

THESIS MASTER'S PROGRAM
DEPARTMENT OF BIOLOGICAL SCIENCES
TEXAS TECH UNIVERSITY
Revised December 2013

The thesis Master's degree programs in Biological Informatics, Biology, Microbiology, and Zoology are recommended for most students interested in a career in science, including research, teaching, and medicine. Participation in thesis research provides sophistication and insight into the workings of science beyond that available in formal course work, facilitates the eventual pursuit of doctoral studies, and may also enhance employability through development of research skills. The student must complete at least **30 hours** of course credit beyond the Bachelor's degree, **6 hours** of which must be thesis research (BIOL, MBIO, or ZOOL 6000 Master's Thesis). At least 18 hours are required in the major subject area.

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 Master's Degree and Admission to Candidacy" 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 toward 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 the Master's Degree Program

Applications for admission into the Master's degree programs in Biology, Microbiology, or Zoology are considered and acted upon by the department's Graduate Student Selection Committee (GSSC). Decisions to admit students are based upon:

- (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);
- (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 an M.S.

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 Master's 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 Master's degree program, the student will form an Advisory Committee in consultation with his or her Major Advisor. This Committee is composed of **three** (occasionally more) Graduate Faculty members, one of them being the Major Advisor who will serve as the Chairperson of the Committee. At least **two-thirds** 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 Master's Degree and Admission to Candidacy" 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 Master's degree. The Committee determines course requirements, approves the thesis research proposal, and conducts the final oral examination and defense of thesis.

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 M.S. degree requirements. The student is required to complete at least **30 credit hours** beyond the Bachelor’s degree, **6 hours** of which must be thesis research (BIOL, MBIO, or ZOOL 6000 Master’s Thesis). The Graduate School ordinarily does not permit more than 6 hours of individual study courses (aside from the thesis) and/or BIOL 7000 Research to be counted as part of the Master’s degree program. In addition, the following specific requirements and considerations apply to all graduate students.

- (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). All course work applied towards a Master’s degree must be completed within **six calendar years** after admission into the graduate program.

Degree Plan (see also Filing a Degree Plan)

All Master’s students must submit a “Program for the Master’s Degree and Admission to Candidacy” 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 Master’s 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.

Enrollment for Thesis M.S. 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.

Students who are working on a thesis and who have begun enrollment in BIOL, MBIO, or ZOO 6000 Master's Thesis 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 thesis 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 Master's Degree and Admission to Candidacy" form at the Graduate School.

All requested information must be filled in on the form, including expected graduation date (month and year), thesis title or (if not yet known) area of thesis 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 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 M.S. 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. Up to **6 credit hours** of BIOL 7000 Research can be included on the thesis M.S. degree plan. If the student desires, two or three courses 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 **24 credit hours** of course work exclusive of BIOL, MBIO, or ZOOL 6000 Master's Thesis must be listed on the degree plan. At least six hours of Master's Thesis must also be taken (for a **total of 30 hours**) to complete the thesis M.S. degree, but these hours do not need to be listed on the degree plan. Undergraduate courses cannot be counted toward the Master's 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 six hours of course credit can be transferred.

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 Oral Examination and Defense of Thesis

Before earning the M.S. degree, each thesis Master's student must pass a final oral examination and defense of thesis. After the Advisory Committee has judged that the thesis 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 thesis to the other Committee members at least four weeks before he or she intends to defend. In scheduling the examination and defense, students should be aware that the final, Committee-approved copy of the thesis, 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 thesis. Students should also understand that faculty members may not be available for a thesis defense during the summer.

The examination and defense is administered by the student's Advisory Committee. The student is expected to deliver a concise and well-organized presentation covering the salient points of the thesis, 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 for a more in-depth discussion of the merits and weaknesses of the thesis and further oral examination. As soon as possible after the examination and defense, the Major Advisor will report the results to the Dean of the Graduate School. Satisfactory performance by the student is indicated by a majority affirmative vote of the Committee members. A student who fails the examination and defense may repeat it once, but only after an interval of four months or more. In the event of failure, the Major Advisor will provide the student with a written summary of the perceived deficiencies and corrective actions that need to be taken before making the second attempt.

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.

Master's Thesis

The Master's thesis represents original research conducted by the student under the direction of his or her Major Advisor and Advisory Committee. It is to be written clearly and concisely in correct English. The required format for the thesis 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 thesis (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 oral examination and defense of thesis. Within **one week**, the Committee members will determine whether the thesis 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 thesis or will pass the student in the thesis defense. If the thesis is judged defensible, then the defense can go forward as scheduled. If one or more Committee members do not find the thesis 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.

Maximum Allowable Graduate Hours

Graduate students who are not making timely progress toward completion of their degree are subject to termination by the Dean of the Graduate School. Students beyond the maximum allowable graduate hours may be required to pay out-of-state tuition, regardless of residence status. The maximum time allowed for completing a Master's degree is **six years**.

Preliminary Examination (Diagnostic)

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.

Research Proposal

In consultation with his or her Major Advisor and Advisory Committee members, the student will develop a written thesis 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 thesis proposal if a drastic change, such as an entirely new project or research goals, is contemplated.

THESIS M.S. 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 Master’s Degree and Admission to Candidacy” form) at the Graduate School: at least 30 hours of graduate course work including 6 hours of BIOL, MBIO, or ZOO 6000 (Master’s Thesis) is required (must also file any subsequent course changes)	As soon as possible but no later than the second semester of enrollment
Present thesis 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
File “ Statement of Intention to Graduate ” at the Graduate School	During the semester of graduation (exact deadline varies)

THESIS M.S. CHECKLIST, continued

Submit a completed version of the thesis to all Advisory Committee members for review	At least four weeks before the anticipated thesis defense
Obtain approval of all Advisory Committee members to schedule the thesis defense	During the semester of graduation (exact deadline varies)
Pay Electronic Thesis Dissertation (ETD) processing fee	During the semester of graduation (exact deadline varies)
Take Final Examination and Defense of Thesis (Major Advisor reports the result to the Graduate School)	During the semester of graduation (exact deadline varies)
Submit thesis 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 thesis to the ETD Submission web site	During the semester of graduation (exact deadline varies)
Graduation	Target: two years