

Program Guide

for the

**MASTER OF SCIENCE
IN BIOLOGY**

Thesis and Non-thesis Options

Including instructions for admission to the Program, Advisory Committee formation, and guidelines for the thesis and non-thesis options



**Department of Biology
University of Central Oklahoma
100 North University Drive
Edmond, Oklahoma 73034-5209**

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INTRODUCTION

We are pleased that you have expressed an interest in the Master of Science Program in Biology at the University of Central Oklahoma (UCO). Information concerning our program is provided in this booklet.

The mission of the Department of Biology M.S. Program is to provide students with content knowledge and training beyond that provided by the B.S. in Biology degree; prepare students for further graduate studies and/or for specific career opportunities in education, research, medicine, allied health, and/or other professional areas; and prepare students to be leaders in the sciences by developing the skills and abilities necessary to function as productive, creative, ethical, and engaged scientists as determined by community, state, national, and international needs. This is achieved through selected coursework, faculty mentoring, interactions with peer communities, and research design and experimentation.

We serve a broad spectrum of students with diverse backgrounds from metropolitan and rural regions of the state, country, and world. Students can choose one of two degree options, either the Thesis option or the Non-thesis option. The educational depth of the M.S. degree is determined by specific courses selected for the student's personalized Plan of Study and their thesis or capstone work.

The Department of Biology annually awards Teaching Assistantships on a competitive basis. Research Assistantships often are available through faculty members. You should contact your faculty mentor to inquire if this is an option. Assistantships provide financial support, through a tuition waiver and a stipend, in return for completing assigned duties.

Prior to being accepted into our program, a graduate faculty member from the Department of Biology must agree to serve as your Major Advisor. Our faculty conducts research in a variety of disciplines in biology (see the list of faculty research interests below). Please visit with our faculty prior to completing your application. Visit the departmental website, <https://www.uco.edu/cms/academics/biology/>, for more information and links to faculty websites. To obtain more information or ask questions, you also may contact either the Interim Department Chairperson (Dr. Mel Vaughan, 405-974-5725, mvaughan4@uco.edu) or the Biology Graduate Program Advisor (Dr. Paul Stone, 405-974-5791, pstone@uco.edu), or write to the Department of Biology, University of Central Oklahoma, 100 North University Drive, Box 89, Edmond, Oklahoma 73034-5209 (405-974-5017). General information regarding UCO graduate programs and requirements can be obtained through the Jackson College of Graduate Studies (hereafter referred to as Graduate College; <http://www.uco.edu/graduate/>).

GRADUATE FACULTY – DEPARTMENT OF BIOLOGY

Elizabeth A. Allan: Science Education. *B.S., University of Oklahoma; Ph.D., University of California Riverside.* eallan@uco.edu

John F. Barthell: Invertebrate terrestrial ecology. *B.S., Ph.D., University of California, Berkeley.* jbarthell@uco.edu

T. David Bass: Invertebrate zoology and ecology. *B.S., M.S., Lamar University; Ph.D., Texas A&M University.* dbass@uco.edu

Caroline Bentley: Bacterial pathogenesis and immunology. *B.S., Oral Roberts University; M.S., College of William and Mary; Ph.D., University of Washington.* cbentley3@uco.edu

Jim Bidlack: Plant physiology and anatomy. *B.S., Purdue University; M.S., University of Arkansas; Ph.D., Iowa State University.* jbidlack@uco.edu

Robert Brennan: Microbiology and infectious disease. *B.S., University of South Dakota; M.S., Louisiana State University; Ph.D., Texas A&M Health Sciences Center.* rbrennan1@uco.edu

Christopher J. Butler: Avian population ecology, community ecology, and modeling climate change effects. *B.S., Cornell University; Ph.D., Oxford University.* cbutler11@uco.edu

Gloria Caddell: Plant population biology, systematics, and ecology; and pollination biology. *B.A., M.A., University of Alabama; Ph.D., University of North Carolina at Chapel Hill.* gcaddell@uco.edu

Harold Cleveland: Anatomy and herpetology. *B.S., Northwestern State University (LA); M.S., University of Illinois at Urbana Champaign; Ph.D., University of Oklahoma Health Sciences Center.* hcleveland@uco.edu

Brandt G. Cassidy: Human identification, forensic DNA analysis, and molecular identification of wood. *B.S., Iowa State University; Ph.D., Baylor College of Medicine.* bcassidy@uco.edu

Casie Collamore: Microbiology and immunology. *B.S., Oklahoma City University; M.S., Ph.D., University of Oklahoma Health Sciences Center.* ccollamore@uco.edu

James P. Creecy: Molecular genetics, forensics DNA analysis, and microbial genetics. *B.S., M.S., New Mexico Institute of Mining and Technology; Ph.D., University of Oklahoma.* jcreecy@uco.edu

Allyson Fenwick: Herpetology, phylogenetics, and population genetics. *B.S., B.A., Michigan State University; M.S., University of Texas – Tyler; Ph.D., University of Central Florida.* afenwick@uco.edu

Christopher G. Goodchild: Ecotoxicology and wildlife physiology. *B.S., University of Oklahoma; M.S., University of New England; Ph.D., Oklahoma State University.* cgoodchild@uco.edu

Michelle L. Haynie: Mammalogy, population genetics, molecular systematics, and evolution. *B.S., M.S., Oklahoma State University; Ph.D., Texas Tech University.* mhaynie@uco.edu

Victoria Jackson: Mammalogy, spatial ecology. *B.S., Texas A&M University; M.S., Fort Hays State University; Ph.D., University of North Texas.* vjackson4@uco.edu

Chad King: Forest ecology, dendroecology. *B.S., Wayne State College; M.S., University of South Dakota; Ph.D., University of Missouri.* cking24@uco.edu

Hari Kotturi: Microbiology and cancer biology. *B.S., Avanti College (India); M.S., DSM College (India); Ph.D., Clemson University.* hkotturi@uco.edu

Wayne E. Lord: Entomology and parasitology. *B.S., Eastern University; M.S., University of Delaware; Ph.D., University of New Hampshire.* wlord1@uco.edu

Jenna A. Messick: Spatial plant ecology, plant taxonomy, and plant population genetics. *B.S., M.A., Ph.D., University of Oklahoma.* jmessick1@uco.edu

Paul Olson: Environmental biology and bioremediation. *B.S., M.S., University of Central Oklahoma; Ph.D., University of Oklahoma.* polson@uco.edu

Clark L. Ovrebo: Taxonomy and ecology of temperate and Neotropical macrofungi. *B.S., Valley City State University; M.S., University of Idaho; Ph.D., University of Toronto.* covrebo@uco.edu

Nikki Seagraves: Developmental biology and heart development. *B.S., Northwestern Oklahoma State University; Ph.D., Ohio State University.* nseagraves@uco.edu

Paul A. Stone: Herpetology. *B.S., University of Florida; M.S., Auburn University; Ph.D., University of New Mexico.* pstone@uco.edu

Andrew T. Taylor: Fisheries biology and management, ichthyology, aquatic invasive species, conservation genetics, and species distribution modeling. *B.S., M.S., University of Georgia; Ph.D., Oklahoma State University.* ataylor66@uco.edu

Melville B. Vaughan: Cell biology of skin wound healing and aging. *B.S., University of Oklahoma; Ph.D., University of Oklahoma Health Science Center.* mvaughan4@uco.edu

Gregory M. Wilson: Population genetics and molecular evolution. *B. S., Central College, IA; M.S., Fort Hayes State University; Ph.D., Oklahoma State University.* gwilson@uco.edu

M.S. IN BIOLOGY DEGREE OPTIONS

Students can choose from two degree paths: Thesis option or Non-thesis option.

Thesis Option

The Thesis option provides graduate students with experience in the design, execution, and reporting of scientific research based upon the collection of original data. This option is pursued by students who have a strong interest in research and intend to use these skills in their career. Graduate students who plan to enter research professions and/or pursue a doctorate degree should enroll in the Thesis option. Students must complete 32 hours of coursework, all of which must be at the 5000 level. The coursework must include 6 hours of Thesis and 26 hours of Guided Electives. Guided Electives are selected in consultation with the Advisory Committee. This option requires: a written thesis based upon original data collected in the laboratory or field, an oral defense open to the public, and an oral exam administered by the Advisory Committee.

Non-thesis Option

The Non-thesis option provides graduate students with additional graduate coursework compared to the Thesis option. Additionally, this option typically is considered a terminal degree. Graduate students who want to reinforce their knowledge of biology for a career as an educator or manager might want to take advantage of this option. Students must complete 32 hours of coursework, all of which must be at the 5000 level. The coursework must include 2 hours of Graduate Capstone and 30 hours of Guided Electives. Guided Electives are selected in consultation with the Advisory Committee. This option requires: a capstone experience, determined in consultation with the advisory committee, and a comprehensive exit exam administered by the Advisory Committee. The exit exam may be written, oral, or a combination of both, at the discretion of the Advisory Committee.

PROGRAM ADMISSION AND REQUIREMENTS FOR THE M.S. IN BIOLOGY

The guidelines listed on the following pages are excerpted from the Graduate Catalog.

University of Central Oklahoma

Program: Biology
Major: Biology
Major Code: 6600
Degree: Master of Science (M.S.)
Department: Biology
College: Mathematics and Science
Graduate Advisor: Dr. Paul Stone
E-Mail Address: pstone@uco.edu
Office Address: HOH401
Phone Number: 405-974-5791

Admission Requirements

- BS/BA in Biology or related field

Submit the following items to:

Jackson College of Graduate Studies (JCGS)
100 N. University Dr., Nigh University Center 404
Edmond, OK 73034.

- Written statement of a graduate faculty member's commitment to serve as Major Advisor.
- Online application for admission (www.uco.edu/graduate/).
- Official copies of undergraduate and graduate transcripts from each institution attended with all degrees posted. All transcripts must be from accredited institutions. Undergraduate transcripts must show a minimal 2.50 GPA overall with a preferred minimal 3.00 GPA in the last 60 hours attempted.
- GRE scores with a preferred minimum 50th percentile ranking in both the quantitative and verbal sections.
- Three letters of recommendation, one of which may be from the faculty member who will serve as Major Advisor.
- Students with a native language other than English must submit evidence of English language proficiency. See Admission to Graduate Studies– English Language Proficiency.

Note: Students must meet with faculty mentor/advisor in a group or individual advisement session before enrolling.

Other Requirements

- Advisory Committee. Form an Advisory Committee and meet with it at least once per academic year.
- Plan of Study. Each student, under the guidance of the Major Advisor, must file a Plan of Study with the Graduate Program Advisor and the Jackson College of Graduate Studies by the end of the first semester of graduate work. The Plan of Study must be signed and dated by the student and the Graduate Program Advisor before it can be considered official.

- Academic Standards. Meet the following course work standards:
 - Overall GPA of 3.00 or higher.
 - No more than six hours of “C”.
 - No more than six advisor-approved hours from traditional correspondence courses.
- Thesis Option. Complete a thesis, present it to the public, and defend it successfully before the Advisory Committee. The defense will include an oral comprehensive examination administered by the Advisory Committee. Submit two paper copies of the thesis and one electronic copy to the library through ProQuest and the thesis’ Title Page, original Signature Page, and Abstract Page to the JCGS.
- Non-thesis Option. Complete the Graduate Capstone which will include submission of a written document and an exit exam administered by the Advisory Committee.
- Final Requirements. Apply for graduation through the JCGS by advertised deadline.

Graduation Requirements

Thesis Option

Required Courses:6 Hours

BIO 5990 Thesis hours (6 total and spread among semesters)

Guided Electives (5000 level courses only)26 Hours

Courses chosen in consultation with Thesis Advisory Committee.

Original research is a part of the Thesis Option.

TOTAL HOURS REQUIRED32 HOURS

Non-thesis Option

Required Courses:2 Hours

BIO 5892 Graduate Capstone (must be taken in final semester)

Guided Electives (5000 level courses only)30 Hours

Courses chosen in consultation with Advisory Committee.

TOTAL HOURS REQUIRED32 HOURS

NOTE: Each student must complete 32 hours of 5000 level coursework, which includes Thesis or Graduate Capstone hours. A Plan of Study should be designed based on the student’s academic record and recommendations of the Advisory Committee. The Advisory Committee may require completion of lower-level course deficiencies or prerequisites.

AFTER ADMISSION TO THE M.S. IN BIOLOGY DEGREE PROGRAM

Semester Schedule:

The following schedule is suggested to promote completion of the M.S. in Biology Degree in 2 years. This schedule is for full time Master's students; students who either enroll part-time or discontinuously will undoubtedly take longer to complete the degree. For regulations regarding discontinuous enrollment, see the Graduate Catalog provided by the Graduate College. See Appendix I for a summary checklist of important deadlines. See Appendix II for the forms discussed below.

First Semester

Thesis and Non-thesis options:

- Establish a thesis project or capstone topic with the Major Advisor.
- Form the Advisory Committee
- Meet with your Advisory Committee, develop a Plan of Study, and complete the following forms:
 - File Form I – *Advisory Committee Approval Form* with the Graduate College and Biology Graduate Program Advisor.
 - File Form II – *Formal Plan of Study* with the Graduate College and Biology Graduate Program Advisor.
 - File Form IV – *Notification of Advisory Committee Meeting* with Biology Graduate Program Advisor.

Thesis option only:

- Begin writing/revising the thesis proposal. If possible, submit a draft of the proposal to the Advisory Committee by the end of this semester.
- Begin thesis project.

Non-thesis option only:

- Discuss capstone requirements including written documentation to be submitted and exam format.
- Begin capstone project.

Second Semester

Thesis and Non-thesis options:

- If not done during the first semester, Forms I, II, and IV must be completed and submitted to remain in good standing.

Thesis option only:

- Finish your thesis proposal. Upon approval of the thesis proposal by the Advisory Committee, complete Form III.
 - File Form III – *Thesis Proposal Approval* with the Biology Graduate Program Advisor.
- Continue thesis project.

Third Semester

Thesis and Non-thesis options:

- Meet with the Advisory Committee to discuss progress and file a progress report (Form IV) with the Biology Graduate Program Advisor.

Thesis option only:

- If not done during the second semester, the thesis proposal and Form III must be approved and submitted to remain in good standing.
- Continue thesis project and begin drafting the thesis. Submit thesis drafts to your Major Advisor

Non-thesis option only:

- If not already complete, finalize capstone requirements including written documentation to be submitted and exam format.

Fourth Semester and Additional Semesters as Necessary

Thesis and Non-thesis options:

- File a progress report (Form IV) with Biology Graduate Program Advisor if a report was not filed during the third semester.

Thesis option only:

- Finish thesis drafts. Early in the fourth semester you should submit thesis drafts to your Advisory Committee (only with approval from your Major Advisor). Allow at least 2 weeks for the Advisory Committee to read and comment on the thesis.
- Make revisions to the thesis and confer with members of the Advisory Committee.
- Schedule defense with the Graduate College 2 weeks prior to the defense date and submit a thesis abstract.
 - File Form VI – *Thesis Defense Scheduling Form* with the Graduate College and the Biology Graduate Program Advisor.
- Advertise public presentation at least 1 week prior to the presentation.
- Hold public presentation, oral defense, and comprehensive oral examination.
- Apply for graduation through the Graduate College by the advertised deadline.

Non-thesis option only:

- Enroll in the Graduate Capstone course (last semester only). Submit the written document and take the exit exam at the conclusion of this course.
- Apply for graduation through the Graduate College by the advertised deadline.

Enrollment:

Students must be cautioned that courses completed as a graduate student before formation of the Advisory Committee will be accepted as part of the Plan of Study at the discretion of the Advisory Committee. Students should meet with the Major Advisor prior to enrolling in the first semester and with the Advisory Committee to develop a Plan of Study prior to enrolling in the second semester. Students may not earn graduate credit for courses previously completed for undergraduate credit. Enrollment usually begins in April for the summer and fall semesters, and in November for the spring semester.

To be considered a full time student for Financial Aid, students must be enrolled in 9 hours in the fall and spring semesters, and 5 hours in the summer semester. To be eligible for Teaching Assistantships (TAs) and Research Assistantships (RAs), students must be enrolled in at least 5 hours in the fall and spring semesters, and 3 hours in the summer semester.

Graduate students may enroll in a maximum of 12 hours in the spring and fall semesters, and 9 hours in the summer. Special permission to enroll in additional hours must be obtained from the Graduate College. If given written permission by the Graduate Dean, students may enroll in 15 hours during the spring or fall semester, and 12 hours during the summer semester. Overload permission forms are available through the Graduate College. This overload rule applies to all enrolled graduate hours, including Thesis hours and Graduate Capstone. Any hours taken above the allowed or approved maximum will not count towards the master's degree.

See Appendix III for a list of courses offered in the department. The semester each course is offered is included in the appendix. This information should be used when developing a Plan of Study.

Enrollment in Thesis Hours *(the following is taken directly from the Graduate Catalog)*

The maximum number of thesis hours which may be applied toward any graduate program is 6. **Once enrolled in thesis hours, a student must remain continuously enrolled in thesis hours during each fall and spring semester until full completion of all thesis requirements has been met.** Thesis hours completed during the development and preparation of a thesis but prior to its final completion will be assigned an "X" grade and will contribute to the "Hours Attempted" and "Hours Earned" sections of the student's transcript. The "X" grade will not, however, contribute to the graduate GPA. Once the thesis is completed, the thesis committee chair will assign a Passing or Failing grade ("P" or "F"). While a grade of "P" will not contribute to the graduate GPA, an "F" grade will contribute to the overall graduate GPA and will prevent a student from graduating. Any student who has completed all course work must complete his/her thesis within 2 academic years (2 fall and 2 spring semesters) beginning with enrollment in the first thesis course. Any exception request to extend beyond 2 years must be made in writing to the graduate dean.

Enrollment in Graduate Capstone Hours

Non-thesis students must enroll in Graduate Capstone hours during their final semester. This course can only be taken once and should be taken at the culmination of the non-thesis program. Once the capstone requirements are completed, the Advisory Committee chair will

assign a Passing or Failing grade (“P” or “F”). While a grade of “P” will not contribute to the graduate GPA, an “F” grade will contribute to the overall graduate GPA and will prevent a student from graduating. If a student is unable to complete the capstone requirements during the semester in which they are enrolled, an Incomplete grade (“I”) may be assigned at the discretion of the Advisory Committee. If an “I” grade is assigned, students will have up to 1 year to complete the capstone requirements. If the capstone requirements are not completed within the allotted time, the grade will be converted to an “F.”

Irregular Enrollment Courses:

Students may enroll in BIO59x0 courses (this includes seminars and individual study hours) during the course of their degree. Irregular Enrollment forms must be filled out by the course instructor prior to enrollment. The number of hours allowed per semester for each course varies (see Graduate Course Catalog for details). Students may count only 6 hours (in combination) from any of these courses towards their degree (excluding the Thesis hours discussed above and Seminar (BIO5910) courses). There are no restrictions on the number of seminar (BIO5910) hours that may be applied to your degree.

Enrollment in Non-biology Courses:

Students in the Biology M.S. Program may take courses from other departments at UCO, as long as those courses are at the 5000 level and the student meets the prerequisite for the course. Courses from other departments may count towards the coursework hours if they are on the Plan of Study.

Transfer Courses:

The information below is taken from the Graduate Catalog.

Students may not transfer in credit for capstone courses, program projects, internships, theses, or similar non-classroom, summary, or application requirements. These requirements must be met through UCO. A maximum of 10 (ten) semester hours of graduate credit from an appropriately regionally accredited, degree-granting institution may be transferred to a graduate degree program at the University of Central Oklahoma, unless UCO has a Memorandum of Understanding and/or a Transfer Agreement with the sending institution or its agents. These 10 hours must carry grades of “B-” or higher, must apply to the student’s UCO program, and must appear on a UCO Plan of Study. Courses must be approved by the graduate program advisor and the Dean of the Jackson College of Graduate Studies.

If the courses have been used to satisfy degree requirements at other universities, they cannot count toward degrees at UCO, unless UCO has a Memorandum of Understanding and/or a Transfer Agreement with the sending institution or its agents providing for an exception to this rule. Only those courses approved by graduate program advisors for credit toward UCO degrees will count toward GPA calculations. All provisions for transfer to UCO are subject to modifications in cases where UCO has a Memorandum of Understanding and/or a Transfer Agreement with the sending institution or its agents providing exceptions to the transfer rules. Limits imposed in this catalog under “Time to Degree Completion” apply equally to credits earned at UCO and to transfer credits.

ADVISORY COMMITTEE

Selection and Role of the Advisory Committee:

Every student in the M.S. in Biology Degree program is required to form an Advisory Committee consisting of a Major Advisor and at least 2 other graduate faculty members. This should be done preferably during the first semester, but no later than the second semester of the program, and under advisement of the Major Advisor. Two committee members (including the Major Advisor) must be from the UCO Department of Biology. A committee member from outside the Department of Biology or the university may serve on the student's Advisory Committee. Outside committee members should carry credentials from another department, university, government agency, or industry that qualify them as a professional in the area of study representative of the student's work. Outside committee members have all of the rights and privileges of UCO faculty with regards to expectations of a committee member. Additional members, beyond the required 3, may be chosen to serve on the Advisory Committee if desired.

Traditionally, the Advisory Committee operates in a mentoring capacity. The mentor–student relationship is critical to the success of the student and differs substantially from associations between faculty and students in the classroom. The Major Advisor serves as director of the thesis or capstone work. The Advisory Committee, as a whole, makes suggestions about and approves the student's graduate program (which includes a list of coursework). The Advisory Committee provides feedback on all written documents (thesis proposal and thesis, or capstone document) and evaluates the final oral defense and examination, or comprehensive exit exam.

Because the Major Advisor and Advisory Committee play such an important role in the successful completion of the M.S. in Biology Degree, students are urged to give serious consideration to selection of those faculty who will be working with them for the duration of their degree. It is to the student's advantage to avoid issues that necessitate changes in Advisory Committee membership during their program.

Policies for Changes in the Advisory Committee:

Student Initiated Changes:

Change of Committee Member

All proposed changes to the Advisory Committee must be discussed first with the Major Advisor. Students should be prepared to fully explain the reasoning for the proposed change(s). After discussion with the Major Advisor, students must then inform the Advisory Committee of the proposed changes. If the affected member or members step down voluntarily, and prior to filing Forms I, II, or III, no formal action is required. At a committee member or member(s) request, written documentation of the reasons for removal must be provided. This documentation must be written by the Major Advisor and must be sent to all members of the Advisory Committee, the Biology Department Chair, and the Biology Graduate Program Advisor. If changes to the Advisory Committee are made after the submission of Forms I, II, or III, revised forms must be submitted to the Graduate College and the Biology Graduate Program Advisor.

Change of Major Advisor

Should the student desire a change of Major Advisor, the student must notify the Major Advisor, Advisory Committee, and Biology Graduate Advisor of the change. If the Major Advisor steps down voluntarily, and prior to filing Forms I, II, or III, no additional action is required. If requested, written documentation explaining the reason(s) for the change must be provided. If this documentation is requested, the student must submit a copy to the Major Advisor, Biology Graduate Program Advisor, and Biology Department Chair. If a change in Major Advisor occurs after the submission of Forms I, II, or III, revised forms must be submitted to the Graduate College and the Biology Graduate Program Advisor.

If the student initiates a change in Major Advisor, the thesis or capstone project will not be released to the student without written notification to the Department of Biology Graduate Committee and the Biology Department Chair from the Major Advisor, unless the project was property of the student prior to beginning his or her MS degree at UCO. Should the original Major Advisor release the thesis or capstone project, the new Major Advisor must notify the Biology Graduate Program Advisor in writing that he or she is willing to sponsor the student on the same project. Should the student desire to change the Major Advisor and the original advisor is not willing to release the project, the student must propose a different thesis or capstone project.

In the case that these guidelines are not followed, or at the discretion of the Department of Biology Graduate Committee, the student may be dismissed from the M.S. in Biology Graduate Program.

Faculty Initiated Changes:

Advisory Committee members might find it necessary to withdraw from the committee. Should this situation arise, the committee member needs to notify the Major Advisor and student of their decision. If requested, written documentation describing the reason for withdrawal must be provided to the Major Advisor. If this change occurs after the submission of Forms I, II, or III, revised forms must be submitted to the Graduate College and the Biology Graduate Program Advisor. A replacement committee member must be found to bring the Advisory Committee back to 3 members.

If the Major Advisor wishes to step down, a letter of intent must be submitted to the student, the Biology Graduate Program Advisor, and the Biology Department Chair. The letter of intent should clearly state the reasons why the faculty member is stepping down. The student may seek a new Major Advisor or switch to a new degree program. Unless indicated otherwise by written notification from the Major Advisor to the Biology Department Graduate Committee, the thesis or capstone project is considered property of the Major Advisor. The student will not be allowed to transfer the thesis or capstone project to another Major Advisor without written release from the original Major Advisor. If a new Major Advisor is not found, the student will be unable to continue in the Biology M.S. Program. In this case, all parties are notified and the decision for termination is forwarded to the Graduate College. For students in the Thesis Option, Thesis grades that are currently outstanding shall remain as an "X" on the transcript.

Upon termination of a degree program for any reason, Form VII must be submitted to the Biology Graduate Program Advisor.

Requirements and Format for Advisory Committee Meetings:

Meetings are to be held no later than 2 weeks before the start of finals week. Meetings should not be held on weekends, school holidays, or during the summer semester unless all members of the Advisory Committee agree. It is the student's responsibility to schedule meetings at a time that is agreeable to all Advisory Committee members. It is the Major Advisor's responsibility to ensure that the student holds these meetings, and that a report of the meeting (Form IV) is filed with the Biology Graduate Program Advisor.

Planning Meeting(s): *(this refers to meetings that occur prior to submitting a Plan of Study)*

If so desired by the student and Major Advisor, one or more meetings may be held to discuss the Advisory Committee, the student's thesis or capstone project, coursework, or other matters of concern prior to completion of the required paperwork. Form IV should be completed for at least one planning meeting if the Plan of Study and/or Thesis/Capstone Proposal meetings do not occur during the first academic year.

Plan of Study Meeting:

The student is required to file a list of coursework to be taken for the M.S. Degree in Biology as approved by the Advisory Committee. A Plan of Study (Form II) must be submitted to the Graduate College and Biology Graduate Program Advisor. Form IV also must be completed and submitted to the Biology Graduate Program Advisor. This meeting should take place during the first semester and must take place by the end of the second semester to remain in good standing in the program. The Plan of Study meeting can occur at the same time as the Thesis/Capstone Proposal meeting if the student is prepared to discuss a thesis or capstone topic at the same time.

Thesis Proposal Meeting:

A student in the thesis option is required to prepare a formal proposal of the work to be completed for the M.S. Degree in Biology. The proposal should be presented as soon as possible and must be presented by the end of the third semester to remain in good standing in the program. At least 2 weeks prior to the proposal meeting, students are required to give a copy of the thesis proposal to each Advisory Committee member. At the meeting, students are required to make a short (10 to 20 minute) presentation of the proposed work and should be prepared to answer questions. Once the proposal has been accepted by the Advisory Committee, a copy of the proposal along with Form III must be filed with the Biology Graduate Program Advisor. Form IV also must be completed and submitted to the Biology Graduate Program Advisor.

Capstone Proposal Meeting:

Students in the non-thesis option must complete a written document as part of their Graduate Capstone experience. The student must meet with the Advisory Committee and agree on a Capstone topic. Ideally, this meeting should be held shortly after the student begins the non-thesis program. It must be held no later than the first 2 weeks of the semester in which the Graduate Capstone is taken. Once a Capstone Topic has been selected, Form IV must be completed and submitted to the Biology Graduate Program Advisor.

Progress Report Meeting(s): *(this refers to meetings that occur after submitting a Plan of Study and/or a proposal)*

At least once per academic year, the student is required to meet with the Advisory Committee and give a report of progress on courses and the thesis or capstone project so that problems and/or changes can be discussed. Students are required to hold a progress report meeting even if they have completed their course work and are off-campus. Form IV must be completed and submitted to the Biology Graduate Program Advisor.

THESIS PROPOSAL GUIDELINES

General Information:

During the beginning stages of the thesis project, and in consultation with the Major Advisor, the student must prepare a written proposal of the work to be undertaken during the course of the degree. The purpose of the proposal is to help the student and the Advisory Committee make a realistic evaluation of the proposed work with respect to originality, feasibility, time required, and results. Students should follow the general outlines shown below in preparation of the proposal, although the Major Advisor may stipulate format changes if desired. Length, breadth, and scope of proposals will vary depending on the nature of the project and area of study. The student should consult with the Major Advisor and other Advisory Committee members regarding the specific requirements of the proposal.

Suggested Format:

Title Page:

Include the title of your project, your name, the names of the Advisory Committee members (Major Advisor listed first and remaining members in listed alphabetical order), and the date.

Literature Review/Introduction:

Review the literature with the goal of developing a sound basis for investigating the chosen research problem. Identify a specific research question and provide ample evidence in the form of references to show the need for additional research in this area. Be sure to address work by other authors leading to the project you have developed.

Project Objectives:

State the specific hypotheses or objectives to be addressed and how fulfillment of these objectives/hypotheses will contribute to the current state of knowledge in the chosen research area.

Materials and Methods:

Explain how the research will be conducted and the materials that will be needed to perform the experiments/study. Describe specific procedures, the field/laboratory design, and statistical analyses to be performed.

Preliminary Data and/or Expected Outcomes:

Provide any preliminary data and/or describe the expected outcomes of the research. Explain the significance of this work to the specific research area.

Timeline:

Construct a time table which shows the expected dates for the start and completion of each phase of the project.

Literature Cited:

Provide citations for all materials used in the proposal using a citation format approved by the Major Advisor.

Figures/Tables:

Figures and tables may be included in the proposal as appropriate.

Drafting and Submitting a Thesis Proposal:

The student should submit a draft of the proposal to the Major Advisor before submitting the proposal to the Advisory Committee. Multiple revisions and drafts may be required before the Major Advisor approves submission of the proposal to the Advisory Committee. Once a draft of the proposal is agreed upon by the student and the Major Advisor, it should be submitted to the Advisory Committee for further review. A research proposal meeting must be held to discuss the proposal. The Advisory Committee must have your thesis proposal at least 2 weeks prior to the meeting to approve the proposal (see page 13 for additional rules regarding this meeting).

THESIS GUIDELINES

General Information:

The Master's Thesis is the "capstone" of the M.S. in Biology Thesis Option. As a student completing a thesis, it is important that you follow the instructions of your Advisory Committee concerning the preparation of your thesis.

Graduate College Thesis Requirements:

General Requirements:

- Complete a Title Page for your thesis as shown in Appendix IV.
- Complete a Signature Page as shown in Appendix V.
- Complete Thesis Abstract Page (see guidelines below) as shown in Appendix VI.

The first 2 documents listed above are turned in to the Graduate College upon successful defense of your thesis. **These documents must be submitted to the Graduate College no later than the last day of classes in the same term you intend to graduate. They must be on file to graduate.** The first 2 documents also are the first 2 pages of your completed thesis (see below). The Thesis Abstract Page must be submitted to the Graduate College when you schedule your thesis defense (see below).

Provide a minimum left-side margin of 1.5 inches to allow for proper binding of your thesis after completion. Other than the introductory/cover pages, the Graduate College has no formal requirements for formatting the thesis. Follow the guidelines of your Advisory Committee for formatting other margins and the remainder of your thesis.

Department of Biology Thesis Requirements:

Sequence of Materials:

The sections of the thesis will vary as a function of the unique requirements dictated by a particular discipline. Consult with your Major Advisor and Advisory Committee to determine the organizational style and material to be included. Additionally, consult the theses stored in the Biology office for ideas on formatting and arrangement of sections. Although every thesis may not contain each of the sections listed below, this general sequence should be followed when possible.

1. **Title Page:** The Title Page must be symmetrically balanced, based on an imaginary line drawn 3 inches to the right of the center of the page. The nature of the paper and exact title of the degree sought must be given on this page (see example, Appendix IV). The title of the thesis should be consistent with the title that was submitted to the Graduate College with the Plan of Study. The first letter of each word in the title should be capitalized and all other letters should be lower case. In the case of scientific names, which should be in parentheses next to common names, use italics and capitalize those letters as specified in scientific nomenclature.
2. **Signature Page:** The Signature Page must be symmetrically balanced, based on an imaginary line drawn 3 inches to the right of the center of the page. The first signature line should be designated as the Major Advisor's signature. Each Advisory Committee member should be

provided with separate signature lines. All Advisory Committee members must sign *all* copies of the thesis to be printed. The signing date must be specified on this page. For an example of the Signature Page, see Appendix V.

3. Acknowledgments: Acknowledge sources of funding and those who contributed help toward the project. Personal acknowledgments also can be included in this section.
4. Table of Contents: All chapter or major headings must be identified by page number.
5. List of Tables: Page numbers for each table must be cited.
6. List of Figures or Illustrations: Page numbers for each figure or illustration must be cited.
7. Thesis Abstract: The Thesis Abstract should not be written until the rest of the thesis is complete and it must summarize the entire thesis. Do not cite references, taxonomic authorities, or use abbreviations (unless specified and repeated) in the abstract. Be concise, but include the purpose, materials and methods, results, and significance of findings. See Appendix VI for an example of the preferred format.
8. Body of the Text: This will vary by discipline and style preferred by the Major Advisor. See the "Suggested Formats" sections below for commonly used thesis formats in the department.
9. Bibliography, References, or Literature Cited: Consult with the Major Advisor and Advisory Committee for the preferred style. In most cases, the style will be specified by the journal in which the student and Major Advisor intend to publish the material.
10. Appendices: If appropriate, additional materials can be included in the appendices. In the case of the Department of Biology, this may include raw data and lists of specimens analyzed.

Pagination:

The Title and Signature pages must be labeled as page "i" and "ii," respectively. For subsequent preliminary pages (which includes numbers 3-7 above), label with small Roman numerals (iii, iv, v, vi, etc.). The Body of the Thesis will begin the use of Arabic numerals (starting with 1).

Margins:

The left margin must be 1.5 inches (to leave space for binding); top, right, and bottom margins must be 1 inch. Page numbers must be exactly 1 inch from the top or bottom, depending on the preferred style or specific target journal. At least one full line should separate the page number from the text.

Headings:

Headings should follow a consistent format, although the style may vary depending on the preferences of the Major Advisor or specific target journal. One example is: main headings (INTRODUCTION, MATERIALS AND METHODS, etc.) are in all capitals centered at the top

of the page; sub-headings have the first letter of each word capitalized and are centered at the beginning of the heading; sub-sub headings are underlined and indented for the beginning of the paragraph for that heading. Bold face font also can be used for headings/subheadings. If a heading or first line of a paragraph is the last line of the page, move it to the beginning of the next page.

Suggested Formats – Body of the Thesis:

Traditional Format:

The traditional thesis format includes 4 chapters: Introduction with a literature review, Materials and Methods, Results, and Discussion. This format is suggested if the student will not produce at least 2 independent manuscripts from the thesis research. There are variations of this format, depending on the preferences of the Major Advisor and/or Advisory Committee. The sections outlined below are what most students use in writing their traditional thesis.

- **Introduction:** Identify the scientific problem that was addressed during the course of the thesis research. Justify the problem and why a solution was important through a complete review of the literature. Acknowledge related work and how the research contributed toward what had already been done. Specify the objectives and what fulfillment of those objectives would mean to the scientific community.
- **Materials and Methods:** Describe specific procedures undertaken during the course of the research, the field/laboratory design used, and statistical analyses performed.
- **Results:** This section includes data, tables, graphs, and figures. The data presented should address the objectives presented in the introduction. A well-written document will thoroughly describe what is presented in tables, graphs, and figures.
- **Discussion:** Comparison of the results to other published research should be included. Explain why the new research agrees or disagrees with what has been published. An amalgamation of the thesis results and what has been published in the literature should be used to draw conclusions. Conclusions should address the major findings of the research and how these findings fulfill the objectives. A solution to the original scientific problem should be provided and future research needs in the field should be addressed.

Publication Format:

The publication format includes 3 general sections, although the number of chapters will vary based on the number of manuscripts that will be generated from the thesis research. The chapters include: Introduction, 2 or more Manuscript chapters to be submitted as a result of the research, and Summary. This format is suggested if the student will produce at least 2 independent manuscripts from the thesis research. There are variations of this format, depending on the preferences of the Major Advisor and/or Advisory Committee.

- **Introduction:** This section should present the broad concept to be addressed in the thesis and should act as an introductory link between the Manuscript chapters. A thorough literature review should be included in this section. The final paragraph of the Introduction should indicate the main objective(s) of each Manuscript chapter. If the Manuscript chapters follow different journal formats, it is helpful for the review process to indicate that in this final paragraph.
- **Manuscripts:** The chapters included in this section will vary depending on the journal format(s) used and requirements of the Major Advisor and Advisory Committee. Each

Manuscript chapter should address specific aspects of the broad question discussed in the Introduction.

- **Summary:** This section should present a final summation of the thesis research and should link the conclusions of the Manuscript chapters to address the broader concept(s) proposed in the Introduction. Comparisons to other published research should be included. A solution to the original scientific problem may be provided and future research needs in the field should be addressed.

Thesis Review:

First Round of Revisions:

The thesis should be written and revised several times under the direction of the Major Advisor. When approved by the Major Advisor, a draft of the thesis will be submitted to members of the Advisory Committee for further review.

Second Round of Revisions:

At least 2 weeks must be provided for individuals of the Advisory Committee to read and review the thesis. They in turn, will provide suggestions which should be used to revise the thesis. Further submission and revision of the thesis will follow until all committee members are satisfied with the document. Once the Advisory Committee is satisfied, the thesis defense can be scheduled.

Third Round of Revisions:

Even if the approved version of the thesis passes during the oral defense, further revisions may be necessary before Advisory Committee members will sign the Signature Page.

Final Draft of the Thesis:

After the public presentation and oral defense, and once the final draft of the thesis is complete, the student must make at least 2 copies to be taken to the library for binding. Each of the copies must bear the original signatures of the Advisory Committee. Additional copies may be made for the student, Major Advisor, Advisory Committee members, and others, but must be paid for by the student. See the Final Disposition of the Thesis section below for additional instructions.

Public Presentation and Oral Defense:

General Information:

- *Advertisement of the Defense:* students are required to advertise the oral defense to the Department of Biology by emailing the defense flyer to departmental administrative assistants, who will send it to faculty and graduate students in the department. Students must post the defense flyer on bulletin boards in Howell Hall and the STEM Building, and place an abstract and a copy of the defense flyer in the main Biology office. Campus-wide notices to other departments are optional. Announcements must be disseminated at least one week prior to the oral defense.
- *Presentations:* students are required to make a formal presentation of the thesis to the Advisory Committee and the public. The presentation typically lasts 30-45 minutes with additional time for questions, but the student should determine the time limit with the Major Advisor prior to preparing the presentation. The format of the presentation should

be discussed with the Major Advisor and Advisory Committee. However, it typically follows the standard scientific presentation format which includes an Introduction, Materials and Methods, Results, and Discussion/Conclusions.

- *Following the Defense:* The oral defense by the student is to be followed by a period of questioning which is open to all those who attend. Following public questioning, everyone except the student and Advisory Committee will be dismissed by the Major Advisor. The student will then be examined further regarding the thesis research and other general questions by the Advisory Committee (see the Comprehensive Oral Examination section below). The public presentation and oral examination before the Advisory Committee will occur on the same day, with the examination immediately following the public defense. In exceptional cases, the public presentation and oral examination by the Advisory Committee may be scheduled on separate dates, but prior permission from the Advisory Committee members must be obtained.
- *Graduate College Representative:* A representative from the Graduate College must attend the public presentation.

Thesis Defense Dates:

No less than 2 weeks prior to this defense, a copy of the thesis must be given to each Advisory Committee member for review. The thesis defense is to be held no later than 2 weeks before the beginning of the final examination week for the fall and spring semesters and no later than 10 days prior to the beginning of the final examination week for the summer session. The public presentation may not be scheduled during intersessions, holiday breaks, or weekends. At least 2 weeks prior to the defense, the student must submit a Thesis Defense Scheduling Form (see Appendix II, Form VI for an example) with the Graduate College.

Comprehensive Oral Examination:

In addition to the public presentation of the thesis, a private oral examination will be conducted by the Advisory Committee. The oral examination might include a defense of the thesis to the Advisory Committee, as well as questions over a broad spectrum of biology-related topics. It is recommended that the student speak with members of the Advisory Committee prior to the oral examination to determine what topics might be included on the exam. At the conclusion of the exam, the Major Advisor will ask the student to step out while the Advisory Committee discusses the exam results. The Advisory Committee will decide the results of the examination and inform the student of the decision immediately.

Completion of Degree Requirements

Satisfactory Completion:

A satisfactory examination is defined as the unanimous vote of the Advisory Committee for approval.

Upon successful completion of the examination and all other degree requirements, the Advisory Committee will sign *all* copies of the Signature Page and recommend awarding the M.S. degree by the Graduate College.

The Major Advisor must complete Form VIII and submit it to the Biology Graduate Advisor.

Unsatisfactory Completion:

If the student fails to receive a unanimous vote from the Advisory Committee, the Major Advisor must facilitate the following:

1. Immediately notify the student of the difficulty or problem areas associated with the failure to receive a satisfactory vote.
2. Establish a time-line for a satisfactory revision of the thesis, presentation of the oral defense, and/or completion of a second oral examination.

Failure to provide a satisfactory revision of the thesis, complete an oral defense, and/or a second failed oral examination will result in termination of the degree program. In this case, Form VII must be submitted to the Biology Graduate Program Advisor.

Note: Following a successful defense and oral exam, students should expect that some additional, minor revisions are required before the thesis is considered complete and signed off on by the committee. The request for additional revisions in this case does not denote an unsatisfactory result.

Final Disposition of the Thesis:

The information in this section is taken from the Graduate Catalog with updates to include the most recent information available on the library website.

A student completing his/her thesis for his/her master's degree must submit the original Title Page, Signature Page, and Thesis Abstract to the JCGS **no later than the last day of classes** in the same term they plan to graduate. These documents must be on file to graduate. For additional information, contact the Graduate Program Specialist at:

Elise Ellis
Academic Program Specialist
eellis5@uco.edu
405-974-3417

Following successful public defense of the thesis, students must submit the thesis in both paper and electronic formats. For additional information, visit Chambers Library website at <http://library.uco.edu/services/thesis.cfm> or call Special Collections at 405-974-2882.

1. Paper Submission Process
 - a. Each student completing a thesis for the master's degree program must submit two (2) hard copies of his/her thesis for binding to Archives & Special Collections (Room 215) in the Max Chambers Library. A completed Binding Deposit Form (<https://library.uco.edu/services/thesis/BindingDepositForm.pdf>) must be submitted with the copies of the thesis.
 - b. The primary responsibility for content, form, and style of the thesis rests with the student and the student's Advisory Committee members. The student is responsible for the

complete and accurate collation of the thesis before submitting it to the library for binding.

- c. Both copies of the thesis must be presented with an original Signature Page signed by all members of the Advisory Committee, on white 25-100% cotton or rag paper and not bound or punched.
- d. After the thesis returns from the bindery, one copy will be placed in the Archives Thesis Collection for reference only, and the second copy will be forwarded to the academic department which supervised the work. A full text, electronic version of your thesis will be made available through the UCO Chambers Library online catalog.
- e. It takes approximately two months for the binding process to be completed. Students may pick-up their additional copies in the Archives & Special Collections Monday through Friday from 8:30am to 4:30 pm.

Thesis Costs	
\$24.00	Cost for binding two hard copies of thesis, paid by cash or check at Archives and Special Collection Department at the Library (2 copies @ \$12 each)
\$24.00	Total Required Costs
Optional Thesis Costs	
\$12.00 paid by check or cash	Cost per copy for additional student-requested copies of Thesis.
\$65.00	Costs to have thesis registered with US Copyright Office (Optional, made with credit card payment on the ProQuest website).
\$5.00	Mailing fee if you wish to have your copies mailed.

Note: These costs may change. Please consult with the library to confirm costs.

2. Electronic Submission Processes

After a successful public defense of the thesis, students must submit one (1) electronic copy of the thesis to the ProQuest ETD Administrator:

<https://www.etdadmin.com/main/home?siteId=69>. The electronic copy must be the same, content and pagination as the paper copy submitted for binding, and it must contain the signed signature page.

Instructions are available at:

<https://library.uco.edu/services/thesis/ThesisDepositGuidelines.pdf>. For questions regarding the electronic thesis submission process, please contact:

Nicole Willard
 Archivist
 Chambers Library
 nwillard@uco.edu
 405-974-2885

CAPSTONE GUIDELINES

General Information:

The Graduate Capstone is the culmination of the M.S. in Biology Non-thesis Option. Students must submit a written document, content to be determined by the student's Advisory Committee, which is reflective of the non-thesis experience. Additionally, students must meet with the Advisory Committee to complete a comprehensive exit exam. Subject matter will vary by discipline within the department. Students must enroll in the Graduate Capstone course in the final semester of the degree. Students are expected to spend the course hours finishing their capstone project if necessary, writing and revising their capstone document, and reviewing for their exit exam.

Example Graduate Capstone Schedule:

The schedule below is an example of the activities to be completed during the Graduate Capstone course. Specific deadlines and activities will be set during the meeting with the Faculty Advisor and agreed upon by the student and Advisory Committee during the Advisory Committee meeting. Selection of a capstone topic and the format of the exit exam should be discussed prior to beginning the Graduate Capstone.

Week	Activity
1	<ul style="list-style-type: none"> • Meet with Faculty Advisor • Discussion of capstone timeline • Work on draft of capstone document
2	<ul style="list-style-type: none"> • Meet with Advisory Committee • Confirm capstone timeline • Discussion of exit exam topics and exam format • Work on draft of capstone document
3-5	<ul style="list-style-type: none"> • Work on draft of capstone document • Review for exit exam
6	<ul style="list-style-type: none"> • Submission of first draft of capstone document to faculty advisor • Review for exit exam
7	<ul style="list-style-type: none"> • Review for exit exam
8	<ul style="list-style-type: none"> • Revision of capstone document • Review for exit exam
9	<ul style="list-style-type: none"> • Submission of second draft of capstone document to faculty advisor • Review for exit exam
10	<ul style="list-style-type: none"> • Review for exit exam
11	<ul style="list-style-type: none"> • Revision of capstone document • Review for exit exam
12	<ul style="list-style-type: none"> • Submission of capstone document to Advisory Committee • Review for exit exam
13	<ul style="list-style-type: none"> • Review for exit exam
14	<ul style="list-style-type: none"> • Revision of capstone document • Exit exam • Submission of capstone document to Advisory Committee
15	<ul style="list-style-type: none"> • Revision of capstone document
16	<ul style="list-style-type: none"> • Revision of capstone document

The final draft of the capstone document is due by 5 PM on the Tuesday of Finals Week

Capstone Document:

The Major Advisor and the Advisory Committee have the flexibility to adjust the specific capstone requirements to fit the field of study and the specific needs of the student. The written document should reflect the interests of the student and should help advance the student's career after graduation. Examples of possible capstone documents include, but are not limited to, revision and submission of a manuscript, submission of a final report for work performed during the degree, a literature review of a relevant topic, or a lesson plan.

Comprehensive Exit Exam:

The comprehensive exit exam is intended to explore the extent of the student's knowledge at the end of the degree. It should test the student such that they show they have gained knowledge beyond that achieved with their undergraduate degree. The exam can be written, oral, or both and must be conducted no later than 3 weeks before the beginning of the final examination week for the fall and spring semesters, and no later than 10 days prior to the beginning of the final examination week for the summer semester. The format should be discussed and agreed upon by the Advisory Committee and the student should be informed of the exam format as early as possible. At the discretion of the committee, the student may have input on the format of the exam. Material to be included on the exam may include, but is not limited to: questions related to the capstone document, questions from courses taken during your degree program (submitted by the course instructors), and questions or topics provided by the Advisory Committee during the first meeting of the capstone semester. Regardless of how the exam is structured, it is a closed-door exam that is administered by the Advisory Committee.

During the first meeting with your Advisory Committee during the capstone semester, exam topics, formats, and expectations should be discussed and finalized, if not already done prior to the semester. Advisory Committee members may at this time assign specific topics, readings, or questions that they will expect the student to address during the exit exam. The student should consult with the Advisory Committee during the semester to clarify any questions they might have about the material. If the exit exam is to include questions from courses, it also is recommended that the student speak with course instructors regarding the material they have submitted to your Advisory Committee.

Completion of Degree Requirements:**Satisfactory Completion:**

A satisfactory examination is defined as the unanimous vote of the Advisory Committee for approval.

Upon successful completion of the examination and all other degree requirements, the Major Advisor will submit a Passing (P) grade for the Capstone Course and recommend awarding the M.S. degree by the Graduate College.

The Major Advisor must complete Form VIII and submit it to the Biology Graduate Advisor.

Unsatisfactory Completion:

If the student fails to receive a unanimous vote from the Advisory Committee, the Major Advisor must facilitate the following:

1. Immediately notify the student of the difficulty or problem areas associated with the failure to receive a satisfactory vote.
2. Assign an Incomplete (I) for the Graduate Capstone course.
3. Establish a timeline for a satisfactory revision of the capstone document and/or completion of a second comprehensive examination.

Note: The student has a maximum of 1 year to complete the Graduate Capstone requirements or the grade will be converted to an F.

Failure to provide a satisfactory revision of the capstone document and/or a second failed comprehensive examination will result in termination of the degree program. In this case, Form VII must be submitted to the Biology Graduate Program Advisor.

SWITCHING BETWEEN THESIS AND NON-THESIS OPTIONS

General Information:

Prior to making any change in their M.S. Program, the student must consult with their Major Advisor. If the Major Advisor does not support the requested change, it may be necessary for a student to seek a new Major Advisor. See the Policies for Changes in the Advisory Committee section for an explanation of how to change Major Advisors. If the Major Advisor supports the switch to a new option, the student must then inform the Advisory Committee of the change. At this time, it may be necessary to seek new members of the Advisory Committee. See the Policies for Changes in the Advisory Committee section for an explanation of how to change Advisory Committee members.

Switching from Thesis to Non-thesis:

Prior to switching to the non-thesis option, students should review the Biology M.S. Program Guide to familiarize themselves with the expectations of the non-thesis degree. Once the student and the Major Advisor have agreed that the student will switch to the non-thesis option, the following steps must be taken:

1. File a new Plan of Study (Form II) with the Graduate College and Biology Graduate Program Advisor. When submitting this new form, students must:

- Select the Non-thesis Program Option
- Remove any thesis hours listed in their UCO coursework
- Provide their Capstone topic if known

Note: The non-thesis option requires more coursework than the thesis option. Students may need to add additional courses to bring their Guided Electives to 30.

Note: Any Thesis hours that were taken while the student was enrolled in the thesis option do not count towards the non-thesis degree. These hours will still appear on the transcript. However, they will retain the “X” grade and will not count towards the student’s GPA.

2. File a new Advisory Committee Approval (Form I) if necessary with the Graduate College and Biology Graduate Program Advisor. This only needs to be done if the composition of the Advisory Committee has changed.

After submission of the required paperwork, students will be following the Capstone Guidelines as outlined in this manual.

Switching from Non-thesis to Thesis:

Prior to switching to the thesis option, students should review the Biology M.S. Program Guide to familiarize themselves with the expectations of the thesis degree. Switching from non-thesis to thesis is not recommended as it might increase the amount of time that a student spends pursuing their degree. Students will be expected to propose, complete, and defend a thesis project, which might take a minimum of 2 years. However, if the Major Advisor and the student agree to the switch, the following steps must be taken:

1. File a new Formal Plan of Study (Form II) with the Graduate College and Biology Graduate Program Advisor. When submitting this new form, students must:

- Select the Thesis Program Option
- Update their listed UCO coursework as necessary
- Provide their Thesis topic if known

2. File a Thesis Approval form (Form III) with the Biology Graduate Program Advisor. See the Thesis Proposal Guidelines section for expectations associated with the thesis proposal.

3. File a new Advisory Committee Approval form (Form I) if necessary with the Graduate College and Biology Graduate Program Advisor. This only needs to be done if the composition of the Advisory Committee has changed.

After submission of the required paperwork, students will be following the Thesis Guidelines as outlined in this manual.

APPLYING FOR GRADUATION

The information in this section is taken from the Graduate Catalog with updates to include the most recent information available on the library website.

In order to graduate with a master's degree, a student must submit a formal Graduation Application to the Jackson College of Graduate Studies (JCGS) by the deadline established for the term (fall, spring, or summer) that the student intends to graduate. Deadlines are published for the academic year in the Graduate Catalog.

Graduation Fee:

There is a non-refundable \$45 graduation fee that must be paid to the Bursar's Office in person (NUC 134) or electronically (see below). There is an additional \$25 fee (\$70 total) for processing late applications. Please note, the University will process late applications as time allows, but students who apply late are NOT guaranteed to have their applications fully processed prior to the end of the semester or summer term.

Procedures for Graduation Application:

1. Before you apply, please check with your Graduate Advisor to make sure your most up to date Plan of Study
2. Complete the online Graduate Student Application for Graduation:
<https://www3.uco.edu/mgraduation/>
3. Pay the graduation application fee at the Bursar's Office.

Once the Graduation Application has been submitted, a final degree check will ascertain if all requirements have been met. This process will normally take one to four weeks depending on workload after which the student will be notified in writing of the results of the degree check. Call the Graduate Program Specialist at 974-3417 with any questions.

If a student fails to complete requirements during the semester for which he or she applied for graduation, the student must contact the JCGS to have his or her application rolled forward to a subsequent term. There is an additional fee for such changes (except for change from spring to summer of the same calendar year).

GRADUATE STUDENT SUPPORT

General Information:

Information regarding all forms of financial aid for graduate students can be found at: <https://www.uco.edu/admissions-aid/>.

Graduate Student Assistantships:

Acceptance of a student into the Department of Biology M.S. program does not guarantee that the student will be provided with financial assistance. Both Graduate Teaching Assistantships (TAs) and Graduate Research Assistantships (RAs) typically are available. Availability of both TAs and RAs depends on the number of students competing for the positions and availability of funds. Other forms of support are discussed below.

Graduate Teaching Assistantships:

Contact the Biology Graduate Committee Chair (Graduate Program Advisor) to inquire about the availability of a TA. To apply, complete the application form in Appendix VII. Graduate TAs will be awarded by the Biology Graduate Committee with assistance from the Biology Department Chair. TAs will be awarded only to students who remain in good standing in the department. See Appendix VIII for the criteria used to evaluate good standing. TAs typically come with a stipend and a tuition waiver.

Graduate Research Assistantships:

Graduate RAs can be obtained in the following ways: the student has applied for and received a student Research, Creative, and Scholarly Activities (RCSA) grant through the UCO Office of High Impact Practices (OHIP); the faculty mentor has applied for and received a faculty grant through the UCO Office of Research and Sponsored Programs; the student or faculty mentor has applied for and received external funding that contains money available for student salaries. Grants awarded to faculty mentors do not guarantee RAs for graduate students. RAs awarded through UCO RCSA typically include a stipend and a tuition waiver. RAs awarded through faculty on-campus grants typically include a stipend. RAs awarded through external grants will vary with regards to associated benefits (tuition waiver, health benefits, etc.) depending on the granting agency.

Information for student RCSA grants can be found at: <https://www.uco.edu/academic-affairs/office-high-impact-practices/grants-and-money/student-research,-creative,-and-scholarly-activities-rdsa-grants>.

Departmental Tuition Waivers:

Applications are available in the spring semester and will be awarded for the following academic year. The deadline typically occurs in February and the application can be found at: <https://www.uco.edu/cms/scholarships/>.

Departmental Scholarships:

The Department of Biology is able to offer several scholarships through the UCO Foundation. Applications are available at the end of the fall semester and typically are due in February of the

spring semester. The application can be found at: <https://www.uco.edu/cms/scholarships/>.

Information for university-wide scholarships can be found at: <https://www.uco.edu/admissions-aid/financial-aid/scholarships/>.

Travel Funds:

Student RCSA Travel Presentation Grant – This grant is offered through OHIP and is intended for travel to present research at a conference. Information regarding this travel award and the application can be found at: <https://www.uco.edu/academic-affairs/office-research-sponsored-programs/grants/faculty-rdsa-presentation-grant>.

Additional travel funds may be available through your faculty mentor.

APPENDIX I – GRADUATE STUDENT CHECKLIST

Please use this checklist as a tool to track your progress through the degree.

First semester enrollment: Speak to your Major Advisor prior to enrolling in courses your first semester. Courses completed as a graduate student before formation of the Advisory Committee will be accepted as part of the Plan of Study at the discretion of the student's Advisory Committee.

Thesis Option Checklist:

Completed	Item	Recommended/Required Completion Dates
	Form Advisory Committee (Form I)	First semester
	File Form I with Graduate College and Biology Graduate Program Advisor	Immediately following meeting (must be filed by the end of the first semester to remain in good standing in the department)
	Develop Plan of Study* (Form II)	First semester
	File Form II with Graduate College and Biology Graduate Program Advisor	Immediately following meeting (must be filed by the end of the second semester to remain in good standing)
	Submit Thesis Proposal** (Form III)	End of second semester
	File Form III with Biology Graduate Program Advisor	Immediately following meeting (must be filed by the end of third semester to remain in good standing)
	Progress Meetings (Form IV)	Once per academic year
	File Form IV with Biology Graduate Program Advisor	Immediately following meeting (must be filed at least once per academic year to remain in good standing)
	Enroll in Thesis Hours***	Last 2 semesters (3 hours each of last 2 semesters)
	Schedule a Thesis Defense Date**** (Form VI)	Last semester (defense must occur at least 2 weeks before finals week in fall and spring, or at least 10 days prior to finals week in the summer semester)
	File Form VI with Graduate College and Biology Graduate Program Advisor	Must be done at least 2 weeks prior to defense date
	Submit Thesis Abstract to Graduate College	Must be done at least 2 weeks prior to defense date (submit with Form VI)
	Advertise Public Thesis Defense	Must be done at least 1 week prior to defense date
	File Thesis Page, Signature Page, and Thesis Abstract with the Graduate School	Upon successful completion of the thesis defense (must be submitted by last day of classes)
	Major Advisor files Form VIII with Biology Graduate Program Advisor	Upon successful completion of the thesis defense and oral exam
	Submit Hard Copies of Final Thesis to Library for Binding (Minimum 2 copies); Submit Electronic Copy of Final Thesis to Library	Once final draft is complete

*Any change(s) to the Plan of Study during the course of the degree requires a new Form II to be filed with both the Graduate College and the Biology Graduate Program Advisor.

**The Advisory Committee must have your thesis proposal at least 2 weeks prior to the meeting to approve the proposal. A full description of the thesis proposal guidelines can be found starting on page 15.

***Once you begin enrollment in Thesis Hours, you must enroll in at least 1 Thesis Hour per fall and spring semester until you graduate. See page 9 for Thesis Hour information.

****Advisory Committee members must receive a copy of your thesis at least 2 weeks prior to the defense date. A defense date cannot be scheduled until all members of the Advisory Committee agree the thesis is ready to defend. A full description of the thesis guidelines can be found starting on page 17.

Non-thesis Option Checklist:

Completed	Item	Recommended/Required Completion Dates
	Form Advisory Committee (Form I)	First semester
	File Form I with Graduate College and Biology Graduate Program Advisor	Immediately following meeting (must be filed by the end of the first semester to remain in good standing in the department)
	Develop Plan of Study* (Form II)	First semester
	File Form II with Graduate College and Biology Graduate Program Advisor	Immediately following meeting (must be filed by the end of the second semester to remain in good standing)
	Progress Meetings (Form IV)	Once per academic year
	File Form IV with Biology Graduate Program Advisor	Immediately following meeting (must be filed at least once per academic year to remain in good standing)
	Enroll in Graduate Capstone	Final semester
	Identify a Capstone topic	Must be done by the beginning of the last semester (ideally, this should be done during the first semester prior to filing a Plan of Study)
	Schedule a Comprehensive Exit Exam	Last semester (exam must occur at least three weeks before finals week in fall and spring, or at least 10 days prior to finals week in the summer semester)
	Major Advisor files Form VIII with Biology Graduate Program Advisor	Upon successful completion of Graduate Capstone

*Any change(s) to the Plan of Study during the course of the degree requires a new Form II to be filed with both the Graduate College and the Biology Graduate Program Advisor.

APPENDIX II – FORMS FOR THE M.S. IN BIOLOGY

Forms I-VI are to be filled out as the student progresses through the Master's Program. Form VII or VIII should be completed at the end of the degree program. Once completed, the forms should be turned in to the individuals indicated on each form. Copies should be retained by the student and filed with the Major Advisor (if desired).

ADVISORY COMMITTEE APPROVAL FORM FOR M.S. IN BIOLOGY

(Form I)

Date: _____

Student Name: _____

Thesis/Capstone Title (if known):

Major Advisor: _____
(Printed name) (Signature)

Advisory Committee Members:

(Printed name) (Signature)

(Printed name) (Signature)

(Printed name) (Signature)

Form I is to be submitted to the Dean of the Jackson College of Graduate Studies and the Biology Graduate Program Advisor.

FORMAL PLAN OF STUDY FOR M.S. IN BIOLOGY

(Form II)

Date: _____

Student Information:

Name: _____ **UCO ID #:** _____

Address: _____ **Phone:** _____

B.S. Degree (Major): _____ **B.S. Institution:** _____

Date of Graduation: _____

Advisory Committee Members (print or type)

(Major Advisor)

Select Program Option:

Thesis ___ **Non-thesis** ___

(Form II continued)

PROGRAM COURSEWORK:

Transfer Courses (list all courses transferring):

UCO Coursework (list all courses taken or to be taken at UCO):

Those courses marked above with ** are to count as credit hours toward the M.S. in Biology Degree (a total of 32 graduate hours at the 5000 level is required). Other courses listed are additional requirements or deficiencies.

Thesis/Capstone Topic (if known):

Advisory Committee Approval:

(Major Advisor Signature)

Biology Graduate Program Advisor Approval: _____

Form II is to be submitted to the Dean of the Graduate College and the Biology Graduate Program Advisor.

THESIS PROPOSAL APPROVAL FOR M.S. IN BIOLOGY

(Form III)

Student Name: _____

Major Advisor: _____

Title of Thesis Project:

Advisory Committee Approval

_____ **Date:** _____
(Major Advisor Signature)

Form III is to be filed with the Biology Graduate Program Advisor.

NOTIFICATION OF ADVISORY COMMITTEE MEETING

(Form IV)

This is to notify the Biology Graduate Program Advisor that the following student has held the required Advisory Committee meetings and to record the student's progress through the program. Information on this form also will be used by the Graduate Committee to assess the Biology Graduate Program.

Student Name: _____ **Semester:** ____ **Year:** _____

Type of Meeting (circle all that apply): 1) Plan of Study 2) Thesis Proposal 3) Capstone
4) Progress Report 5) Other (Specify)

List/describe any and all significant changes in the thesis/capstone project. If no changes are necessary, so indicate.

Please report if you have accomplished any of the following since your last Advisory Committee Meeting. Attach additional sheets if necessary.

Presentation at a research conference – Please provide the title, meeting name, meeting location, and meeting date.

Submission of a grant – Please provide the title, granting agency, and grant status (e.g., in review, funded, not funded).

Submission of a manuscript to a peer-review journal – Please provide a full citation.

Student Signature: _____

Major Advisor Signature: _____

Form IV is to be filed with the Major Advisor and the Biology Graduate Program Advisor.

MAJOR ADVISOR EVALUATION OF STUDENT PROGRESS

(Form V)

This form is to be filled out by the Major Advisor after the Advisory Committee meeting or when students are applying for a TA. Students must provide their advisor with this form during the Advisory Committee meeting or when they apply for a TA.

Advisors, please evaluate your student's progress since their last Advisory Committee meeting. This form will be used by the Graduate Committee to determine whether students remain in good standing with the Department of Biology. It is up to the discretion of the advisor as to whether this form is shared with the student.

Student Name:

Date:

Student Progress:

Satisfactory

Unsatisfactory

Comments (Required if Unsatisfactory):

Faculty Advisor Signature: _____

Form V is to be filed with the Biology Graduate Program Advisor.

THESIS DEFENSE SCHEDULING FORM

(Form VI)

This form is a proxy for the original form. Please visit the website listed below to download the official form:
<https://www.uco.edu/graduate/files/thesis--defense-scheduling-form.pdf>

This form must be submitted to the Graduate College at least two weeks prior to the defense date. Please submit a copy of this form to the Biology Graduate Program Advisor.



Please allow at least two (2) weeks to schedule a Graduate Council Representative for your Thesis Defense. Be sure to include an Abstract of your Thesis so that the appropriate Graduate Council Representative can be scheduled for your public defense. Thank you.

Download and fill out the form below. Save it to your device and email it to:
Elise Ellis, Academic Program Specialist
eellis5@uco.edu
405-974-3417

Thesis Defense Scheduling Form
Public Defense of Thesis

Student's Name: _____

UCO Student ID: _____ Student's Email: _____

Degree Program: _____

Thesis Title: _____

Thesis Committee Chairperson: _____

Thesis Committee Member 1: _____

Thesis Committee Member 2: _____

Thesis Committee Member 3: _____

Thesis Defense Date: _____

Thesis Defense Time: _____

Thesis Defense Location: _____

Thesis Abstract: Please see requirements on page 26 of the catalog. Available here:
<https://www.uco.edu/graduate/graduate-catalog/>.

I have met with my Thesis Committee Chair and confirmed information above with my Thesis Committee.

DEGREE TERMINATION FORM

(Form VII)

This form should be filled out for by the Major Advisor when a graduate student's degree is terminated for any reason.

Student Name: _____

Major Advisor: _____

Date of Termination:

Reason for Termination (check all that apply):

- _____ Unsatisfactory progress in degree (please explain below)
- _____ Failure to submit thesis
- _____ Failure to defend thesis
- _____ Failure of second oral examination (thesis option)
- _____ Failure to complete capstone document
- _____ Failure to complete comprehensive exit examination (non-thesis option)
- _____ Other (please explain below)

Explanation of termination:

Major Advisor Signature: _____

Form VII is to be filed with the Biology Graduate Program Advisor.

DEGREE COMPLETION FORM

(Form VIII)

This form should be filled out by the Major Advisor upon successful completion of the requirements of the thesis or non-thesis option.

Student Name: _____

Major Advisor: _____

Thesis Option:

Date of Defense/Oral Exam:

Successfully completed (check all that apply):

_____ Thesis defense

_____ Oral exam

Non-thesis Option:

Date of Completion of Graduate Capstone:

Successfully completed (check all that apply):

_____ Capstone document

_____ Exit exam

Major Advisor Signature: _____

Form VIII is to be filed with the Biology Graduate Program Advisor.

APPENDIX III – GRADUATE COURSE OFFERINGS

Courses listed in this appendix are offered only through the Department of Biology. Students are allowed to take courses in other departments with permission from the Advisory Committee (see the Enrollment Section).

Regular Offerings:

For courses with “Varies” as the Instructor, speak with your Major Advisor.

Course #	Course Title	Instructor(s)	Semester(s) Offered
5012	Introduction to Biological Research	Butler	Every Fall
5024	Freshwater Ecology and Laboratory	Bass	Spring of Odd Years
5044	GIS and Ecology	Butler	Spring of Odd Years
5053	Conservation Biology	Stone	Every Fall
5103	History and Nature of Science	Barthell	Every Spring
5124	Herpetology and Laboratory	Stone	Every Spring
5134	Developmental Biology and Laboratory	Seagraves	Every Spring
5204	Plant Ecology and Laboratory	King	Every Fall
5264	Mammalogy and Laboratory	Jackson	Every Fall
5294	Plant Taxonomy and Laboratory	Messick	Every Spring
5324	Marine Ecology and Laboratory	Bass	Spring of Even Years
5334	Environmental Microbiology and Laboratory	Olson	Every Spring
5343	Molecular Biology Techniques and Laboratory	Cassidy	Every Fall
5354	Plant Anatomy and Laboratory	Bidlack	Every Fall
5504	Mycology and Laboratory	Ovrebø	Fall of Odd Years
5515	Pathogenic Microbiology and Immunology and Laboratory	Brennan	Every Fall and Spring
5622	Methods of Human Dissection and Prosection	Cleveland	Every Fall and Spring
5723	Biometrics	Butler	Every Spring
5734	Ornithology and Laboratory	Butler	Spring of Even Years
5743	Population Genetics and Laboratory	Haynie	Every Spring
5754	General Entomology and Laboratory	Lord	Fall of Even Years
5774	Parasitology and Laboratory	Lord	Every Spring*
5812	Teaching and Learning in the Science Classroom	Allan	Every Fall
5844	Virology and Laboratory	Kotturi	Every Fall
5853	General Methods of Teaching Science	Allan	Every Spring
5892	Graduate Capstone	Varies	Every Semester
5910	Seminar/Special Topics	Varies	Every Semester**
5930	Individual Study in Biology	Varies	Every Semester
5990	Thesis	Varies	Every Semester

*This course also may be offered in the fall semesters based upon student demand.

**Irregular in the summer semester.

Irregular Offerings:

Check with the course instructor if you are interested in taking one of these courses to determine the next time it will be offered. The listing in the “Semester(s) Offered” column indicates when these courses have been offered in the past. For courses with “Varies” as the Instructor, speak with your Major Advisor.

Course #	Course Title	Instructor(s)	Semester(s) Offered
5454	Molecular Cell Physiology and Laboratory	Vaughan	Fall
5524	Aquatic Entomology and Laboratory	Bass	Summer
5554	Oklahoma Field Biology	Team Taught	Summer
5763	Biology of Cancer	Kotturi	Spring
5940	Field Study in Biology	Varies	Every Semester
5950	Internship in Biology	Varies	Every Semester
5970	Study Tour	Varies	Every Semester

Additional courses listed in the Graduate Catalog that do not appear here are rarely offered through the department. Speak with your Major Advisor if you are interested in one of these rarely offered courses.

APPENDIX IV – TITLE PAGE EXAMPLE

UNIVERSITY OF CENTRAL OKLAHOMA
Edmond, Oklahoma
Jackson College of Graduate Studies

I Know Why the Caged Dog Howls

A THESIS

SUBMITTED TO THE GRADUATE FACULTY

In partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE IN BIOLOGY

By

Martha Mostly

Edmond, Oklahoma

2009

APPENDIX V – SIGNATURE PAGE EXAMPLE

I Know Why the Caged Dog Howls

A THESIS

APPROVED FOR THE DEPARTMENT OF BIOLOGY

Month Year

By _____
Name Committee Chairperson

Name Committee Member

Name Committee Member

Name Committee Member

APPENDIX VI – THESIS ABSTRACT EXAMPLE

ABSTRACT OF THESIS

University of Central Oklahoma

Edmond, Oklahoma

NAME: _____

TITLE OF THESIS: _____

DIRECTOR OF THESIS: _____

PAGES: _____

ABSTRACT:

Type in text.

APPENDIX VII – TA APPLICATION
Graduate Teaching Assistantship Application
Department of Biology, UCO
Submit to Biology Graduate Program Advisor

Application deadlines:

Last day of March (for fall semester TA positions); Last day of October (for spring semester TA positions)

Please fill out this application in its entirety. Incomplete applications may not be reviewed.

Student information:

Name: _____

Address: _____

Student ID: _____

E-mail address at which you can be contacted during the summer: _____

Phone number at which you can be contacted during the summer: _____

M.S. Program: Biology____ Forensics¹____ Major Advisor: _____

¹*Forensics applicants must have a Biology background; Biology graduate students are given preference.*

Number of previous semesters of TA support: _____

Degree progress:

Complete all fields with semester and year (Spring/Summer/Fall, 20XX) or NA (not applicable), do not use projected dates except for your expected semester of degree completion.

Admitted: _____ Advisory Committee formed: _____

Plan of Study filed: _____ Proposal approved: _____

Expected semester of degree completion: _____

Your Major Advisor must submit Form V before you will be considered for a TA. Newly admitted students will not be required to submit this form.

TA support requested:

Fall, year: _____

Full time (20 hrs/wk)² _____ ¾ time (15 hrs) _____ ½ time (10 hrs) _____ ¼ time (5 hrs) _____

Spring, year: _____

Full time (20 hrs/wk) _____ ¾ time (15 hrs) _____ ½ time (10 hrs) _____ ¼ time (5 hrs) _____

²*Full-time and ¾ TA's are required to be available 5 days a week, including some evenings.*

Tuition waiver support requested:

Fall: No. of credit hours: _____ Spring: No. of credit hours: _____

The amount awarded will depend upon the availability of funding and number of credits for which you are registered.

TA course request:

You may indicate a specific course you would like to teach. The committee cannot guarantee that the request will be accommodated.

Schedule:

Please attach your Fall and/or Spring schedule (course numbers, titles, and times if known), including all enrolled hours (i.e., Thesis, Independent Study, etc.). Please include any additional time constraints that you would like for the committee to consider (e.g., work schedule, field schedule, etc.).

Enrollment in 5 graduate or 6 undergraduate/graduate hours required for students to be eligible for a TA position. The Biology Department Chair can write a letter requesting an exemption to this requirement if necessary. The committee cannot guarantee that additional schedule restrictions will be accommodated.

Other University support:

Please indicate below what other forms of support you are receiving for the Fall and/or Spring semester. Support includes, but is not limited to, research assistantships (RAs), STLR grants, tuition waivers, and scholarships.

Students are only allowed to work 20 hours per week combined between TAs and RAs (this includes STLR hours). If you have applied for support from other sources, please include that information below, even if you have not received confirmation of support. If your support status changes, you must contact the Biology Graduate Program Advisor immediately. Failure to report all support or to update the committee regarding changes in your support may impact future TA assignments.

_____ Research Assistantship Hours per week _____
This includes all paid research hours provided by your faculty mentor.

_____ RCSA Grant Hours per week _____
Amount of tuition waiver associated with RCSA _____

_____ Biology Department Tuition Waiver Amount _____

UCO Foundation Scholarships (*check all that apply*)

- _____ Dr. Ethel Derrick Scholarship Amount _____
- _____ Dr. Beverly Cox Scholarship Amount _____
- _____ Marvin Mays Endowed Scholarship Amount _____
- _____ Dr. Margaret Hamilton Scholarship Amount _____
- _____ Joe Ernest Vaughan Scholarship Amount _____
- _____ Zane and Skinner Scholarship Amount _____
- _____ Warren L. Smith Endowed Scholarship Amount _____
- _____ Biology Department Scholarship Amount _____

_____ Other support: List all additional support, including hours and/or award amounts, below.

I understand that I must remain in good standing to be considered for a teaching assistantship, following the criteria in the M.S. in Biology Program Guide (Appendix VIII).

_____ Student Signature _____ Date

_____ Major Advisor Signature _____ Date

APPENDIX VIII – GOOD STANDING EVALUATION CRITERIA

Preference will be given to students that meet the following criteria when TA assignments are made.

- Deadlines on the checklist in Appendix I have been met.
 - Preference will be given to students that meet the early deadlines.
- Satisfactory progress report from Major Advisor (Form V)
- Satisfactory evaluation from course instructor (see form below)
- Satisfactory SPIE scores (scores at or above the average for the course taught)
- Good academic standing (no grades of C or lower)

Preference will be given to students early in their career (four semesters of support or less). Students in their fifth or sixth semester will be given secondary preference. Students entering their seventh (or later) semester will be placed at the bottom of the list.

Faculty preference for TAs will be taken into account by the Graduate Committee and the Department Chair when TA assignments are made.

Students who fail to meet any of the above criteria may be given low preference when TAs are assigned. Teaching assistantships can be rescinded by the Graduate Committee if criteria are not met based on the guidelines.

TEACHING ASSISTANT EVALUATION BY COURSE INSTRUCTOR
Department of Biology, UCO

Please evaluate the teaching assistant using the criteria below and provide additional comments if necessary. This information will be used when assessing TA assignments for subsequent semesters.

Student name: _____ Semester: _____

Course instructor: _____ Course name: _____

I have supervised the applicant for _____ semesters (including the current semester).

Duties performed:

How would you assess the student's performance their duties in this course?

Unsatisfactory* ___ Satisfactory ___ Exceeds Expectations ___

Would you recommend continuing their teaching assistantship?

Yes ___ No* ___

My confidence in ranking this applicant is (circle one) very high, high, reasonable, poor.

Please check the box which most accurately describes the above student.

QUALITIES:	Below Average*	Average	Good	Excellent	Have Not Observed
Dependability, reliability					
Preparedness					
Knowledge of subject					
Lectures at appropriate level					
Rapport with students					
General communication skills					
Works well with others					
Overall ranking as a TA					

*If you rated the student as unsatisfactory or below average, or recommended that they not continue as a TA, please explain. Additional sheets may be attached if necessary.

Signature: _____ Date: _____

APPENDIX IX – GRADUATE PROGRAM ASSESSMENT CRITERIA

Thesis Option:

1. Demonstrate mastery of the subject material in their specified research program
 - Successful completion of a written research proposal
 - Goal: 80% of students will submit their approved thesis proposal by the end of their second semester
 - Goal: 100% of students will submit their approved thesis proposal by the end of their third semester
 - Successful completion of a written thesis
 - Goal: 60% of students will submit their approved thesis by the end of 2.5 years
 - Goal: 80% of students will submit their approved thesis by the end of 3 years
 - Goal: 95% of students will submit their approved thesis by the end of 3.5 years
 - Successful completion of an oral defense
 - Goal: 95% of students will successfully defend their thesis
 - Successful completion of an oral exam
 - Goal: 95% of students will successfully pass their oral exams
2. Demonstrate oral and written communication skills
 - Successful completion of a written research proposal
 - Goal: 80% of students will submit their approved thesis proposal by the end of their second semester
 - Goal: 100% of students will submit their approved thesis proposal by the end of their third semester
 - Presentation at a research conference
 - Goal: 100% of students will present either a poster or an oral paper at a research conference
 - Submission of a SRCSA (or other) grant
 - Goal: 80% of students will submit an internal or external grant
 - Successful completion of a written thesis
 - Goal: 60% of students will submit their approved thesis by the end of 2.5 years
 - Goal: 80% of students will submit their approved thesis by the end of 3 years
 - Goal: 95% of students will submit their approved thesis by the end of 3.5 years
 - Successful completion of an oral defense
 - Goal: 95% of students will successfully defend their thesis
 - Successful completion of an oral exam
 - Goal: 95% of students will successfully pass their oral exams
 - Submission of a manuscript to a peer-reviewed journal
 - Goal: 50% by the completion of the degree
3. Produce and defend a creative and scholarly piece of work
 - Successful completion of a written research proposal
 - Goal: 80% of students will submit their approved thesis proposal by the end of their second semester

- Goal: 100% of students will submit their approved thesis proposal by the end of their third semester
- Successful completion of a written thesis
 - Goal: 60% of students will submit their approved thesis by the end of 2.5 years
 - Goal: 80% of students will submit their approved thesis by the end of 3 years
 - Goal: 95% of students will submit their approved thesis by the end of 3.5 years
- Successful completion of an oral defense
 - Goal: 95% of students will successfully defend their thesis
- Submission of a manuscript to a peer-reviewed journal
 - Goal: 50% by the completion of the degree

Non-thesis Option:

1. Demonstrate mastery of the subject material in their specified program
 - Successful completion of a comprehensive exit exam
 - Goal: 95% of students will successfully pass their exams
2. Demonstrate oral and written communication skills
 - Successful completion of a written capstone document
 - Goal: 60% of students will submit their approved capstone document by the end of 2 years
 - Goal: 80% of students will submit their approved capstone document by the end of 2.5 years
 - Goal: 95% of students will submit their approved capstone document by the end of 3 years
 - Presentation at a research conference
 - Goal: 50% of students will present either a poster or an oral paper at a research conference
 - Successful completion of a comprehensive exit exam (exam may be oral or written)
 - Goal: 95% of students will successfully pass their exams
 - Submission of a manuscript to a peer-reviewed journal
 - Goal: 25% by the completion of the degree