

DOCTORAL PROGRAM
DEPARTMENT OF BIOLOGICAL SCIENCES
TEXAS TECH UNIVERSITY
Revised December 2013

The Department of Biological Sciences offers doctoral degree programs in Biology and Zoology for students who want to prepare for research-oriented careers in the life sciences. Making a contribution to scientific knowledge through original research is often the most satisfying aspect of a student's graduate experience. All doctoral students are strongly encouraged to begin their research as soon as they undertake their graduate studies.

The Graduate School has mandated the following requirements for the Ph.D. degree.

- (1) The student must complete at least **72 hours** of course credit beyond the Bachelor's degree, 12 of which must be dissertation research (BIOL 8000 Doctor's Dissertation). If the student wishes to declare a minor, at least 45 hours are required in the major subject area and 15 hours in the minor subject area.
- (2) The student must pass a **qualifying examination**, consisting of a series of comprehensive written exams followed by an oral exam.
- (3) The student must complete and make an **oral defense** of a substantial research investigation, the doctoral dissertation.

Academic Standing in the Program

A student who is on schedule for completion of the degree program (see the accompanying checklist) and who maintains a **GPA of at least 3.0** is considered in good academic standing, unless he or she receives the grade of "**C**" in six hours of any courses used to satisfy the degree plan (listed on the "Program for the Doctoral Degree" form – see the "Degree Plan" section of this handbook), or a grade of "**D**" or "**F**" in any graduate course.

Once each year (usually in January), all graduate students are required to fill out an evaluation form reporting on various aspects of their progress towards the completion of their degrees. The Graduate Student Affairs Committee (GSAC) uses this form to assess the progress and academic standing of each graduate student. Students who are not making adequate progress or who fall from good academic standing may be referred to the Chairperson of the Department for review and possible loss of teaching assistantship or dismissal from the graduate program.

Admission to Candidacy

If the qualifying examination is considered satisfactory and other requirements have been completed (e.g., leveling courses, language and research tool courses, and BIOL 6202), the Major Advisor, on behalf of the Advisory Committee, will send a letter promptly to the Dean of the Graduate School recommending that the student be admitted to candidacy. The letter will include the date of the examinations and whether or not the student passed. If an official minor has been designated, then the letter must indicate

whether or not the student passed both the major and minor portions of the exam. The Advisory Committee recommendation will then be submitted to the Graduate Council by the Dean of the Graduate School. The Graduate Council might approve the Advisory Committee's recommendation or, after consultation with the Committee, it might suggest additional requirements that the student must satisfy.

The Dean of the Graduate School will transmit in writing the results of the Graduate Council's decision to the applicant, Major Advisor, and Graduate Advisor. A student must be admitted to candidacy for the doctoral degree at least **four months** prior to the proposed graduation date.

Admission to the Doctoral Program

All applications for admission into the doctoral programs in Biology and Zoology are evaluated and voted upon by the Graduate Student Selection Committee (GSSC). A Master's degree is preferred as a credential for entry into the doctoral program, but students with outstanding undergraduate records may be admitted directly. Decisions to admit students are based upon the following criteria:

- (1) the grade point average (GPA) over the last **60 hours** of undergraduate course work (for applicants who have or are about to receive a Bachelor's degree) and any formal graduate course work that has already been taken (for applicants who have or are about to receive a Master's degree);
- (2) the verbal, quantitative, and analytical writing scores for the Graduate Record Examination (GRE) General Test;
- (3) **three** favorable letters of recommendation;
- (4) in the case of **international students** for whom English is a second language, the scores for the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS); and
- (5) a Goals Statement. This statement (**1–2 pages** in length is sufficient) should be a specific and thoughtful explanation of the student's career goals and how a doctoral degree from Texas Tech University will contribute toward attaining those goals. Any prior experience with scientific research should also be described.

In addition to the above criteria, each student must identify a faculty member who has at least provisionally agreed to serve as the student's Major Advisor before he or she is considered for admission into the doctoral program. Students are urged to communicate directly with one or more faculty members whose research interests are most compatible with their own. **Any student who does not gain admission initially is welcome to submit a new application after improving his or her credentials.**

Advisory Committee

As soon as possible, but **no later than the second semester** of enrollment in the doctoral degree program, the student will form an Advisory Committee in consultation with his or her Major Advisor. This Committee is composed of **five** (occasionally more) Graduate Faculty members, one of them being the Major Advisor who will serve as the Chairperson of the Committee. At least **three-fifths** of the Committee members, including the Chairperson, must be Graduate Faculty members in the Department of

Biological Sciences (this may include Adjunct Faculty). As soon as the student has filed the “Program for the Doctoral Degree” form (see the “Degree Plan” section of this handbook), the Dean of the Graduate School will officially appoint the Advisory Committee. It is the responsibility of the student and Major Advisor to inform the Graduate Advisor and the Dean of the Graduate School of any changes in the composition of the Advisory Committee.

The Advisory Committee will meet with the student at least **once a year** to advise the student and assess his or her progress towards the doctoral degree. The Committee determines course requirements, approves the dissertation research proposal, administers the qualifying examinations, and conducts the final examination and dissertation defense.

Occasionally, it may become necessary for a student to change the composition of his or her Advisory Committee.

- (1) In the case of a proposed change other than the Major Advisor, the process is initiated by the Major Advisor. The Graduate Advisor must be informed of the change. The student must also show courtesy to the Committee member being replaced by letting him or her know about the plans for change and reasons for the decision. It may be that a misunderstanding has occurred that can be resolved, so that a change will not be necessary.
- (2) A student proposing to change his or her Major Advisor should inform the current Major Advisor directly or through the Chairperson of the Department. In either case, the Major Advisor will be given an opportunity to express his or her opinion and make an attempt to work out problems that may have precipitated the need for such a change. Some discussion with the Chairperson of the Department may be required before a final decision is reached.
- (3) In extreme cases of disagreement, the Major Advisor or Committee member has the right to file an official grievance, which will be conducted according to normal grievance policies of the University.
- (4) If a degree plan has been filed prior to a change in the composition of the Advisory Committee, a “Title or Committee Change Form” must be completed, signed by the Graduate Advisor, and submitted to the Graduate School.

Course Requirements

The student and Advisory Committee together will determine which courses must be taken to satisfy the doctoral degree requirements. The student is required to complete at least **72 credit hours** beyond the Bachelor’s degree, **12 hours** of which must be dissertation research (BIOL 8000 Doctor’s Dissertation). In addition, the following specific requirements and considerations apply to all graduate students in the Department of Biological Sciences.

- (1) **BIOL 6202. Preparation for Graduate Learning and Teaching in Biology.**
All students are required to take BIOL 6202 during their first fall semester of enrollment in the graduate program. Failure to take the course at the appropriate time might result in dismissal of the student from the program or the loss of a teaching assistantship.

- (2) **BIOL 6301. Biological Pedagogy.** All teaching assistants are required to take this section of BIOL 6301 Advanced Topics in Biology during their first year of enrollment in the graduate program. Failure to take the course at the appropriate time might result in the loss of a teaching assistantship.
- (3) **Leveling courses.** Incoming graduate students with educational gaps in their background may be required by their Advisory Committee to take certain courses in order to fill these gaps.
- (4) **Languages and research tools.** The Department of Biological Sciences **does not** have a general requirement for either a foreign language or a research tool subject (for example, computer programming) for the graduate degree. However, the Advisory Committee may require the individual student to take such courses if they are deemed an essential part of the student's area of research.

Deadlines and Time Limit

Although every effort will be made by both the Graduate Advisor and the Major Advisor to make the student aware of various University and Department regulations and deadlines, it is ultimately the student's responsibility to see that these regulations are adhered to and that the deadlines are met (see the accompanying checklist).

At least three months must intervene between the preliminary examination (if required) and qualifying examination, and at least **four months** must intervene between the qualifying examination and the final examination and dissertation defense. All work for the doctoral degree must be completed within eight consecutive calendar years or **four calendar years** from admission to candidacy, whichever comes first.

Degree Plan (also see Filing a Degree Plan)

All doctoral students must submit a "Program for the Doctoral Degree" form to the Graduate School. This form, which must be initialed by the Major Advisor and signed by the Graduate Advisor, lists all required courses. It should be submitted as soon as possible but **no later than the second semester** of enrollment in the doctoral degree program. The Graduate Catalog should be consulted for any additional requirements that must be met before Admission to Candidacy is granted. Subsequent changes in the degree plan must also be approved by the Advisory Committee and filed with the Graduate School.

Departmental Graduate Student Meeting

The **week before classes begin** in the fall semester, the Chairperson of the Department and other faculty will meet with the graduate students to communicate important news and information. Attendance at this meeting is **mandatory**. In addition, course coordinators often hold organizational meetings with Teaching Assistants during this same week.

Doctoral Dissertation

The doctoral dissertation represents substantive, original research conducted by the student under the direction of his or her Major Advisor and Advisory Committee. It must be written clearly and concisely in correct English. The required format for the

dissertation is described in the “Thesis/Dissertation Formatting Guidelines,” which is available as a pdf file on the Graduate School web site.

After being approved by the Major Advisor, a completed version of the dissertation (not necessarily the final one) will be given to all other members of the Advisory Committee at least **four weeks** prior to the anticipated date of the final examination and dissertation defense. Within **one week**, the Committee members will determine whether the dissertation is defensible. “Defensible” means that it is structurally sound, based on the criteria for articles in a quality journal in the field of study, and that the Committee is able to assess the validity of the presented research. “Defensible” does not mean that the Committee members approve of the scientific content of the dissertation or will pass the student in the dissertation defense. If the dissertation is judged defensible, then the defense can go forward as scheduled. If one or more Committee members do not find the dissertation to be defensible, or if they perceive any major flaws in the methodology, analysis, or interpretation of data, these problems should be communicated to the Major Advisor and graduate student within the one-week period. Any disputes that cannot be resolved will be taken for arbitration first to the Graduate Advisor and then, if necessary, to the Chairperson of the Department.

Enrollment for Ph.D. Degree

All graduate students are required to register for appropriate courses in **every** semester or summer session in which they expect to receive assistance, use the facilities of the University and faculty time, or take comprehensive examinations. If enrollment is interrupted during the summer, the student may be required to pay additional fees upon re-enrollment in the following fall semester.

Students are expected to register for a number of course hours commensurate with the anticipated level of effort in their graduate studies. Except in unusual circumstances, all students who are seriously pursuing graduate degrees will be enrolled full time. Full-time enrollment is normally 12 hours in a regular semester and 6 hours in each summer session. For students on fellowships, assistantships, or other appointments that require duties other than course work and research, full-time enrollment is normally **9 hours** in a regular semester and **3 hours** in each summer session (i.e., 24 hours per calendar year). Students must maintain their full-time status even if they are devoting all of their time to research.

The Graduate School requires all doctoral students to satisfy a residence requirement that consists of full-time enrollment for at least two consecutive semesters. For the purposes of this residence requirement, both summer sessions are considered equivalent to one regular semester.

Students who are working on a dissertation and who have begun enrollment in BIOL 8000 Doctor’s Dissertation must meet a continuous enrollment requirement in this course, which consists of both regular semesters and at least one summer session until all degree requirements have been completed. A student who is completing a dissertation but who is no longer on campus may satisfy the continuous enrollment requirement by

registering for one hour in each regular semester and at least one summer session with the permission of the Department until the final semester, at which time he or she must enroll for at least three hours. The Graduate School should be consulted for specific information about these options.

Filing a Degree Plan

No later than the **second semester** of enrollment in the graduate program, the student must file a “Program for the Doctoral Degree” form at the Graduate School.

All requested information must be filled in on the form, including expected graduation date (month and year), dissertation title or (if not yet known) area of dissertation research, and all members of the Advisory Committee. If a proposed member of the Committee is at an institution other than Texas Tech University or the TTU Health Sciences Center, the Graduate School must be provided with his or her curriculum vitae. In general, the person’s academic credentials should be equivalent to those of a Graduate Faculty member at Texas Tech University. The “proposed enrollment pattern for residence year” lists the planned hours of enrollment in each semester; for example, “9-9-3-3” for full-time enrollment in the fall, spring, and both summer sessions when the student is being supported by an assistantship.

The student and his or her Advisory Committee will decide together what courses are listed on the degree plan. Under the Major column, list all of the courses that are taken to complete the doctoral degree requirements in the major subject area, including BIOL 6202. All graduate (5000 and 6000)-level courses with BINF, BIOL, BOT, MBIO, and ZOOL prefixes are considered as major courses. Formal courses are listed only by prefix and number without a title, e.g., BIOL 5320. For individual study courses or courses that can be repeated for additional credit (e.g., BIOL 6100, BIOL 6101, BIOL 6301, and BIOL 6309), different sections or specific titles should also be listed to indicate that the course does not have the same content each time it is taken. The Graduate School does not allow more than **6 credit hours** of BIOL 7000 Research on the doctoral degree plan, although prior approval of additional BIOL 7000 hours may be granted on a case-by-case basis. If the student desires, at least 15 hours in a subject area outside of the major can be designated as a minor and listed under the Minor column. However, this is entirely optional. A minimum of **60 credit hours** of course work exclusive of BIOL 8000 Doctor’s Dissertation must be listed on the degree plan. At least 12 hours of Doctor’s Dissertation must also be taken (for **a total of 72 hours**) to complete the doctoral degree, but these hours do not need to be listed on the degree plan. Undergraduate courses cannot be counted toward the doctoral degree. Tool, Language, or Leveling courses are listed only if required by the Advisory Committee. If the student wishes to receive transfer credit for graduate courses taken at another institution, the course prefixes and numbers on the student’s transcript from that institution must be listed as well as the equivalent graduate courses at Texas Tech University. The student should be prepared to provide the Graduate Advisor and the Graduate School with copies of the transcript. Up to 12 hours of course credit can be transferred.

If the student has already earned a Master's degree, either from Texas Tech University or another accredited institution, the Graduate School will accept up to 30 credit hours of course work taken at the Master's level for transfer to the doctoral degree. However, transfer credit is **not** given for BIOL 6000 Master's Thesis (or equivalent courses at other institutions).

The completed form must be signed by the Graduate Advisor before it is submitted to the Graduate School. The student's Major Advisor should either initial (**not sign**) the form or send a short note to the Graduate Advisor indicating that the plan has been approved by the Advisory Committee.

Final Examination and Dissertation Defense

Before earning the doctoral degree, each doctoral student must pass a final oral examination and defense of the dissertation. After the Advisory Committee has judged that the dissertation is in a defensible form, the graduate student may then set a date for the examination and defense with the approval of all Committee members, which must be scheduled at least **three weeks** in advance. Thus, the student should plan to deliver the Major Advisor-approved version of the dissertation to the other Committee members at least four weeks before he or she intends to defend. The student must also file the "Doctoral Final Oral Examination Notification Form" at the Graduate School. In scheduling the examination and defense, students should be aware that the final, Committee-approved copy of the dissertation, signed Thesis-Dissertation Approval Form, and Electronic Thesis-Dissertation (ETD) Signature Form must be turned in to the Graduate School within **two weeks** of the defense or **no later than the date** in the "Graduation Deadlines" posted on the Graduate School web site. Sufficient time should be allowed before this deadline to make all necessary revisions to the dissertation. Students should also understand that faculty members may not be available for a dissertation defense during the summer.

The examination and defense is administered by the student's Advisory Committee and in the presence of a representative appointed by the Dean of the Graduate School. The student is expected to deliver a concise and well-organized presentation covering the salient points of the dissertation, stressing its contribution(s) to scientific knowledge. This presentation and following question-and-answer session is open to all faculty, graduate students, and others who care to attend. Afterwards, the student will meet privately with the Advisory Committee and Graduate Dean's representative for a more in-depth discussion of the merits and weaknesses of the dissertation and further oral examination. As soon as possible after the examination and defense, the Major Advisor will report the results to the Graduate Dean. Satisfactory performance by the student is judged by a **majority** affirmative vote of the Advisory Committee members. In the event of failure, the Graduate School does not ordinarily permit the student to repeat the examination and defense.

Graduation: Additional Requirements

During the semester of intended graduation, a "Statement of Intention to Graduate" must be filed at the Graduate School, and payment of the ETD document processing fee and all

other required fees must be posted to the student's University bill. Since exact dates for these requirements vary with the semester, the current "Graduation Deadlines" posted on the Graduate School web site should be consulted.

Maximum Allowable Doctoral Hours

The Texas Legislature has capped state-funded financial assistance for graduate study at 99 doctoral hours (past the Master's degree) for most programs and may impose sanctions upon universities permitting registration for excess hours. Graduate students with more than 99 doctoral hours are required to pay out-of-state tuition, regardless of residence status. The maximum time allowed for completing the doctoral degree is eight years from the first semester of doctoral enrollment or four years from admission to candidacy, whichever comes first.

To avoid these infractions, the Graduate School has adopted several policies to manage graduate enrollment. The Graduate School will initiate a formal review of all doctoral students who are approaching the 99-hour limit, and these students must present a plan for prompt completion of the doctoral degree. **Any student who has exceeded 99 doctoral hours is strongly encouraged to contact the Graduate School and make certain of all requirements pertaining to continued enrollment.** Students not making timely progress toward completion of the doctoral degree are subject to termination by the Dean of the Graduate School. Accumulation of excess hours while failing to complete the degree will constitute unsatisfactory progress.

Preliminary Diagnostic Examination

The student's Major Advisor or Advisory Committee may require the student to pass a preliminary examination in the major and minor fields of the degree program to facilitate evaluation and counseling of the student. The Major Advisor will coordinate the administration of the examination, which may be either written or oral and should be taken as soon as possible but no later than the student's **second semester** of enrollment in the graduate program.

Professional Conduct in Teaching and Research

All graduate students are expected to maintain the highest standard of professional ethics in the conduct of their research. Plagiarism, selective and inappropriate manipulation of experimental data to achieve desired outcomes, and outright falsification of data all constitute scientific fraud. Such conduct will not be tolerated and provides sufficient cause to dismiss the student from the graduate program.

All original research data collected by the graduate student must remain permanently with the laboratory where the work was done. No record of the data, including research notebooks and computer files, may be removed from the laboratory **without the written consent of the Major Advisor.** In return, the graduate student is given the opportunity to publish these data in a timely manner.

Qualifying Examination

The qualifying examination for Admission to Candidacy is an evaluation of the student's ability to consolidate, synthesize, and apply the formal knowledge that he or she has gained in the major and (if applicable) minor subject areas. Students must take this examination within one calendar year of completing all requirements listed on the degree plan. The Advisory Committee prepares and administers the qualifying examination, which consists of both written and oral components. Each Committee member will prepare a separate written examination. Under the supervision of the Major Advisor, all of the written examinations will be taken by the student during a period of one week (Monday–Friday). The oral examination must then be held within **two weeks** after completion of the written examinations.

The student's performance on both the written and the oral components of the qualifying examination must be approved by at least **four-fifths** of the Committee members before the student may be recommended for Admission to Candidacy for the doctoral degree. The Major Advisor, on behalf of the Advisory Committee, will complete the "Qualifying Exam and Admission to Candidacy Recommendation Form" and submit it to the Graduate School after the student successfully completes the qualifying examination. The Major Advisor will notify the Dean of the Graduate School in writing if the results of the examination are unsatisfactory. In the event of failure, the Major Advisor will also provide the student with a written summary of the perceived deficiencies and corrective actions that need to be taken before making another attempt. A student may repeat the qualifying examination once, but only after an interval of at least four months and not more than 12 months from the date of the first attempt. Failure to pass the qualifying examination a second time will result in dismissal from the graduate program.

Research Proposal

In consultation with his or her Major Advisor and Advisory Committee members, the student will develop a written dissertation research proposal. This document will include an abstract, research plan, supporting data, and budget. Generally, a document of 8–10 pages in length is sufficient. Copies of the proposal should be submitted to each Committee member **two weeks** prior to a Committee meeting to give the proposal formal consideration. At this meeting, the student will make an oral presentation of the proposed research and will receive suggestions for improvements. The revised version of the proposal should then be submitted to the Committee members for final approval. A copy of the proposal cover page, signed by all Committee members, must be delivered to the Graduate Secretary. The Advisory Committee is to be informed of **major changes** in the research and may require submission of a new dissertation proposal if a drastic change, such as an entirely new project or research goals, is contemplated.

DOCTORAL CHECKLIST

Students are responsible for seeing that all deadlines are met.

Item	Date or Deadline
Choose Major Advisor	Prior to entry into the graduate program
Departmental graduate student meeting	Week before classes begin in the fall semester
Plan courses for first semester: BIOL 6202 (Preparation for Graduate Learning and Teaching in Biology) is required during first fall enrollment	Week before classes begin
Set up and meet with Advisory Committee	During first semester of enrollment
Take preliminary examination (if required by the Advisory Committee)	During first semester of enrollment
File degree plan (“Program for the Doctoral Degree” form) at the Graduate School: at least 72 hours of graduate course work including 12 hours of BIOL 8000 (Doctor’s Dissertation) is required (must also file any subsequent course changes)	As soon as possible but no later than the second semester of enrollment
Present Dissertation Research Proposal to the Advisory Committee	As soon as possible after filing the degree plan but no later than the second semester of enrollment
Turn in annual graduate student evaluation form	Usually due in January of each year
Take written and oral qualifying examination (Major Advisor reports the result to the Graduate School)	No later than the second year of enrollment

DOCTORAL CHECKLIST, continued

File “ Statement of Intention to Graduate ” at the Graduate School	During the semester of graduation (exact deadline varies)
Submit a completed version of the dissertation to all Advisory Committee members for review	At least four weeks before the anticipated dissertation defense
Obtain approval of all Advisory Committee members to schedule the dissertation defense	During the semester of graduation (exact deadline varies)
File “ Doctoral Final Oral Examination Notification Form ” at the Graduate School	At least three weeks prior to the scheduled defense date
Pay Electronic Thesis Dissertation (ETD) processing fee	During the semester of graduation (exact deadline varies)
Take Final Examination and Dissertation Defense (Major Advisor reports the result to the Graduate School)	During the semester of graduation (exact deadline varies)
Submit Dissertation for formatting review; turn in signed Thesis-Dissertation Approval Form and ETD Signature Form to the Graduate School	During the semester of graduation (exact deadline varies)
Upload corrected, final version of dissertation to the ETD Submission web site	During the semester of graduation (exact deadline varies)
Graduation	Target: four–five years