching assistantships. They will also be subject to dismissal at the end of the following term. It is expected that students will exit academic probation after one semester by raising their GPA to 3.0 or above.
- **Have a Dissertation Advisor**
A student must have the support of a Dissertation Advisor to continue in the Graduate Program. If a student fails to get agreement from a faculty member to act as their Dissertation Advisor at the end of the Spring semester of their first year they must discuss their options with the DGS, such as a fourth rotation. In rare situations, a Dissertation Advisor in another department at Pitt may be chosen. The Department cannot guarantee support for a student whose mentor's primary appointment is outside the Department of Biological Sciences. If a student loses the support of their current Dissertation Advisor after the first year, they have the option to find an alternative advisor among the faculty within the Department. If one cannot be found, then they will be unable to continue in the program.
- **Demonstrate satisfactory progress toward the completion of their degree.**
Each student must complete all requirements for their Program in the timeframe specified in this Guide and show good progress in their research efforts towards completion of their degree. If a Dissertation Advisor and/or a Dissertation Committee judge the progress of a student to be unsatisfactory they will discuss the problem with the student and with the DGS. If no immediate solution is evident the student will be informed in writing that their performance is below that deemed satisfactory, state what measures must be taken to rectify the situation and provide a timeline to achieve this. If appropriate measures are not taken by the student within this time period, GPOC will recommend the student be dismissed. This recommendation is forwarded to the Department Chair, who will render a final decision.
- **Demonstrate appropriate personal and ethical behavior**

Students are professional scientists and must behave as such in their interactions with all members of the university and when participating in professional events (e.g., conferences). They must display exemplary ethical behavior in all aspects of their studies. Students are expected to participate in training in research ethics, including attending the BIOSC 2058 Workshop and completing online training in a timely fashion.

4) Teaching: TAs and Teaching Minor Program

Teaching is an essential element of graduate student training within our department. Developing good teaching skills is important not only for those students hoping to continue in academia but for all students because these skills are used in many situations outside of a formal classroom. By the time of graduation each student should have experienced numerous opportunities to improve their teaching performance. The most obvious teaching experience is that of a Teaching Assistant (TA) in an undergraduate class and every student must participate in this for one semester. Students will also gain experience presenting their science through Noon Seminars, and they may also have the opportunity to mentor undergraduate students and other trainees conducting research in their lab.

a) Teaching Assistants

One term of satisfactory performance as a TA is required sometime after the first year. Students may be assigned as Teaching Fellows (TFs) rather than as Teaching Assistants (TAs) if they have successfully taught for at least one semester. TFs receive a higher stipend than TAs, which is closer to the Graduate Student Researcher (GSR) stipend. All other policies are the same.

i) Training University

At the beginning of the Fall Term, the University Center for Teaching and Learning (UCTL) sponsors a New TA Orientation. All graduate students in the Department of Biological Sciences who are teaching at the university for the first time are required to attend. UCTL has produced a handbook for TAs; it is recommended that new TAs read relevant sections from this before they start teaching. It can be downloaded at: teaching.pitt.edu/wp-content/uploads/2018/12/GSTI-TA-Handbook.pdf

Departmental

TA training within the department occurs at the end of the Spring Term for students TAing for the first time during the Summer Term and at the beginning of the Fall Term for students TAing for the first time during the Fall or Spring Terms. All new TAs in the Department of Biological Sciences are required to attend. The agenda includes an overview of the TA program, teaching strategies, safety issues, an overview of departmental majors, a discussion of ethical issues, and balancing teaching with research. Each graduate student then presents a brief “lecture” to an audience composed of the TA Coordinator and fellow graduate student trainees. During the semester, the new TAs observe a senior TA’s laboratory or recitation session.

ii) Workload

Each faculty member to whom a TA is assigned will be asked to provide at the outset, a description of the duties expected of the TA in the assigned course. This includes office hour policy, lecture attendance, grading participation, special considerations (for example, preparation of materials for laboratory course), and discussion of weekly TA and faculty supervisor meetings. Even when students are teaching they still need to continue their studies towards a PhD and are expected to spend no more than 20 hours a week on average on their TA duties. Students who are having to spend more time than this on a regular basis should talk to their supervising faculty member and, if the issue cannot be resolved at this level, to the TA Coordinator or the (TAOC).

iii) Evaluation

Each supervising faculty member will observe the TA conducting a recitation or lab before the middle of the term and will fill out an evaluation form that will be forwarded to the TA Coordinator. If the faculty supervisor rates the TA's overall performance satisfactorily, the TA will be informed. If performance is unsatisfactory, the supervising faculty member and the TA Coordinator will inform the TA and offer suggestions and resources to assist them in improving their teaching. Later in the term, to allow sufficient time for the TA to improve, a member of the TAOC and the supervising faculty member will observe the TA and evaluate the instruction. This observation will be unannounced. If the TA is evaluated favorably, the TA will be informed of the result of the evaluation and a TAOC member may or may not attend a third class. If the performance is unsatisfactory for the second time, the TA will be informed of the result and given additional suggestions for improvement. In this case, the same member of the TAOC will perform a third evaluation.

All evaluation forms and any additional descriptions of their teaching will be inserted into the graduate student's teaching file. The evaluations will be used by the TAOC to determine satisfactory completion of the term of teaching. Furthermore, all teaching assistants must have student evaluations of their teaching performed by Office of Measurement and Evaluation. The quantitative analysis of the evaluations is forwarded to the TA Coordinator and aggregated results are reported to the Dean's office as part of the Graduate Program Assessment.

iv) Types of Assignments

The exact nature of the TA experience will vary from class to class. Teaching Assistants are assigned to laboratory sections, recitation sections, and as graders/facilitators for large lecture courses. Lecture courses are taught by faculty members and lab courses are taught and/or coordinated by faculty members who in turn supervise the Teaching Assistants. The Department of Biological Sciences does not typically assign any Teaching Assistants as independent instructors. Students are asked for preferences on teaching assignments, although it is not always possible to match everyone to their top choices. A list of courses can be found in **Appendix F**.

v) Resources

In cases of TA/student or TA/faculty supervisor problems, the TA should attempt, when appropriate, to discuss the issue with the supervising faculty member. If the issue is not resolved or cannot be discussed at this level, the TA may present their concerns to the TA Coordinator or TAOC. If the issue is not resolved at this level, the issue should be brought to the attention of the DGS and the GPOC.

Policy resources for TAs include this Departmental Teaching Assistant Policy Statement and the University of Pittsburgh Policy Statement for Teaching Assistants, Teaching Fellows, and Graduate Student Assistants:

provost.pitt.edu/sites/default/files/TATFGSAPolicyStatement.pdf

Teaching resources include The Teaching Assistant Experience: A Handbook for Teaching Assistants and Teaching Fellows at the University of Pittsburgh prepared by CIDDE (teaching.pitt.edu/wp-content/uploads/2018/12/GSTI-TA-Handbook.pdf) and UCTL TA Services (teaching.pitt.edu/graduate-student-teaching).

vi) Paychecks

The timing of paychecks for TAs and TFs is determined by the dates of the course. During the summer, pay is not spread out evenly over the four months. Please see section 5 for the paycheck schedule.

b) Teaching Minor Program

The Department of Biological Sciences offers graduate students an optional Minor in Teaching that provides a more complete teaching experience beyond the one semester TA requirement. The Teaching Minor Program includes exposure to various methodologies and teaching philosophies, more independent experience in the classroom, and development of material suitable for a teaching portfolio. Students planning for a career with an education component are especially encouraged to join this Program.

i) Enrollment

Students who would like to enroll in the Teaching Minor Program should submit a petition to the DGS via the GPA. Petition for entry into the Teaching Minor Program can be made at any time. However, students are strongly encouraged to have successfully completed their Comprehensive Exam and must have at least two years left until completion of their MS or PhD degree. The following items should be included in the petition:

- (1) A letter from the student requesting entry into the Teaching Minor Program, and
- (2) A letter from the student's Dissertation advisor giving permission to participate in the Teaching Minor Program.

ii) Requirements

The requirements for the Minor are as follows:

- A. Two or more semesters of teaching as a Teaching Assistant with satisfactory performance.**
- B. Enrollment for four semesters and receipt of satisfactory grades in BIOSC 2972 "Teaching Minor in Biological Sciences."** This course is based around the completion of one independent teaching project each year (**two total projects**), as well as the production of the Teaching Dossier. Each project is expected to take approximately 10-15 hours. Of the two projects, at least one must be a guest lecture in a class, along with any material used in class, and exam questions. The projects cannot be ones used to complete FACDEV 2200 but can be projects in a class for which the student is serving as a TA if the project is in addition to the normal TA requirements. BIOSC 2972 meets formally approximately two times a semester at times arranged at the beginning of the semester.
- C. Enrollment and receipt of a 'B' or better in FACDEV 2200 ("University Teaching Practicum").** Students should take FACDEV 2200 during a Fall or Spring semester (preferably not Summer) while serving as a teaching assistant, ideally when teaching a course where there is some opportunity to participate in curriculum development. If this is not possible for whatever reason, then the student will need to identify a suitable course and to arrange to perform guest lectures with the faculty member who teaches that course to complete assignments in FACDEV 2200 (two guest lectures are the minimum).
- D. Yearly meetings with two Teaching Mentors.** The student must identify and request two faculty members to serve as Teaching Mentors. The two Teaching Mentors must be chosen during the first year in the program and declared when the Teaching Dossier is submitted for the first time. The student's Dissertation advisor may serve as a Teaching Mentor. At a minimum the Mentors should observe at least one class led by the student, observe independent projects as appropriate, meet with the student once a year to provide feedback on the Teaching Dossier and discuss other issues, and provide a teaching evaluation letter for the Dossier. The yearly meetings must be documented by filling out a report

(biology.pitt.edu/graduate/teaching-minor/forms) that includes a section for self-evaluation by the student and sections documenting the meetings with both Teaching Mentors. The meetings must occur each year until the final Teaching Dossier has been submitted to GPOC.

- E. Maintenance of a Teaching Dossier, which is submitted to GPOC via the Graduate Program Administrator by the third Monday in May each year.** The Teaching Dossier must be organized using a set template provided in BIOSC 2972 (biology.pitt.edu/graduate/teaching-minor/forms) and will serve both to document the completion of the Teaching Minor requirements and to be an organized collection of all teaching and Teaching Minor material from which students can draw material for a teaching portfolio when on the job market. The Dossier should include a Teaching Philosophy statement, letters pertaining to enrollment in the Teaching Minor Program, a transcript, documentation of yearly meetings with Teaching Mentors, teaching evaluations, FACDEV 2200 material, BIOSC 2972 material, and samples of teaching materials. Maintenance of the Teaching Dossier is the responsibility of the student, although feedback on presentation will be given by the Teaching Mentors and in BIOSC 2972.
- F. Completion of 10 course credits.** These credits are derived from BIOSC 2972 (4 credits for the four semesters of participation and 3 credits for completion of the Dossier = 7 total) and FACDEV 2200 (3 credits).

iii) Continuation in the Teaching Minor Program

Students enrolled in the Program must remain in good academic standing, and continuation in the Minor Program requires annual approval from GPOC. This approval is given in a letter to the student after the Teaching Dossier has been assessed each year.

iv) Completion of the Teaching Minor Requirements

Upon completion of the requirements listed above, the student must submit the final Teaching Dossier to GPOC at or before the time that the dissertation is submitted to the student's Dissertation Committee. Students are strongly encouraged to submit the final Dossier within one semester of completing the Teaching Minor requirements if that is earlier than the submission of the dissertation. GPOC will review the Dossier and, if all requirements have been met, will nominate the student to the Chair of the Department for award of the Teaching Minor.

Receipt of the Minor can occur only upon completion of a MS or PhD from the University of Pittsburgh, and implementation of this Program does not change any existing Departmental requirements for the granting of graduate degrees.

v) Suggested Timeline for the Teaching Minor

- A. At least two terms as a Teaching Assistant.** Typically, one term takes place in the second year of graduate school and the other takes place in the third or fourth year of graduate school.
- B. Petitioning for enrollment.** This typically occurs at the end of spring term of the second year or the end of the Fall term of the third year, after completion of the Comprehensive Exam.
- C. Selection of two Teaching Mentors.** Approach potential mentors during the first year in the Teaching Minor Program, prior to submitting the Teaching Dossier for the first time.
- D. Enrollment in BIOSC 2972.** This should occur in four consecutive academic year semesters (Fall or Spring) after acceptance into the Teaching Minor Program.

- E. Enrollment in FACDEV 2200.** Ideally this occurs during a Fall or Spring semester when serving as a TA. Although FACDEV 2200 is offered during the Summer, enrollment for this semester is not recommended because of insufficient time to complete the necessary requirements. Typically, students enroll while doing their second TA assignment.
- F. Yearly submission of a Teaching Dossier to GPOC.** Dossiers should be submitted on the third Monday of May of each year after acceptance into the Teaching Minor Program.
- G. Final submission of the Teaching Dossier to GPOC.** Ideally, the final dossier is submitted in the first semester after completing the Teaching Minor requirements, but at the latest it should be submitted by the time that the dissertation is submitted to the student's Dissertation Committee.
- H. Receipt of the Teaching Minor.** The teaching minor is conferred upon graduation.

5) Financial Support and Benefits

GSA/GSR/TA/TF Definitions

Teaching Assistants (“TAs”), Teaching Fellows (“TFs”) and Graduate Student Assistants (“GSAs”) at the University of Pittsburgh are graduate students who are receiving financial support while gaining invaluable teaching and other educational experience under the guidance of faculty mentors. The primary purpose of teaching, from the standpoint of the University and the student, is for students to make steady progress toward an advanced degree, become a valuable member of the academic community, and gain valuable professional experience. TA/TF/GSA status is dependent upon being enrolled at the University as a graduate student. The University uses the following descriptions to define and differentiate TAs, TFs, and GSAs. Teaching Assistant: A graduate student who holds a teaching or teaching-related appointment made in accordance with the University regulations pertaining to TAs. TAs often assist faculty with teaching classes, such as large lecture classes with recitation or lab sections. TAs should not be assigned to teach post-baccalaureate or graduate courses or be the instructor of record. Exceptions may be made only in rare cases where the student shows clear evidence of outstanding knowledge in specialized areas and when the individual is directly guided by a member of the graduate faculty.

Teaching Fellow: The same as a TA except that a TF is more educationally advanced or experienced, typically holding the equivalent of a master’s degree. TFs are responsible for teaching a significant portion of a course for their own advanced academic and professional training and may be the instructor of record. TFs should not be assigned to teach graduate courses. Exceptions may be made only in rare cases where the student shows clear evidence of outstanding knowledge in specialized areas and when the individual is directly guided by a member of the graduate faculty.

Graduate Student Assistant: A graduate student who assists in the educational or research mission of the University that support the student’s academic and professional development, but does not teach a class, recitation or laboratory.

Appointment Guidelines

The TA, TF, or GSA must receive a letter from the department, school or University unit that states the general conditions of the appointment and that specifies the stipend, teaching or other expectations, duration of the appointment, other benefits, and any other pertinent terms. The letter will also include a reference to this Academic Regulation and state that this policy governs the appointment. The letter of appointment should be sent to the student. If the student accepts the appointment, they must return a signed copy to the designated University office or representative.

Students with a full appointment as a TA, TF, or GSA should not spend more than 20 hours in any week on assistantship activities for which the student is not receiving academic credit. Fractional appointments should not exceed the corresponding fraction of the 20-hour standard. TAs, TFs, and GSAs who receive appointments in the fall and/or spring terms are expected to complete at least 9 credits or the Full-Time Dissertation Study option in the terms of appointment; those with fractional appointments are expected to register for at least the following number of credits or the Full-Time Dissertation Study option: 3/4 appointment, 9 credits; 1/2 appointment, 6 credits; 1/4 appointment, 3 credits. TAs, TFs, and GSAs who receive appointments in the summer term or in a summer session do not need to be registered for credits or FTDS if their summer appointment is part of an 8- or 12-month appointment. However, if the student’s summer appointment is for 4 months or less, students must register for at least 1 credit or for the Full-Time Dissertation Study option in the summer term or session. International students who begin their graduate programs in the spring preceding a summer appointment should contact Office of International Services (OIS) to determine whether or not they must register for credits or FTDS if they receive a summer

appointment. All appointments are conditioned on students continuing to make satisfactory academic progress towards completing their degree. When a student accepts an appointment in writing, both the student and the program are expected to comply with the terms of the appointment. A department may, during the appointment term, transfer a student, after consultation with the student, from a teaching assignment to a research appointment or to another appropriate appointment that provides for essentially equal financial support and academic and professional training. The Immigration Reform and Control Act requires the University to verify that a TA, TF, or GSA is authorized to receive a stipend in the United States. Each new TA, TF, or GSA is required to verify that they are either a U.S. citizen or authorized to receive a stipend in this country. To receive financial support, a TA/TF/GSA is required to produce the necessary documentation to the University. In accordance with the English Fluency in Higher Education Act of the Commonwealth of Pennsylvania, prior to their appointment all TAs or TFs who are non-native speakers of English must be evaluated by the English Language Institute to ensure adequate English language fluency for effective communication with students. Schools or departments may require higher scores than the established University minimums. All TAs and TFs obtaining unsatisfactory scores must complete an enhancement program. If a TA or TF does not obtain a satisfactory score by the time of appointment, their appointment may be or may not be renewed. Reappointment Guidelines Although TA, TF, and GSA appointments may not be made for more than one year, a student may be reappointed. If it is impossible to offer renewals or other appointments to all qualified TAs, TFs, or GSAs, priority should be given to those with superior academic and teaching qualifications. The same regulations which pertain to original appointments apply to reappointments.

The criteria for reappointment include satisfactory academic performance, satisfactory academic progress towards their degree, and the demonstrated quality of the TA, TF, or GSA's teaching or other activities necessary to their academic and professional development. Examples of unsatisfactory academic performance would be a GPA below 3.0, completion of fewer than six credits of graduate work per term, or failure to pass preliminary or comprehensive examinations as specified.

It is the goal of the Program to have every student supported by a stipend. This is true for the majority of our students, but the department cannot absolutely guarantee this. The following describes the different situations and payment schedule.

Term as TA/TF	Paychecks at end of month
Fall term	September, October, November, December
Spring term	January, February, March, April
Summer term*	
6week1	May, June
6week2	June, July
PLE1 (4week1)	May
PLE2 (6week1)	May, June
PLE3 (6week2)	June, July
PLE4 (4week3)	July

*No paychecks in August as a TATF; pay received earlier in summer

Term on GSR	Paychecks at end of month
Fall term	September, October, November, December
Spring term	January, February, March, April
Summer term	May, June, July, August

a) Sources of Financial Support

Financial support to cover student stipends comes from three sources (note the stipend rate for A&S fellowships, GSRs and TA/TFs is not identical: see Appendix G):

i) Fellowships

Fellowship from the Dietrich School of Arts & Sciences

Support for the Fall and Spring semesters of the first year is provided by a fellowship from Dietrich School of Arts & Sciences of the University of Pittsburgh. There are only a limited number of fellowships but in recent years all SLE students have been supported by one; it is expected that this will continue in the future. ALE students are not eligible for these Dietrich School fellowships.

Other Fellowships

Students are encouraged to apply for competitive fellowships awarded locally or nationally. Examples include the Mellon Fellowship and the NSF Predoctoral Fellowship. Students on outside fellowships need to apply to Arts and Sciences for a tuition waiver; see the Graduate Program Administrator for details. If healthcare is not covered by the outside fellowship, students should discuss their options with the GPA and their Advisor.

ii) Grants awarded to Dissertation Advisors

A Dissertation Advisor may use some of their grant support to cover a student's stipend. A student whose stipend is covered by one of their Advisor's grants is termed a Graduate Student Researcher (GSR).

iii) Teaching Assistantships and Teaching Fellowships

Students may be supported by Teaching Assistantships (TA) or Teaching Fellowships (TF) awarded by the Dietrich School of Arts & Sciences (DSA&S). The TF award is slightly higher than that of a TA. To be appointed a TF rather than a TA, the student must have successfully completed at least one semester of teaching.

Requests to be awarded a TA/TF must be made by the student's Advisor to the TA Coordinator. The Department has a limited number of TA/TF slots provided by the Dietrich School of Arts & Sciences; there are more slots available in the Fall and Spring terms as compared to the Summer term. If more requests are made than TA/TFs are available (which is generally only a problem in the summer), the following criteria will be used to determine which students will be awarded a TA/TF: (i) whether the student has gone without full funding in a previous term, (ii) the number of semesters of teaching already completed by the student, and (iii) the number of students from an individual lab making requests at the same time. It is important to note that recently we have had more requests for summer TA/TF positions than slots available. Therefore, if you do not have other funding available, it is important to plan ahead in case you do not have a full TA/TF position in the summer. During the summer, most of the slots are 0.5 positions (apportioning the work among two students for a single TAship), which helps us distribute the money among all students if we are unable to provide a full TA/TF slot to everyone.

b) Healthcare and Tuition

i) DSA&S Fellows, TA/TFs, GSRs and Mellon fellows

First year students receiving a DSA&S(DSA&S) Fellowship, TA/TFs, and GSRs have their tuition and healthcare covered by the University or from overheads charged to the Advisor's grant. Any student with an appointment as an DSA&S Fellow, a TA/TF, or a GSR for the Fall

and Spring semesters will continue to have their healthcare covered for the Summer even if they lose that appointment (but remain a student in good standing). Mellon Fellows must remain as such to have their healthcare covered in the Summer.

ii) Other Fellowships

Students who are awarded an outside fellowship (for example, NSF GRFP; American Heart Association; Center for Latin American Studies (CLAS) Fabiola Aguirre Fellowship), can apply through the DSA&S Graduate Studies Office for funds to cover their tuition for the duration of the fellowship. A **Supplemental Tuition Application** should be completed; contact the GPA for additional information. Most outside fellowships will include funds for healthcare, but if this is not the case, the student should discuss their options with the GPA and their Advisor.

iii) University Health Plans

All information on University health, dental and vision plans can be found at:

<https://www.hr.pitt.edu/students/graduate-plan>

Although premiums for individual students in the UPMC Health Plan are covered for University fellows, TA/TFs, and GSRs. Students must make additional contributions to cover other family members. Additional monthly contributions are also required to join the vision and dental care plans.

The UPMC Health Plan description:

Students will be issued a UPMC medical insurance card at the beginning of each year. New students should download the UPMC health plan booklet and go to www.upmchealthplan.com for further information and to choose a PCP.

c) Travel Grants

Students attending scientific conferences are encouraged to apply for travel grants available from different sources at the University of Pittsburgh, including the Dietrich School of Arts & Sciences, and the Graduate Student Organization (GSO). For more information go to:

<https://pre.asgso.pitt.edu/>

6) Conflict Resolution, Leaves of Absence, & Readmission

a) Conflict Resolution

Significant conflicts between student and Dissertation Advisor are not common, but should they arise, the following steps should be taken.

- The student should write to the Dissertation Committee, outlining the issue at hand and requesting a meeting with the committee. The Dissertation Committee will then meet with the student and Advisor separately to discuss the problem and identify possible solutions and, if appropriate, recommend a meeting with both.
- If this is not successful, the student will request a meeting with the DGS. The DGS will meet separately with the student, the Dissertation Committee, and the Advisor. The DGS will then make specific recommendations to the student and/or the Advisor.
- In the unusual situation where it is agreed that the relationship between a Dissertation Advisor and a student has broken down irreparably, and the student is still in good standing in the department, the DGS will recommend that the student identify a new Advisor from faculty in the department.

Disagreements that cannot be resolved within the Department should be taken to Dean Jonathon Woon, Associate Dean of Graduate Studies and Research in the office of the DSA&S Graduate Studies (412 624-6094; woon@pitt.edu).

b) Leaves of Absence

In some circumstances a leave of absence from the graduate program may be granted. If a student and Advisor agree that this would be an appropriate step to take, they should discuss this with the DGS and a formal request should then be made to GPOC. If GPOC agrees to support the leave of absence, the DGS will then make a formal request to the Assistant Dean of Graduate Studies, Dr. Rosemary Capo, stating the reason for the request and the length of time being requested. The application can be made for a maximum of one year for master's students or two years for doctoral students; a leave of absence can be taken only once during a graduate career.

After returning, the statute of limitation following matriculation is extended for the period of the leave. That is, a student entering with a BS would need to defend within 11 years of matriculation instead of 10 if a 1-year leave of absence were taken. The statute of limitations on comprehensive exams cannot be extended. If the leave results in failure to register for 3 semesters, the student needs to apply for readmission, though no fee is required in this case and readmission is automatic.

c) Readmission

If a student fails to register for 3 consecutive semesters, that student becomes inactive. The inactive status does not act as a leave of absence, so statutes of limitations are not adjusted. For students to continue their graduate work, they must apply for readmission and register once again. To graduate, students must be registered during the semester they defend their thesis.

Readmission will only be considered if the student presents a plan for readmission to GPOC before becoming inactive. This plan should include the reason for not registering, the time frame for readmission, and a plan of study for completing the degree once readmitted. The student

should include an assessment by the student's committee that this plan is reasonable and achievable.

Requirements for Readmission

The requirements for readmission, as determined by the DSA&S, are outlined below:

- Readmission application (available from the GPA)
- Admissions credential evaluation (available from the GPA)
- Application fee (consult the GPA for its current amount)
- Statute extension form, if necessary (available from the GPA)
- A detailed plan of study, including realistic dates; if any milestones are not met, students are terminated from the program. This agreement must be signed by the student and the Department Chair.
- A memo certifying that courses completed more than 10 years ago are relevant to current degree. This must be provided by the Chair of the Dissertation committee.
- If the comprehensive exam was taken more than 7 years prior to graduation, it must be retaken.

When a student requests readmission, these materials must be submitted to GPOC. If GPOC and the Chair approve the application, the Department will forward the materials to the DSA&S.

Appendix A: Overview of Requirements for EE Program

Year 1	Coursework	<ul style="list-style-type: none"> • Completion of at least 4 of 8 required credits of formal graduate coursework • Complete <i>Communication in Biological Sciences Workshop: Posters and Presentations</i> • Seminars in Ecology and Evolution (2540): at least 2 semesters before the end of the second year • Departmental Seminar (2960; Fall, Spring): attendance weekly • Introduction to Graduate Studies (2950) • EE Student Research Seminar (2950; F, S): attendance each week • Ethics: online course and BIOSC 2058 workshop on scientific ethics • Prevention of Sexual Harassment: online course
	Research	<ul style="list-style-type: none"> • Three 10-week rotations (15-minute presentation after each); two rotations may be performed in the same laboratory • Mentor may have been chosen on entry; if not, choose by end of Spring semester • Departmental Retreat: attendance
Year 2	Coursework	<ul style="list-style-type: none"> • Complete total of 8 credits of formal graduate coursework • Complete <i>Communication in Biological Sciences Workshop: Grants</i> • Departmental Seminar (2960; F, S): attendance only • EE Student Research Seminar (2050; F, S): attendance weekly
	Research	<ul style="list-style-type: none"> • Dissertation research • Annual committee meeting • EE Student Research Seminar (2050; F, S): presentation • Departmental Retreat: attendance and participation
	Teaching	<ul style="list-style-type: none"> • Teaching Assistant, one term, typically in the second or third year
	Comprehensive exam	<ul style="list-style-type: none"> • Completion deadline: mid-April (written); early May (oral). See above for more detailed guidelines.
Year 3 and beyond	Coursework	<ul style="list-style-type: none"> • Complete <i>Communication in Biological Sciences Workshop 3: Papers</i> • Departmental Seminar (2960; F, S): attendance only • EE Student Research Seminar (2050; F, S): attendance weekly
	Research	<ul style="list-style-type: none"> • Dissertation research • EE Student Research Seminar (2050; F, S): presentation • Annual committee meeting. Note: One must be the Overview Meeting. See Grad Guide for details • Departmental Retreat: attendance and participation
	Teaching	<ul style="list-style-type: none"> • Teaching Assistant, one term, typically in the second or third year • Teaching Assistant, second term, for students enrolled in the Teaching Minor
	Dissertation	<ul style="list-style-type: none"> • PhD awarded upon submission, defense, and approval of dissertation

Appendix B: Overview of Requirements for MCDB Program

Year 1	Coursework	<ul style="list-style-type: none"> • Completion of at least 4 of 8 required credits of formal graduate coursework • Complete <i>Communication in Biological Sciences Workshop: Posters and Presentations</i> • <i>Seminar in Molecular Cell and Development Biology</i> (2450; Fall, Spring): at least 2 courses by the end of the second year • Departmental Seminar (2960; F, S): attendance weekly • Introduction to Graduate Studies (2950) • MCDB Student Research Seminar (2050; F, S): attendance weekly • Ethics: online course and BIOSC 2058 workshop on scientific ethics • Prevention of Sexual Harassment: online course
	Research	<ul style="list-style-type: none"> • Three 10-week rotations (15-minute presentation after each) • Choose Advisor by end of Spring semester; Dissertation research begins in summer • Departmental Retreat: attendance
Year 2	Coursework	<ul style="list-style-type: none"> • Complete 8 credits of formal graduate coursework • Departmental Seminar (2960; F, S): attendance only • MCDB Student Research Seminar (2050; F, S): attendance weekly • Complete <i>Communication in Biological Sciences Workshop: Grants</i>
	Research	<ul style="list-style-type: none"> • Dissertation research • Annual committee meeting • MCDB Student Research Seminar (2050; F, S): presentation • Departmental Retreat: attendance and participation
	Teaching	<ul style="list-style-type: none"> • Teaching Assistant, one term, typically in the second or third year
	Comprehensive exam	<ul style="list-style-type: none"> • Completion deadline: mid-April (written); early May (oral). See Grad guide for more detailed guidelines.
Year 3 and beyond	Coursework	<ul style="list-style-type: none"> • Complete <i>Communication in Biological Sciences Workshop 3: Papers</i> • Departmental Seminar (2960; F, S): attendance • MCDB Student Research Seminar (2050; F, S): attendance
	Research	<ul style="list-style-type: none"> • Dissertation research • MCDB Student Research Seminar (2050; F, S): presentation • Annual committee meeting. Note: One must be the Overview Meeting. See Grad Guide for details • Departmental Retreat: attendance and participation
	Teaching	<ul style="list-style-type: none"> • Teaching Assistant, one term, typically in the second or third year • Teaching Assistant, second term, for students enrolled in the Teaching Minor
	Dissertation	<ul style="list-style-type: none"> • PhD awarded upon submission, defense, and approval of dissertation

Appendix C: Graduate Courses and Workshops Offered by the Department of Biological Sciences

Course	Description	Term(s)	Credits
2000	Research and Thesis for the Master's Degree	F,S,Sm	Var
2050	Student Research Seminar (Monday and Wednesday)	F,S	0.5
2950	Introduction to Graduate Study	F,S	1
2055	Science Communication: Fellowships and Grants	F	1
2056	Science Communication: Seminar and Poster Presentations	F	1
2057	Science Communication: Preparation of Scientific Papers	Var	1
2058	Ethical Practices in Scientific Research	F	1
2040	Protein Structure and Function	Var	2
2090	Advanced Developmental Biology	Var	2
2100	Advanced Cellular Biology	Var	2
2110	Microbial Diversity	Var	2
2130	Advanced Genetics (Genetics of Model Organisms)	Var	2
2140	Advanced Genomics	Var	2
2145	Advanced Biochemistry	Var	2
2150	Nucleic Acids	Var	2
2155	Gene Expression	Var	2
2220	Advanced Biostatistics	Var	2
2351	Advanced Evolution	Var	2
2355	Species Interactions	Var	2
2361	Advanced Ecology	Var	2
2370	Evolutionary Genetics	Var	2
2355	Species Interactions	Var	2
2450	Biological Sciences Seminar	F,S	2
2540	Seminar in Ecology	F,S	2
2550	Experimental Designs in Ecology	Sm-pym	3
2570	Environmental Science Teacher's Workshop	Sm-pym	3
2810	Macromolecular Structure and Function	F	0
2840	Regulation of Membrane Trafficking	Sm	2
2940	Molecular Biology	F	0
2960	Departmental Seminar	F,S	1
2970	Teaching of Biological Sciences	F,S,Sm	Var
2972	Teaching Minor in the Biological Sciences	F,S	Var
2990	Independent Study	F,S,Sm	1
3000	Research and Dissertation for the PhD Degree	F,S,Sm	Var
3902	Directed Study	F,S,Sm	Var

F, fall; S, spring; Sm, summer; Sm-pym, summer Pymatuning (PLE)

Blue Formal Graduate Courses; credits in these courses count towards the 8 credits of formal coursework required for completion of the PhD degree.

Red Communication and Ethics Workshops, offered on a rotating basis. All four workshops must be completed.

Green Graduate Seminar courses; two terms are required within the first two years.

Magenta Graduate sections of shared undergraduate courses; no credits count toward the requirement of 8 credits of formal graduate coursework.

Black Other graduate courses.

Var, Variable: these courses are typically offered once every other year. Consult actual course listings on the Pitt website to confirm that a course is being offered in any semester <https://www.registrar.pitt.edu/>

Appendix D: Courses Offered Outside the Department That May Count Towards Degree Requirements

Approved by GPOC; Fall 2017

Students enrolled in the MCDB and EE programs must complete 8 credits of formal coursework. The courses listed below are offered outside the Department and will count toward fulfilling this requirement. Because the workload of courses offered in different departments varies, the number of credits counting toward fulfilling this requirement may differ from the number of credits listed on the graduate transcript.

University of Pittsburgh

^f, fall; ^s, spring; [?], couldn't find in catalog (2022); ^s, summer

Course	Description	Credits	
		Listed	Toward Requirement
BIOST 2014 [?]	Intro to Biostatistics for Biomedical Scientists	3	1
BIOINF 2051 ^f	Foundations of Bioinformatics	3	2
BIOST 2041 ^f	Intro to Statistical Methods 1	3	2
BIOST 2042 ^s	Intro to Statistical Methods 2	2	2
BIOST 2055 [?]	Intro to High Throughput Genomic Analysis I	2	2
CLRES 2707 [?]	Bioinformatics Resources: Data Mining	1	1
CLRES 2708 [?]	Bioinformatics Resources: Data Analysis	1	1
EPIDEM 2725 ^f	Reproductive Development	2	2
GEOL 2006 ^s	Environmental Modeling	2	2
IDM 2001 ^f	Molecular Biology of Microbial Pathogens	3	2
IDM 2003 ^f	Host Response to Microbial Infections	2	2
IDM 2014 ^s	Functional Genomics of Microbial Pathogens	3	2
ISB 2070 [?]	From bedside to bench	3	2
INTBP 2040 [?]	Using Perl for Bioinformatics	3	2
MOLBPH 2001 ^f	Molecular Biophysics 1: Structure	3	2
MSBMG 2510	Biochemistry of Macromolecules	2	2
MSBMG 2560	Biology of Signal Transduction	3	2
MSBMG 3510	Advanced Topics in Gene Expression	3	2
MSCBIO 2075 ^{f,s}	Molecular Evolution	3	2
MSCBIO 2025 ^f	Introduction to Bioinformatics Programming in Python	3	2
MSIMM 3280 ^f	Immunology of Infectious Disease	2	2
MSMVM 3410 ^s	Microbial Pathogenesis	2	2
MSMVM 3420 ^f	Viral Pathogenesis	2	2
MSMVM 3455 [?]	Antimicrobial Therapeutics	2	2
MSCBMP 2840 ^s	Regulation of Membrane Traffic	2	2
MSCBMB 2860 ^s	Multiparametric Microscopic Imaging	3	2
MSCBMP 2880 ^s	Cellular Biology of Normal and Disease States	4	2
MSCBMP 2885 ^s	Imaging Cell Biology in Living Systems	3	2
	From Single Molecules to Animal Models		
MSCMP 2730 [?]	Molecular Methods of Tissue Growth & Differentiation	3	2
MSCMP 3750 [?]	Angiogenesis	3	2

MSMPHL 2310 ^s	Principles of Pharmacology	3	2
MSMPHL 3330 ^s	Genome Instability and Human Disease	2	2
MSMVM 3475 ^s	Imaging Host Pathogen Interactions	1	1
MSMVM 3480 ^f	Immunology of Infectious Disease	2	2
MSNBIO 2112 ^s	Neurobiology of Diseases	3	2

Carnegie-Mellon University

Course	Description	Credits	
		Listed	Toward Requirement
03-738	Physical Biochemistry	3	2
04-738	Physical Biochemistry	3	2
03-871	Structural Biophysics	3	2
03-711	Computational Molecular Biology & Genomics	4	3
03-712	Computational Methods for Biological Modeling and Simulation	3	2

Chatham University

Course	Description	Credits	
		Listed	Toward Requirement
SUS508	Environmental Statistics	3	2

Appendix E: Information and Instructions for Application for Advanced Level Entry into the MCDB or EE programs

Key differences between Standard Level Entry (SLE) and Advanced Level Entry (ALE)

- ALE students are required to have a Master's degree or equivalent in a suitable area that has provided training approximately equivalent to that obtained by students in their first year of the MCDB or EE programs.
- ALE students will be exempt from most first year requirements including research rotations, Graduate Seminar Course and 4 credits of formal coursework, unless it has been decided that they should complete any course work to supplement their previous training (all rules governing grade requirements for SLE students taking these courses will also apply). However, students must still take the online ethics course and attend the ethics workshop (BIOSC 2058). Which courses or workshops will be waived and which must be taken will be decided on an individual basis by GPOC in consultation with the Dissertation Advisor.
- ALE students could receive up to thirty transfer credits for their Master's degree or previous study.
- ALE students are required to fulfill all other requirements of the MCDB or EE programs, including upper-level graduate classes, attendance of seminars, passing their comprehensive exam, and dissertation proposal.
- A satisfactory Annual Committee meeting within the first year will substitute for the Preliminary Evaluation.
- Financial support for ALE students should normally come either from GSR monies from the Dissertation Advisor or from a fellowship awarded to the student.
- ALE students must complete one term of teaching as a Teaching Assistant, unless they have taught at an equivalent level for one term prior to joining the Department. Due to limited TAs and the increased expectation of funding from GSR monies, ALE students are permitted to teach only one term as a TA. Additional terms as a TA are only available when given special permission from GPOC, such as when participating in the Teaching Minor Program.
- It is understood that faculty may lose grant funding and be unable to provide GSR monies; under these circumstances an ALE student would be treated in the same way as a standard student in our programs and would be supported by a TAs if sufficient slots were available.
- The total number of ALE students should not exceed 20% of the total graduate student body and there should not be more than 2 ALE students per lab.

Application process

Recruitment

1. Faculty will inform GPOC that they are interested in recruiting an ALE student and must confirm that they can provide a minimum of two-years of support with GSR monies (note that this is not required if the student has their own fellowship, see below).
2. Faculty names will be listed on the website.
3. Faculty can also advertise in appropriate media; any advertisement must be approved by GPOC. The advertisement must clearly state that the student will join the MCDB or EE program in the Department of Biological Sciences as an Advanced Level Entry student.

Admissions

1. Before applying, prospective ALE students must correspond with the faculty member they are interested in to confirm that an application through this mechanism is appropriate.

2. If the faculty member supports an application, the student will apply through the regular mechanism, providing three letters of reference, a recent transcript, TOEFL scores (or equivalent) if required, and a personal statement, in addition to a completed standard application form. The student will inform the faculty member that they have applied and then the faculty member will inform the Graduate Recruiting and Admissions Committee (GRAC).
3. Applications can be made at any time of the year.
4. GRAC will download ALE applications and pass them onto the faculty member identified. The faculty member, who should already be familiar with the applicant, will then review the application.
5. If the faculty member supports the student joining the program, they will then submit a letter of support to GRAC in which they will confirm that they:
 - a. are willing to act as the Dissertation Advisor of the student
 - b. confirm they have no more than one ALE student currently in their lab.
 - c. have grant monies available to cover 2 years of stipend support or that the student has been awarded a fellowship to cover living expenses (see below).
 - d. have reviewed the application materials and to the best of their knowledge agree that the studies already completed by the student are approximately equivalent or exceed that expected of first year students in our own program.
 - e. specify any deficiencies in the studies previously completed by the student.
 - f. state which required courses should be waived and which should not.
6. If the student has been awarded a fellowship to cover living expenses, they must provide evidence for this. The fellowship must be for at least three years and provide funds of at least \$14,000 per year.
7. GRAC will then review the application and if they agree to support the application it will be passed on to GPOC to be approved. If approved by GRAC and GPOC, the application will be sent to the Associate Dean for Graduate studies by the GPA, as with all other requests for admission.

Appendix F: Undergraduate Courses Taught by the Department of Biological Sciences That Typically Utilize Teaching Assistants

Fall Semester

005x/006x	Foundations of Biology Lab (only an option if other TA positions filled)
0150/0160	Foundations of Biology (variable)
0350	Genetics
0390	Ecology Lab
1000	Biochemistry
1860	Microbiology Lab (for Microbiology majors)
1950	Molecular Genetics Lab

Spring Semester

0050/0060	Foundations of Biology Lab (only an option if other TA positions filled)
0150/0160	Foundations of Biology (variable)
0350	Genetics
0351	Genetics Lab
0352	Introduction to Molecular Genetics Lab
1000	Biochemistry
1830	Biochemistry Lab

Summer Semester

0050/0060	Foundations of Biology Lab (only an option if other TA positions filled)
0350	Genetics
1000	Biochemistry
PLE lab courses (approximately eight 0.5 TA positions)	

Note, not all courses may have a TA every year.

Appendix G: Current Stipend Rates

Graduate student status	Monthly stipend	Healthcare contribution	Net stipend
A&S Fellowship	\$2961.00	\$370.56 ¹	\$2590.44
Graduate student researcher (GSR)	\$2570.00	0 ²	\$2570.00
Teaching Assistant (TA)	\$2435.00	0 ²	\$2435.00
Teaching Fellow (TF)	\$2531.25	0 ²	\$2531.25

All rates are current as of August 2020.

A&S Fellowship. These fellowships are typically awarded to first year students to cover Fall and Spring semesters during research rotations.

Graduate Student Researcher. This stipend is financed by Dissertation Advisor's grant.

Teaching Fellows. Students may be assigned as a TF rather than a TA if they have taught at least one semester in our department

1. This health care contribution is the standard amount for a single student for the Panther Blue Health Plan; students must pay this themselves out of their stipend.
2. The health care contribution is provided by the University or from overheads taken from the Advisor's grant.

Appendix H: DSA&S Dissertation Committee Policy

please refer to <https://www.asgraduate.pitt.edu/dsas-doctoral-dissertation-committee-policy>

The on-line information describes:

- *Committee Composition*
- *Notification of Committee Membership*
- *Special Requirements for External Committee Members from outside the University of Pittsburgh*
- *Committee Participation by Former Members of the University of Pittsburgh Faculty*
- *Committee Participation by Retired Members of the University of Pittsburgh Faculty*
- *Committee Participation by Retired Members of the University of Pittsburgh Faculty*
- *Remote Participation by Candidate and Committee Members (highlights below)*

Additional Committee Members

Additional members may be added to the doctoral committee in cases where additional expertise is needed. Such additional committee members are expected to have significant involvement with the graduate student and to attend both the proposal/prospectus/overview meeting and the defense; one committee member must be present in person for each of these meetings. For additional committee members only, the Graduate Faculty status (or the equivalent at another institution) requirement may be waived if prior approval from the Assistant Dean is requested and granted. Such a request should be accompanied by a brief memo that explains the benefits for the student of the participation of this faculty member on the committee and, in the case of a member who is not from the University of Pittsburgh, a current C.V. The C.V. need only be provided every five years for committee members serving on multiple committees within the same department.

Remote Participation by Candidate and Committee members (forms available on-line or through GPA)

The candidate and committee members may choose to attend the dissertation proposal/prospectus/overview either in person or remotely without needing prior approval. In cases where there are both in-person and remote attendees, the hybrid meeting must be conducted synchronously.

The candidate, the Chair of the committee, and at least one other committee member must attend the dissertation defense in person. If a candidate has co-chairs, the candidate, BOTH co-chairs, and at least one other member must attend in person. If the defense will have any configuration other than this, a completed [Remote Participation Request](#) form must be submitted to the [Coordinator of Graduate Student Services](#) for approval prior to the defense.

- If the candidate is requesting to be remote, the request form must provide a compelling rationale for why the in-person participation requirement represents a hardship for the candidate.
- If the Committee Chair (or one or both Co-Chairs) is requesting to be remote, the request form must provide a compelling rationale for remote participation, e.g., if the in-person requirement would delay the candidate's graduation timeline to a subsequent term. In such cases, the petitioning Committee Chair's designated internal committee member ("designee") must confirm their in-person attendance as one of at least two physically present committee members and assume responsibility for certifying that audio-visual requirements have been met.
- In certain extenuating circumstances, a fully remote defense may be requested. The request must provide a compelling rationale for a fully remote defense, e.g., if the in-person requirement for the

candidate and Committee Chair would delay the candidate's graduation timeline to a subsequent term.

The Graduate Dean's Office will review the petition and render a decision. Any request for remote attendance should be sent to the [Coordinator of Graduate Student Services](#) as early as possible prior to the defense.

If any committee member, or, exceptionally, the candidate, participate remotely in the defense, the Ph.D. program is responsible for hosting a synchronous dissertation defense meeting with in-person and remote participants according to the guidelines detailed below. The candidate may opt to make the public parts of their defense meeting accessible to further remote attendees, such as faculty, fellow students, and the candidate's family and friends. Committees and candidates requiring guidance should consult the University Center for Teaching and Learning.

Requirements for Audio-Visual Technology

To satisfy the requirements for the remote attendance of any committee member or, exceptionally, the candidate, all participants in the meeting or defense must have access to the technological means for audiovisual interaction. Remote attendees must be accessible, with or without reasonable accommodations, to the graduate student presenter and other committee members participating in person and vice versa. The candidate's graduate program is responsible for arranging the necessary technology on campus and it is recommended that someone with technological expertise be present to resolve any difficulties as they may arise.

The dissertation proposal/prospectus/overview meeting or the defense of the dissertation must be rescheduled (or completed at a later time) if:

1. it is not technologically possible to accomplish the required level of audiovisual interaction at the time and place appointed; or
2. the video portion of the connection fails before the meeting or defense is 50% completed (reasonably determined by the Committee Chair) and cannot be reestablished; or
3. the audio portion connection fails before 90% of the meeting or defense is completed (reasonably determined by the Committee Chair) and cannot be reestablished.

Should any committee member and/or graduate student require accessible accommodations, please be sure to plan accordingly with the department in advance.

Chair's Dissertation Meeting/Defense Attendance Certification

For ALL Dissertation Proposal/Prospectus/Overview meetings and Defenses, the Chair of a dissertation committee will be required to complete the [Attendance Certification](#) form whereby they attest whether the meeting or defense was conducted fully in-person, fully remote, or a hybrid defense. Where a meeting or defense includes any number of remote attendees, the Chair must also attest on this form that the technological requirements for remote attendance have been met. This form must be included with the results of the dissertation proposal/prospectus/overview meeting or defense in the submission to the Office of Graduate Studies. If the Chair of the committee signs the student's paperwork in the name of a remotely attending member, a copy of the authorization for this signature must also be provided when the documentation is submitted; an email from the remotely attending member authorizing the signature is sufficient.

Remote attendance requirements

To satisfy the requirements of remote attendance, any remotely attending committee member must have full audiovisual interaction. The attendee must be visible to other committee members and the graduate student presenter and must be able to see the presenter as well as others in the room as necessary. The attendee must be able to hear and participate orally in all parts of the discussion and questioning. The candidate's department is responsible for arranging the necessary technology to fulfill

the remote attendance requirements and it is recommended that someone with technological expertise be present to resolve difficulties if they arise. **The dissertation proposal/prospectus/overview meeting or the defense of the dissertation must be rescheduled (or finished at later time) if –**

1. it is not technologically possible to accomplish the required level of audiovisual interaction at the time and place appointed; or
2. the video portion of the connection fails before the defense is 50% completed (reasonably determined by the Committee Chair) and cannot be reestablished; or
3. the audio portion connection fails before 90% of the meeting or defense is completed (reasonably determined by the Committee Chair) and cannot be reestablished.

Overview of Doctoral Committee Participation Rules

(Please refer to the full policy document for additional details, requirements, and explanations)

Members	Required for graduate committee?	Committee member department appointment	Minimum status	Prior approval required? ^b	Prior notification required? ^c	Remote attendance ^d
Internal 1 (Chair)	Required	Primary, secondary, or joint in candidate department	Pitt Graduate Faculty ^a	No	Yes	Must be present for both overview and defense
Internal 2	Required	Primary, secondary, or joint in candidate department	Pitt Graduate Faculty ^a	No	Yes	May request remote attendance of overview or defense but not both.
Internal 3						
External	Required	Not in candidate department	Pitt Graduate Faculty ^a or the equivalent at another institution	No, if Pitt Yes, if non-Pitt	Yes	May request remote attendance of both overview and defense if non-Pitt
Additional Members	Optional	Internal or external to department	Pitt Faculty or the equivalent at another institution	No, if Pitt Yes, if non-Pitt or not Grad Fac	Yes	May request remote attendance of overview or defense but not both.

a) Former Pitt faculty with Graduate Faculty Status may remain on the committee if the defense takes place less than 12 months after their departure. If the former faculty member was the committee Chair and will continue in this role, a current faculty Co-Chair must be designated.

b) Approval from the Assistant Dean for Graduate Studies must be requested for all external committee members. If non-Pitt or without Graduate Faculty status (applicable only to additional members), the approval request must explain the benefit to the candidate of committee member's participation and include a C.V.

c) Committee members must be identified on the application for candidacy and any changes to the committee must be requested prior to scheduling the overview or defense meeting.

d) A single remote attendance request by one committee member, either internal or external, for each meeting may be requested and will generally be granted. In the case where the non-Pitt external member is attending remotely, one additional request for remote attendance by an internal member or additional member is permitted (see Chart for additional attendance requirements). The second request may not be granted if shifting the meeting date by one month or less would avoid the need for remote attendance.

List of periodic content updates

The DGS should remove this page when making a PDF of the *Grad Guide*.

The following items should be checked every summer and updated prior to the posting of the new *Grad Guide* on the web site.

Last Done	~Page	Relevant Section	Item to update annually
2021	1	Cover page	Date range
2017	3-4	Table of contents	Adjust pages if major change made
2021	6	Graduate program faculty	Faculty hires, departures, promotions
2021	7	Department Graduate Committees	Committee members
2017	12	Dissertation committee membership	Assistant Dean identity & email
2021	16	Research Rotations	Dates of rotations and talks
2017	19	Department retreat	Date of retreat
2017	34	Conflict resolution	Associate Dean identity and email
2021	38	Appendix C	Any new Departmental course changes
2017	39	Appendix D	Any new outside courses approved
2021	43	Appendix G	Current stipend rates

The DGS should add items here if time- or identity-sensitive information is added to the *Grad Guide*.

COVID19 mentions

Also, the DGS should periodically test all links in the document; these occasionally are moved in the university web site and need to be updated.

DGS Resources

The current DGS should consult with previous DGSs when needed, especially regarding policies codified during their tenure:

Deborah Chapman	2022 –
Tia-Lynn Ashman	2020 – 2022
Kirill Kiselyov	2017 – 2020
Karen Arndt	2014 – 2017
Jeffrey Lawrence	2011 – 2014
Gerard Campbell	2008 – 2011
Susan Kalisz	2005 – 2008
Jeff Brodsky	2002 – 2005
Paula Grabowski	1999 – 2002