

Master of Science Guidelines

Department of Biological Sciences

Spring 2020

1. INTRODUCTION

The purpose of this document is to present the guidelines for earning a Master of Science (M.S.) degree in Biology from the Department of Biological Sciences at Fort Hays State University. Reading and understanding these guidelines is the responsibility of all Biology graduate students.

Meeting deadlines for completion of the graduate degree program is the responsibility of the student. Carefully note sections of this handbook that include deadlines and checklists. Students should contact the Graduate School to obtain deadlines and to verify progress in their program.

As a graduate student, you are held to higher standards than those applied to undergraduate students. Graduate study is a transition from being a student to becoming a professional biologist, and, as such, you will be held to professional standards in your conduct and your work.

- A. These guidelines are to serve as a reference for graduate students and faculty members.
- B. Major advisors might have other requirements of which students need to be aware.
- C. Graduate committees are given broad latitude in adding requirements to those listed in these guidelines.
- D. It is the student's responsibility to be aware of and to follow the requirements and procedures of the Graduate School.

2. ADMISSION

Application for admission to the Graduate School and application for assistantships and fellowships must be made with the Graduate School, Fort Hays State University. After the applicant submits all necessary materials to the Graduate School, the materials are forwarded from the Graduate School to the Department of Biological Sciences. Applications are reviewed by the Department's graduate studies committee, and the department chair makes admission recommendations to the dean of the Graduate School.

- A. Required Application Materials
 - 1. A completed Graduate School application and payment of associated fees.
 - 2. A typed description of the student's research interests or reasons for pursuing graduate education (the "personal statement").

3. Transcripts for all undergraduate and graduate courses.
 - Transcripts from international schools must be evaluated by an impartial agency to allow for comparison by domestic standards.
4. Two letters of recommendation. At least one of the letters should be from an instructor at the student's undergraduate institution or someone familiar with the applicant's capacity for graduate study.

B. Evaluation of Graduate Applications

1. The graduate studies committee will review completed graduate applications.
2. The committee makes a recommendation to the department chair. The department chair, considering the recommendation of the graduate committee, makes a recommendation to the graduate dean including admission, any qualification for admission, the name of the student's major advisor, and the semester of admission.
3. A recommendation of admission and qualifications for admissions will last for one year. A student who is admitted but does not enroll the semester of their admission must reapply. A student who is not admitted cannot reapply until one year has passed.

C. Orientation

1. Graduate students are required to be present on campus 3-5 business days prior to the beginning of classes.
2. Graduate students are required to attend all orientation meetings.
3. Graduate students are required to complete training on sexual harassment each year.
4. Graduate Teaching Assistants (GTAs) might be required to assist with the preparations for upcoming classes.

3. PROGRAM OPTIONS

The Department of Biological Science offers two options for the completion of the Master of Science (Biology): Thesis and Non-thesis. In deciding between the options, students should keep in mind their educational and career goals and consult with their major advisor.

A. Thesis Option

1. Requires a minimum of 30 graduate credit hours.
 - a. At least 24 credit hours of formal courses.
 - i. Formal courses include courses with fixed titles in the university catalog, topics courses, and seminar.
 - ii. Formal courses do not include Readings, Problems, or Research hours

- b. BIOL 805, Professional Scientific Communication during their first fall semester.
 - c. At least 2 credit hours of BIOL 899 Thesis in Biology.
 - d. At least 2 credit hours of BIOL 892 Research in Biology.
2. The student must prepare a thesis acceptable to the student's graduate committee.
 3. The student must pass a qualifying comprehensive examination (See 8. EXAMINATIONS).
 4. The student must orally present the results of their research to the public.
 5. The student must pass an oral examination (thesis defense) on the topic of the thesis (See 8. EXAMINATIONS).
- B. Non-thesis Option
1. Requires a minimum of 30 graduate credit hours.
 - a. At least 28 credit hours of formal courses (Described above under Thesis Option).
 - b. BIOL 805 Professional Scientific Communication during their first fall semester.
 - c. At least 2 credit hours of BIOL 892, Research in Biology (Research Report).
 2. The student must pass a qualifying comprehensive examination (See 8. EXAMINATIONS).
 3. The student must prepare a research report acceptable to the student's graduate committee.

Students may switch from one program option to the other. Students changing program options must fulfill all of the requirements of their new options. Agreement of the student's graduate committee will be required so that the student's program of study can be reviewed and possibly revised.

4. STUDENT'S GRADUATE COMMITTEE

The graduate committee assists in the development of the program of study, approves the program of study, approves the thesis or research proposal, supervises the thesis or report research, and approves the thesis or research report.

A. Major Advisor (Major Professor)

1. The major advisor works closely with the student to help develop a program of study, assists the student in the development of the thesis or research report proposal, advises the student on the conduct of research, aides in the preparation of the thesis or research report, and approves the thesis for review by the student's graduate committee.

2. The major advisor must be a member of the graduate faculty.
3. A student's major advisor can be changed at any time during the student's program.
 - a. The change can be initiated by either the student or the major advisor.
 - b. The student or major advisor must notify the department chair informing of the change of major advisor.

B. Graduate Committee

1. Composition

- a. A graduate committee will consist of a minimum of 4 members.
 - b. The major advisor will chair the committee.
 - c. A minimum of two other members of the FHSU biology graduate faculty.
 - d. One outside committee member (an individual from a different FHSU department, or an adjunct of the Department of Biological Sciences) can be included, but is not required.
 - i. If the major advisor feels that the student's research project requires additional outside expertise, then one other outside member can be included on the graduate committee as a non-voting member.
 - ii. Outside members must have an earned MS or earned PhD (or terminal degree) in an appropriate discipline.
2. The student selects the graduate committee after consultation with their major advisor.
 3. The student invites the potential committee members to serve on their graduate committee.

C. The graduate committee should be established and is required to meet in the first semester of the student's graduate studies to approve the program of study (See 5. PROGRAM OF STUDY).

D. If after two semesters of graduate study the student has not had a meeting of their graduate committee or the graduate committee has not approved a program of study (See 5. PROGRAM OF STUDY) and a research proposal (See 7. RESEARCH), then the student will be ineligible for a graduate assistantship and subject to dismissal.

5. PROGRAM OF STUDY

During the first semester of the student's graduate studies, the student and advisor must outline a program of coursework.

A. Content

1. All students are required to enroll in BIOL 805 Professional Scientific Communication.
 2. No undergraduate courses (100-400 level courses) can apply toward the student's graduate program.
 3. Deficiencies in undergraduate biology or cognates will not be included in the graduate program against the minimum required hours.
 4. The program of study should consist of at least the minimum credits hours required for the program option that the student is pursuing.
- B. All courses of the program of study listed on the Graduate School's form entitled "Program for Master's Degree" are required for the completion of a M.S.
- C. All courses of the program of study listed on the Graduate School's form entitled "Program for Master's Degree" must be taken for a letter grade.
- D. The student's graduate committee might require the student to complete more courses than the minimum specified by the student's selected option.
- E. Only 10 hours of graduate credit transferred from another university can be applied to the program of study.
- F. After the major advisor has approved the program of study, it is submitted to the committee for approval. A program of study is approved by a majority vote of the committee.
- G. Changes in the Program of Study
1. A program of study can only be amended with consent of their graduate committee.
 2. If changes are necessary, the student and major advisor should contact the student's degree analyst in the Graduate School to update the program of study.
 3. A majority vote of the graduate committee is required to amend the program of study.
- H. Enrollment
1. Students should enroll in a minimum of 6 credit hours during each fall and each spring semester.
 - a. Students supported by Teaching Assistantships or Research Fellowships have 9 credit hours of tuition waived; they should enroll in at least 9 credit hours.
 - b. In accordance with the Graduate School, international students are required to enroll in at least 9 credit hours per semester.
 2. At least six of the credit hours during the fall and spring semesters must be from courses listed on the student's program of study.

3. If a student has a GTA or a GRA for the summer semester, he/she is required to enroll in 3 credit hours during the summer.

I. Time Limit

1. If a student wants to include a course in their program that was not completed within the past 6 years, then the student can petition for the course to be recertified by the instructor of the course.
2. A student must retake any course older than 8 years.
3. Students not completing all of the requirements for the M.S. within 6 years might be required to pass another qualifying comprehensive exam.

J. Completion of Degree *in Absentia*

1. Students in absentia are required to enroll in at least 1 credit hour per semester until all degree requirements are completed.

6. SCHOLASTIC STANDARDS

Graduate students are held to a higher academic standard than undergraduates; they are expected to demonstrate exceptional performance in all of their courses.

- A. A graduate student automatically is placed on probation and is subject to termination of graduate status or their assistantship for the following reasons:
 1. A GPA less than 3.00 in any semester.
 2. A grade of "C" in more than 6 credit hours or 2 courses.
 3. A grade lower than "C" in a course listed on their program of study.
- B. Students must maintain a 3.00 GPA in courses listed on their program of study to be eligible for graduation.

7. RESEARCH

- A. **Research Proposal.** Research requires thought and planning. Students are required to briefly describe their proposed research for their graduate committee in a research proposal. The student's major advisor will help with the preparation of the research proposal and approve the proposal prior to its dissemination to the student's graduate committee. The research proposal should be presented to the student's graduate committee at least two weeks prior to meeting. At the meeting of the graduate committee, the research proposal should be discussed. The committee may recommend that the student make revisions to the proposal. Revisions must be completed to the committee's satisfaction prior to approval.

As the research progresses, it is expected that changes will need to be made to the research proposal. Substantive changes to the research proposal must be approved by a

majority of the graduate committee. Students are strongly encouraged to hold a meeting of their graduate committee to discuss the proposed changes to their research and obtain the approval of their committee. It is the student's responsibility to keep all members of the graduate committee informed of progress in their research.

Research Proposal Format

The following topics should be addressed in the thesis proposal:

- Introduction
 - Includes hypotheses and/or objectives
- Materials and Methods
- Anticipated results
- Discussion including how results would support or refute the hypothesis of the proposal
- Broader impacts
- Literature Cited

The requirement of the research proposal is independent of the requirements of any course in which a student might enroll. If the student's graduate committee has not approved a research proposal by the end of the 2nd semester of graduate work, then the student will not be eligible for an assistantship and is subject to dismissal from the graduate school.

- B. **Thesis or Report.** Preparation of the thesis or the research report is an indicator of the student's ability to analyze, summarize, and present research findings. The quality and accuracy of this document is of paramount importance. The completion of the thesis or research report shall not be tied to the grade of a course other than hours in thesis or research.

The student should consult the Graduate School guidelines for the requirements for formatting and presentation of the document. The thesis or research report may be written in such a way as to be acceptable for publication. The advisor should review the thesis or report and determine when it is suitable for review by the student's graduate committee. An approved research report then can be circulated to the student's graduate committee for their approval. The graduate committee can request changes to the research report. When a majority of the graduate committee has approved the research report the graduate student can circulate the signature sheet. The approval of the thesis is discussed in the thesis defense. (See 8. EXAMINATIONS)

- C. **Misconduct in Research.** The conduct of graduate student research will comply with university policy, including IACUC and IRB regulations. Allegations of misconduct are subject to due process. A finding of misconduct is followed by notification and disciplinary action as outlined in university policies.

Research misconduct might include (but is not limited to) four categories of unacceptable actions:

- Acts of deception, falsification, plagiarism, or misappropriation.
- Failure to comply with sponsoring agency guidelines.
- Retaliation against any person reporting misconduct in research.
- Failure to comply with legal requirements governing research.

D. **Use of University Property.** Use of university equipment, facilities, vehicles, properties, or supplies must be approved by the major advisor and the faculty or staff member responsible for such items. Graduate students must assume responsibility for the proper use of university equipment and property, and for the care and return of borrowed materials.

The Department will furnish expendable supplies only for teaching obligations. Graduate students must purchase their own supplies for classes in which they are enrolled. The same principle applies to use of the departmental copy machine.

Equipment and rooms for student research are not to be shared with anyone not specifically authorized to use them. Only students receiving formal financial assistance from the university are allowed to drive university vehicles. Permission to use university vehicles must be obtained from the student's advisor and budgetary authority, and the appropriate request forms must be completed and approved. In some cases, special training might be required for use of vehicles or other specialized equipment.

E. **Publications and Presentations.** Students are strongly encouraged to communicate the results of their research to the broader scientific community, by presenting their research at a meeting and/or by submitting to a peer-reviewed journal. Students who are presenting their research at a meeting may apply for an honorarium from the Department of Biological Sciences to help defray some of the costs of travel.

Students and faculty should consider professional ethics when reaching a decision about recognition for publication. It is prudent for the student and their advisor to establish in advance what the proposed publication arrangements will be, including authorship and assigned responsibilities. Results of sponsored research should be published jointly with the person or persons who received the grant or contract.

F. **Ownership of Data.** Students performing research sponsored by grants, assistantships, or departmental monies should understand that the data they collect are the property of Fort Hays State University and the sponsoring agency. Students, major advisors, and sponsoring agencies should establish an understanding of how data will be handled.

8. EXAMINATIONS

- English Proficiency.** International students for whom English is not their first language must meet Graduate School requirements for demonstrating English proficiency. Additional proficiency will be required of all students serving as graduate teaching assistants.
- Diagnostic Examination.** The advisor or graduate committee may require the student to take a diagnostic examination to assist in the preparation of the program of study.

- C. **Qualifying Comprehensive Examination.** All M.S. degree candidates must pass a qualifying comprehensive examination. Graduate students typically take the qualifying exam during their third semester of graduate school. Students must be admitted to candidacy and file the appropriate form with the Graduate School prior to taking the exam.
1. Scheduling
 - a. During fall and spring semesters, the exam can only be scheduled to take place between the 3rd and 12th weeks of the semester.
 - b. During the summer term, the exam can only be scheduled to occur between the end of the first quarter of the term and the end of the third quarter of the term.
 - i. Scheduling of exams during the summer term is strongly discouraged.
 - c. The exam should be taken in the second year of study and cannot be taken in the latter half of the semester in which the student intends to graduate.
 - d. Exceptions to the scheduling guideline can be made by the department chair. A request for an exception to the scheduling guideline must be made in writing with a compelling rationale for the exception.
 - e. The tentative date for the exam is set by the student with the consent of the major advisor, the graduate committee, and the department chair.
 2. Content
 - a. At the beginning of the third semester of the student's graduate program, the student will communicate with their graduate advisory committee, and present the committee with three well-conceived potential research proposal topics.
 - i. The student should provide his/her committee with three titles and a short summary (up to 250 words) of each.
 - ii. In the event the student is on the thesis track, his/her thesis topic cannot be submitted as a potential research proposal topic.
 - iii. The student should work with his/her advisor to come up with the list of possible proposal topics.
 - b. The committee selects a topic from the three proposed topics.
 - c. The student is informed of the topic selection, and will have 30 days in which to write a grant proposal, using the following criteria. The student is expected to work independently, with no input from advisor or fellow students.

d. The proposal will be a **maximum** of 10 pages of single-spaced text, with 1 inch margins and font no smaller than 11 point. Figures and tables are included within the 10 pages. Sections of the proposal should be:

- i. Introduction
- ii. Materials and Methods
- iii. Anticipated results
- iv. Discussion, including how results would support or refute the hypothesis of the proposal
- v. Broader impacts
- vi. Literature Cited (this does not count as part of the 10 pages).

3. Examination Structure

- a. At the end of the 30 day writing period, the student will turn in the written proposal to his/her graduate advisory committee and present the proposal as an oral presentation to his/her committee.
 - i. The proposal should be submitted to the student's exam committee at least two weeks prior to the tentative date for the exam.
 - ii. There should be five faculty on the exam committee. This will be the student's graduate committee plus any additional faculty needed to reach five members on the exam committee.
 - iii. The exam committee makes an initial assessment (by vote) of the proposal to determine whether the proposal is defensible and if the exam should occur.
 - iv. In the event the committee determines the proposal is not defensible, the exam is failed by the graduate student.
 - v. In the event the committee determines the proposal is defensible, the graduate student should schedule an exam. The exam will consist of a presentation and questions to follow.
 - vi. The presentation should be of professional quality and should be 30 minutes (± 5 min) in length.
 - vii. The presentation will be followed by a question and answer period of 60 to 90 minutes.
 - viii. The committee may ask questions about the general biology of the study system, as well as questions specifically about the document and/or presentation.

- b. The student will then be asked to step out of the room to allow the committee to deliberate on the written proposal and the presentation, including the student's performance on the question and answer period.
- c. Possible outcomes of the deliberation will be either:
 - i. Unconditional Pass
 - ii. Conditional Pass with rewrites or improved oral presentation
 - iii. Fail
- d. Upon successful completion of the exam, the student will meet with their advisor and/or committee to discuss the committee's comments together. The discussion may include going over what the student did well and what the student needs to improve. The purpose of this discussion is to review the student's writing and help the student prepare for writing the thesis.
- e. Failure would require a repeat of the exam in a subsequent semester. A second failure would result in dismissal from the graduate program.
- f. It is the responsibility of the major advisor to submit the Report of the Comprehensive Examination to the Graduate School within 2 working days after the day of the examination.

D. Oral Examination of Research (Thesis Defense), Students in the thesis option are required to pass an oral examination of their research (thesis defense). The thesis defense consists of two parts: the public oral presentation and the formal examination.

1. Scheduling

- a. The thesis defense cannot be scheduled in the first two weeks or in the last 4 weeks of a semester.
- b. During the summer term, the exam can only be scheduled to occur between the end of the first quarter of the semester and the end of the third quarter of the semester.
 - i. Scheduling of exams during the summer term is strongly discouraged.
- c. The thesis, approved by the major advisor, should be submitted to the student's graduate committee at least two weeks prior to the tentative date for the thesis defense.
- d. The major advisor and all of the members of the graduate committee must approve the defense date.
- e. The graduate committee makes an initial assessment of the thesis to determine whether the thesis is defensible and if the exam should occur.

- f. When the thesis and the date have been approved, the student needs to reserve a location for the public presentation and the defense with the department's administrative assistant.
 - g. Students must be admitted to candidacy prior to taking their exam and they must sign up for the exam with the Graduate School.
2. Public Presentation
- a. Announcement
 - i. The graduate student is responsible for the development and dissemination of an announcement (or flyer) that publicizes the public presentation of their research.
 - ii. The flyer should be posted at least one week in advance of the defense.
 - iii. The flyer should prominently contain the statement "Public Invited."
 - iv. Copies of the flyer should be:
 - posted throughout Albertson Hall and the campus
 - sent to the Dean of the College of Science, Technology, and Mathematics
 - sent to the Dean of the Graduate School
 - b. Presentation
 - i. The student is responsible for reserving the location for the presentation.
 - ii. The major advisor will chair the presentation.
 - Introduce the student
 - Select questions from the audience for the student
 - iii. The presentation should last 30-40 minutes with another 10 minutes for questions.
 - iv. The student is expected to answer questions from the audience.
3. Formal Examination
- a. The student's graduate committee will administer the examination.
 - b. The major advisor will serve as the chair of the examination committee.
 - c. The major advisor will determine the order that committee members will question the graduate student. This order should be announced at the beginning of the examination.

- d. All members of the examination committee are to ask questions and should be allowed an approximately equal amount of time for questions.
- e. The formal portion of the thesis defense will last 2 hours \pm 10 minutes.
- f. At the end of the questions the major advisor will excuse the student.
- g. Once the student has left the room, the graduate committee will discuss and vote on the student's performance.
 - i. Balloting will be secret and written. Each member of the examination committee will cast one vote.
 - ii. The only possible votes are Pass and Fail.
 - iii. A majority of Pass votes is required for the student to pass the examination.
- h. Once the votes are counted the student is brought back into the room and informed only of whether they passed or failed the examination (not the vote count).
- i. A student who fails the oral examination can retake the examination one additional time at a time to be approved by the examination committee.
- j. It is the responsibility of the major advisor to submit the Report of the Examination form to the Graduate School within 2 working days after the day of the examination.

9. GRADUATE ASSISTANTSHIPS

A graduate assistant (GA) is hired as a temporary member of the university's instructional (GTA) or research staff (GRA). These are not scholarships. A graduate assistant failing to adequately perform their assigned duties will forfeit the appointment and its benefits.

A. Application and Selection

1. Application Dates
 - a. Applications for assistantships beginning in the fall semesters: Preference will be given to complete applications received by the preceding 15 March.
 - b. Applications for assistantships beginning in the spring semesters: Preference will be given to complete applications received by the preceding 1 December.
 - c. Applications for assistantships beginning in the summer semesters: Preference will be given to complete applications received by the preceding 15 March.
2. A selection committee comprised of faculty members in the department reviews the applications and forwards its recommendations to the Department Chair, who makes recommendations to the Graduate School, which awards all assistantships.

B. Outside Employment

1. Outside employment for GRAs and GTAs is strongly discouraged.

C. GTA

1. Students awarded GTAs are assigned primarily to teach or assist in laboratory courses.
2. Eligibility
 - a. Students are eligible for support for four semesters (fall and spring) and three summer sessions.
 - b. Students are not guaranteed an assistantship.
 - c. Assistantships can be withdrawn at any time for lack of funds, student's failure to perform assigned tasks, or student's failure at other responsibilities.
3. Assignments are distributed as evenly as possible and are based on a standard of 19 hours of work per week.
4. Specific duties given to each GTA are made by the supervising faculty and might include but are not limited to the following:
 - a. scheduled hours teaching or assisting in lab or classroom;
 - b. mandatory GTA meetings with faculty supervisor;
 - c. preparing for lab (e.g., reading background information, writing lecture notes and quizzes);
 - d. setting up lab materials and putting lab materials away;
 - e. grading lab assignments outside of class;
 - f. assisting faculty with preparation of lecture materials or grading exams;
 - g. other duties assigned by faculty supervisor or department chair.
5. Office hours
 - a. GTAs will be assigned office space.
 - b. GTAs will schedule a minimum of three office-hours per week between 8:00 am and 4:30 pm Monday through Friday.
 - c. These office hours will be announced in the classes taught by the GTA, printed in the syllabi, posted on the office door, and provided to the department's administrative assistant and supervising instructors, within one week of the start of each semester.

- d. During scheduled office hours, GTAs must be available in their office or teaching lab to meet with students or faculty.

D. GRA

1. Each GRA is required to have a written description of expectations that details their responsibilities and remuneration.
2. Description of expectations must be signed and dated by both the principal investigator and the student.
3. The signed description of expectations must be submitted to the Biology Department office within three weeks.
4. The original description can be amended. The amended description must be signed by both parties and submitted to the Biology Department office.

10. EQUAL EMPLOYMENT OPPORTUNITY

Fort Hays State University's affirmative action and equal opportunity statement can be reviewed here: <https://fhsu.edu/president/Compliance-Office/Equal-Employment-Opportunity/index.html>.

By signing, I acknowledge that I have read and understand the responsibilities and expectations described in this document.

Signature

Date

Printed name