



TEXAS A&M UNIVERSITY

Biology

GRADUATE PROGRAM

HANDBOOK

2024-2025

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INTRODUCTION TO OUR GRADUATE PROGRAM

The graduate program in the Department of Biology provides students with specialized training through coursework, research, and teaching. The Graduate and Professional School (GPS) establishes the minimal university guidelines for all graduate degrees. The Department of Biology has established additional requirements that all students must satisfy. It is your responsibility as a graduate student to ensure that you have met all departmental and university requirements for your degree. Please note that graduate students must fulfill the requirements of the catalog that is current during the semester they enter the program. This is the case for both university and Department of Biology requirements. It is the student's responsibility to keep up with changes in requirements.

This book provides you with the departmental requirements and a summary of university requirements; however, a complete description of university requirements can be found in the graduate catalog. Please keep this book and a copy of the graduate catalog handy and refer to them as you progress through your degree. Additional information can be obtained from the Graduate and Professional School, located in Nagle Hall Room 204, and the Department of Biology, located in Butler Hall Room 102.



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GRADUATE POLICIES

To earn a Doctor of Philosophy degree a student must meet the requirements of both the university and the Department of Biology. The Department of Biology requirements are outlined below, along with a summary of the university requirements. Please refer to the graduate catalog for a complete description of University requirements and policies (<https://catalog.tamu.edu/graduate/>).

Please note that graduate students must fulfill the requirements of the catalog that is current during the semester they begin their degree requirements. This is the case for both the university and the Department of Biology requirements. ***It is the student's responsibility to ensure that they meet all requirements and deadlines for timely graduation.***

Deadlines For Graduate Degree

The Department of Biology has established the following deadlines to ensure timely completion of graduate degrees. The schedule is identical for both degrees granted in the Department of Biology.

Choice of major professor	by the end of the 2 nd semester
Degree plan filed with department	before registering for the 3 rd semester
Proposal draft submitted to advisor	start of the 5 th semester
Proposal filed with department	during the 5 th semester
Preliminary exam	during the 5 th semester
Final examination	within four years of completing the prelim exam

Meeting these deadlines requires that students complete a number of smaller items each year as they work their way through the graduate program below are major items that should be accomplished each year.

YEAR ONE

- Complete required courses/seminars
- Complete rotations
- Choose advisor
- Coordinate any additional coursework with PI
- Set up advisory committee
- Pass first committee meeting and turn in paperwork
 - Outline research project
 - Discuss any additional coursework
 - Obtain committee approval for degree plan
- Submit degree plan in DPSS to the Graduate and Professional School (GPS)

YEAR TWO

- Complete required courses/seminars
- Hold second-year committee meeting by the end of April

YEAR THREE

- Complete yearly seminars
- PhD students complete preliminary exam in Fall:
 - Submit final draft of research proposal to advisory committee a minimum of two weeks before the start of the preliminary exam
 - Submit Preliminary Exam Request in ARCs before the oral exam date
 - Complete written and oral exams (deadline: December 15th)

YEAR FOUR AND BEYOND

- Complete seminar course each year
- Hold committee meeting each year
- PhD students complete their final exam
 - Write dissertation
 - Submit completed Request for Final Exam through ARCs two weeks before defense
 - Distribute thesis to advisory committee two weeks before defense
 - Defend dissertation
 - Obtain committee approval for thesis
- Submit dissertation PDF to the thesis office.
 - Submit Copyright and Availability Form Dissertation Approval Form through ARCs

Required Teaching

The requirement for the Doctor of Philosophy degree is two semesters. Previous teaching experience at the university level may be used to fulfill this requirement at the discretion of the associate head for graduate programs.

Choice Of Major Professor

All students must identify a major professor by the end of their first year. The major professor must be a member of the Department of Biology graduate faculty. Students must inform the graduate office of their choice of major professor. They can notify them of their major professor by having the committee chair sign and submit a “New Student-Lab” form.

Advisory Committee

The advisory committee, chaired by the major professor, is a primary source of direction and intellectual support for a student’s research. The advisory committee should be constituted soon after the choice of major professor in order to provide the student with maximum input on course choices and research direction. The advisory committee will approve the degree plan, read, critique, and approve the proposal and dissertation, and administer the preliminary exam and the final defense.

The university requires that a graduate student’s advisory committee *must include a total of at least four members of the graduate faculty.* In addition to the university requirements, a biology

graduate student's advisory committee must include at least two tenured or tenure-track biology graduate faculty. The university requires that one member of the advisory committee be from a department other than the student's home department. Joint faculty members are considered biology faculty and cannot serve as the out-of-department member of a biology graduate student's advisory committee.

If a committee chair and student would like someone from outside of the university to serve on their committee, the outside faculty member will need to go through the Graduate Committee approval process. Please contact the Graduate Advising Office for information on requirements for the nomination. The faculty member being nominated will be an in-department member on the committee. Students will still be required to find an out-of-department committee member.

Filing The Degree Plan

The degree plan lists the coursework and research hours to be completed by a student during graduate study. The department or university cannot change the requirements for graduation once the degree plan is approved, and the student can only change the degree plan by filing a petition with GPS. The student, in consultation with the major professor and advisory committee, decides upon the courses included on the degree plan that are in addition to the departmentally required courses. The list of required courses starts on page 16. The minimum total number of hours required on a PhD degree plan is 96 hours; however, for students entering with a MS degree awarded in the US (or its equivalent as determined by the Office of Admissions), the minimum number of hours is 64.

The degree plan must be filed electronically at <https://ogsdpss.tamu.edu/>. Instructions on how to fill out degree plans will be emailed by the Graduate Advising Office to students in the spring semester before it is due. Additional instructions can be found at the Graduate and Professional School's website, <https://grad.tamu.edu/>.

During the course of a student's career, it may be necessary to request a committee, course, or degree change. Any petition that requests some change to a student's program must be submitted to the Graduate and Professional School's Document Processing Submissions System (GPS DPSS): <https://ogsdpss.tamu.edu/>.

Please consult with the Graduate Advising Office before submitting a petition.

Petitions

During the course of a student's career, it may be necessary to request a committee, course, or degree change. Any petition that requests some change to a student's program must be submitted to the Graduate and Professional School's Document Processing Submissions System (GPS DPSS): <https://ogsdpss.tamu.edu/>.

Laboratory Rotations

Students are expected to contact and/or visit faculty members they are considering for rotations or permanent positions to obtain additional information, prior to listing them as preferred

rotations. Two weeks prior to beginning of rotations students will submit a Rotation Selection Form and faculty will submit their lab's availability for rotations. The Graduate Program Committee (GPC) will place students in their rotations based on student preference and lab availability. No lab should accept students for rotations if they are not interested in taking students. The graduate program committee will make every effort to ensure that students have the opportunity to rotate in the labs they rank highest. Rotation assignments will be arbitrated by the Graduate Program Committee based on ranked choices by the students and available space in research laboratories.

Direct recruit Ph.D. students (students admitted directly into a Ph.D. advisor's lab) have the option to rotate in labs whether or not they are accepting new students, enabling them to learn new skills. If the faculty advisor and student agree to not take part in lab rotations, the faculty advisor will cover the direct recruit Ph.D. student with a research assistantship for their first year. If a direct recruit student does choose to do rotations, the first rotation will be with the sponsoring lab and the Ph.D. student and faculty advisor will sign a Lab Placement Agreement at the end of the first rotation. Lab placement agreements will be honored by the faculty, students, and the department.

Permanent Lab Placement

One week prior to the end of the third rotation (and not before), the faculty advisor will submit a ranked list of the potential students they would be willing to take into their labs. Likewise, students will submit a rank list of the labs they wish to join. The rank lists will only contain the names of those in which you have an interest to work with for the long-term.

The Graduate Program Committee will first and foremost consider the faculties and students' rankings in this arbitration process. Faculty need to have available funding to support graduate student development and summer research assistantship/tuition for a minimum two years. Exceptions to this policy can be made with prior department head approval. To ensure open discussion with all faculty about lab assignments, Ph.D. student placements will be shared in advance with faculty before lab assignment notifications are sent to the students. Faculty and students should not make independent prior arrangements or agreements regarding the student's dissertation lab.

In the event a student does not find a laboratory for their dissertation research, the student can complete a fourth rotation to try to find an advisor. If a student has not found a research laboratory for their dissertation research at the end of their fourth rotation, the student will meet with the Associate Head for Graduate Studies to discuss options for a master's degree.

COMMITTEE MEETINGS

All graduate students are required to have at least one committee meeting each academic year. An advisory committee meeting report form must be submitted within one year of the previous committee meeting. Failure to do so may result in a registration block for the next semester.

First-Year Committee Meeting

The first committee meeting has a unique set of forms to be completed by the advisory committee, and subsequent meetings all use the standard advisory committee meeting report.

For the first-year committee meeting, each committee member must fill out the Report of the First Year Graduate Assessment. The committee chair will also fill out the Committee Chair Report where they sum the acceptable and unacceptable scores from each committee member's Report of the First Year Graduate Assessment. Then, the chair will fill out the summary and recommendation of the committee, and both the chair and the student will sign the form. Regardless of whether the student passes or fails the assessment, the form **must** then be submitted to the Graduate Advising Office.

If the student fails in their first attempt, he or she may request a second assessment meeting to be held within 6 months of the first or choose to leave the program. The second assessment meeting will require the same assessment forms as the first, but the committee may choose to focus on only certain areas (please see First-Year Committee Meeting Form in Appendix for more information). If a student fails the first committee meeting a second time they will be dismissed from the program or may switch to the master's program at the discretion of the student's advisory committee chair.

Annual Committee Meeting

At committee meetings after the first year, committees will fill out the Annual Committee Meeting Form together as a group. They will also all sign the form, along with the student, and submit the form to the Graduate Advising Office. These forms can be downloaded from the biology graduate program website.

RESEARCH PROPOSAL

The PhD student must prepare a research proposal for approval by his or her advisory committee. The proposal format should be discussed during the first committee meeting. Some faculty use the NIH F31 application as a template. In the proposal, the student should describe the rationale for the research project, the main hypothesis being tested, the objectives (specific aims) of the research to be performed, and outline the methodologies to be used. Typically, the research proposal will include preliminary results from the student's work and be no longer than 10 pages. The proposal should be reviewed and approved by the faculty mentor prior to sharing with the committee. It should be submitted to the students committee at least 2 weeks prior to the start of the written exam.

PRELIMINARY EXAM

Purpose

The purpose of the preliminary examination is for the student's advisory committee to determine whether the student has a mastery of the subject matter of all fields in the program, an adequate knowledge of the literature in these fields, and the ability to carry out bibliographical research.

The preliminary examination is required of all PhD students.

Paperwork

Before the oral portion of the exam, students must submit a Preliminary Exam form in ARCs. The Preliminary Exam form will be approved or disapproved by the committee after the oral exam. Students also need an Annual Committee Meeting form to be filled out by the committee at the oral exam and then returned to the Graduate Advising Office.

Parts of Exam

The preliminary examination includes both a written and an oral examination in which the student's advisory committee tests a PhD student's mastery of his or her field of specialization. The preliminary examination will be administered during the 5th long semester by the student's advisory committee; *in other words, the student will take their written and oral exams in the fall semester of their 3rd year.*

The PhD preliminary examination will consist of the proposal described above, a written, and an oral examination. During this exam students are expected to demonstrate that they: 1) understand fundamental biological concepts; 2) have gained detailed knowledge of scientific literature in their research area and the ability to critically evaluate it; 3) are able to formulate specific, plausible and testable hypotheses; 4) are able to design controlled experiments that distinguish among competing hypotheses; 5) are familiar with techniques within their discipline; 6) understand the theory underlying the proposed techniques; and 7) can communicate effectively both in writing and in the oral presentation. Details of the exam format and requirements follow.

Each student will arrange a time to take ***a written exam from each advisory committee member***. Exams will be evaluated by the committee member, who will typically provide feedback to the student prior to the oral portion of the exam.

Students are expected to prepare a 15-30 minute presentation on their proposal and will be examined on their proposal and general knowledge of biology. The committee will meet at the end of the exam and evaluate student performance. The student passes the preliminary exam if there is no more than one dissenting vote among advisory committee members; however, the dissent cannot come from the chair. If the one dissenting voice is the chair, the student fails the exam.

Scheduling Exam

Preliminary examinations cannot be taken until all the course requirements of the Department of Biology have been completed and less than six hours of formal coursework remain to be completed on the degree plan.

Students are responsible for scheduling a mutually agreeable two hour block of time for the committee to give the oral exam, which must not be more than three weeks after the completion of written exams.

Failure of Exam

In the event of a failure, the advisory committee has the option to allow a retake of the preliminary exam. The written and oral portions of the exam, administered as described above, must be completed within a three week timeframe within six months of the original oral exam date. In the event of a second failure, no further retakes will be allowed. The student's status in the biology graduate program will then be determined by the student and the advisory committee (options include leaving the program or completing an MS).

Regardless of whether the student passes or fails the preliminary exam, the Preliminary Exam Request in ARCs and Annual Committee Meeting form must be completed and, in the case of the Annual Committee Meeting form, must be submitted to the Graduate Advising Office.

If the student does not schedule and pass their preliminary exam before the end of the fall of their 4th year, they are automatically reassigned to the Master's with thesis track.

The results of the examinations should be reported on the Report of the Preliminary Exam form in ARCS. Failure to submit the form to GPS within 10 working days of the exam will result in the preliminary exam being recorded as a failure. *After passing the preliminary examination, all degree requirements must be completed within four calendar years. Otherwise, the student will be required to repeat the preliminary exam.*

Admission to Candidacy

For admission to candidacy for a doctoral degree, the student must have: (1) completed all formal coursework on the degree plan with the exception of any remaining 681s or 691s (2) a

3.0 graduate GPA and a Degree Plan GPA of at least 3.0 with no grade lower than C in any course on the degree plan, (3) passed the written and oral portions of the preliminary exam, (4) submitted an approved dissertation proposal, and (5) met the residence requirements. The final examination will not be authorized for any doctoral student who has not been admitted to candidacy.

Registration

Students must be enrolled for 9 hours in the long semesters and 6 hours in the summer if they are on an assistantship (teaching or research). After all formal coursework is complete, students should enroll in 8 hours of research and 1 hour of journal club in each long semester until graduation. Once all course work on the degree plan other than 691 Research is completed, a doctoral student must be in continuous registration until all further requirements for the degree have been completed. Please see the [Graduate Catalog](#) for additional information on the continuous registration requirement.

Pre-Defense Publication of Dissertation Material

Students should be aware of the agreement that is signed when a journal (hard copy or electronic) accepts an article for publication. At that time, the student often must assign rights to the journal as publisher. The student must obtain written permission from the copyright holder to include the material in the thesis, dissertation, or record of study. Virtually all journals and publishers will grant TAMU such rights, many have blanket statements granting this permission on their websites.

The [Thesis Office](#) maintains guidelines for theses, dissertations, and records of study. Please see their resource page for more information.

Dissertation

The ability to perform independent research must be demonstrated by the dissertation, which must be the original work of the candidate. The dissertation describes the research performed by a student during graduate study and the unique contribution the student has made to advance the frontiers of knowledge. The student, in consultation with his or her advisory committee, determines the content of the dissertation. The dissertation must be approved by the student's advisory committee. *The dissertation should be submitted to the members of a student's advisory committee at least two weeks prior to the final examination.*

The dissertation must be original work, grammatically correct in a format consistent with that used in scholarly journals in the candidate's field. The Graduate and Professional School controls the format of the dissertation. Students must follow it exactly, or risk having it rejected by the thesis clerk. Instructions and the thesis manual are available on-line on the Thesis Office Resource Page

Students are required to submit an electronic thesis/dissertation (ETD) as a pdf file to the thesis office. All electronically submitted manuscripts can be accessed from the internet via <http://etd.tamu.edu> or through the library website, <http://library.tamu.edu>. Information on how to

submit an electronic thesis/dissertation is available on the thesis office website: <http://thesis.tamu.edu>. Deadlines for submission of manuscripts to the Graduate and Professional School are published each semester in the Graduate and Professional School calendar. A copy of this calendar can be found at <http://GPS.tamu.edu/Buttons/Calendars>.

Final Examination/Dissertation Defense

In order to graduate at the end of a given semester, the final exam for a doctoral degree must be passed by deadlines announced in the Graduate and Professional School calendar. Students must be registered for at least one credit hour during the semester or summer term in which the final examination is held.

To be eligible to take the final examination, a student must be advanced to candidacy. The preliminary examination results and research proposal must have been submitted to the Graduate and Professional School at least 14 weeks prior to the date of the defense. However, the final examination must be held within four years of advancement to candidacy.

Requests for permission to hold and announce the final oral examination must be submitted to the Graduate and Professional School at least 10 working days before the requested exam date. This request must be approved by the student's advisory committee, the associate head for graduate programs (or department head), and GPS. The Final Exam Request should be submitted through ARCs in Howdy.

The student's advisory committee will conduct the final examination/dissertation defense. The final examination is not to be administered until the candidate's dissertation in substantially final form is provided to the advisory committee, and all concerned have had adequate time to review the document. ***The Department of Biology requires that the dissertation in substantially final form be submitted to the members of a student's advisory committee at least two weeks prior to the final examination. In order to allow sufficient time for revisions, the final exam should be scheduled no later than 4 weeks prior to the GPS deadline for submission of the dissertation.***

All PhD students receiving degrees through the Department of Biology will be required to present a departmental seminar covering their dissertation research, to be held immediately prior to the final examination. This seminar must be announced two weeks prior to the scheduled date and time (indicating that the student is a doctoral candidate), be advertised as a departmental seminar, and be open to all interested parties. Presentation of this seminar is to be followed by an open question period. Following the open question period, the student's advisory committee will conduct the final examination.

Whereas the final examination may cover the broad field of the candidate's training, it is presumed that the major portion of the time will be devoted to the dissertation and closely allied topics. Persons other than members of the graduate faculty may, with mutual consent of the candidate and the major professor, be invited to attend a final examination for an advanced degree. Upon completion of the questioning of the candidate, all visitors must excuse

themselves from the proceedings when the advisory committee begins its deliberation on the results of the examination.

A positive vote by all members of the graduate committee, with at most one dissension, is required to pass a student on his or her exam.

Application for Degree

Graduate students who expect to complete their work at the end of a given semester must apply for graduation through Howdy and by paying the required graduation fee at the fiscal department no later than the Friday of the second week of the fall or spring semester or the Friday of the first week of the first summer term. Graduate students in interdisciplinary programs should attend the ceremony of their home academic department.

Time Limit

All graduate work must be completed within 10 consecutive calendar years. If within this time period a student does not complete all requirements for the degree sought, he or she cannot receive graduate credit for any course work that is more than 10 calendar years old at the time of the final examination.

GENERAL UNIVERSITY INFORMATION

Ombudsperson For Graduate Education

The Ombudsperson for graduate education assists graduate students, faculty, staff, and administrators to solve conflicts informally. The ombudsperson serves as a neutral listener, information resource, advisor, intermediary, and mediator. The ombudsperson advocates for the processes of graduate education by being equally open and accessible to all parties.

Ombudsperson contact information:

Ombudsperson for Graduate Education
1113 TAMU
College Station, TX 77842-1113
(979) 845-3631

RESIDENCE

Students who enter the doctoral degree program with a bachelor's degree must spend at least two academic years in resident study at College Station or Galveston. If a Master's degree has been awarded, one academic year is required. One academic year may include two adjacent regular semesters or one regular semester and one adjacent 10-week summer semester. See the graduate catalog for additional information on residence requirements.

A&M Policy On The Maximum Doctoral (G8) Hours

A full-time doctoral student will be allowed to pursue his/her program for seven calendar years before a charge of out-of-state tuition is initiated (99 doctoral hours and 21 semesters). If a student is pursuing a doctoral degree on a part-time basis, he/she would have up to 99 semester hours before the university would begin to charge out-of-state tuition if they pass the seven year mark. Students who exceed these time limits will be charged out-of-state tuition.

GENERAL DEPARTMENT INFORMATION

Minimum GPA (Scholastic Deficiency)

A student's graduate GPA is expected to remain at or above 3.00 (on a 4.00 scale) during his or her graduate career. If a graduate student's cumulative GPA falls below 3.00, he or she will be on scholastic probation and notified of this in writing by the Associate Head for Graduate Programs. A copy of the memo will be sent to the student's advisor. The student will meet with his or her advisor and advisory committee to develop a plan to overcome the scholastic deficiency. The plan should include the course(s) to be taken and the grade(s) the student must receive to return to good standing with the department. A copy of the plan signed by the student and the advisory committee will be given to the graduate advising office for the student's file. If the student has not yet chosen a major professor, he or she will meet with the Associate Head for Graduate Programs to develop such a plan, a copy of which will be put in the student's file. The student will be given one semester (excluding summer terms) to raise his or her GPA above 3.000. If after one semester the student remains scholastically deficient, he or she will be informed of this in writing by the Associate Head for Graduate Programs. The student may request a second semester of academic probation from the Graduate Program Committee. If the request is denied or, if after two full semesters, the student remains on scholastic probation, he or she may be asked to leave the graduate program and the GPC and Associate Head for Graduate Programs will submit a request to the Graduate and Professional School that the student be dismissed from the university for scholastic deficiency. Additionally, if a student earns a "C" or lower in a required course, they must make up the course the next time it is offered and earn a "B" or better.

Financial Support

Graduate students in the Department of Biology can be supported by graduate teaching assistantships (GAT), graduate research assistantships (GAR), or fellowships. GAR support is usually provided by individual faculty and is funded by research grants. Fellowship support may be provided by the university, federal grants, or other sources and is awarded on a competitive basis.

In order to be eligible for support, students must be registered as full-time graduate students. In the fall and spring semesters, a minimum of 9 credit hours is required. For summer support, required registration is a minimum of 6 credit hours for the 10-week session or 3 credit hours per five-week summer session. The Department of Biology will cover tuition and fees for students on Teaching Assistantships for the first four years (if students have a master's degree) and first five years (if students do not have a master's degree). After the four or five year mark, students or their PIs will be responsible for their tuition and fees.

Submitting Required Paperwork

There are two types of required paperwork: departmental and university. Departmental paperwork consists of yearly committee meeting forms, graduate assistantship request forms, annual report forms, etc. These need to be returned to the graduate office upon completion.

University-level paperwork are typically forms that the Graduate and Professional School (GPS) need to process degree progress (e.g. preliminary exam forms, proposal forms, and defense paperwork, etc). These forms are found in ARCs, which is in Howdy. Degree plans are also submitted to GPS, but through the Document Processing Submission System (DPSS). All of the university-level paperwork is approved by the Assistant Program Director first, then sent to the committee, then the Department Head, and GPS will make any final approvals.

Progress Towards Degree

All graduate students must adhere to the requirements set forth by the department in order to remain in good standing. If a student has not met the required departmental or university deadlines as specified in this handbook or the graduate catalog, they will no longer be in good standing with the department and may be blocked from registration the following semester.

Graduate Course Requirements For PhD In Biology

Biology PhD graduate students are required to take courses as listed below. Graduate students in consultation with their chair and committee are allowed to substitute one required course without GPC approval. Any additional course switches would need to be approved by GPC.

Required Courses for the First Long Semester (Fall, Year 1)

BIOL 683	Experimental Design
BIOL 613	Cell Biology
BIOL 694	Graduate Orientation
BIOL 697	Method of Teaching Biology Laboratory
BIOL 681	Seminar: Departmental Colloquium

Required Courses for the Second Long Semester (Spring, Year 1)

BIOL 609	Molecular Tools
BIOL 696	Ethics and Responsible Research
BIOL 681	Seminar: Departmental Colloquium
BIOL 691	Research (1 hr)
BIOL 682	Communication

Required Courses for the Third Long Semester (Fall, Year 2)

BIOL 610	Evolution
BIOL 651	Bioinformatics
BIOL 681	Journal Club (1 hour)
BIOL 691	Research with PI (2 hours)

Required Courses for the Fourth Long Semester (Spring, Year 2 through Graduation)

BIOL 681	Journal Club (1 hour)
BIOL 691	Research (8 hours)

Graduate Course Requirements For PhD In Microbiology

Microbiology PhD graduate students are required to take courses as listed below. Graduate students are allowed to substitute **one** required course without GPC approval. Any additional course switches would need to be approved by GPC.

Required Courses for the First Long Semester (Fall, Year 1)

BIOL 613	Cell Biology
BIOL 683	Experimental Design
BIOL 694	Graduate Orientation
BIOL 697	Method of Teaching Biology Laboratory
BIOL 681	Seminar: Departmental Colloquium

Required Courses for the Second Long Semester (Spring, Year 1)

BIOL 606	Microbial Genetics
BIOL 609	Molecular Tools
BIOL 696	Ethics and Responsible Research
BIOL 682	Communications
BIOL 681	Seminar: Departmental Colloquium

Required Courses for the Third Long Semester (Fall, Year 2)

BIOL 622	Microbial Physiology
BIOL 651	Bioinformatics
BIOL 681	Journal Club (1 hour)
BIOL 691	Research with PI (2 hours)

Required Courses for the Fourth Long Semester (Spring, Year 2 through Graduation)

BIOL 681	Journal Club (1 hour)
BIOL 661	Antimicrobial Agents (only in 4 th semester)
BIOL 691	Research (7 hours)

PARTICIPATION IN DEPARTMENTAL COMMITTEES

Graduate students are encouraged to participate in departmental committees. Regular elections are held to select graduate student representatives to the Graduate Programs, Graduate Recruiting and Admissions, and seminar committees. These elections are held under the auspices of the Biology Graduate Student Association (BioGSA). Students are encouraged to join and become active in the BioGSA, as it provides an organized means of communicating student concerns to the faculty and administration. BioGSA officer elections are held at the beginning of the fall semester.

Committees/ Positions:

- BioGSA
 - Primary Advisor: Faculty Position
 - President: Student Position
 - Vice President: Student Position
 - Treasurer: Student Position
 - Fundraising: Student Position
 - GRAC Position: 2x Student Position
 - GPC Position: Student Position
 - Faculty Meeting Rep: Student Position
 - Outreach Committee: 2x Student Position
 - Professional Development: Student Position
 - Administrative Position: Student Position
 - Engagement Chair: Student Position
 - Event Coordinator: Student Position
 - GPSG Officer: Student Position