BIOLOGICAL SCIENCES

Graduate Handbook

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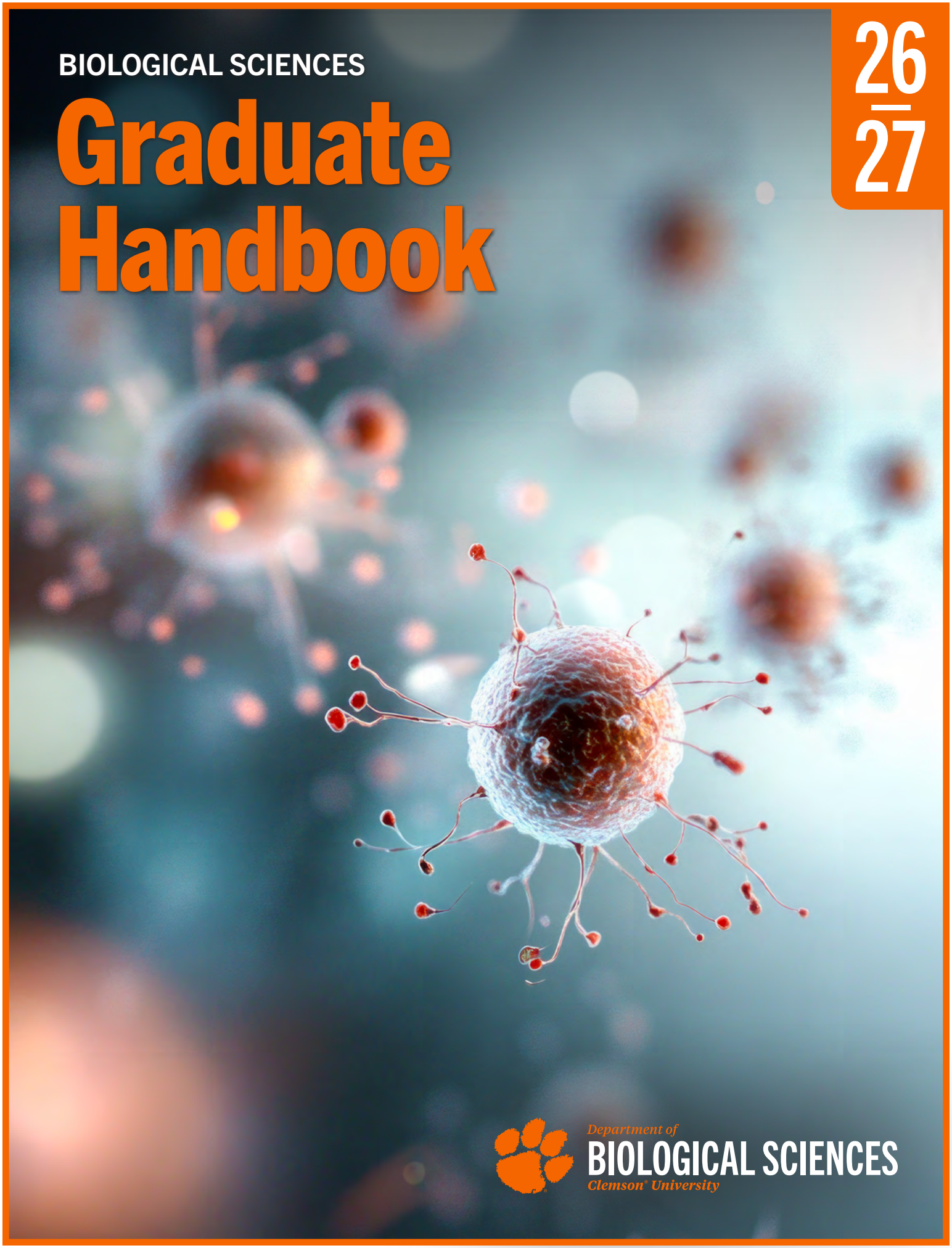

Department of
BIOLOGICAL SCIENCES
Clemson University

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Welcome to the Graduate Programs in the Department of Biological Sciences

Department Chair

Karolina Pajerowska-Mukhtar (Email: kmukhta@clemson.edu)
Office: 132C Long Hall

Graduate Program Coordinators

Biological Sciences & Lead Coordinator

Chris Parkinson (Email: viper@clemson.edu)
Program Email: biolgrad@clemson.edu
Office: 338 Long Hall

Microbiology

Zhicheng Dou (Email: zdou@clemson.edu)
Program Email: micrograd@clemson.edu
Office: 151B Life Science Building

Toxicology

Bill Baldwin (Email: baldwin@clemson.edu)
Program Email: entoxgrad@clemson.edu
Office: 237 Long Hall

Graduate Student Services Coordinator

Candice Blassingame (Email: blassin@clemson.edu)
Office: 147 Long Hall

Contact Information

Department of Biological Sciences
Clemson University 132 Long Hall
Clemson, SC 29634-0314
Phone: 864-656-2328

Graduate Student Guide Overview

This guide provides information for graduate students in the Department of Biological Sciences. This guide outlines requirements for students in the following on-campus programs.

View the Graduate Student Guide on the BioSci Website or in BOX.

The guide is for the following programs:

- Biological Sciences, M.S.
- Biological Sciences, Ph.D.
- Toxicology, M.S.
- Toxicology, Ph.D.
- Microbiology, M.S.
- Microbiology, Ph.D.

Welcome and Introduction

The Faculty, Staff, and Students of the Department of Biological Sciences would like to welcome you into your graduate program. There are many exciting and challenging disciplines within our department.

As a graduate of the Biological Sciences, Microbiology or Toxicology programs, you will be a qualified professional, capable of addressing and seeking solutions to many of the critical problems facing society, both nationally and globally. We are pleased that you have chosen one of our programs for your graduate experience, and we look forward to helping you reach your full potential.

These guidelines are provided to assist you in accomplishing your academic and career objectives and to help you comply with the expectations for students pursuing a graduate degree in our department. Thus, these guidelines constitute a program supplement to the Clemson Graduate School Policies and Procedures Handbook.

It is important to note that these guidelines do not replace the Graduate School's policies and procedures. It is your responsibility to familiarize yourself with the Graduate School's policies and procedures handbook and comply with all policies, procedures, and regulations pertaining to graduate study. The Graduate School's Policy Handbook sets a minimum standard for the University. Because these minimum standards may be exceeded by requirements of the Biological Sciences, Microbiology or Toxicology Program, there may be cases where the policies contained in these guidelines differ from those written in the Graduate Policy Handbook.

These guidelines provide a statement of the graduate program expectations, resources, and procedures. Therefore, you must familiarize yourself with these guidelines and the program policies and expectations. The Program Coordinator and your Faculty Advisor are available to assist you in interpreting these Guidelines.

I. Organizational Structure Relevant to Graduate Students

A student's primary interface with the University on a day-to-day basis is the Faculty Advisor and other faculty, particularly those comprising the Advisory Committee. Other Administrative entities exist, and their roles and responsibilities are briefly summarized here.

Faculty Advisor: Chosen by mutual interest, consent and agreement between the student and that faculty member and approved by the Program Coordinator.

Faculty Advisor responsibilities include:

- guides the student in the selection of courses,
- directs the student's research,
- serves as an advocate in all academic matters
- often provides financial support for the student in the form of a research assistantship.

Thesis/Dissertation Committee: The Thesis/Dissertation Advisory Committee is chaired by the Faculty Advisor. Other committee members are selected by the student in consultation with their Faculty Advisor and are approved by the Graduate Program Coordinator.

Lead Graduate Programs Coordinator:

Name: Christopher Parkinson

The Lead Graduate Programs Coordinator's responsibilities:

- chairs the Graduate Advisory Committee (GAC),
- oversees the Graduate Programs in Biological Sciences, Microbiology and Toxicology,
- coordinates assessment of the graduate programs.
- together with the GAC, administers compliance with these Graduate Student Guidelines and revisions as deemed appropriate by the Program Faculty.

Graduate Program Coordinators (GPC):

Name: Christopher Parkinson,
Program: Biological Sciences M.S. and Ph.D. degree programs

Name: Zhicheng Dou,
Program: Microbiology M.S. and Ph.D.

Name: Bill Baldwin, Graduate Program Coordinator for
Program: Toxicology M.S. and Ph.D.
The Graduate Program Coordinators' responsibilities include:

- supports graduate admissions
- supports current graduate students in the on-campus Biological Sciences, Microbiology and Toxicology programs

Graduate Advisory Committee (GAC) members:

- Chris Parkinson……Biological Sciences
- Zhicheng Dou……Microbiology
- Bill Baldwin……..Toxicology
- Anna Seekatz……..Microbiology
- Kara Powder……Biological Sciences
- Vince Richards……Microbiology
- Subham Dasgupta…….Toxicology
- Emily Rosowski……Rotation Coordinator

The Graduate Advisory Committee (GAC) responsibilities include:

- Evaluates applications
- Makes recommendations for student admissions
- Interprets program policies and guidelines
- Approves course substitutions and waivers in special cases
- Makes programmatic recommendations to the faculty
- Recommends changes in the guidelines to the faculty

Graduate Student Services Coordinator (GSSC):

Name: Candice Blassingame

The responsibilities include:

- Supports all the on-campus graduate programs from prospects through graduation, including hiring graduate students
- Serves as the first point of contact for all student questions
- Assisting with tracking student milestones and submitting all required forms.

Dean for the College of Science:

Dean Name: Dr. Cynthia Y. Young

The responsibilities include:

- Oversees all aspects of the College of Science, including teaching and research activities by our faculty.
- Allocates College scholarships and fellowships

Dean of the Graduate School:

Dean Name: Dr. John Lopes

The responsibilities include:

- Administers and approves all official graduate student work
- Formulates policy and standards
- Unifies administrative procedures relevant to graduate study to include admissions policies, graduate programs, university-wide scholarships, fellowships and granting of degrees.

II. M.S. Program Information

Graduate school has final authority. Their policies and procedures are located in the Graduate School Policy Handbook.

M.S. Program Rules, Requirements, and Policies

Below are degree requirements for students who enter the Department of Biological Sciences for one of the following three M.S. programs: Biological Sciences, Microbiology or Toxicology.

The Master of Science (M.S.) degree is conferred to those who have demonstrated mastery of general biology and of advanced biology in an area of concentration. The major emphasis of the master's programs in Biological Sciences, Toxicology, and Microbiology is to provide an environment for the student to learn how to think critically, pose questions and answer them by experimentation, perform library research, write, and communicate in scientific formats, and develop into a mature, articulate, and competent scientist.

It is the graduate student's responsibility to stay in touch with their Faculty Advisor and graduate advisory committee and ensure all requirements are fulfilled. The GPCs, Faculty Advisor, and GSSC will check in periodically with each student to see how they are progressing in their program. If they do not make progress towards their degree, there will be a discussion as to how the student can improve. If the student still does not make progress towards their degree, they may be dismissed from the program.

The student is ultimately responsible for complying with the regulations of the Department of Biological Sciences, Clemson University Graduate School, and they should be aware of all procedures, deadlines, etc., as they may not be reminded by faculty. On the Graduate School website is the Graduate School Policy Handbook.

M.S. Program Procedures and Timelines

Requirement	Relevant Form	Deadline (deadline for students entering Fall 2026)

Advisory Committee Selection	Online, GS2 Committee Selection	By end of Semester 1 (December 2026)
Plan of Study	Online, GS2 Plan of Study	By end of Semester 2 (May 2027)
Thesis Proposal and Defense	GS-Research Approval	By end of Semester 3 (December 2027)
Thesis Submission / Defense	GS7M Thesis Approval Form	By end of Year 3 (May 2029)
Annual Progress Report (APR)	APR	Every summer
Research Presentation	APR	Every year
Seminar Attendance (BIOL 8120/ETOX 8610)	APR	Must be enrolled in years 1 and 2. Recommended attendance otherwise.
Reading Group Attendance (BIOL 8070 or MICR 8070)	APR	Must be enrolled in years 1 and 2. Suggested attendance otherwise.

APR = Annual Progress Report

M.S. Thesis Advisory Committee Overview

The thesis advisory committee should **be established around the end of the first semester**, after the student has begun to identify their research area. The thesis advisory committee approves the student's degree curriculum, supervises the graduate program, administers the final oral examination during the thesis defense, and initiates the recommendation for the awarding of the M.S. degree. One member of the committee is designated as chair, typically the Faculty Advisor, and normally directs the student's thesis, if required. A minimum of two additional faculty members are to be selected by a student seeking a M.S. degree. Either the Faculty Advisor or at least half of the committee must hold rank in the Biological Sciences or Microbiology programs offering the degree. For Toxicology graduate students, at least half of the committee members need to be associated with the Toxicology curriculum.

M.S. GS2 Plan of Study Advisory Committee Selection

The purpose of the GS2 Plan of Study Committee Selection form is to select your graduate advisory committee.

Deadlines

The GS2: Committee Selection should **be established around the end of the first semester** for M.S. students. This portion of the form must be complete and approved by all committee members before the GS2: Plan of Study can be submitted. Access the GS2 Committee Selection form through the iROAR Portal.

Procedure

1. Open the GS2 Committee Selection form in the iROAR portal.
2. "Thesis should be selected from the committee type dropdown menu.
3. Add committee members from the list of available faculty members. All faculty eligible to serve on the graduate student committee are found on the graduate faculty list.
4. If the faculty is not on the list but is at Clemson University, contact the appropriate Graduate Program Coordinator (GPC) to request approval to add them as a committee member. Once approved, they will be added to the graduate faculty list.
5. External faculty (outside the university) will appear if all steps for their appointment have been completed. Detailed information about the external member process is in the additional information section.
6. Submit the form after all committee members have been added and approved.

Additional Information (External Faculty Member)

In order for an external member to be awarded graduate faculty status through the Department, the student's Faculty Advisor should fill out the email template in the BioSci faculty resource folder requesting Graduate Faculty Status. Send it along with the external faculty's CV to the Graduate Program Coordinator (GPC). This will be presented to and voted upon by Graduate Advisory Committee (GAC). After approval from GAC, the student fill out the Request to Add an External Member to an Advisory Committee form. Once the student's request is submitted, it's routed to the department chair and Graduate School for approval. Student will be notified via email when completed. The student will then contact the Graduate Student Services Coordinator (GSSC) to complete the External Committee Selection form.

M.S. Committee Meeting Times

The committee will meet at a minimum at the following times:

- Prior to the end of the second semester to review the student's planned research and approve the student's GS2 - Plan of Study.
- During the third semester or earlier for the oral defense of the

thesis proposal.

- At least once a semester, starting in the 4th semester.
- The final semester for the thesis defense, during which the GS7M - Thesis Approval form is filed after completing thesis.

M.S. Course Work

Clemson's directory of classes and on-line registration can be found through the iRoar Portal.

M.S. students must have a minimum of 30 credits hours to graduate. Coursework encompassing the breadth and depth in associated life science areas is expected of all candidates. An appropriate plan of coursework to fulfill this requirement will be developed by the student and their advisory committee and submitted in the GS2 - Plan of Study around the **middle of the second semester**. The GS2 Plan of Study must reflect the required 30 credit hours necessary for graduation. At least one-half of the total credit hour required (not including research credits) must be courses that are 8000-level or above. All courses listed in the GS2 Plan of Study must be passed with a grade of "B" or higher prior to completion of the graduate degree, even if those courses are not part of the general degree requirements.

Seminar

- BioSci and Micro: The Department of Biological Sciences hosts a weekly guest lecturer as part of the departmental **BIOL 8120** Seminar series. For the 2026 -2027 academic year, the seminar will be held on Mondays from 11:15am to 12:05 pm. A wide variety of topics from across all disciplines in Biological Sciences, ranging from microbiology, ecology, evolutionary biology, cell and molecular biology, developmental biology, and others, are presented. This seminar series is to be attended by graduate students in the Biological Sciences and Microbiology programs.

- Tox: The Toxicology seminar (**ETOX 8610**) is the required seminar course for TOX M.S. students.

- Credit Requirements: M.S. students must enroll in either BIOL 8120 or ETOX 8610 for their first two years (or up to four semesters), for a minimum of four credits. Attendance at seminars, even when not enrolled, is highly encouraged.

- Passing Seminar: To pass BIOL 8120 or ETOX 8610, enrolled graduate students are required to attend a minimum of eight of the 10+ Departmental or other approved seminars each semester. Seminars presented in other departments may count towards meeting this requirement, but the student is responsible for getting permission from the faculty coordinator for BIOL 8120 or ETOX 8610 of the substitution and documenting

attendance by signing in with the coordinator of the seminar they attend. Excused absences (e.g. attendance at scientific meetings, family emergencies) must be approved by the seminar coordinator.

Seminar Coordinator: Dr. Matthew Koski (mkoski@clemson.edu)

Reading Groups/Journal Clubs

One of the most profitable and enjoyable aspects of the graduate training program is the students' participation in one or more reading groups. Such discussion groups will teach, develop, and enhance a student's ability to critically read, interpret, discuss, and present scientific literature and results.

- BioSci and Micro: M.S. students in these degree programs are required to pass the reading group course (**BIOL 8070 or MICR 8070**). Although the format may vary among the various sections of **BIOL 8070** and **MICR 8070**, each involves a meeting of the faculty and students working in areas of mutual interest to discuss recent developments, findings, and techniques that relate to their research interests. Any exemption from the policy for reading groups requires approval of the Lead Graduate Programs Coordinator.

- TOX: M.S. students in Toxicology are required to take and pass the Reading Group course. They can choose from either **BIOL 8070** or **MICR 8070** reading courses. Any exemption from the policy for Reading Groups requires approval of the Lead Graduate Programs Coordinator.

- Credit Requirements: M.S. students in Micro and BioSci are required to enroll in a minimum of four credits of reading group (**BIOL 8070 or MICR 8070**). Attendance at other reading groups, even when not enrolled, is highly encouraged. M.S. students in TOX are required to enroll in a minimum of two credits and a maximum of eight credits of reading group (**BIOL or MICR 8070**).

- Passing Reading Group: Participation includes attendance, as well as leading the discussion at least once per semester.

Professional Development Course

Professional Development (**BIOL 8150**) covers topics including how to read a scientific paper, research ethics, failing forward, how to choose a committee, and time management. Students who take this course can count it towards one of their reading group requirements. If they were to do that, Microbiology and Biological Sciences students would have to take three credits of

BIOL or MICR 8070 (reading) instead of four credits, and Toxicology students would have to take one additional credit of **BIOL or MICR 8070** (reading) instead of two.

Research Credits

To complete an M.S. degree, students are required to take at least **six** semester hours of thesis research (**BIOL/MICR/ETOX 8910**). Every enrolled graduate student must enroll in *at least* one credit of thesis research each semester. This research should be led by their Faculty Advisor. Exemption from this policy requires approval from the Lead Graduate Programs Coordinator.

GTA Colloquium

All GTAs are required to register for and pass **BIOL 8130** (GTA Colloquium). This course is a one-hour pass/fail course for all students who have not yet taught as a GTA but ***will be*** teaching assistants in the fall or might be teaching assistants at some time in the future.

Undergraduate Deficiencies

Any undergraduate deficiencies will be annotated in the acceptance letter to the student. These courses should be completed as soon as possible after starting the program.

Seminar Presentation

M.S. students will conduct at least one seminar presentation per year starting in their second year. The seminar may be at an official conference, a seminar to the department, or a research report/update to their committee. If you are curious as to whether a seminar presentation counts, please reach out to your Graduate Program Coordinator.

Program-Specific Coursework

Biological Sciences:

- Courses: A minimum core has been chosen to ensure that graduates will be well-rounded biological scientists capable of excelling within a broad interdisciplinary context of Biological Sciences will be taken by each M.S. student. Students are required to take at least one of theses courses, offered in the fall semester:
    - **BIOL 8000** (Concepts in Evolution, Ecology and Organismal Biology)
    - **BIOL 8010** (Concepts in Molecular, Cellular and Developmental Biology)

Microbiology:

- Courses: A minimum number of courses chosen to ensure that graduates will be well-rounded microbiologists capable of excelling within the broad interdisciplinary context of Microbiology will be taken by M.S. students. These are as follows:
    - **MICR 8000** (Microbial Structure and Function; Bacterial Physiology/Diversity; and Ecological Microbiology)

- **MICR 8010** (Bacterial Genetics; Microbial Evolution/Genomics; Eukaryotic and Prokaryotic Pathogenesis)

Toxicology:

- Courses: A minimum core has been chosen to ensure that graduates will be well-rounded toxicologists capable of excelling within a broad interdisciplinary context of Toxicology will be taken by each M.S. student. These are as follows:
  - **ETOX 6300** (Toxicology)
  - **ETOX 6370** (Ecotoxicology)
  - **STAT 8010, 8050** (statistics) or another appropriate computational course

  While no longer required, there are additional courses that are optional for students but may be useful for their studies. Students should consult their Faculty Advisor to see if they recommend these courses:
  - **EES 8430** (Chemistry) or **EES 8450** (Organic Chemistry
  - **ETOX/BIOL 8300** (Mechanistic Toxicology)

One additional specialty course from one of the following emphasis areas is offered in either the fall or spring semester.

M.S. GS2 Plan of Study

The purpose of the GS2 Plan of Study is to document the plan for coursework upon which the student and committee have agreed. The GS2 Plan of Study is available through the iROAR Portal. For approval, emails will be sent one by one in a hierarchical order. An email is first sent to the GSSC, then to the Faculty Advisor, the appropriate Graduate Program Coordinator, and lastly to Graduate Enrolled Student Services.

Deadlines

A student should plan on filling out *two* GS2 Plans of Study during their degree. The first one is due around **the middle of the second semester** for M.S. students. If the courses taken change before the student graduates, an updated GS2 Plan of Study needs to be filed. The second Plan of Study is filed at the beginning of the semester in which the student intends to graduate. Graduation Deadlines for Completing Your Program located on the Graduate School website. The GS2 Plan of Study is filed through the iRoar Portal. Instructions are located on the Graduate School's Plan of Study page.

Courses

Students should list courses (formal or research) to total 30 credits. This coursework is decided between the students and their advisory committee. **Do not list courses completed more than**

those required by the advisory committee. A student can take as many credits as they like (within reason), but only the courses required by the advisory committee, our graduate programs (i.e., the Biological Sciences seminar and reading group courses), and research credits should be listed on the Plan of Study.

Contact the appropriate Graduate Program Coordinator if there are any questions.

Typical MS Student Course Requirements			
Course	**Credits**	**Notes**	**Additional Notes**
Reading Group (BIOL/MICR 8070)	4	Only 2 credits required for TOX	Total course credits ≥ 24 (at least 12 credits at 8000-level)
Seminar (BIOL 8120/ETOX 8610)	4		
GTA Colloquium (BIOL 8130)	1		
Other course (6000+)	3	• **Bio Sci:** students must take BIOL 8000 or BIOL 8010 • **TOX:** ETOX 6300, 6370 and a computational biology or statistics course are required. • **Micro:** students should take MICR 8000 or MICR 8010	
Other course (6000+)	3		
Other course (6000+)	3		
Other course (6000+)	3		
Other course (6000+)	3		
Research Credits (BIOL/ETOX/MICR 8910)	6	Minimum of 6 research credits	
TOTAL CREDITS	**30**	**Minimum of 30 credits total**	

M.S. Thesis Proposal Preparation and Defense

All graduate students in Biological Sciences, Microbiology or Toxicology must prepare a written research proposal outlining the student's dissertation research project for discussion and approval by the Advisory Committee **by the end of the third semester.** The proposal will be written in federal grant style (NIH, NSF, USDA, etc.). Please meet with your advisor to discuss what format would be most ideal for your proposal. Once you have come to a decision, please inform your committee of the format of your proposal. **The proposal must be provided to the committee *at least* 14 days before the defense. An email should be sent to the GSSC and the appropriate GPC stating that the proposal has been sent.**

An oral seminar outlining the research plan is presented to the Thesis Advisory Committee and orally defended by the student for final approval following the proposal seminar. Master's students are not required to make this an open seminar but may do so if they so choose. If you do choose to make this a public proposal defense, please follow the same directions in the M.S. Research and Thesis Defense section. Please contact the Biol Grad email (biolgrad@clemson.edu) if you would like to make it open.

Upon successful defense by the student, the student and committee members will fill out and submit the GS-Research Approval Form to the grad school, with a copy sent to the GSSC (biolgrad@clemson.edu). Students may be asked to revise their proposals and re-defend with the advisory committee, or enroll in more courses, if the committee feels such actions are warranted as a result of their first defense. However, if it is not passed the second time, a recommendation for dismissal is submitted to the Graduate School.

- Filing the GS-Research Approval Form:
  The GSSC will send the form through Adobe Sign on behalf of the student. Once the form is completed and signed, it will be placed in your file and sent to the appropriate person at Enrolled Student Services.

M.S. Research and Thesis Defense

Master's students are expected to generate a satisfactory thesis based upon the results of a research project designed by the student in conjunction with their advisory committee. **The research should be an original contribution to the student's field of choice, and it is highly recommended that the scope of the project be sufficient to result in at least one publication in a quality peer-reviewed journal.** The student is expected to devote a considerable amount of time to research, even while completing coursework and teaching as time management will be crucial in all their future work. GAC expects students to submit a manuscript from their thesis within one year of graduation.

At the end of the program, a student will defend their thesis research. The defense will include a public departmental seminar in which the student presents the results of their research and followed by a "closed-door" oral defense of the research with the advisory committee. The thesis must be provided to the committee **at least 14 days before the defense. An email should be sent to the GSSC and appropriate GPC stating that the dissertation has been sent.** The defense must also occur at least one full week (seven days) before the final manuscript is due to the Graduate School. Please see the information below on how to schedule your final defense.

This final oral exam consists of general questions covering the discipline and mastery of skills and questions challenging the thesis Students should prepare for the general questions through review of their classwork, and by remaining current in the literature related to their field of study. The defense of the dissertation will focus on the hypotheses, methods, results, and conclusions in the thesis, so the students should be thoroughly conversant with all aspects of the research.

Procedure for Organizing Your Thesis Defense

The following outlines the steps in scheduling the defense, advertising the defense, filing the appropriate form with the Graduate School once the student has successfully completed their defense, and filing the appropriate assessment form with the Department. See all deadlines well in advance of the semester the student plans to defend. Note that the student must be enrolled for at least one credit during the semester they plan to defend (usually BIOL/ETOX/MICR 8910, but can be anything), and the student must apply for graduation through iROAR at the beginning of the semester in which they plan to defend.

If the student can complete all their requirements, including an accepted manuscript, before classes begin in the coming semester, they will be cleared to graduate at the end of that semester without having to enroll in credit hours or pay tuition. The student should check with enrolled services for the exact deadline for each semester and notify them if there is a delay in their graduation.

M.S. students must pass the oral examination, i.e., the thesis defense, at least three weeks prior to the commencement ceremony.

Reserve a Seminar Room

The student should contact Ms. Amanda Roberts (phone: 864-656-2328; email: aorr2@clemson.edu) at least four weeks in advance of the date they want to defend their proposal. Be sure to let her know this is the final defense, as well as the defense date, time, and room preference(s). She can also help choose a room. Some common rooms for public proposal defenses include the Jordan Room, Long 229, LSF 026, 142, and 242; BRC 100; and Poole E-142. Amanda can reserve the Jordan Room and the Long Hall rooms directly. She can fill out the

forms to request LSF rooms or BRC rooms. She can also request Poole E-142, which has videoconferencing abilities, through Kate Price (kgthoma@clemson.edu). If Amanda is unavailable, email the BioSci email (BiolSci@clemson.edu) for assistance.

Announce Your Defense

At least 10 days before a thesis defense, the student should email an announcement of their defense with the flyer attached to their Faculty Advisor, committee members, and the GSSC, biolgrad@clemson.edu.

The contents of the announcement should be **in the body of the email**. The contents include the student's name (the name of the person defending); what they are defending (M.S. Thesis); the title of the talk; the date, time, and location of the talk; and the Faculty Advisor's name.

The student should include this information on a flyer in a separate attachment with the email as well. The flyer should have the following format:

Title of Thesis

(Title should be in 12 point Arial or Times New Roman font and centered)

Author's name

M.S. Defense Advisor's name:

Names of committee members:

Date & Time

Location – zoom link or physical location. Information between here and title should be in 11 point Arial or Times New Roman font and centered.

The abstract, less than one page, if possible, should be included. The text of the above should be included in an email and as a separate PDF for distribution. Small photos and/or graphics can be included. A GOOD diagram (something that would, by itself, explain your

proposed research to any interested persons) that can be used in place of a description of your research. An image related to your research (photo, graph, computer generated image, etc.) may also be provided.

The flyer will be posted on the Seminar Board near the main BioSci Office and on various boards in Long and Jordan Halls and the LSF, if appropriate.

Remote Dissertation Support

For any assistance with teleconferencing, contact CCIT (ithelp@clemson.edu) for assistance.

To set up a virtual meeting, the Faculty Advisor should create the Zoom meeting with a waiting room, invite people in, and record the defense in the cloud. The waiting room, passwords and invites prevent random people from joining the Zoom room and interrupting the proposal defense. Clemson University provides excellent support for Zoom.

Graduate School policy permits proposal defenses to be delivered virtually if the defense is a synchronous event for the committee members. As this method is being employed more extensively than originally anticipated, the resources shared here are intended to support this process for all involved.

A link was forwarded to a post by Ashton Merck, who had a virtual dissertation defense and shared many excellent suggestions for both the defending student and the faculty committee.

Filing the GS7M Thesis Approval Form and Thesis Rubrics

A successful "Pass" of the defense will result in filing the GS7M Thesis Approval form with the Graduate School. The GSSC will send the GS7M Thesis Approval form through Adobe Sign to all the committee members for approval. Once it has been signed, the GSSC will add the completed form to the student's file and send a copy to Enrolled Student Services.

The committee will assess the student for departmental assessment purposes using a set of rubrics on a form. The GSSC will send the rubric to the advisor after the Thesis defense is completed, and the advisor will submit the form with the committee's consensus evaluation.

Guide for Formatting and Submitting Your Dissertation

The Graduate School requires that all master's theses be submitted in electronic format. Guidelines for the electronic format of theses can be found on this Graduate School webpage, Theses and Dissertations | Graduate School. The official copy of the thesis must be submitted to the Graduate School in this electronic format and approved before a degree will be awarded.

In addition to the electronic copy of the thesis document required by the Graduate School, you have the option to purchase bound copies through a vendor. A signature page from the advisory committee (not available in the electronic copy) can be included in the bound copy, and there is an option to print the figures in color. Please visit Theses and Dissertations | Graduate School webpage for more information.

Graduation Guidelines

The semester that the student intends to graduate, there is a list of procedures the student must follow by specific deadlines to graduate on time. The list of these Graduation Deadlines for Completing Your Program are located on the Graduate School website

Final GS2 Plan of Study Form: Towards the beginning of the semester in which the student graduates, the student will resubmit their GS2- Plan of Study form. Students who submit this form after the deadline will be charged money, so be sure to check the deadline.

Apply to Graduate: At the beginning of the semester in which the student intends to graduate, they must formally apply through the iRoar Portal. To do this, access the iROAR page. Select "Student Record." Then, select "Apply to graduate." If questions arise during this process, please reach out to Enrolled Student Services at essrecs@clemson.edu.

Schedule your Defense: Reach out to Amanda Roberts (aorr2@clemson.edu) at least four weeks in advance of the defense to reserve a room. Then, 10 days before the defense, the student will need to inform the GSSC about their defense by emailing them the flyer to the Biol Grad email biolgrad@clemson.edu. Finally, the student will need to submit the date, time, and location of defense to the Graduate School by submitting the Submit Defense Form.

File your GS7M Thesis Approval Form: The GS7M Thesis Approval form needs to be submitted to Enrolled Student Services at least one week before your completed dissertation is due. The GSSC will send the GS7M Thesis Approval form through Adobe Sign to all the committee members for approval. Once it has been signed, the GSSC will add the completed form to the student's file and send a copy to Enrolled Student Services.

Submit your Completed Thesis: Once the committee has agreed on the final version of the thesis, it will need to be submitted to the Manuscript Review Office (Submit Your Thesis/Dissertation). This needs to be done at least three weeks before graduation.

Submit your Revised, Final Thesis: The Manuscript Review Office may have minor edits for the formatting of the manuscript. They will email these edits in one to two business days. The student will have one week from the initial submission to turn in the final, edited manuscript.

Commencement: The Commencement Ceremony is always held at the Littlejohn Coliseum. Tickets are not required, but students can have a maximum of six guests at the ceremony. Regalia needs to be ordered in advance, at least one month before commencement, and is done through Clemson University Barnes & Noble Bookstore.

III. PH.D. PROGRAM INFORMATION

The final authority resides with the Graduate School. Their policies and procedures can be located on the Graduate School website.

A. Ph.D. Rotation Program

Some students in the Biological Sciences or Microbiology Ph.D. program enter as rotation students. Students are required to conduct a minimum of three rotations before requesting a faculty advisor. In some cases, a fourth rotation may be necessary. This option should be discussed before the end of the third rotation with the Rotation Coordinator, Emily Rosowski (erosows@clemson.edu). Rotation students are expected to contact and meet individually with faculty members to discuss possible rotation projects and expectations prior to requesting a rotation in that lab. A great place to learn about different faculty research is at the BioSci Research Expo, which is held near the beginning of the Fall semester each year. Students submit their choices to the Rotation Coordinator. The Rotation Coordinator will work with the faculty to decide the order of the rotations, to accommodate both the faculty advisor and the student's preferences. Once the order has been determined, the student will be informed via email.

Students spend seven weeks in each lab. At the start of each rotation, students should communicate with their rotation advisor about expectations and requirements to learn, engage and succeed in the research experience and fill out the rotation evaluation forms. The student is expected to abide by these recommendations and stay in contact with their rotation advisor throughout the rotation period. At the end of each rotation period, the Rotation Coordinator will send each student and faculty member an evaluation form to determine how they both felt the rotation went.

Rotation Program Timeline

For 2026-2027:

- Date first rotation starts: Sept. 8th
- Date first rotation ends: Oct. 20th
- Date second rotation starts: Oct. 28th
- Date second rotation ends: December 11th (3 days off for Thanksgiving)
- Date third rotation starts: January 11th, 2027
- Date third rotation ends: February 23, 2027

Rotation Program Course Requirements

During their first year, rotation students sign up for BIOL or MICR 9910. For Fall 2026, rotation students in will register for BIOL 9910 sect 029 and Micro sect 020 with Dr. Emily Rosowski. Each rotation advisor submits an evaluation form sent by the Rotation Coordinator at the end of each rotation. The Pass/Fail grade for the fall semester is based on the first and second rotations, and the grade for the spring semester is based

on the third (and possibly the fourth) rotation. If students receive three recommendations of "Fail" by rotation advisors, they will therefore receive a "Fail" in the Fall and Spring semesters (if necessary) and be recommended for dismissal by the Graduate School.

Choosing a Faculty Advisor from Your Rotation Program

- Meet with the Rotation Advisor at the end of each rotation to discuss potential projects.
- Submit rotation evaluations to the Rotation Coordinator within three days of the end of each rotation.
- The student should stay in touch with any rotation advisor with whom they are interested in working.
- At the end of the third rotation, the student should contact the Rotation Coordinator with a ranking of their advisor/laboratory choices.
- The Rotation Coordinator will review student and faculty evaluations and contact the faculty that the student is interested in joining.
- If the faculty member is agreeable, then the student will be encouraged to directly contact the faculty member to discuss the specifics of joining their lab.
- If both the faculty member and the student are amenable to the student joining that lab, then no further action is needed. If that is not the case, the Rotation Coordinator will advise the student to reach out to their other options or potentially conduct a fourth rotation.
- If the student fails t secure a faculty advisor during their fourth rotation the student will be asked to leave the program

B. Ph.D. Program Rules, Requirements, and Policies

Below are degree requirements for students who enter the Department of Biological Sciences for one of the following three Ph.D. programs: Biological Sciences, Microbiology or Toxicology.

The Doctor of Philosophy degree is the highest degree offered by Clemson University. It is conferred only for work of distinction in which the student displays original scholarship. The major emphasis of the doctoral program in Biological Sciences, Microbiology or Toxicology is to provide an environment for the student to learn how to think critically, pose questions and answer them by experimentation, perform library research, write, communicate in scientific formats, and develop into a mature, articulate, and competent scientist.

It is the graduate student's responsibility to stay in touch with their Faculty Advisor and graduate advisory committee and ensure all requirements are fulfilled. The GPCs, Faculty Advisor, and GSSC will check in periodically with each student to assess their progress in the program. If they do not make progress towards their degree, there will be a discussion as to how the student can improve. If the student still does not make progress towards their degree, they may be dismissed from the program.

The student is ultimately responsible for complying with the regulations of the Department of Biological Sciences and Clemson University Graduate School, and being aware of all procedures, deadlines, etc. as they may not be reminded by faculty. Policies and procedures can be found on the Graduate School website.

Ph.D. Program Procedures and Timelines

Requirement	**Relevant Form**	**Deadline (deadline for students entering Fall 2026)**
Advisory Committee Selection	Online, GS2 Committee Selection	By end of Semester 3 (December 2027)
Plan of Study	Online, GS2 Plan of Study	By end of Semester 3 (December 2027)
Dissertation Proposal and Defense	GS-Research Approval	By end Year 2 (July 2028)
Comprehensive Exam	GS5D - Doctoral Comprehensive Exam and Candidacy Form	By end of Year 3 (July 2029)
Dissertation Submission / Defense	GS7D - Dissertation Defense Approval Form	No more than 5 years after filing GS5
Annual Progress Report (APR)	APR	Every summer
Research Presentation	APR	Every year
Seminar Attendance (BIOL 8120/ETOX 8610)	APR	Must be enrolled up to 6 credits at CU Recommended attendance otherwise.

Reading Group Attendance (BIOL 8070 or MICR 8070)	APR	Must be enrolled up to 6 credits at CU. Suggested attendance otherwise.

APR = Annual Progress Report

Ph.D. Dissertation Advisory Committee Overview

The Dissertation Advisory Committee is **established around the end of the third semester (the second fall semester)** *after* the student has begun their program. This committee is expected to meet *at least* once per year and, additionally, as needed.

The advisory committee approves the student's degree curriculum, supervises the graduate program, administers the Ph.D. comprehensive exams and the final oral examination during the dissertation defense, and initiates the recommendation for the awarding of the Ph.D. degree. One member of the committee is designated as chair, typically the Faculty Advisor, and normally directs the student's dissertation, if required. A minimum of three additional faculty members beyond the chair are to be selected by a student seeking a doctoral degree.

Either the Faculty Advisor or at least half of the committee must hold rank in the Biological Sciences or Microbiology programs offering the degree. For Toxicology graduate students, at least half of the committee members need to be associated with the Toxicology curriculum.

Ph.D. Advisory Committee Selection (GS2)

The purpose of the first part of the online GS2 Committee Selection form is to select the graduate advisory committee. The online GS2 Committee Selection form is available through the iROAR Portal. Please follow the directions found on the Graduate School's webpage for submission.

Deadlines

The deadline for the GS2 Committee Selection form is **by the end of the third semester (the second fall semester)** for Ph.D. students. This portion of the form must be completed and approved by all committee members before the GS2 Plan of Study can be submitted.

Procedure

1. Open the GS2 Committee Selection form in the iROAR portal.
2. "Dissertation" should be selected from the committee type dropdown menu.

3. Add committee members from the list of available faculty members. All faculty eligible to serve on the graduate student committee are found on the graduate faculty list.
4. If the faculty is not on the list but is at Clemson University, contact the appropriate Graduate Program Coordinator (GPC) to request approval to add them as a committee member. Once approved, they will be added to the graduate faculty list.
5. External faculty (outside the university) will appear if all steps for their appointment have been completed. Detailed information about the process is in the additional information selection.
6. Submit the form after all committee members have been added and approved

Additional Information (External Faculty Member)

In order for an external member to be awarded graduate faculty status through the Department, the student's Faculty Advisor should fill out the email template in the BioSci faculty resource folder requesting Graduate Faculty Status. Send it along with the external faculty's CV to the Graduate Program Coordinator (GPC). This will be presented to and voted upon by the Graduate Advisory Committee (GAC). After approval from GAC, the student fills out the Request to Add an External Member to an Advisory Committee form. Once the student's request is submitted, it's routed to the department chair and the Graduate School for approval. The student will be notified via email when completed. The student will then contact the Graduate Student Services Coordinator (GSSC) to complete the External Committee Selection form.

Ph.D. Committee Meeting Times

The committee will meet at a minimum at the following times:

- No later than the end of the third semester (the second fall semester) to review the student's planned research and to approve the student's GS2- Plan of Study.
- No later than end of the second year for the Oral Defense of the Dissertation Proposal (GS-Research Approval Form).
- Beginning of third year to inform the committee of their choice for Comprehensive Exam format.
- No later than end of third year for Comprehensive Exam orals (filing GS5D - Doctoral Comprehensive Exam and Candidacy Form).
- A minimum of one time in the fourth and fifth years to review progress.

- No later than the end of five years after filing the GS5D for the Dissertation Defense (filing GS7D - Dissertation Defense Approval Form), unless they have permission to continue beyond five years.

Ph.D. Course Work

Clemson's Directory of Classes and online registration can be found through the iROAR Portal.

Ph.D. students must have a minimum of 60 credits hours to graduate; 30 of these credits must be beyond the master's degree if one was previously obtained. At least 12 credit hours of coursework must be taken by students who are pursuing a Ph.D. without having a M.S. degree. Coursework encompassing the breadth and depth in associated life science areas is expected of all candidates. An appropriate plan of coursework to fulfill this requirement will be developed by the student and their advisory committee and submitted in the GS2- Plan of Study around the **end of the third semester (the second fall semester)**. The GS2 Plan of Study must reflect the required 60 credit hours necessary for graduation. All courses listed in the Plan of Study must be passed with a grade of "B" or higher prior to completion of the graduate degree, even if those courses are not part of the general degree requirements.

Seminar

BioSci and Micro: The Department of Biological Sciences hosts a weekly guest lecturer as part of the Departmental Seminar series (**BIOL 8120**). For 2026-2027, the seminar will be held on Mondays from 11:15 – 12:05 pm. A wide variety of topics from across all disciplines in Biological Sciences, ranging from microbiology, ecology, evolutionary biology, cell and molecular biology, developmental biology, and others, are presented. This seminar series is to be attended by graduate students in the Biological Sciences and Microbiology programs.

TOX: The Toxicology seminar (**ETOX 8610**) is the required seminar course for TOX Ph.D. students.

Credit Requirements: Ph.D. students must enroll in either **BIOL 8120** or **ETOX 8610** for their first three years (or up to six semesters), which totals a minimum of six credits. Students should not take more than eight credits for either of these courses. Students with credit for **BIOL 8120** from their MS degree are required to take up to six credits between the two degrees. Attendance at seminars, even when not enrolled, is highly encouraged.

Passing Seminar: To pass **BIOL 8120** or **ETOX 8610**, enrolled graduate students are required to attend a minimum of eight of the 10+ Departmental or other approved seminars each semester. Seminars presented in other departments may count towards

meeting this requirement, but the student is responsible for getting permission from the faculty coordinator for **BIOL 8120** or **ETOX 8610** for the substitution and documenting attendance by signing in with the coordinator of the seminar they attend. Excused absences (e.g. attendance at scientific meetings, family emergencies) must be approved by the Seminar Coordinator.

Seminar Coordinator: Dr. Matthew Koski (mkoski@clemson.edu)

Reading Groups/Journal Clubs

One of the most profitable and enjoyable aspects of the graduate training program is the student's participation in one or more Reading Groups. Such discussion groups will teach, develop, and enhance a student's ability to critically read, interpret, discuss, and present scientific literature and results.

BioSci and Micro: Ph.D. students in these degree programs are required to pass the Reading Group course (**BIOL 8070** or **MICR 8070**). Although the format may vary among the various sections of **BIOL 8070** and **MICR 8070**, each involves a meeting of the faculty and students working in areas of mutual interest to discuss recent developments, findings, and techniques that relate to their research interests. Any exemption from the policy for Reading Groups requires approval of the Lead Graduate Programs Coordinator.

TOX: Ph.D. students in Toxicology are required to take and pass the Reading Group course. They can choose from either **BIOL 8070** or **MICR 8070**. Any exemption from the policy for Reading Groups requires approval of the Lead Graduate Programs Coordinator.

Credit Requirements: Ph.D. students in Micro and BioSci are required to enroll in a minimum of six credits and a maximum of eight credits of reading group (**BIOL or MICR 8070**). Students with credit for a reading group from their MS degree are required to take up to six credits between the two degrees. Attendance at other reading groups even when not enrolled is highly encouraged. Ph.D. students in TOX are required to enroll in a minimum of two credits and a maximum of eight credits of reading group (**BIOL or MICR 8070**). Students with credit for a reading group from their MS degree are required to take up to two credits between the two degrees.

Passing Reading Group: Participation includes attendance, as well as leading the discussion at least once per semester.

Professional Development Course

The Professional Development course (**BIOL 8150**) covers topics including how to read a scientific paper, research ethics, failing forward, how to choose a committee, and time management. Students that take this course can count it towards one of their reading

group requirements. If they were to do that, Microbiology and Biological Sciences would have to take five credits of **BIOL or MICR 8070** instead of six credits, and Toxicology students would have to take one additional credit of **BIOL or MICR 8070** instead of two.

Research Credits

To complete a Ph.D., students are required to take at least 18 semester hours of dissertation research (**BIOL/MICR/ETOX 9910**). Every enrolled graduate student must enroll in at least one credit of dissertation research each semester. This research should be led by their Faculty Advisor. Exemption from this policy requires approval from the Lead Graduate Programs Coordinator.

GTA Colloquium

All GTAs are required to register for and pass the GTA Colloquium (**BIOL 8130**). This colloquium is a one-hour pass/fail course for all students who have not yet taught as a GTA but will be teaching assistants in the Fall or might be teaching assistants at some time in the future.

Undergraduate Deficiencies

Any undergraduate deficiencies will be annotated in the acceptance letter to the student. These courses should be completed as soon as possible after starting the program.

Seminar Presentation

Ph.D. students will conduct at least one seminar presentation per year starting in their second year. The seminar may be at an official conference, a departmental seminar or a research report/update to their committee. If there are any questions as to whether a seminar presentation counts, please reach out to the appropriate graduate program coordinator. This is documented on the annual progress survey sent out every July.

Program-Specific Coursework

Biological Sciences:

A minimum core of courses has been chosen to ensure that graduates will be well-rounded biological scientists capable of excelling within a broad interdisciplinary context of Biological Sciences will be taken by each Ph.D. candidate. Students are required to take at least one of the courses, offered in the Fall semester, below:

- **BIOL 8000** Concepts in Evolution, Ecology and Organismal Biology
- **BIOL 8010** Concepts in Molecular, Cellular and Developmental Biology

Microbiology:

A minimum number of courses chosen to ensure that graduates will be well-rounded microbiologists capable of excelling within the broad interdisciplinary context of Microbiology will be taken by each Ph.D. candidate. For students entering the Ph.D. program in Microbiology directly from a bachelor's program, graduate coursework must include two core Microbiology courses and one additional course. For students entering the Ph.D. program in Microbiology with a master's degree, they need to either take the courses below or have similar courses that they have taken during their MS program. Students in the latter situation should consult with their faculty advisor and advisory committee to determine which courses are expected of them.

Our two core courses include:

- **MICR 8000** Microbial Structure and Function; Bacterial Physiology/Diversity; and Ecological Microbiology
- **MICR 8010** Bacterial Genetics; Microbial Evolution/Genomics; Eukaryotic and Prokaryotic Pathogenesis

One additional specialty course from one of the following emphasis areas is offered either in fall or spring semesters.

- Genetics, Physiology and Metabolism
- Pathogenic Microbiology
- Environmental and Ecological Microbiology
- Technology
- Bioinformatics, Genomics and Statistics

Toxicology:

A minimum core of courses chosen to ensure that graduates will be well-rounded toxicologists capable of excelling within a broad interdisciplinary context of Toxicology will be taken by each Ph.D. candidate. These are as follows:

- **ETOX 6300** Toxicology
- **ETOX 6370** Ecotoxicology
- **ETOX 8610** Seminar in Toxicology
- **Statistics (8010, 8050) or approved Computational Course**

While no longer required, there are two additional courses that are optional for students, but may be useful for their studies. Students should consult their Faculty Advisor to see if they recommend these courses:

- **EES 8340 or 8450** Environmental Chemistry
- **ETOX/BIOL 8300** Mechanistic Toxicology

Ph.D. GS2 Plan of Study

The purpose of the GS2 Plan of Study is to document the plan for coursework upon which the student and committee have agreed. The GS2 Plan of Study is available through the iROAR Portal. For approvals, emails will be sent one by one in a hierarchical order. An email is first sent to the GSSC, then to the Faculty Advisor, the appropriate Graduate Program Coordinator, and lastly to Graduate Enrolled Student Services.

Deadlines

A student should plan on filling out two Plans of Study during their degree. The first one is due around **the end of the third semester (the second fall semester)** for Ph.D. students. If the core courses taken change before the student graduates, an updated plan with the courses that have been taken must be filed. This update plan is generally filed at the beginning of the semester in which the student intends to graduate. Please see the Graduate School's website for graduation deadlines.

Courses

Students should list courses (formal or research) to total 30 or 60 credits, depending on whether they have a previous MS degree. This coursework is decided between the student and their advisory committee.

The total is determined based on the following:

- Ph.D. students coming in with a M.S. degree in hand need 30 credits
- Ph.D. students coming in with only a B.S./B.A. degree need 60 credits

Do not list courses completed more than those required by the advisory committee. A student can take as many credits as they like (within reason), but only the courses required by the advisory committee, our graduate programs (i.e., the Biological Sciences Seminar and Reading Group courses), and research credits should be listed on the Plan of Study.

Contact the appropriate Graduate Program Coordinator if you have any questions.

Typical Ph.D. Student without MS			
Course	**Credits**	**Notes**	**Additional Notes**
Reading Group (BIOL/MICR 8070)	6	Only 2 credits required for ETOX	Total course credits ≥ 12 due to Reading Group/Seminar requirements
Seminar (BIOL 8120/ETOX 8610)	6		
GTA Colloquium (BIOL 8130)	1		
Other course (6000+)	3	• **Bio Sci:** students must take BIOL 8000 or BIOL 8010 • **ETOX:** ETOX 6300, 6370 and computational biology or statistics course are required. • **Micro:** students should take MICR 8000 or MICR 8010	
Other course (6000+)	3		
Other course (6000+)	3		
Research Credits (BIOL/ETOX/MICR 9910)	28	Minimum of 18 research credits	
TOTAL CREDITS	**60**	**Minimum of 60 credits total**	

Typical Ph.D. Student with an MS from Elsewhere

Course	Credits	Notes	Additional Notes
Reading Group (BIOL/MICR 8070)	6	Only 2 credits required for ETOX	Total course credits ≥ 12 due to Reading Group/Seminar requirements
Seminar (BIOL 8120/ETOX 8610)	6		
GTA Colloquium (BIOL 8130)	1		
Other course (6000+)	3	• **Bio Sci:** students must take BIOL 8000 or BIOL 8010 • **ETOX:** ETOX 6300, 6370 and a computational biology or statistics course are required. • **Micro:** students should take MICR 8000 or MICR 8010	
Other course (6000+)	3		
Research Credits (BIOL/ETOX/MICR 9910)	28	Minimum of 18 research credits	
TOTAL CREDITS	**60**	**Minimum of 60 credits total**	

Typical Ph.D. Student with an MS from Dept. of Biological Sciences at Clemson			
Course	**Credits**	**Notes**	**Additional Notes**

Reading Group (BIOL/MICR 8070)	2	Have already taken 4 during MS; Not required for ETOX	Total course credits ≥ 12
Seminar (BIOL 8120/ETOX 8610)	2	Have already taken 4 during MS	
Other course (6000+)	3	• **Bio Sci:** students must take BIOL 8000 or BIOL 8010 • **ETOX:** ETOX 6300, 6370 and a computational biology or statistics course are required • **Micro:** students should take MICR 8000 or MICR 8010	
Other course (6000+)	3		
Other course (6000+)	3		
Research Credits (BIOL/ETOX/MICR 9910)	20	Minimum of 18 research credits	
TOTAL CREDITS	**30**	**Minimum of 30 credits total**	

Ph.D. Dissertation Proposal Preparation and Defense

All graduate students in Biological Sciences, Microbiology or Toxicology must prepare a written research proposal outlining the student's dissertation research project for discussion and approval by the Advisory Committee **by the end of the second year**. The proposal will be written in federal grant style (NIH, NSF, USDA, etc.). Please meet with your Faculty Advisor to discuss what format would be most ideal for your proposal. Once you have come to a decision, please inform your committee of the format of your proposal. **The proposal must be provided to the committee at least 14 days before the defense**. An email should be sent to the appropriate GPC stating that the proposal has been sent.

An oral seminar outlining the research plan will be presented in an open forum to the advisory committee members and the Department of Biological Sciences. See below for details on how to organize and publicize this seminar. Following the proposal seminar, the student will orally defend the proposed topic in a closed session with the Advisory Committee.

Upon successful defense by the student, the student and committee members will fill out and submit the GS-Research Approval Form to the Graduate School with a copy to the GSSC, biolgrad@clemson.edu. Students may be asked to revise their proposals and re-defend with the advisory committee, or enroll in more courses, if the committee feels such actions are warranted as a result of their first defense. If the student fails the proposal the first time, they may try a second time. However, if it is not passed the second time, a recommendation for dismissal is submitted to the Graduate School.

Reserve a Seminar Room

Contact Ms. Amanda Roberts (864-656-2328; aorr2@clemson.edu) at least four weeks in advance of the proposal defense date. Be sure to state that this is a **proposal defense** and not a final defense. Let her know the defense date, time, and room preference(s). She can also help choose a room. Some common rooms for public proposal defenses include the Jordan Room, Long 229, LSF 026, 142, and 242; BRC 100; and Poole E-142. Amanda can reserve the Jordan Room and the Long Hall rooms directly. She can fill out the forms to request LSF rooms or BRC rooms. She can also request Poole E-142, which has videoconferencing abilities, through Kate Price (kgthoma@clemson.edu). If Amanda is unavailable, email BiolSci@clemson.edu and someone will assist you.

A public proposal defense is required for all Ph.D. students.

Written Proposal

Provide the advisory committee with the proposal ***at least* 14 days** before the defense.

Announce Your Public Proposal Defense

At least 10 days before a public proposal defense, the student should email an announcement of the defense with the flyer attached (see below) to their Faculty Advisor, committee members, and the GSSC, biolgrad@clemson.edu.

The contents of the announcement should be **in the body of the email**. The contents include the student's name (the name of the person defending); what they are defending (Ph.D. dissertation); the title of the talk; the date, time, and location of the talk; and the Faculty Advisor's name.

The student should include this information on a flyer in a separate attachment with the email as well. The flyer should have the following format:

Title of Dissertation

(Title should be in 12 point Arial or Times New Roman font and centered)

Author's name

Ph.D. or M.S. Defense

Advisor's name:

Names of committee members:

Date & Time

Location – zoom link or physical location. Information between here and title should be in 11-point Arial or Times New Roman font and centered.

The abstract, less than one page, if possible, should be included. The text of the above should be included in an email and as a separate PDF for distribution. Small photos and/or graphics can be included. A GOOD diagram (something that would, by itself, explain your

proposed research to any interested persons) that can be used in place of a description of your research. An image related to your research (photo, graph, computer generated image, etc.) may also be provided.

Post the flyer on the Seminar Board near the main BioSci Office and on various boards in Long and Jordan Halls and the LSF, if appropriate.

Remote Proposal Defense

For any assistance with teleconferencing: Contact ithelp@clemson.edu for assistance.

To set up a virtual meeting, the Faculty Advisor should create the Zoom meeting with a waiting room, invite people in, and record the defense in the cloud. The waiting room, passwords and invites prevent random people from joining the Zoom room and interrupting the proposal defense. Clemson University provides excellent support for Zoom.

Graduate School policy permits proposal defenses to be delivered virtually if the defense is a synchronous event for the committee members. As this method is being employed more extensively than originally anticipated, the resources shared here are intended to support this process for all involved.

A link was forwarded to a post by Ashton Merck, who had a virtual dissertation defense and shared many excellent suggestions for both the defending student and the faculty committee.

Filing the GS-Research Approval Form

The GSSC will send the form through Adobe Sign on behalf of the student. Once the form is completed and signed, it will be placed in the student's file and sent to the appropriate person at Enrolled Student Services.

Ph.D. Comprehensive Exam

The comprehensive exam determines whether a student has the requisite knowledge and abilities to successfully pursue the Ph.D. degree and a career in science. Passing the comprehensive exam and filing the GS5D - Comprehensive Exam and Candidacy Form with the Graduate School are requirements for Ph.D. candidacy.

The student is required to complete the comprehensive exam at **least six months before graduation,** after the start of the program. There are two formats of the exam that can be taken. A Ph.D. student will choose the format in consultation with their faculty advisor. The two formats are described in detail below. Once a format has been selected, students should reach out to each of their committee members to determine what they expect from them.

According to the Graduate School, satisfactory completion of the comprehensive examination must occur no more than five years and at least six months prior to the date of graduation.

The committee will assess the knowledge of the student using a set of rubrics. The GSSC will send the form to the advisor after the comprehensive exam is completed, and the advisor will submit the form with the committee's consensus evaluation.

Ph.D. Comprehensive Exam Formats

Format 1**:** "Research Proposal Format"

This exercise is intended to ensure that the doctoral student who has successfully completed most of the coursework requirements can identify specific questions that remain unanswered in a research area and to develop a written research proposal that describes experimental approaches to answer these questions.

Note: The comprehensive exam research proposal should be on a topic that is not a part of the student's dissertation research or an ongoing research project of the student's mentor.

- Choosing a Topic: The student and the advisor will discuss two or three topics of interest for a research proposal to be written in federal grant style. After discussion and agreement, the student will have two weeks to research the topics before presenting to the student's advisory committee. A 1.5 to 2-page description containing background and specific aims for each topic should be delivered to the members of the committee at least two days prior to an advisory committee meeting. At this meeting, the student will give a short, informal presentation on each topic. The committee will decide which topic should be addressed in the research proposal, and the student will have four weeks from the date of this meeting to write the proposal.

- Format of Proposal: The proposal will be written in federal grant style. Sections will include background and significance, specific aims, and experimental design and methods. Students should contact their advisor to see which type of federal grant (NIH, NSF, USDA, etc) proposal formatting they would like. Students will not solicit help from any faculty or other graduate students when writing this proposal. The exam will be held two weeks after the submission of the research proposal.

- Comprehensive Exam: Following submission of the research proposal to the advisory committee by the student, the committee will schedule the comprehensive examination. Here, the student will present, in 30 minutes or less, an overview of the research proposal and will then defend the proposal and answer questions from the advisory committee. The student will be expected to demonstrate a thorough knowledge of background information and apply basic information from their coursework and reading of the literature while answering questions about the research proposal. In addition, the student will be expected to demonstrate a general knowledge of biology, physics, chemistry, biochemistry, mathematics, and the area of "bioscience" in which they are being trained. At the end of the exam, the committee can recommend Pass/Rewrite/Remediation/Fail.

    - Pass: If a student passes, they should inform the GSSC. The GSSC will send out the GS5D - Doctoral Comprehensive Exam and Candidacy Form through Adobe Sign to all the committee members. Once it has been signed, the GSSC will add the completed form to the student's file and send a copy to Enrolled Student Services. Once the document has been approved by the Graduate School, the student will be considered a Ph.D. Candidate. The student will then have a maximum of five years from this date to complete and successfully defend the dissertation research.

    - Rewrite: The committee will decide the extent of the rewrite. They will communicate this information to the student and give them a deadline by which the rewrite must be completed.

    - Remediation: The committee may decide that the student needs more background in a particular area, and they will therefore elect for remediation. The nature of this remediation is determined by the committee. It can include, but is not limited to, additional course work or completing another comprehensive exam.

    - Fail: If the advisory committee deems that the material and the student's preparation are of sufficiently poor quality to be considered a "failure," then several options may be recommended by the committee. These recommendations include but are not limited to, choice of another topic, a probationary period, or recommendation for dismissal from program. All the recommendations in this category will be presented to the Graduate Program Coordinator and the Graduate Advisory Committee, who will be responsible for determining the final status of the student. **For a student who is permitted a second attempt, a minimum of two months must pass before the student can**

undergo a second comprehensive exam. A second failure of any part of the exam leads to an automatic dismissal of the student from the Ph.D. program.

Format 2: "Written and Oral Examination"

This format is the more traditional style where a student answers a series of written essay exam questions provided by each member of the advisory committee. Following completion of the written portion of the comprehensive exam, the student will then meet with the advisory committee for the oral portion of the comprehensive exam.

- Written exam: The written examination should be constructed to evaluate:

    1. The student's knowledge and appreciation of empirical and theoretical information from the specialty area and related subject areas.

    2. The student's ability to analyze and evaluate such information.

    3. The student's ability to recognize and construct important and useful relationships of information from within and outside their areas of concern.

    For preparation, students should obtain a list of possible examination topics from each committee member prior to the examination. The length of the written exam and the rules for taking the exam (time limits, open versus closed book, etc.) are determined by each member of the advisory committee for their portion of the exam. Each committee member grades their own examination and reports the grade for each question, "Pass", "Marginal", or "Fail", to the major advisor. Upon receiving all results, the major advisor determines the outcome. If more than one of the written exams is marked "Fail" overall, then the written portion of the exam is failed and must be re-done before the oral portion of the comprehensive exam can proceed.

- Oral exam: The student schedules the oral exam no more than 3 weeks after receiving notification from their advisor that all written exams have been passed. The oral exam should evaluate the ability of the student to think and speak in situations that require relatively rapid, well-organized, and articulate responses. The examination also provides an opportunity for the committee to further evaluate the student's knowledge and analytical abilities. At the end of the oral exam, the committee can recommend Pass/Rewrite/Remediation/Fail.

- Pass: If a student passes, they should inform the GSSC. The GSSC will send out the GS5D - Doctoral Comprehensive Exam and Candidacy Form through Adobe sign to all the committee members. Once it has been signed, the GSSC will add the completed form to the student's file and send a copy to Enrolled Student Services. Once the document has been approved by the Graduate School the student will be considered a Ph.D. Candidate. The student will then have five years from this date to complete and successfully defend the dissertation research.

- Rewrite: The committee will decide the extent of the rewrite. They will communicate this information to the student and give them a deadline by which the rewrite must be completed.

- Remediation: The committee may decide that the student needs more background in a particular area, and they will therefore elect for remediation. The nature of this remediation is determined by committee. It can include, but is not limited to, additional course work or completing another comprehensive exam.

- Fail: If the advisory committee deems that the material and the student's preparation is of sufficiently poor quality to be considered a ""failure"", then several options may be recommended by the committee. These recommendations include but are not limited to, choice of another topic, a probationary period, or recommendation for dismissal from program. All the recommendations in this category will be presented to the Graduate Program Coordinator and the Graduate Advisory Committee, who will be responsible for determining the final status of the student. For a student that is permitted a second attempt, a minimum of two months must pass before the student can undergo a second comprehensive exam. A second failure of any part of the exam leads to an automatic dismissal of the student from the Ph.D. program.

Ph.D. Research and Dissertation Defense

The emphasis of the doctoral program is research, and the time spent in research will increase each year. A student will choose a project in consultation with their advisory committee that, upon completion, will merit the awarding of the doctoral degree. **The research should be an original contribution to the student's field of choice and should result in at least one publication in a quality, peer-reviewed journal prior to the defense**. The student is expected to devote a considerable amount of time to research, even while completing coursework and teaching, as time management will be crucial in all their future work.

The dissertation must be provided to the committee **at least 14 days before the defense**. An email should be sent to the appropriate GPC stating that the dissertation has been sent. The defense must also occur **at least one full week (seven days**) before the final manuscript is due to the Graduate School. Please see the information below on how to schedule your final defense.

The defense will include a public departmental seminar in which the student presents the results of their research, followed by a "closed-door" oral defense of the research with the advisory committee. This final Oral Exam may consist of general questions covering the discipline and mastery of skills, and questions challenging the dissertation. Students should prepare for the general questions through review of their classwork, and by remaining current in the literature related to their field of study. The defense of the dissertation will focus on the hypotheses, methods, results, and conclusions in the thesis, so the students should be thoroughly conversant with all aspects of the research.

Procedure for Organizing Your Dissertation Defense

The following outlines the steps in scheduling the defense, advertising the defense, filing the appropriate form with the Graduate School once the defense has successfully been completed, and filing the appropriate assessment form with the Department. Students should check out Graduation Deadlines well in advance of the semester they intend to defend. Note that students must be enrolled for at least one credit during the semester they plan to defend (usually BIOL/ETOX/MICR 9910 but can be anything) and that they have to apply for graduation through iROAR Portal at the beginning of the semester in which they plan to defend.

If a student can complete all their requirements, including an accepted manuscript, before classes begin in the coming semester, they will be cleared to graduate at the end of that semester without having to enroll in credit hours or pay tuition. Check with enrolled student services for the exact deadline for each semester. Students should notify them if their plans to graduate are delayed.

Note: Ph.D. candidates must pass the oral examination, i.e. the dissertation defense, at least three weeks prior to the commencement ceremony.

Reserve a Seminar Room

Contact Ms. Amanda Roberts (864-656-2328; aorr2@clemson.edu) at least four weeks in advance of the defense date. Be sure to state that this is a final defense. Let her know the defense date, time, and room preference(s). She can also help choose a room. Some common rooms for public proposal defenses include the Jordan Room, Long 229, LSF 026, 142, and 242; BRC 100; and Poole E-142. Amanda can reserve the Jordan Room and the Long Hall rooms directly. She can fill out the forms to request LSF rooms or BRC rooms. She can also request

Poole E-142, which has videoconferencing abilities, through Kate Price (kgthoma@clemson.edu) . If Amanda is unavailable, email BiolSci@clemson.edu and someone will assist you.

Announce Your Defense

At least 10 days before a public proposal defense, the student should email an announcement of the defense with the flyer attached (see below) to their Faculty Advisor, committee members, and the GSSC, biolgrad@clemson.edu.

The contents of the announcement should be **in the body of the email**. The contents include the student's name (the name of the person defending); what they are defending (Ph.D. dissertation); the title of the talk; the date, time, and location of the talk; and the Faculty Advisor's name.

The student should include this information on a flyer in a separate attachment with the email as well. The flyer should have the following format:

Title of Dissertation

(Title should be in 12 point Arial or Times New Roman font and centered)

Author's name

Ph.D. or M.S. Defense

Advisor's name:

Names of committee members:

Date & Time

Location – zoom link or physical location. Information between here and title should be in 11-point Arial or Times New Roman font and centered.

The abstract, less than one page, if possible, should be included. The text of the above should be included in an email and as a separate PDF for distribution. Small photos and/or graphics can be included. A GOOD diagram (something that would, by itself, explain your

proposed research to any interested persons) that can be used in place of a description of your research. An image related to your research (photo, graph, computer generated image, etc.) may also be provided.

Post the flyer on the Seminar Board near the main BioSci Office and on various boards in Long and Jordan Halls and the LSF, if appropriate.

Remote Proposal Defense

For any assistance with teleconferencing: Contact ithelp@clemson.edu for assistance.

To set up a virtual meeting, the Faculty Advisor should create the Zoom meeting with a waiting room, invite people in, and record the defense in the cloud. The waiting room, passwords and invites prevent random people from joining the Zoom room and interrupting the proposal defense. Clemson University provides excellent support for Zoom.

Graduate School policy permits proposal defenses to be delivered virtually if the defense is a synchronous event for the committee members. As this method is being employed more extensively than originally anticipated, the resources shared here are intended to support this process for all involved.

A link was forwarded to a post by Ashton Merck, who had a virtual dissertation defense and shared many excellent suggestions for both the defending student and the faculty committee.

Filing the GS7D Dissertation Defense Form and Rubric

A successful "Pass" of the defense will result in filing the GS7D - Dissertation Defense Approval Form with the Graduate School.

The GSSC will send the GS7D form through Adobe Sign to all the committee members for approval. Once it has been signed, the GSSC will add the completed form to the student's file and send a copy to enrolled student services.

The committee will assess the student for departmental assessment purposes using a set of rubrics on a form. The GSSC will send the form to the advisor after the dissertation defense is completed, and the advisor will submit the form with the committee's consensus evaluation.

Guide for Formatting and Submitting of Your Dissertation

The Graduate School requires that all Doctoral dissertations be submitted in electronic format. Guidelines for electronic format of dissertations Theses and Dissertations can be found on the Graduate School webpage. The official copy of your dissertation must be submitted to the Graduate School in this electronic format and approved before your degree will be awarded.

In addition to the electronic copy of the dissertation document required by the Graduate School, a student has the option to purchase bound copies Theses and Dissertations | Graduate School through a vendor. A signature page from the advisory committee (not available in the electronic copy) can be included in the bound copy, and there is an option to print your figures in color.

Graduation Guidelines

The semester that the student intends to graduate, there are a list of procedures the student must do by specific Graduation Deadlines to graduate on time.

- Comprehensive Exam: Comprehensive exams need to be finished at least six months before the graduation date. So, students should aim to complete them by the beginning of the semester that comes before the semester they intend to graduate.
- Final GS2 Plan of Study Form: Towards the beginning of the semester that the student graduates, the student may need to resubmit their GS2 form. This only needs to be done if the core courses that count toward the degree have changed since the original version was submitted. If a course has changed, but it is not one of the ones strictly required for graduation, the form does not need to be resubmitted. Students that submit this form after the deadline will be charged money, so be sure to check the deadline.

- Apply to Graduate: At the beginning of the semester that the student intends to graduate, they will need to formally apply to graduate through iROAR. To do this, access the iROAR page. Select "Student Record." Then, select "Apply to graduate." If questions arise during this process, please reach out to enrolled student services at essrecs@clemson.edu.

- Schedule your Defense: Reach out to Amanda Roberts (aorr2@clemson.edu) at least four weeks in advance of the defense to reserve a room. Then, 10 days before the defense, the student will need to inform the GSSC about their defense by emailing them the flyer to biolgrad@clemson.edu. Finally, they need to submit the date, time, and location of your defense to the Graduate School by submitting the "Submit Defense Form."

- File your GS7D Dissertation Defense Approval Form: The GS7D - Dissertation Defense Approval Form needs to be submitted to Enrolled Student Services at least one week before your completed dissertation is due. The GSSC will send the GS7D Dissertation Defense Approval form through Adobe Sign to all the committee members for approval. Once it has been signed, the GSSC will add the completed form to the student's file and send a copy to Enrolled Student Services.

- Submit your Completed Dissertation: Once the committee has agreed on the final version of the dissertation, it will need to be submitted to the Manuscript Review Office. This needs to be done at least three weeks before graduation.

- Submit your Revised, Final Thesis: The Manuscript Review Office may have minor edits for the formatting of the manuscript. They will email these edits in one to two business

days. The student will have one week from the initial submission to turn in the final, edited manuscript.

- Doctoral Hooding Ceremony: The Doctoral Hooding Ceremony is normally held in the Brooks Center for the Performing Arts. All doctoral students who apply for graduation will receive an email closer to the ceremony date asking them to confirm their attendance and provide further information via a registration link. This email will be delivered approximately one month before the ceremony date. Regalia needs to be ordered in advance, at least one month before commencement, and is done through Clemson University Barnes & Noble Bookstore.

IV. Annual Progress Report

Graduate students annually self-report on their progress in research, accomplishments of milestones towards degree (e.g., completion of Program of Study, Proposal Defense, or Comprehensive Exams), awards and honors received, and dissemination of results (papers published, presentations made). This annual progress report serves two important purposes. First, it allows the GPCs and GAC to keep tabs on the progress of graduate students in the program and spot struggling students early. Second, it allows for better assessment of the programs in terms of student measures of success, such as the dissemination of research results. It is also recommended that student progress reports be emailed by the student to all committee members each year.

An email is sent each year with a link to a form that must be completed no later than two weeks after receipt. Failure to file a progress report annually is considered as lack of adequate progress towards degree. A letter will be sent to both student and faculty advisor and continued non-compliance will result in the student's file being reviewed by GAC to determine the consequences of this failure.

V. Student Financial Support, Tuition and Fees

Teaching and Research Assistantships and Fellowships

Graduate students accepted into the Biological Sciences, Toxicology or Microbiology graduate programs are either awarded support through the Department of Biological Sciences as Graduate Teaching Assistants (GTAs) or from individual faculty advisors' sponsored grant funds as Graduate Research Assistants (GRAs). A student may be both a GTA and a GRA during their time at Clemson, depending on their faculty advisor's grant funding. Students can work a

maximum of 28 hours a week if they are U.S. citizens and 20 hours a week if they are international students.

To be eligible for a GTA or GRA, a student must be enrolled full-time. Full-time status entails registering for a minimum of nine credit hours during the fall and spring semesters. If a student's assistantship continues into the summer, then the student must be enrolled in three credit hours in each summer session or six credit hours in the long summer session. A GTA/GRA can be terminated at any time for substandard, unsatisfactory, or unethical performance. The annual progress report letter sent by GSSC each fall semester identifies problems with performance or progress toward the degree and sets deadlines for resolving the problems.

GTAs are awarded upon acceptance to the program and may be renewed annually based on teaching performance and satisfactory progress toward the degree. M.S. GTAs can be renewed up to three years (six semesters), and Ph.D. GTAs up to five years (10 semesters). Students can apply for a GTA extension by contacting the GSSC. The current rate for a 9-month appointment (not teaching in the summer) is $24,000 for M.S. and Ph.D. students (before they pass the Comprehensive Exam). Ph.D. students who have successfully passed the Comprehensive Exams and submitted the GS5D - Doctoral Comprehensive Exam and Candidacy Form to the Graduate School will receive a 9-month rate of at least $26,000 per year, starting after the form is filed, and the change of pay can be processed (the start of the next pay period). Annual GTA stipends may be supplemented by Faculty Advisors' grant funds or from other sources. Additional GTA support may be available with satisfactory research progress towards the degree and permission from the GAC and Department Chair.

GRAs are awarded by individual Faculty Advisors with funds available from research grants. Individual stipend amounts and conditions of renewal are determined by individual Faculty Advisors, but currently funded GRA stipends of at least $24,000. This will depend on the tenure of the student (years in program) and the availability of supplemental funds. GRA support is negotiated by prospective students with individual Faculty Advisors.

All Ph.D. students are given a $3,000 stipend for their **first** summer. **For M.S. students summer funding is not guaranteed and for Ph.D. students (after the first summer), so students should be sure to save money during the fall and spring semesters to support themselves over the summer semester.** During the summer months, graduate students may be employed on an assistantship or on an hourly basis. Graduate students on an assistantship in the summer must enroll in at least three credits for each of the two summer sessions. Graduate students employed on an hourly basis do not need to register for courses over the summer.

A limited number of university fellowships are available on a competitive basis by nomination. The GAC will inform students of these opportunities. We also encourage graduate students to

submit proposals for outside funding, such as an NSF GRFP. Other fellowships are listed below in the table and are solicited in the spring and awarded the following academic year.

Department of Biological Sciences Fellowships	
Fellowship name	**Target applicants and eligibility**
Alex P. Anderson and Lydia Anderson Fellowship	Graduate students conducting advanced research in biological sciences (including bacteriology and entomology). NOTE: must hold a Clemson University degree at any level.
Dr. Harry Findley (’71) and Catherine T. Findley Student Assistance Endowment	Graduate students studying microbiology or biology within the Dept. of Biological Sciences in the College of Science
J. Michael & Ellen Dobson Henson Student Assistance Endowment in Microbiology	Graduate students majoring in the Microbiology PhD program and performing research in the areas of microbial ecology, geomicrobiology, microbiology, food microbiology, or other microbiology program areas.
Dr. Stephen Klaine Annual Memorial Fellowship	Graduate students who are enrolled in Toxicology PhD program.
Dr. David W. Tonkyn Memorial Annual Fellowship	Fellowship for graduate student enrolled in Biological Sciences that is studying conservation and/or endangered species

VI. M.S. En Route to a Ph.D. Program

Clemson has adopted a process by which a doctoral student *may* be granted a master's degree in the same discipline while progressing towards their doctoral degree. This process is called the '*en route*' master's to distinguish it from the 'normal' master's degree for students who matriculated into master's degree programs. The '*en route*' process is neither automatic nor mandatory; however, there is no difference in requirements for either the M.S. or an '*en route*' M.S. degree.

The *en route* M.S. is not an avenue for students who seek only a M.S. degree and who do not plan to pursue the Ph.D. degree. The *en route* M.S. provides greater flexibility for students in case they elect to pursue a Ph.D. in another program or at another institution after fulfilling the requirements for the M.S. degree.

Students must be enrolled as a Ph.D. student to utilize this mechanism. To change to a M.S. *en route* program:

1. a Graduate School Form (GS2-14 Master's en route to PhD degree curriculum) should be submitted to document
2. the fulfillment of requirements for an *en route* M.S. degree
3. the faculty's recommendation to award the *en route* M.S. degree. Normal university deadlines apply in all cases.

The M.S. *en route* program is used primarily for students in good academic standing that achieved a good amount of progress on their research, who have already passed their comprehensive exams, that have enough credit hours to receive a master's degree, and that have satisfied all the requirements for the master's degree while maintaining a GPA of at least 3.0.

At the discretion of your advisory committee, six hours of course work may be double counted towards both the master's and doctoral degree credit hour requirements. This will result in 30 hours for the master's degree and 24 unique credit hours for the doctoral degree.

The student will take and pass the M.S. oral exam (the M.S. thesis defense) before being awarded the '*en route*' M.S.

Program Guidelines

Students who enter the M.S. *en route* to Ph.D. program in the Department of Biological Sciences will be considered M.S. students until the defense of their thesis. After a successful defense,

they will be considered doctoral students. **It is important to note that per Graduate School policy, the time limit to the degree does not start over after a student completes the M.S. en route if they return to the doctoral program in which they were originally admitted.** Students who complete the M.S. *en route* will have eight years to complete both degrees, beginning from the term they first matriculated in the doctoral program.

Students who wish to obtain the M.S. *en route* to their Ph.D. must take and pass the oral exam at the master's thesis defense before the award of the M.S.

During the M.S. portion of the program, the guidelines and regulations of the standard departmental master's Program apply, including required coursework for the M.S. degree.

VII. M.S. Bypass to a Ph.D. Program

Students admitted and enrolled in the M.S. program can bypass the M.S. degree and proceed directly to the Ph.D. upon petition to GAC. The M.S. bypass is intended for students whose research has expanded to the point that a Ph.D. degree is more appropriate. M.S. bypass requests should typically be submitted in the third semester of the M.S. program. **Students who use this option are not awarded the M.S. degree.**

The following procedure must be followed if a student wishes to bypass the M.S. degree:

1. The student must have successfully completed at least two semesters of academic work in the M.S. program, accumulating a minimum of six credit hours of BIOL/ETOX/MICR coursework at the 8000 level plus three credit hours of thesis research (BIOL/ETOX/MICR 8910) while maintaining a minimum GPA of 3.0. The student must also have met the M.S. program's requirements pertaining to enrollment in Seminar and Reading Groups and have made significant progress toward their research goals. The student should also have formed a committee of at least four eligible faculty (see Ph.D. Dissertation Advisory Committee Selection), met with their committee, and submitted a Plan of Study for the M.S. degree.

2. Following discussions between the student and their advisory committee, the student will submit a short (1-2 pages) written request to GAC to bypass the M.S. degree. This request should outline the student's progress in the M.S. program and must justify why a bypass is appropriate. Supplementary materials, such as a CV, reprints of published papers or published abstracts, completed unpublished manuscripts, or a list of formal presentations, can be included with the request. The advisor should also submit a letter to the GAC, written in consultation with the student's advisory committee, supporting the student's request.

3. GAC will either approve or disapprove the initial request. In the case of initial approval, GAC will provide a one semester extension of the M.S. (potentially Ph.D.) proposal defense, which is normally due by the end of the third semester.

4. The student will then write their research proposal as if it were for a Ph.D. and present a Ph.D. proposal defense seminar open to the department within eight weeks of the beginning of the fourth semester. At least two members of GAC, apart from any members of the student's advisory committee, will attend the proposal defense. In the seminar, the student must present evidence of significant research progress, outline a specific research plan for the Ph.D., and demonstrate sufficient communication skills. The student will then meet in a closed-door session with their advisory committee to defend their proposal.

5. Following the seminar presentation, the student's advisory committee will submit a written recommendation to GAC as to whether the student is prepared to move directly to a Ph.D. A final decision of the application to bypass the M.S. degree will then be made by GAC.

6. If the request is not approved, the earliest a M.S. student could defend their thesis is the following semester because of the dates for applying for graduation.
7. If the student is approved to switch to the Ph.D., the Lead Graduate Programs Coordinator will notify the Graduate School and a GS2-14 Master's en route to PhD degree curriculum will be submitted. A new faculty advisory committee must be selected to meet the requirement of a minimum of four advisory committee members for Ph.D. students, and the GS2 Plan of Study must be re-filed reflecting the student's new status in the Ph.D. program. Students admitted to the Ph.D. program in this way are expected to fulfill all current Ph.D. requirements.

Appendix I: Additional Information about Grad School and the Department

A. New Student Hiring Directions

1. All new graduate assistants to be hired by the Department of Biological Sciences will be contacted by the Graduate Student Services Coordinator, Candice Blassingame (blassin@clemson.edu) to begin the new hire process. All forms and instructions will be included. Items to be completed consist of:
    a. New Employee Data Sheet: A fillable form that must be completed as part of the hiring process.
    b. I9: Completing an I-9 form is a federal requirement and provides proof of authorization to work in the United States. The I-9 document contains a list of acceptable documents. From that list students will need to present either one official document from list A OR 1 from list B + list C.
        - U.S. Citizens: Instructions will include how the student can provide your documents for verification, providing alternatives to in-person meetings if needed.
        - International students: A meeting with the International Employment division in Human Resources is required.

2. HR and Payroll also ask that each student supply a copy of their social security card. The Social Security Administration requires employers to enter all employee names into the payroll system as it appears on the employee's social security card.

3. Once the employment record is entered into the HR/Payroll database, the student will be notified by email with instructions for setting up direct deposit for their pay,

their tax withholding, viewing their pay stub, and signing up to receive their W-2 tax form online (if desired).

B. Reporting Hours Worked

Fall and Spring

To comply with the Affordable Care Act (ACA), we must obtain, and report paid service hours accurately and in a timely manner. Therefore, all graduate assistants, whether they are a teaching assistant or a research assistant, must accurately report paid service hours worked in a timely manner. The University uses Workday to log all these hours. Missed entries after the deadline may result in disciplinary action for those weeks being calculated based on full-time work hours for the purposes of the ACA.

Summer

If at any time, a student works as a Graduate Summer Hourly Employee, they will have to enter their clock in and out times in Workday. Directions are:

1. Sign in to Workday
2. Click Check in and hit OK
3. When clocking out, sign in and click Check out and hit OK

There are training guides for Workday.

C. Payroll, Fees and Benefits Information

Payroll

Graduate teaching (GTAs) and research (GRAs) assistants receive semi-monthly payments throughout the year. Most appointments are 9-month annual appointments beginning around August 15th of each year to around May 15th. They will receive nine semi-monthly payments for Fall, and nine semi-monthly payments for Spring. Paydays are the 15th of the month and the last day of the month unless the date falls on a weekend or holiday. Paychecks must be directly deposited into a checking or savings account.

Directions for initiating your direct deposit can be found at: Student Employment Resources. It is possible to direct deposit in up to five different accounts. Students who have questions/problems with their payroll should contact the GSSC, Candice Blassingame (blassin@clemson.edu).

Fees

Each semester, there are various fees that each student must pay that include access to the health center, gymnasium (Fike), and software. For 2026-27, the amount is $919/semester for students on an assistantship; you can calculate the most up-to-date amount. Health insurance is not included in these fees and must be purchased separately. Students who have insurance through a relative must submit a waiver.

Fees can be drafted from a bank account in six consecutive installments each semester, except for the first semester a student is enrolled. The fees will be withdrawn every two weeks. Most graduate students will be on an assistantship, and therefore, the relevant section of that site is found under "Full-Time Graduate Tuition and Fees".

Health Benefits

Clemson University requires all full-time (nine hours or more), on-campus graduate students to have health insurance coverage. It may be purchased through Clemson University or through other insurance policies that meet the University requirements. The Graduate School subsidizes the cost of health insurance. If you have any questions about health and medical insurance, contact the Student Health Plan Coordinator, (studentinsurance@clemson.edu or 864-656-9493).

D. Graduate Student Organizations

Biological Sciences Graduate Student Association (BioSci GSA)

The Biological Sciences Graduate Student Association (BioSci GSA), organized by the departmental graduate students, sponsors a speaker each year, organizes various social events, provides travel awards, helps recruit new graduate students, and assists with departmental functions as requested. The BioSci GSA also serves as a liaison between graduate students and the Department. More information about BioSci GSA can be found on their website.

The BioSci GSA offers Travel Awards, on a competitive basis, of up to $400 each to active member. Application forms and instructions can be obtained from a BioSci GSA officer. The current BioSci GSA officer roster can be obtained from the GSSC, Candice Blassingame (blassin@clemson.edu) or on the BioSci GSA website.

Toxicology Graduate Group Association (ETGGA)

The Toxicology graduate program was established at Clemson University in 1992, offering both M.S. and Ph.D. degree programs. The Toxicology Graduate Group Association (ETGGA) is an organization dedicated to serving the graduate students within ETOX, providing a social outlet, performing community outreach, and providing a resource for professional/academic

information and opportunities. The current ETGGA officer roster can be obtained from the GSSC, Candice Blassingame (blassin@clemson.edu).

University Graduate Student Government (GSG)

The goals of GSG are to:

1) Increase graduate student involvement
2) Act as a liaison between the University and graduate students
3) Act as a channel for graduate students to collaborate and enhance their education
4) Provide opportunities for graduate students to develop professionally and academically

If you are interested in learning more, you can find more information on the GSG website.

The GSG offers travel awards of up to $750 (domestic) and $1000 (international), each on a competitive basis during fall, spring, and summer semesters. Specific award details and instructions are subject to change. More information about the Graduate Travel Grant is on the website.

E. Computing

Computing Services

The University's Center for Computing and Information Technology (CCIT) is responsible for all computing issues on campus. New students are assigned a user ID and a temporary password upon admission to the University. CCIT maintains several computer labs throughout the campus that are open to students. Wireless access is also available in many buildings throughout campus.

Students can have personal computers set up with appropriate software and wireless setup by taking the computer to the CCIT help desk (Second Floor of Cooper Library) or emailing ithelp@clemson.edu to set up an appointment.

Poster Printing

Poster printing is handled through CCIT, and students have access through their website. All graduate students receive $25.50 in their accounts per semester (Spring, Summer, Fall), which does not roll over between semesters. A student can add to this balance at TigerStripe website page.

Digital File Storage

The department has a Box folder that holds files of interest for graduate students. This includes all the forms and rubrics needed for the GS2 Plan of Study, as well as the thesis/dissertation defense. It also has information about fellowships, safety trainings, seminar presentations and more. All new students should be able to access the Graduate Student Resources Box folder upon their arrival at Clemson.

F. Office Information

Graduate students are sometimes assigned a desk in research labs located in Jordan Hall. However, desks and filing cabinet space are also available in the graduate student office in 230/234 Long Hall. Contact Amanda Roberts (aorr2@clemson.edu) for assistance if you need a desk in this room. Students whose labs are in the Life Sciences Facility (LSF) are assigned desks in a common graduate student office in that facility. Ask your advisor and contact Rick Moseley (remosel@clemson.edu) for assistance.

Mail

Graduate student mail should be addressed as follows:

Your Name, Department of Biological Sciences
132 Long Hall, Clemson University
Clemson, SC 29634-0314

Outgoing mail can be placed in the appropriate bin in 133 Long Hall. All personal U.S. mail must be stamped.

Building Access

All buildings on campus can be accessed with obtain the TigerOne Card. To gain access, the GSSC will request access to the Building Manager.

Long Hall: Charles Allen (impala@clemson.edu)

Jordan Hall: Weston Link (westonl@clemson.edu)

Life Sciences Facilities: Rick Moseley (remosel@clemson.edu)

Keys for access to laboratories and offices, in Long Hall and Jordan Hall, are assigned through the BioSci main office. Please see Amanda Roberts in 132 Long Hall. Keys to specific laboratories require the approval of the laboratory principal investigator. Contact the instructor or course coordinator to acquire keys to specific teaching laboratories. Keys to conference rooms and classrooms can be signed out from the departmental office as needed on a limited basis. The

student is responsible for all keys given to them and for ensuring that all areas used by them are locked when they leave. Please return keys when they are no longer needed.

Office Materials

Office materials (including printer paper) are available for class or research use through the appropriate teaching or research professor. See the main departmental office (Long 132) to obtain these materials.

Photocopies

Photocopy machines are in 135 and 149 Long Hall. Personal copying may not be done on the departmental copier. Ms. Amanda Roberts can show any student how to scan, print, and copy from these machines. Copiers are available in the library and at commercial sites downtown (e.g., Copy Shop, 189 Old Greenville Hwy Suite A., Clemson, SC.) for personal copying.

Sending Express Shipments

To send an express package, a student should contact their advisor/lab manager. The student must provide an account number to pay for the shipment (available from their faculty advisor). They will need specific training offered by the Occupational and Safety Department to ship biohazard materials or with dry ice.

Departmental Vehicles

The department maintains three trucks, three 18-passenger vans and three golf carts for departmental teaching and research use. A student must be a licensed driver and complete an online driver training course offered through Clemson to drive a SC State vehicle.

To register for the online driver training course and reserve a departmental vehicle, contact Amanda Roberts (aorr2@clemson.edu). Be sure to be aware of all state regulations regarding the use of vehicles. Any ticket a student receives will be their responsibility, whether on campus or on the road.

G. Transportation and Parking

All Clemson Area Transit (CAT bus) buses are free. They have campus routes as well as routes servicing Clemson, Central, and other surrounding areas. Commuter student parking is in the orange spaces and is by permit only. Information and permits can be obtained from Parking and Transportation Services in the University Union.

H. Facilities

Departmental Facilities

Research and teaching for the Department of Biological Sciences takes place primarily in Long Hall, Jordan Hall and the Life Sciences Facility (LSF). Information about the resources in these facilities:

- Laboratories: No smoking, eating, or drinking is allowed in either the teaching or research laboratories. All personnel working in labs with hazardous chemicals must have all skin areas covered; lab coats are required; sandals are not allowed. Laboratories, both teaching and research are to be kept clean and in order.

- Teaching Laboratories. Undergraduate students may not be left in teaching laboratories without supervision. Building and equipment security is your responsibility. Be sure doors and windows are closed and locked following lab. Do not leave building doors propped open after hours for any reason.

- Common Departmental Equipment. Students should not use common equipment until they have been trained to do so. Sterilization (autoclaves) and glass-washing facilities, walk-in cold rooms and chambers are available on each floor in Jordan and in many locations in the Life Sciences Facility. Students should receive training in operating this equipment from either the course coordinator (teaching labs) or their research advisor prior to use.

- Microscopy, Imaging, Flow Cytometry. The Clemson Light Imaging Facility is located Suite 030 of the Life Sciences Facility. Information regarding the use of this equipment can be obtained by emailing imaging@clemson.edu.

University Facilities

Specialized fee-based campus facilities are also available to all departmental researchers. These include animal facilities, greenhouse facilities, imaging facilities, a DNA sequencing facility, and genomics/proteomics capabilities. A description and contact information for major resources:

- Electron Microscopy Facility: Additional electron microscopy facilities are available at Electron Microscopy Facility - Home. Equipment at this center includes SEM, TEM, STEM and FESEM capabilities. More information can be found on their website or by contacting Dr. Lax Saraf (lsaraf@clemson.edu).

- Clemson University Genomics and Bioinformatics Facility (CUGBF): This facility offers sequencing, ddPCR, nucleic acid quantification and bioinformatics support. The Director is Dr. Christopher Parkinson (viper@clemson.edu).

- South Carolina Botanical Gardens. The South Carolina Botanical Garden has field areas (old fields, woods, a small stream, etc.) on a 295-acre site for programmatic use.

- Clemson Experimental Forest: The Clemson University Forest, 17,500 acres are dedicated to education, research, and demonstration to better understand and manage forest resources for the benefit of society. With approval, the Experimental Forest may be available for research and teaching purposes contact, Forest Manager, Wayne Phillips (waynep@clemson.edu), 864-656-4833).

- University Greenhouses: Greenhouse Complex is available for research purposes. The department operates greenhouses on the roof of Jordan Hall and rented space in the Biosystems Research Center (BRC) greenhouse facility. Dr. Matt Koski (mkoski@clemson.edu) oversees the teaching collection in the greenhouses.

- Bob and Betsy Campbell Museum of Natural History: The vertebrate collection is in the Campbell Museum of Natural History. The collection is available for use in teaching and research. Contact the Curator, Ms. Melissa Fuentes (fuente2@clemson.edu, 864-656-2328), for questions regarding the museum or its collections.

- Herbarium: The Herbarium is located on the first floor in Jordan Hall. The department maintains an excellent collection of local, regional, and worldwide floras. All qualified graduate students are invited to utilize the herbarium. Contact the Curator, Dr. Lorena Endara (cendara@clemson.edu, 864-656-7234) is the curator in charge of the herbarium.

- Aquatic Animal Research Laboratory (AARL): The Aquatic Animal Research Lab Located in the Pool Agricultural Building, Room 26 and the adjacent corridors. Rooms are available for short- term projects involving aquatic animals housed in aquaria, stock tanks, and raceway channels. Re-circulating tanks and raceways can be used for freshwater or sea water research projects. Requests for research space in this facility should be made by your faculty advisor.

- Godley Snell Research Center (GSRC): Godley-Snell Research Center is managed by the Office of Research Services and provides centralized laboratory animal facilities, equipment, caging, and veterinary and technical support to facilitate diverse campus-wide animal research and teaching programs. Services available include: Animal Procurement and Maintenance, Animal Care and Health Surveillance, Project Cost Analysis, Project Development and Veterinary Consultation, Technical Services (blood collection, veterinary care, euthanasia, and sample collection), and Surgical Services.

I. Safety Manuals and Training

All personnel working or teaching in laboratories must complete the Chemical Safety course administered online by the Clemson Department of Occupational and Safety. Safety training includes chemical, biological and radiation training. **Appropriate training must be completed prior to beginning laboratory or fieldwork**. Safety requirements vary based on your research area. Your advisor will provide you a list of required safety modules that must be completed for your research area.

All the required Online Tiger Training courses are found at Clemson University's Human Resources Tiger Training website. Occupational and Safety offers safety training. Both online and safety training require login with Clemson University credentials.

For safety questions or issues related to chemical hygiene in BioSci, contact the Instructional Lab Manager, Carissa Foster (carissf@clemson.edu). Research Safety provides biohazard waste and sharps collection containers, plus disposal. For assistance with disposal of biohazard wastes, contact the Hazardous Materials Manager, June Carroll (juneb@clemson.edu, 864-656-1770).

Disclaimer

Any additional safety training requirements for the graduate student pertaining to research will be the responsibility of the PI. This GTA training is specifically for the graduate student who will have a teaching assistantship. Therefore, the material presented will be for training to prep, work, and teach in the Biological Sciences teaching labs. Some of the safety training will pertain to research but not all of it; therefore, graduate students will receive additional training from the PI in relation to research. GTA safety training personnel are not responsible for research safety training.

J. Travel Forms

The system that Clemson uses to reimburse students for travel, or any other expenses is Workday@Clemson . Students will need to save their receipts for all expenses and submit them

through Workday program no more than one week after the expense occurred. Before submitting a reimbursement request for the first time, please reach out to our Account Payable and Receivable Accountant, Kailyn Barton (kbarto5@clemson.edu) to set up a time to go over how to set up an account, how to use Workday for reimbursements, and how to add her as an expense delegate. Anytime you submit a reimbursement request, the student should also reach out to our Financial Analyst (Chris Krouchick, Jr, ckrouch@clemson.edu) to ensure that they are using the right account number for the reimbursement.

Appendix II. Graduate School Forms Summary

This section briefly outlines the forms that are required by the graduate program for both Ph.D. and M.S. students. Each form can be found on the Graduate School Forms and Requests page and these should be used as some forms are now online or accessible through iROAR. Completed original forms are submitted to the Graduate Enrolled Services Office (104-D Sikes Hall) electronically and copies are kept by the BioSci Department. You will need to send a copy to the GSSC, biolgrad@clemson.edu.

It is the student's responsibility to check the Graduate School website to ensure the most recent update of the form is used for submission.

- GS2 Plan of Study: GS2 Plan of Study
- GS-Research Approval Form: GS-Research Approval Form
- Comprehensive Exam Form: GS5D - Doctoral Comprehensive Exam and Candidacy Form
- Application for Graduation: GS4, complete through iROAR portal
- M.S. Thesis Approval Form: GS7M Thesis Approval Form
- Ph.D. Dissertation Defense Approval Form: GS7D - Dissertation Defense Approval Form
- Clemson University Name Change Request: Update Your Information

Appendix III. Engineering and Science Education Program (ESED)

Credits in STEM education can be taken from ESED Program (Engineering and Science Education) to improve your teaching and consider new teaching methods. These classes can be taken as part of an Engineering & Science Education Certificate and may be a good idea for students interested in teaching or lecturing at small colleges and universities or working as a lecturer at larger universities. It is also suggested for students who are considering working at larger state universities or at RI or RII institutions in which teaching is a significant component of their duties. More on the curriculum for the Engineering & Science Education Certificate Program on the website.

Appendix IV. Departmental Rubrics

- Rubric for Biological Sciences – MS Thesis and Defense (BioSci MS Thesis and Defense Rubric)
- Rubric for Toxicology – MS Thesis and Defense (TOX MS Thesis and Defense Rubric)
- Rubric for Microbiology – MS Thesis and Defense (Micro MS Thesis and Defense Rubric)
- Rubric for Assessing Student Learning Outcomes – Ph.D. Comprehensive Exams (BioSci Ph.D. Comp Exam Rubric), (TOX Ph.D. Comp Exam Rubric) and (Micro Ph.D. Comp Exam Rubric)
- Rubric for Biological Sciences – Ph.D. Dissertation and Defense (BioSci Ph.D. Dissertation and Defense Rubric)
- Rubric for Toxicology – Ph.D. Dissertation and Defense (TOX Ph.D. Dissertation and Defense Rubric)
- Rubric for Microbiology – Ph.D. Dissertation and Defense (Micro Ph.D. Dissertation and Defense Rubric)

Appendix V. Resources for Graduate Students with Disabilities

What to do:

1. Meet with someone from Student Accessibility Services to disclose disability and discuss possible accommodations.
2. Provide documentation of disability (contact at SAS will provide guidelines for this.

For accommodations related to job functions:

Americans with Disabilities Act (ADA)

Priscilla Harrison, ADA Coordinator
864-656-3181
priscih@clemson.edu

For classroom or research accommodations:

Student Accessibility Services (SAS)

Margaret Camp, Director of Student Accessibility Services
864-656-6848
mmcamp@clemson.edu

Appendix VI. Contact Information for Departmental and University Staff and Their Duties Related to Graduate Students

- **Carla Brewer** (153 Long Hall; cjdunca@clemson.edu, 864-656-0854): Registration Coordinator (Overrides for signing up for courses)
- **Amanda Roberts** (132 Long Hall; aorr2@clemson.edu, 864-656-2328): Main Office Administrative Assistant (Scheduling use of the departmental vehicles, issuing departmental visitor parking permits, scheduling conference rooms, issuing keys, issuing paper and supplies, assisting with the photocopiers)
- **Ginger Foulk** (236 Long Hall; foulk@clemson.edu, 864-656-4224): Project Coordinator (Manages website, social media, seminar speaker travel/logistics, marketing, event planning, outreach events)
- **Melissa Fuentes** (fuente2@clemson.edu): Vertebrate Collection Curator
- **Candice Blassingame** (147 Long Hall; blassin@clemson.edu or biolgrad@clemson.edu, 864-656-3587): Graduate Student Services Coordinator (**All graduate-student related questions**, including payroll)
- **Brooke Morton** (150 Long Hall; blmorto@clemson.edu, 864-656-3057): HR & Payroll Liaison)
- **Weston Link** (240 Long; westonl@clemson.edu, 864-656-6273): Building Manager for Jordan Hall and BBC Museum of NH (manages all building/lab renovations/projects/constructions, general maintenance and repair, ethanol stockroom, radiation badges, service contract issues)
- **Charles Allen** (impala@clemson.edu, 864-656-0550): College of Science Building Manger for Long Hall (building/lab renovations/projects/constructions, general maintenance and repair)
- **Teri Elliott** (132B Long Hall; telltt@clemson.edu, 864-656-2328): Administrative Coordinator (manages calendar and schedules meetings with Chair; HR Liaison, payroll for faculty/staff/graduate students/undergraduate student workers)
- **Rhonda Powell** (G-24 Life Sciences Facility, rhondar@clemson.edu, 864-656-1264): Clemson Light Imaging Facility Manager
- **Chris Krouchick** (149 Long Hall; ckrouch@clemson.edu, 864-656-8962): College of Science Financial Analyst (verifies funds before travel, IDOs, expenditure/revenue reports)

- **Kailyn Barton** (kbarto5@clemson.edu, 864-656-1634); Accounts Payable and Receivable Accountant for G&B (receives and processes p-card receipts, processes BuyWays orders, travel reimbursements, invoicing)

Any general questions about the Department, contact: BiolSci@clemson.edu.