



TEXAS A&M UNIVERSITY

Biology

GRADUATE PROGRAM

# HANDBOOK

2021-2022

## INTRODUCTION TO OUR GRADUATE PROGRAM

The graduate program in the Department of Biology provides students with specialized training through course work, 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.



**Dr. Heath Blackmon**

*Graduate Advisor*



**Jennifer Bradford**

*Graduate Programs Coordinator*

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# GRADUATE POLICIES

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## 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 <sup>nd</sup> semester
Degree plan filed with department .....	before registering for the 3 <sup>rd</sup> semester
Proposal draft submitted to advisor .....	end of the 4 <sup>th</sup> semester
Proposal filed with department .....	during the 5 <sup>th</sup> semester (see page 19)
Preliminary exam .....	during the 5 <sup>th</sup> semester (see page 20)
Final examination .....	within four years of completing the prelim exam

## SUBMITTING REQUIRED PAPERWORK

All paperwork to be filed with the Graduate and Professional School (GPS) or other university offices **must be routed through the Biology Graduate Advising office**. The graduate advising office will review the document, obtain signatures from the department head or associate head for graduate programs, log in the paperwork, and file the paperwork with GPS.

## 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. The block will not be lifted until the requirement is met. Requests for exemptions will be considered by the associate head for graduate programs in consultation with the Graduate Programs Committee (GPC) on a case-by-case basis.

# THE FIRST YEAR

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## RESEARCH ROTATIONS

The Department of Biology requires all incoming students to complete three five-week laboratory rotations during their first semester. Rotations acquaint new students with research programs in their areas of interest, provide a perspective on approaches and procedures used in modern biology, and create useful contacts in other labs. At the conclusion of rotations, a major professor is chosen by the mutual consent of the graduate faculty member and the student. Students have the option to do one or more additional seven-week rotations in the second semester.

## REQUIRED COURSEWORK

See pages 12-15 for required coursework for Biology and Microbiology PhD students.

## 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 associate head for graduate programs of their choice of major professor and request that the major professor notify the associate head for graduate programs of their agreement.

## REQUIREMENTS FOR A CO-CHAIRLED COMMITTEE

Occasionally, a student can best complete his/her graduate program by working under the direction of two faculty members. Under these circumstances, a student may elect to be co-chaired by two Texas A&M faculty members. In general, students should request a co-chaired committee only if necessary for their graduate training. The co-chairs should both provide ongoing intellectual contributions and be active mentors to the student. In the case of students who are residents in other academic departments, the biology co-chair must be willing to act as a conduit to maintain lines of communication between the department, the advisory committee, and the student.

One of the co-chairs **must** be a member of the Department of Biology graduate faculty. The other co-chair may be a member of any other department on campus (including Biology). Students with co-chaired committees **must satisfy all biology requirements for degrees and must take at least 50% of their 691 research credit hours as biology hours.**

## GUIDELINES FOR REQUESTING A CO-CHAired ADVISORY COMMITTEE

Requests for a co-chaired committee must be reviewed and approved by the department's Graduate Program Committee (GPC) before the associate head for graduate programs will approve a student's degree plan.

Requests for a co-chaired committee should be submitted to the biology graduate advising office and must contain the following:

**01 Student Statement of Purpose**  
This letter, from the requesting student, should outline the reasons for requesting the co-chaired committee and the reasons for designating the specific biology faculty member as their choice of co-chair. The student should outline the role(s) each co-chair will take in guiding the student's academic and research progress.

**02 Letters from Faculty Co-Chairs**  
A letter is required from each co-chair outlining his or her contribution to the student's academic endeavors and/or research projects and confirming their approval of the shared duties as co-chairs of the student's advisory committee. The faculty co-chairs may be requested to meet with the GPC to discuss their contributions prior to approval of the request by the GPC.

## ADVISORY COMMITTEE

An advisory committee supervises a student's course work and research, examines a student's progress, and approves all documents required for progress toward a degree. The advisory committee will approve the degree plan, read and critique the proposal and thesis or dissertation, and administer the oral exams. The advisory committee, chaired by the major professor, is a primary source of direction and intellectual support for a student's research.

In order to provide the student with maximum input on course choices and research direction, the advisory committee should be constituted soon after the choice of major professor. Students are expected to meet with their advisory committee before the end of their first year.

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.

## REQUIRED 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 to the graduate advising office no later than the end of summer term of each academic year. Failure to do so may result in a registration block for the fall semester. 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. These can be obtained from the biology graduate advising office or downloaded from the biology graduate program web site; copies are included in the appendix of this handbook.

## FILING THE DEGREE PLAN

**The degree plan lists the course work 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 12. 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 International Admissions), the minimum number of hours is 64.

It is important that students review the limitations on the use of undergraduate courses, seminar hours, research hours, and transfer courses (detailed in the graduate catalog) prior to submitting a degree plan. When a student files a degree plan, a template should populate with the required courses that all students must take, such as 681, 697, 685, etc. It will be up to the student to fill in four 3-credit hour courses, all 691 hours, and any additional courses required by the committee.

The degree plan must be filed electronically at <https://ogsdpss.tamu.edu/>. Instructions can be found at the Office of Graduate and Professional Studies web site, <http://GPS.tamu.edu/New-Current-Students>.



## 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://ogsdps.tamu.edu/>.

# DEGREE REQUIREMENTS

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## GRADUATE COURSE REQUIREMENTS FOR PHD IN BIOLOGY

Biology PhD graduate students are required to take a minimum of any 4 BIOL graduate courses from either or both foundation and specialization course listings. Exemptions will be considered by the GPC. Additional courses can be included to the student's degree plan by the student's individual committee; suggested courses from other departments are included in the supplementary list.

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

BIOL 683	Experimental Design
BIOL 609	Molecular Tools
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 613	Cell Biology
BIOL 696	Ethics and Responsible Research
BIOL 681	Seminar: Departmental Colloquium
BIOL 691	Research*

\* Students must enroll in either 4 hours of research with their major PI or enroll in 1 hour of research and 3 hours of elective coursework. The PI will determine additional elective coursework.

### 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)

### Specialization Biology Course List (taught every year or every other year):

BIOL 601	Biological Clocks
BIOL 602/603/604	TEM
BIOL 608	Light Microscopy
BIOL 615	Signaling in Development and Behavior
BIOL 622	Advanced Microbiology Physiology
BIOL 625	Structural and Molecular Biology
BIOL 628	Principles of Neuroscience II
BIOL 635	Plant Molecular Biology
BIOL 636	Plant Cell Biology
BIOL 644	Comparative and Developmental Neurobiology
BIOL 649	Comparative Endocrinology
BIOL 650	Genomics
BIOL 652	Epigenetics
GENE 612	Population Genetics
BIOL 609	Molecular Tools
BIOL 611	Developmental Biology
BIOL 627	Principles of Neuroscience I
BIOL 698	Behavior Genes and Evolution

### Supplemental Course List:

STAT 651/652	Statistics in Research I and II
GEOL 651	Paleo Community Analysis ( <i>substitutes for STAT 651</i> )
GENE 603	Genetics
BICH 603	General Biochemistry
BICH 631	Biochemical Genetics

## GRADUATE COURSE REQUIREMENTS FOR PHD IN MICROBIOLOGY

Microbiology PhD graduate students are required to take a minimum of any 4 BIOL graduate courses from either or both foundation and specialization course listings. Exemptions will be considered by the GPC. Additional courses can be included to the student's degree plan by the student's individual committee; suggested courses from other departments are included in the supplementary list.

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

BIOL 609	Molecular Tools
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 613	Cell Biology
BIOL 696	Ethics and Responsible Research
BIOL 691	Research (1 hour)
BIOL 681	Seminar: Departmental Colloquium

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

BIOL 622	Microbial Physiology
BIOL 651	Bioinformatics
BIOL 661	Antimicrobial Agents
BIOL 681	Journal Club (1 hour)
BIOL 691	Research with PI (1 hours)

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

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

**Specialization Microbiology Course List (taught every year or every other year):**

BIOL 601	Biological Clocks
BIOL 602/603/604	TEM
BIOL 608	Light Microscopy
BIOL 611	Developmental Biology
BIOL 615	Signaling in Development and Behavior
BIOL 622	Advanced Microbiology Physiology
BIOL 625	Structural and Molecular Biology
BIOL 647	Digital Biology
BIOL 650	Genomics
STAT 651/651	Statistics in Research I and II
GENE 603	Genetics
BICH 601	Fundamentals of Biochemistry
BICH 603	General Biochemistry
BICH 631	Biochemical Genetics
MSCI 635	Basic Immunology
MPIM 601	Microbial Pathogenesis of Human Disease
MPIM 602	Immunoregulation
MPIM 607	Applied Epidemiology

**OTHER COURSE OPTIONS**

**Special Topics Courses:** These courses cover current topics of interest and may or may not become permanent courses. Typically, they are 1-3 credit literature-based courses and are announced at the beginning of each semester. If these courses are well subscribed for 3 consecutive academic years then they can be moved up to the major course category and given a BIOL course number.

**Undergraduate Background Courses:** If a graduate student enters the program without the background needed for a graduate course in a particular area, it may be appropriate to first take an undergraduate course. For example, for graduate students who have not taken molecular biology, genetics, biochemistry, or neurobiology, we recommend that they take BICH 431 Molecular Genetics, GENE 302 Genetics (majors course), BICH 440/441 Biochemistry I/II (majors course), BIOL 434/435.

# TIMELINE FOR GRADUATE STUDIES

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## YEAR ONE

- Complete required courses/seminars
- Complete rotations
- Choose advisor
- Develop degree plan with advisor
- Set up advisory committee
- Hold first committee meeting
  - Outline research project
  - Discuss degree plan
  - Obtain committee approval for degree plan
- Submit degree plan to the biology graduate advising office to be submitted to the Graduate and Professional School (GPS)

## YEAR TWO

- Complete required courses/seminars
- PhD students submit draft of research proposal to their advisor by end of spring semester

## YEAR THREE

- Complete yearly seminars
- PhD students complete preliminary exam:
  - Submit research proposal to advisory committee (deadline: 3<sup>rd</sup> Monday in September)
  - Submit preliminary exam checklist two weeks before preliminary exam commences (deadline: 3<sup>rd</sup> Monday in October)
  - Complete written and oral exams (deadline: last working day of November)

## YEAR FOUR AND BEYOND

- Complete seminar course each year
- Hold committee meeting each year
- PhD students complete their final exam
  - Write dissertation
  - Submit completed Permission to Defend Thesis form to the GPS two weeks before defense
  - Distribute thesis to advisory committee two weeks before defense
  - Defend dissertation
  - Obtain committee approval for thesis
- Submit dissertation approval form and dissertation PDF to the thesis office.

# DOCTOR OF PHILOSOPHY

## GRADUATE DEGREE REQUIREMENTS

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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.

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 keep up with changes in requirements.

### 01

#### Laboratory Rotations and Identify a Major Professor

All incoming students must complete at least three five-week laboratory rotations during their first semester, and they must identify a major professor by the end of their 2nd semester (excluding summer terms). Sponsorship by the chair or co-chair must be submitted in writing to the associate head for graduate programs by the end of the 2nd semester.

The committee chair or one of the co-chairs must be a member of the Department of Biology graduate faculty. Requests for a co-chair from outside the Department of Biology must be approved by the Graduate Program Committee (see requirements on pages 7-8).

### 02

#### Establish an 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 doctoral student's advisory committee be composed of no fewer than 4 members of the graduate faculty who are representative of the student's field of study and research. The chair or one of the co-chairs of the advisory committee must be from the student's major department, and at least one of the members must be from a department other than the student's department.



The Department of Biology has established the following additional requirements for doctoral students. The advisory committee must contain at least two tenured or tenure-track members of the biology graduate faculty. Faculty having joint appointments in the Department of Biology are considered biology faculty and cannot serve as the out-of-department member of a biology graduate student's advisory committee.

## 03

### Degree Plan

The degree plan should be developed in consultation with the student's advisory committee and submitted through the GPS DPSS system (<https://ogsdpss.tamu.edu/>) prior to registering for the 3rd semester (excluding summer terms). This deadline was established to ensure that students consult with their advisory committees about course work before beginning the second year of study.

For PhD students, a minimum of 96 credit hours beyond the baccalaureate degree or 64 credit hours beyond the Master's degree is required. Some Master's degrees awarded in countries other than the U.S. are not equivalent to a Master's degree awarded in the U.S. In these instances, the student will be required to have 96 hours on their degree plan.

The degree plan should include the course work required by the Department of Biology. For limitations regarding the use of certain graduate courses and transfer credit see the graduate catalog. All doctoral degree plans must carry a reasonable amount of 691 (Research) hours.

## 04

### Teaching Requirement

All PhD students are required to teach for at least two semesters.

## 05

### Foreign Language

No foreign language is required.

# 06

## Research Proposal

The PhD student must prepare a research proposal for approval by his or her advisory committee. The proposal describes the research that a student intends to undertake. The proposal is not a contract to perform the described research and significant research progress need not be completed at the time of proposal submission. The proposal is a mechanism to assist students in clarifying research goals early in their graduate program, to encourage students to become familiar with the primary literature in their field, to provide experience in scientific writing, and to facilitate research interactions between students and members of their advisory committee. In the proposal, the student describes the rationale for the research project, the objectives of the research to be performed, and outlines the methodologies to be used.

Students will prepare a proposal describing their planned research. The proposal format will be determined by the student's advisory committee during their first committee meeting. Suggested formats include:

NIH R01 applications (<http://grants.nih.gov/grants/funding/phs398/phs398.html>)

NSF research proposals ([http://www.nsf.gov/pubs/gpg/nsf04\\_23](http://www.nsf.gov/pubs/gpg/nsf04_23))

NIH postdoctoral fellowships (<http://grants1.nih.gov/grants/funding/416/phs416.htm>)

### Research Proposal Guidelines

**01** A draft of the research proposal should be submitted to the student's advisor by the end of the 4th semester. The proposal must be approved by the student's advisor then submitted to the entire advisory committee by the 3rd Monday in September of their 5th semester (excluding summer; i.e. the first semester of year 3). The advisory committee will evaluate the proposal and request any changes by the last business day in September. Students will complete any changes and gain approval by the committee to proceed with the preliminary exam by the 2nd Monday in October.

**02** After revisions and approval by the advisory committee, the proposal should be submitted along with the signed official cover sheet to the Biology Graduate Advising office. The official cover page is available in Appendix II.

**03** Students performing research involving human subjects, infectious biohazards, and/or recombinant DNA must attach a copy of the appropriate research compliance approval form to the proposal when proposal is submitted. Proposals that include research with vertebrate animals (including antibody generation in rabbits or mice) must include a copy of an approved Animal Use Protocol cover page. Information on animal use protocols can be found at <http://animal.tamu.edu/approval.html>.

# 07

## Preliminary Examination

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.**

### Eligibility Requirements for the Preliminary Exam

- 01** The student must be registered for at least 1 hour for the semester or 5-week summer term during which any portion of the preliminary exam may fall. If the entire exam falls between semesters, the student must be registered for the term immediately preceding the exam.
- 02** An approved degree plan was on file with GPS at least 90 days prior to the first written examination.
- 03** The student's official GPR at the time of the examination must be at least 3.000.
- 04** All English language proficiency requirements must have been satisfied.
- 05** All committee members must have scheduled or waived the written portion and agree to attend the oral portion of the exam or have found a substitute. Only one substitution is allowed and it cannot be for the committee chair.
- 06** At the end of the semester in which the exam is given, there are no more than 6 hours of course work remaining on the degree plan (except 681). The head of the student's department has the authority to approve a waiver of this criterion.
- 07** The time span from the first written examination to the oral is no more than three weeks. The head of the student's department has the authority to approve a waiver of this criterion.

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 7<sup>th</sup> semester (including summer sessions) by the student's advisory committee; **in other words, the student will take their written and oral exams in the fall semester of their 3<sup>rd</sup> 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.

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 course work remain to be completed on the degree plan.

Written exams will be taken during the week starting with the last Monday in October. Each student will arrange a time to take a written exam from each advisory committee member. Exams will be evaluated and returned to the committee chair, who will then forward the exams to the student. Students will have the opportunity to discuss any deficiencies in their exams with advisory committee members during the first full week of November.

Oral exams will be taken during the second full week of November. Students are responsible for scheduling a mutually agreeable two hour block of time for the committee to give the oral exam. Students are expected to prepare a 20-40 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.

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 prior to spring break. 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.

**If the student does not schedule and pass their preliminary exam before the end of their 9<sup>th</sup> semester (including summer), immediately upon the 10<sup>th</sup> semester (i.e. fall semester of their 4<sup>th</sup> 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. The chair will bring the completed form to the Biology Graduate Advising office, which will submit the form to the Office of Graduate and Professional Studies. 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.**

# 08

## **Admission to Candidacy**

For admission to candidacy for a doctoral degree, the student must have: (1) completed all formal course work on the degree plan with the exception of any remaining 681, (2) a 3.0 graduate GPR and a Degree Plan GPR 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.

# 09

## **Continuous Registration**

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. See the graduate catalog for additional information on the continuous registration requirement.

# 10

## **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 assigns 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. Most journals and publishers will grant TAMU such rights. A list of these journals can be found on the thesis office website.

# 11

## **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 at <http://thesis.tamu.edu/>.

The student must submit an original copy of the dissertation in a form approved by the student's advisory committee to the graduate advising office in order to obtain the department head's approval and signature a minimum of two weeks prior to the Graduate and Professional School deadline for submitting the dissertation to the thesis office. If the department head deems the dissertation unsatisfactory, it will be given to the Graduate Program Committee for review. The Graduate Program Committee will make a recommendation of action to the Department Head, student, and the members of the student's advisory committee.

Students are required to submit an electronic thesis/dissertation (ETD) as a pdf file to the thesis office. Paper copies of these ETDs will not be sent to the library or to the departments. 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>.

# 12

## **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 three years of advancement to candidacy.

Request 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. This announcement must be made on the official form, which can be downloaded from the GPS website. A sample form can be seen in Appendix II.

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 and for Department Head approval, 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.

## 13

### Application for Degree

Graduate students who expect to complete their work at the end of a given semester must apply for graduation by submitting the electronic application for degree to the Office of the Registrar 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. The electronic application for

degree can be accessed via the website [degreeapp.tamu.edu](https://degreeapp.tamu.edu). Graduate students in interdisciplinary programs should attend the ceremony of their home academic department.

The biology graduate advising office should be notified when you apply to graduate so your file can be reviewed with time to identify and address any problems.

# 14

## **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 INFORMATION

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## 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  
[ombuds@tamu.edu](mailto:ombuds@tamu.edu)

## 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.

## MINIMUM GPR (SCHOLASTIC DEFICIENCY)

A student's graduate GPR is expected to remain at or above 3.000 (on a 4.000 scale) during his or her graduate career. If a graduate student's cumulative GPR falls below 3.000, 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 GPR 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 the Graduate Program Committee for a second semester of academic probation. 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.

## FINANCIAL SUPPORT

Graduate students in the Department of Biology can be supported by graduate teaching assistantships (GAT), graduate non-teaching assistantships (GANT), 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.

## 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. 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 to compensate for this lack of state support. In the rare cases where a doctoral student requires more time to complete the degree, he/she can apply to the Department of Biology for funding to cover the out-of-state tuition penalty. These requests will be reviewed by the Graduate Program Committee and Associate head for graduate programs.

## GRADUATE STUDENTS AT TAMU-GALVESTON

Students undertaking research at the Galveston campus toward a biology degree are required to adhere to all requirements, deadlines, etc. of the Department of Biology. Residence on the Galveston campus will satisfy the residency requirement for graduate students.

## PARTICIPATION IN DEPARTMENTAL COMMITTEES

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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 (BGSA). Students are encouraged to join and become active in the BGSA, as it provides an organized means of communicating student concerns to the faculty and administration. BGSA officer elections are held at the beginning of the fall semester.

### Committees/ Positions:

- BioGSA
  - Primary Advisor: Faculty Position
  - Chief Student Leader: Student Position
  - Treasurer: Student Position
  - IT Officer/Webmaster: Student Position
  - General Officer 1: Student Position
  - General Officer 2: Student Position
  - General Officer 3: Student Position
  - General Officer 4: Student Position
- GRAC: Graduate Recruiting and Admissions Committee
  - 1 Student Position
- Graduate Programs Council
  - 1 Student Position
- SPRC: Student/ Post-Doc Research Conference
  - 1 Student Position
- Outreach Committee
- Seminar Committee
  - 1 Student Position

## FIRST-YEAR ASSESSMENT OF GRADUATE STUDENTS

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At the first committee meeting for each graduate student, which is to be held before the fall semester of year two, the student's committee will be responsible for determining if the student should continue in the Department of Biology's graduate program. The following skills will be evaluated by examining the student's performance in courses, teaching assignments, research, and by the student's performance during the committee meeting.

1. Motivation
2. Logic and critical thinking (analysis of data, logical conclusions)
3. Ability to develop a testable hypothesis and design scientific studies.
4. General knowledge (general biology, areas specific to the student's research area, ability to retain information)
5. Ability to communicate

After the meeting, the student will leave the room and each committee member will fill out an assessment form to indicate if they find the student's performance in each of the 5 areas acceptable or unacceptable. These forms must be turned into the graduate advising office after the meeting.

Of the 20 judgments (4 committee members  $\times$  5 areas) for a Ph.D. student or 15 judgments (3 committee members  $\times$  5 areas) for an MS student, 6 unacceptable ratings (counting no more than three unacceptable ratings from any one committee member) constitute a failure. In the case of a failure, the committee will provide a summary letter that describes the concerns of the committee and measures needed to correct these deficiencies to the student and the associate head for graduate programs within one month of the committee meeting.

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.

A PhD student with 6/20 unacceptable ratings (counting no more than three unacceptable ratings from any one committee member) on the 2<sup>nd</sup> try may, at the discretion of the committee, be allowed to change to a Master's degree or will be required to leave the program. A Master's student with 6/15 unacceptable ratings (counting no more than three unacceptable ratings from any one committee member) on the 2<sup>nd</sup> try will be required to leave the program. The student may appeal the decision through the associate head for graduate programs to the department head.

## Postscript:

- Sunset Clause: If the current plan is approved by the faculty, we will review the merits of the first year graduate assessment after 3 years and modify the plan as recommended.
- GPC/GRAC will develop a set of questions that will provide examples for committees to use to assess each of these areas.
- Each committee member will make a provisional assessment of the student individually, prior to a general discussion of the student's performance.
- Evaluation of the first year graduate student assessment:
  - A. The effectiveness of the first year assessment meeting will be formally assessed each year as follows:
    - a. Determine the number of students who pass or fail on the first and/or second try each year. If the quality of the graduate students in the program is improving, we expect the overall numbers of students passing on the first try to increase each subsequent year.
    - b. Determine the average time it takes graduate students to take their preliminary exam as compared to the average time of students prior to implementation of the first year assessment.
    - c. Determine the number of students who passed or failed their preliminary exam as compared to the numbers prior to implementation of the first year assessment. We expect if the assessment plan is successful that the numbers of students that pass their preliminary exam on the first try will increase.
    - d. Determine the average and variation in time to degree of students before and after implementation of the first year assessment. We expect if the plan is successful that more doctoral students will finish their degrees within 5 to 6 years. (Currently, the mean is 6.2 years with a range between 4 and 10 years.)
    - e. Assess if the quality of our incoming graduate students and graduate student applicants is improving based on GPA, GRE scores, and research experience following implementation of the first year assessment.
    - f. We will develop a questionnaire that asks for faculty and student perspective of the first year assessment.

## FORMS

# DEPARTMENT OF BIOLOGY

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TEXAS A&amp;M UNIVERSITY

Biology

# Report of the First Year Graduate Student Assessment

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

Degree: \_\_\_\_\_

**Instructions:** Each committee member independently rates the student's performance in each of the 5 areas from 1 (unacceptable) to 5 (acceptable). Of the 20 judgments (4 committee members x 5 areas) for a PhD student or 15 judgments (3 committee members x 5 areas), 6 unacceptable ratings (counting no more than three unacceptable ratings from any one committee member) for a PhD student or MS student constitute a failure. In the case of failure, the committee will provide a summary letter that describes the concerns of the committee and measures needed to correct these deficiencies to the student and the Graduate Advisor within one month of the committee meeting.

<b>Logical/Critical Thinking:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
(unacceptable)	(unacceptable)	(acceptable)	(acceptable)	(acceptable)
<b>Ability to Develop a Testable Hypothesis and Design Scientific Studies:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
(unacceptable)	(unacceptable)	(acceptable)	(acceptable)	(acceptable)
<b>General Knowledge:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
(unacceptable)	(unacceptable)	(acceptable)	(acceptable)	(acceptable)
<b>Technical Skills:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
(unacceptable)	(unacceptable)	(acceptable)	(acceptable)	(acceptable)
<b>Communication Skills:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
(unacceptable)	(unacceptable)	(acceptable)	(acceptable)	(acceptable)
<b>Progress to Degree:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
(unacceptable)	(unacceptable)	(acceptable)	(acceptable)	(acceptable)

Name of Committee Member: \_\_\_\_\_

Signature of Committee Member: \_\_\_\_\_



TEXAS A&M UNIVERSITY

Biology

## First Year Graduate Student Assessment Committee Chair Report

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

Degree: \_\_\_\_\_

Total number of acceptable: \_\_\_\_\_

Total number of unacceptable: \_\_\_\_\_

**Summary and recommendation of the committee:**

Signature of Committee Chair: \_\_\_\_\_

Signature of Student: \_\_\_\_\_



# Advisory Committee Meeting Report

Student Name: \_\_\_\_\_

Meeting Date: \_\_\_\_\_

The following items were discussed at this meeting:

On a scale of 1 to 5, please rate how this student is progressing, with 1 being insufficient progress, 3 being good progress, and 5 being outstanding progress. Committee members should collectively decide on a rating, rather than each member assigning a different number.

<b>Logical/Critical Thinking:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
<b>Ability to Develop a Testable Hypothesis and Design Scientific Studies:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
<b>General Knowledge:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
<b>Technical Skills:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
<b>Communication Skills:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress
<b>Progress to Degree:</b>				
1	2	3	4	5
Insufficient Progress		Good Progress		Outstanding Progress

**Action Plan:**

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Committee Chair

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Committee Member

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Committee Member

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Committee Member

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Student

**Acknowledge:**

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Associate Head for Graduate Programs

## BIOLOGY ANNUAL COMMITTEE MEETING RUBRIC

	Poor Progress (1)	Fair Progress (2)	Good/ Average Progress (3)	Above Average (4)	Outstanding Progress (5)
Logical / Critical Thinking	Does not appear to apply knowledge of biological concepts when explaining observations in the field of biology	Struggles to apply knowledge of biological concepts when explaining observations in the field of biology	Applies some knowledge of biological concepts to explaining observations in the field of biology	Critically applies knowledge of concepts when explaining observations in the field of biology	Exemplary demonstration of critical thinking skills beyond what is expected of their time in the program
Develop Hypothesis	The hypothesis is stated but too vague or confused for its value to be determined	Some parts, but not all parts, of framing the hypothesis is appropriate	Hypothesis denotes a level of understanding about their project but lacks some clarity	Hypothesis is insightful and clearly worded	Development of hypothesis above what is expected of their time in the program or compared to their peers
General Knowledge	Demonstrates very little understanding of graduate-level biological concepts in student's research area	Demonstrates an understanding of some graduate-level biological concepts in student's research area	Demonstrates an understanding of most graduate-level biological concepts in student's research area	Demonstrates an understanding of all graduate-level biological concepts in student's research area	Exemplary demonstration of knowledge beyond what is expected of their time in the program or compared to their peers
Technical Skills	Technical skill is poorly explained / indecipherable	Some, but not all, technical skill are appropriate	Technical skill is appropriate and adequately explained	Demonstrates an appropriate, clearly explained synthesis of previous approaches or an entirely new approach	Exemplary demonstration of technical skill beyond what is expected of their time in the program or compared to their peers
Communication Skills	Student mainly uses lay language to demonstrate understanding of research area	Demonstrates ability to use some discipline-specific language to demonstrate understanding	Student uses discipline-specific language and genres to demonstrate understanding	Demonstrated appropriate use of discipline-specific language to demonstrate scholarly understanding	Exemplary demonstration of communication skills beyond what is expected of their time in the program or compared to their peers