

# School of Biological Sciences

## Master of Science in Biology Graduate Student Handbook



LOUISIANA TECH  

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UNIVERSITY®

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## WELCOME

Welcome to Graduate School and the School of Biological Sciences! We are excited to have you join us for your Master's of Science degree and hope that you will enjoy your time here. Graduate school is a big transition from college and this handbook is designed to make some of that transition easier by providing you with critical degree information along with some of the resources that are available to you on campus to assist you in academics, financial aid, and overall personal health.

The goal of graduate school is to prepare you with a set of skills that will help you achieve your next academic or career goal. During graduate school, whether you choose the research thesis or non-thesis plan you will develop skills in critical thinking, collaboration, writing, and oral presentation.

**The research thesis is plan is designed for students who want to pursue a faculty-guided research project.** Most students who pursue this curriculum are interested in pursuing further graduate studies or are looking for a job where some research experience is required. **Students who pursue the non-thesis plan are filling some course needs, raising a GPA, or working to increase their knowledge and background before applying for jobs, medical school, or other professional schools.** The thesis plan is a larger commitment as the time it takes to complete your degree depends on your research project and on your own work ethic. The thesis plan requires a thesis proposal, significant research, and a final written thesis and defense. If you choose this plan you will need to find a faculty advisor who works in an area of biology that interests you and with whom you work well. You will work in the area of research directed and supported by your advisor to achieve the goals you, your advisor, and your committee set for you prior to graduation. Most thesis students finish their MS in 2-3 years, depending on the research project and completion of the proposal and thesis writing and presentation requirements. The non-thesis plan is a coursework only degree program and so the time to completion is more dependent on how many courses a student can pass each quarter and the successful completion of the oral comprehensive exam given by the student's committee the final quarter of the degree program. If at any point in your time as a graduate student you would like to switch between thesis and non-thesis you can do that by speaking with your advisor and notifying your committee via email and an updated plan of study. Changing plans may impact the length of time needed to complete your degree as the course requirements are different so make sure you plan for those expectations and discuss those details with your advisor. All of the details and expectations of the degree programs are provided in this handbook.

The goal for all of the faculty at Louisiana Tech University is to help you be successful and help you to achieve the next step in your career. Your fellow graduate students, the faculty, and staff, are here to help and support you so please ask questions, engage in your classes and research, and enjoy your time in the graduate program.

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## HOW TO BEGIN

To prepare for the first quarter at Louisiana Tech, each student will need to first register for classes. All students should receive a series of emails from **Louisiana Tech University Graduate School** and **Louisiana Tech Registrar**. Make sure you are checking your email and carefully reading all emails sent by the University. International students should attend the orientation offered by the International Student Office located in Tolliver Hall, Room 229.

1. **Familiarize yourself with the MS Biology degree requirements and expectations.**  
<https://ans.latech.edu/biological-sciences/graduate-programs/>
2. **Obtain your CWID number and set up Louisiana Tech email and BOSS accounts.**  
This information should come in an email from the Louisiana Tech Registrar.
3. **Meet with your academic advisor.** Each student will be temporarily assigned an academic advisor, who will be replaced by the student's research advisor or permanent advisor after the plan of study is completed.
4. **Select courses for your first quarter.** A summary of the core courses required by the thesis and non-thesis plan can be found online and in the handbook. A graduate student is verified as full-time with 6 or more graduate semester hours. A student receiving an assistantship must be qualified as a full-time graduate student. Graduate International students are required to be enrolled for a minimum of 6 graduate credit hours in their degree program each term until graduation to maintain F-1 student visa status.
5. **Register for classes.** If you have any holds or are unable to register, check with the Registrar's office.
6. **Purchase a parking sticker at the Campus Police Station.**

## GENERAL GUIDELINES

### The Graduate Advisory Committee

*What is the Graduate Advisory Committee?*—The Graduate Advisory Committee is a group of faculty that serve the student in completing their degree. The Graduate Advisory Committee membership will include a minimum of three and a maximum of five members of the Louisiana Tech University Graduate Faculty. **A majority of the committee members must be from the School of Biological Sciences Graduate Faculty.** The remaining committee member(s) must be selected from the Graduate Faculty of Louisiana Tech University or may be from outside Louisiana Tech University (Appendix B). The chair of the Graduate Advisory Committee for a thesis student typically directs the thesis research, in consultation with the other members of the Committee. The chair of the Graduate Advisory Committee for a non-thesis student typically is someone who is active in teaching, service, or research to the closest area of interest of the graduate student. The Graduate Advisory Committee assists in preparation of the Plan of Study and administers the required examinations (see below). The Associate Dean for Research and Graduate Studies and

the Graduate Advisory Committee may identify deficiencies in the candidate's educational background and will, based on those deficiencies, determine a schedule of additional course work.

*Selecting and Assigning a Major Advisor*—Graduate students must select a major advisor during the **first quarter enrolled**. Until a student has designated a major advisor, the Director of the School of Biological Sciences will serve as the major advisor. Typically, incoming biology graduate students will have contacted a Louisiana Tech University faculty member to work with prior to acceptance in the Graduate School. If the student and faculty member have mutually agreed to work together, and the student is accepted into the program, this faculty member will serve as the student's major advisor. In other cases, the student may have been accepted to the program without having contacted a faculty member and without having selected a major advisor. In the latter case, the student must find a major advisor prior to the end of the first quarter and preferably soon after the quarter begins. Once the major advisor is selected and agrees to work with the student, the student may select the Graduate Advisory Committee in consultation with the major advisor. To officially have your major advisor listed as your major advisor on BOSS you will need to notify the Office for the School of Biological Sciences (CTLH 215). Students may seek advice regarding the selection of a major advisor by discussing their interests and career goals with the Biological Sciences Graduate Faculty, the Associate Dean for Research and Graduate Studies, and/or the Director of the School of Biological Sciences.

*Assembling a Graduate Advisory Committee*—During the **first quarter enrolled** as a graduate student, each student will assemble a Graduate Advisory Committee for counsel and guidance. This committee must comprise at least three persons, including the Major Advisor, but may consist of up to five faculty members. Ordinarily, a majority of the Committee members are from the student's area of research interest. Adjunct faculty that have been appointed to the Graduate Faculty of Louisiana Tech may serve on a Graduate Advisory Committee, but may not chair a Graduate Advisory Committee. If an adjunct faculty member who is not employed at Louisiana Tech University is appointed as a member of the committee, the chair of the committee (the Major Advisor) will serve as the designated signer on the Plan of Study for that person(s) (see below for more on Plan of Study). The Director of the School of Biological Sciences, the Associate Dean for Research and Graduate Studies, and the Dean of the College of Applied and Natural Sciences are *ex officio* members of each Graduate Advisory Committee. In consultation with the chair of the committee (Major Advisor), the student will select the rest of the committee. From there the student must ask those faculty members to serve on their committee. The Graduate Advisory Committee is complete when all members have signed off on the electronic Plan of Study form. At any point a student may add, remove, or substitute a member of their committee as long as they adhere to the make-up of the committee described above. It is professional courtesy to let a committee member know they have been removed or substituted, and all faculty should be asked and agree to serve on a graduate advisory committee prior to adding them to the electronic Plan of Study.

THE PLAN OF STUDY  
([HTTP://FORMS.LATECH.EDU](http://forms.latech.edu))

Each student, with the advice and approval of the student's Graduate Advisory Committee, will prepare a Plan of Study. The completed and signed **Plan of Study must be submitted during**

**the student's first quarter of enrollment.** Failure to submit this form in a timely manner will prevent a student from registering for subsequent terms. The completed Plan of Study form must be signed by the student, all members of the Graduate Advisory Committee, and the Director of the School of Biological Sciences. The Plan of Study will be submitted to the Graduate School through the Associate Dean for Research and Graduate Studies. Changes to a student's Plan of Study, approved by the student's Graduate Advisory Committee, may be made by completing and submitting a new fully signed Plan of Study form.

The Plan of Study should include all required classes for the degree the graduate student is seeking and the estimated quarter the student will take the class. Additionally, students must have the correct number or course credit hours accounted for on the Plan of Study. The courses and the timing of enrollment in those courses are likely to change from the initial Plan of Study. This is OK and a new or revised Plan of Study does not need to be completed every time there is a change. However, any time the Plan of Study is changed (Revised), courses and any grades assigned to those courses should be accurately updated. **A final updated Plan of Study is required prior to graduation that reflects courses taken and grades earned.**

### COMPREHENSIVE EXAMINATION

Students pursuing the **thesis plan** must successfully pass an oral examination (also referred to as the oral defense of the thesis). According to Graduate School guidelines, the oral defense must take place no later than the 10<sup>th</sup> class day of the quarter of expected graduation. The defense must be public and advertised in advance to all Biology Faculty. Following successful completion of this defense, the student will update their Plan of Study including uploading their final thesis document to be signed by all members of their Graduate Advisory Committee indicating that they all agree the student passed their oral examination. This process is further described under the **Thesis Plan Program of Study**.

Students pursuing the **non-thesis plan** must successfully pass a comprehensive examination administered by their Graduate Advisory Committee. Students must register for BISC 585 (*Comprehensive Examination in Biological Sciences*) during the quarter they take the comprehensive examination, typically the quarter prior to the quarter the student anticipates graduating or very early during the quarter the student plans to graduate. Students will not be allowed to take the comprehensive examination if they are not registered for BISC 585. Following successful completion of the comprehensive examination, the student will update their plan of study to be approved by all members of the Graduate Advisory Committee. This process is further described under the **Non-Thesis Plan Program of Study**.

### GRADUATE ASSISTANTS

Graduate students who have been appointed to a Graduate Assistantship (including both for assistance in teaching and research appointments) have certain obligations that must be satisfied and certain guidelines that must be followed. Students appointed to a Graduate Assistantship will have out-of-state tuition fees waived, if applicable. NOTE: Graduate Assistantships do not include

a waiver of in-state tuition and fees and thus, Graduate Assistants must still pay in-state tuition and fees unless other sources of support are available.

Students receiving a Graduate Assistantship must be enrolled in a **minimum of 6 graduate credit hours per quarter** while receiving the assistantship. Students may be enrolled in 3 hours during the summer as long as they are also registered for a minimum of 6 hours in the coming fall quarter. For new incoming graduate students, students must enroll before the start of their first quarter. Should a student's course load fall below the six-hour minimum the assistantship and out-of-state tuition waiver will be cancelled, and the student may be required to repay the funds received. These guidelines pertain to all graduate assistants regardless of whether their source of support is from grant funds, School/Departmental funds, College or University funds, or some other source of funds.

In certain situations, students receiving an assistantship may be able to register for just 3 hours of graduate credit for one quarter during their tenure as graduate students if specified criteria are met (this is usually a student's final quarter); check with your advisor or the Graduate School if you have questions about registration requirements.

*Graduate Assistantships (Awarded to assist in teaching)*—There are a limited number of graduate assistantships, therefore not all students who apply will be granted an assistantship. Responsibilities of GA include assisting in course laboratory teaching (typically these courses include BISC131, BISC133, BISC226, BISC260, BISC310, BISC313). To be selected for one of these Graduate Assistantships, the student must first apply for the assistantship. The application can be found in 215 Carson-Taylor Hall. The term of appointment (Fall, Winter, Spring, or Summer Quarter(s)) will be specified as well as the level of funding, which depends on the work load and graduate level (Masters or PhD). Unless otherwise specified, students will be expected to work 20 hours per week for approximately 10 weeks per quarter. Graduate students on assistantships will be expected to meet with their faculty supervisor (typically the faculty member teaching the course) prior to the beginning of classes each quarter that the graduate student is receiving the assistantship and on a regularly scheduled basis as established by the supervisor. Responsibilities as a Graduate Assistant include:

1. Assist in assigned sections of the course each quarter determined by supervisors.
2. Hold 10 hours of office hours per week in the School of Biological Sciences graduate student office, or other approved location
3. Participate in Graduate Assistant meetings as schedule.
4. Prepare for laboratory meetings, grade laboratory notebooks, laboratory reports and other tasks associated with instructing the laboratory section.
5. Assist laboratory coordinators and faculty in maintaining a clean and safe learning environment.
6. Maintain strict confidentiality regarding student, staff, and faculty records (<https://www.latech.edu/current-students/registrar-office/ferpa/>).
7. Maintain a complete and accurate record of time worked. Submit accurate time sheets in a timely manner.



*Graduate Assistantships (Research)*—Graduate students may be on research-related assistantships. A faculty member may have funds from grants or other opportunities to pay a student to complete research. The faculty member provides the assistantship and so the level of funding will be determined by that faculty member and funding source. Graduate students on assistantships will be expected to meet with their faculty supervisor (typically their Major Advisor) to determine the expectation and detailed responsibilities.

## TRAININGS

*Laboratory Safety*—Any student working or assisting in a laboratory is expected to complete safety training and review the Hazardous Communication Program (Policy 4212) which can be found on the Environmental Health and Safety webpage under Safety Documents <https://www.latech.edu/administration/administration-facilities/environmental-health-safety/>.

Graduate students should contact Mr. Jay White ([jwhite@latech.edu](mailto:jwhite@latech.edu)) to complete their general laboratory safety training. Students should give a copy of their safety certification to their faculty supervisor. Each student will undergo additional laboratory safety training specific to the laboratory they will be working in by their faculty supervisor. Documentation of this training should be kept on file by the faculty supervisor.

*Driver Safety Certification*—Any student traveling on State of Louisiana business as part of their responsibilities at Louisiana Tech University in either a State Vehicle or private vehicle must complete Driver Certification. No expenses related to travel in a State or private vehicle will be reimbursed and State Vehicles may not be operated without training. The Process of Certification of Drivers can be found on the Environmental Health and Safety webpage under Safety Documents <https://www.latech.edu/administration/administration-facilities/environmental-health-safety/> under ‘Driver’s Safety Program’.

*Other Trainings*—Students working on research funded by specific agencies may be expected to complete additional research, ethics, or laboratory safety trainings. This will be determined in consultation with their Major Advisor or faculty supervisor. Students on assistantships related to teaching may also have additional trainings as specified by their faculty supervisor. Graduate Assistants will also be required to do quarter safety training and will be notified of these activities through Moodle.

## OTHER INFORMATION

### Graduate Student Office Space

There are a limited number of graduate student desk spaces in the Graduate Student Office in Carson-Taylor Hall 134. Students on Graduate Assistantships that are required to hold office hours will have first priority for the space. If there is additional space, other graduate students may be assigned space but may have to surrender the space if a Graduate Assistant required to hold office hours needs the space in the future. To acquire desk space, email Dr. Bill Campbell ([campbell@latech.edu](mailto:campbell@latech.edu)). Graduate Assistants should not hold office hours in their labs unless separate office space has been designated. This is to protect the undergraduate student who may not have appropriate safety training to be in specific laboratory spaces.

### Scholarships

There are a few scholarships available to graduate students in the School of Biological Sciences. The dollar amounts vary annually based on stock markets are usually around \$500-\$900 per year. Students will receive an email with applications when they are available and hard copies of the applications for these scholarships can be found in 215 Carson-Taylor Hall. See applications for eligibility and deadlines; applications are typically available in the Fall and Spring.

### Seminars

The School of Biological Sciences and New Frontiers in Biomedical Research have a weekly seminar series. Seminars are held on Mondays at 3:30pm in University Hall 134 unless otherwise noted. These seminars feature presenters from research laboratories, private sectors, government, and universities and may be local, national or international. Attendance at these seminars is expected of graduate students as learning about biological-related science and its communication is essential for an advanced degree in Biology. Although any given presentation may be related or outside a person's particular area of study, learning to draw connections and apply knowledge across fields is how science advances and is an essential skill for an advanced degree in Biology. Graduate students are strongly encouraged to attend even when not enrolled in BISC 580 Graduate Biology Colloquium.

### Funding for Travel

*Louisiana Tech University Funding*—The College of Applied and Natural Sciences has a limited set of funds for graduate student travel related to conference attendance. Deadlines for applications are Fall and Spring annually and can be found on the College of Applied and Natural Science's web page at: <https://ans.latech.edu/research-outreach/mini-travel-grants/>.

*External Funding*—There are numerous travel scholarships for students to attend meetings. These are typically funded by the society associated with that meeting. Talk with your major advisor to learn more about these opportunities.

### Funding for Research

*Louisiana Tech University Funding*—The College of Applied and Natural Sciences has a limited set of funds for graduate student research. The deadline for applications is mid to late October annually and can be found on the College of Applied and Natural Science's web page under 'Mini

& Travel Grants’ under ‘Graduate Student Research Mini-Grants’ <https://ans.latech.edu/research-outreach/mini-travel-grants/>.

*External Funding*—Below is a non-comprehensive list of organizations that have grants or scholarships available to fund student research. Many other funding opportunities exist, this list is merely meant to provide some information as a launching board; additional research by the student on potential granting agencies will likely be necessary. For individual deadlines and eligibility, see each agency’s webpage. Sigma Xi, National Science Foundation Graduate Research Fellowships, Garden Club of America, Lewis and Clark Research Grant, Explorer’s Club, National Geographic, Louisiana Environmental Education Consortium (LEEC), Louisiana Biomedical Research Network (LBRN), and Louisiana Space Consortium (LaSPACE).

### PROGRAM OF STUDY: THESIS PLAN

For the degree of Master of Science in Biology with the thesis plan, a minimum of **30 semester hours of graduate credit** is required, with the following regulations:

1. The curriculum for students pursuing the thesis plan includes the following required course work:

Course Number	Course Title	Credit Hours	Quarter Offered*
BISC 502	Research Methods in Biological Sciences	3	F
BISC 535	Current Topics in Biological Sciences	1	F, W, Sp, Su
BISC 535	Current Topics in Biological Sciences	1	F, W, Sp, Su
BISC 568	Graduate Biostatistics	3	W
BISC 580	Graduate Biology Colloquium	0	F, W, Sp
BISC 580	Graduate Biology Colloquium	0	F, W, Sp
BISC 580	Graduate Biology Colloquium	0	F, W, Sp
BISC 549**	Thesis Proposal Preparation	1	F, W, Sp, Su
BISC 551	Research and Thesis in Biological Sciences	6	
	Approved graduate elective courses	15	
<b>Total Hours</b>		<b>30 hours</b>	

\* *Anticipated offerings; subject to change*

\*\* *BISC 549 must be taken prior to, or concurrently with, BISC 551; and before the end of the 3rd quarter enrolled as a graduate student*

- A maximum of six semester hours of credit for Biological Sciences Special Problems (BISC 530) combined with Biological Sciences Internship (BISC 540 and BISC 541) can be used toward satisfying the requirements for the M.S. in Biology.
- The Proposal for the Thesis should be completed while enrolled in BISC 549, which should be taken during or prior to the 3<sup>rd</sup> quarter the student is enrolled as a graduate student. The completed, committee-approved Proposal for the Thesis uploaded to the Plan of Study for review by Associate Dean for Research and Graduate Studies no later than during the first quarter of registration in Biological Sciences Research and Thesis (BISC 551).
- Completion of the thesis plan includes a successful oral defense of the Thesis and oral examination by the student's Graduate Advisory Committee. **Written notification (memo or email containing a flyer for distribution) of the date and location of a student's oral**

**examination must be forwarded to the office of the Associate Dean for Research and Graduate Studies in at least one week advance of the examination.**

- Unanimous agreement by the Graduate Advisory Committee is required regarding the student's acceptable performance in the oral defense of the thesis. Upon completion of these requirements, the completed thesis should be uploaded to the updated Plan of Study and signed off on by all members of the Graduate Advisory Committee, Director for the School of Biological Sciences, Associate Dean for Research and Graduate Studies, and Dean of the College of Applied and Natural Sciences. Consistent with University policy, a student who does not successfully pass the oral defense of the thesis is entitled to **only one repeat examination**.

## The Thesis

A thesis research project is directed by a faculty member (the Major Advisor) who will aid a student in identifying a project that fits within the expertise and area of study of that particular advisor. A thesis research project includes a statement of an original hypothesis or a problem to be investigated, and it is the duty of the student to conduct investigations to address the problem or to test the hypothesis. Relevant scientific literature must be surveyed, and empirical data must be collected, properly analyzed, and reported.

If appropriate, approval for resources, research ethical approval (e.g., IACUC, IRB, etc.), and facilities to be used for thesis research must be secured from the appropriate academic unit head prior to beginning a thesis research project. Enrollment in a minimum of three hours of graduate credit is required each quarter, including the summer, when the student is using university resources (laboratory facilities, supplies, computers, faculty time, library resources, etc.) for their thesis project.

*Important steps in conducting thesis research include:*

- Define the problem to be investigated, or the hypothesis to be evaluated.
- Review appropriate literature regarding what is known and what important questions remain unanswered. It is expected that the student will undertake a thorough review of the scientific literature and become cognizant of major issues within their field of research.
- Prepare a **research proposal**. This important step defines the student's research project. The proposal should be an overview of the research project, including an introduction that may take the form of a literature review, proposed methods and experimental procedures, and a description of how the collected data will be analyzed. A set of specific research objectives should also be included in the research proposal. The thesis proposal must be submitted to the student's Graduate Advisory Committee no later than end of the student's third quarter enrolled in the thesis option of the graduate program. Before a student initiates a thesis project, input and approval by all Graduate Advisory Committee members is required. This is accomplished through the completion of a thesis proposal that is uploaded to the student's Plan of Study and approved by all members of the Graduate Advisory Committee. It is of paramount importance for the student to keep the Graduate Advisory Committee advised of progress and problems encountered during the research project.

Prior to initiating the thesis project, the student must obtain a current copy of the *Guidelines For The Preparation And Submission Of Your Thesis Or Dissertation*, published by the Louisiana Tech University Graduate School (also available from the Graduate School website at

[www.latech.edu/graduate\\_school/thesis\\_dissertations/grad\\_guidelines\\_thesis.shtml](http://www.latech.edu/graduate_school/thesis_dissertations/grad_guidelines_thesis.shtml).

These guidelines contain helpful information, as well as University guidelines that must be followed, and deadlines which must be met.

### **Guidelines for the Thesis Proposal:**

The total length of the Thesis Proposal should be in the range of 5-8 single-spaced pages, but final length will depend on specifics of the project, figures, etc. A general guide for the thesis proposal is:

#### Introduction:

This section should cover relevant background information and a brief survey of the literature that describes what has been done in the field that support you conducting the research outlined in your proposal. This section should be well referenced with relevant citations that demonstrate a thoughtful investigation of the literature.

#### Motivation & Goal:

This section should describe the overall motivation and need for your research to be performed; the significance of your project to your field of study. This section should also describe the research question, the specific objectives of your thesis project, and the overall goal for this research.

#### Methodology/Experimental Design:

This section should describe the methodology for each of the objectives listed in the previous section. These should not be detailed methods but rather general information about experimental design, measurements to be taken and assays to be performed, and expected results. The goal of this section is to demonstrate a clear understanding of how to design experiments, collect data, and interpret results. It is also important to demonstrate that the methods will allow you to meet your stated objectives.

#### Conclusion:

This should be a brief summary of the objectives, what will be learned from the research being performed, and how the results of this project impact the student's field of study.

### **Guidelines for Thesis:**

*This is a general example. Do not use this section as a substitute for reading the Graduate School Guidelines. You must obtain a copy of the Graduate School Guidelines and follow the procedures described therein.*

#### Title:

The title should describe the topic of the study clearly and concisely, but not be excessively wordy.

#### Abstract:

The abstract should be informative but not overly descriptive. The abstract should include a statement of the research objectives, important methods to be employed, a brief description of the results obtained, and conclusions.

#### Introduction:

The introduction should be a thoroughly documented description of the question(s) or hypothesis (hypotheses) to be investigated. The research objectives must be clearly identified. The introduction should include a thorough review of the significant scientific literature in the student's research area. The source of statements within the literature review, as well as in other sections of the thesis, should be documented.

#### Materials and Methods:

This section should describe, in detail, how the research was conducted and what methods, techniques, or protocols were employed. A description of the organism(s) used should also be included. Include an explanation of your method(s) of data analysis. Sufficient detail should be included in this section so that other researchers, familiar with your field of study, could repeat the experiments or techniques you describe.

#### Results:

All results should be presented in the Results section of the thesis. Units, measurements, and statistical results should be consistent with those used in a major journal in the field. Ordinarily, metric (SI) units should be used.

#### Discussion:

This section should summarize and interpret the observations and results obtained during the research described in the Materials and Methods and Results sections. This section should evaluate the results to determine whether the hypothesis proposed in the Introduction is valid. The Discussion should explain the results obtained with respect to the original problem or hypothesis, as well as to the relevant published scientific literature.

#### Conclusion:

There may be a separate section for the student's conclusions. In this section the student interprets the meaning and importance of the research findings and draws appropriate conclusions.

#### Literature Cited:

Citation of primary sources (scientific journal articles) is often the best documentation of facts and ideas. Methods, comparative data, and authoritative analysis of previous work may also be cited from review articles and books. There are several acceptable formats for citing references within the main text. The format selected should be consistent with an acceptable style used by publications in the area of the student's research and should be approved by the chair of the student's Graduate Advisory Committee.

Citation of information obtained from the Internet is acceptable; however students have a responsibility to ensure the accuracy and validity of information from this source. If in doubt about a particular reference, perhaps you should select a different source.

A list of all literature used or cited in the Thesis should be included in a Literature Cited section. Use of literature and/or data sources must be properly documented, and students should be aware of proper citation methods.

***Failure to properly document resources, presentation of data or material from another source as your own, or other forms of plagiarism is not acceptable, and may result in a rejection of the thesis and removal from the graduate program.***

### **General Comments on Completing the Thesis:**

It is the student's responsibility to produce a Thesis acceptable by the student's Graduate Advisory Committee, the School of Biological Sciences, the College of Applied and Natural Sciences, and Louisiana Tech University. It is strongly recommended that the student schedule regular meetings with the chair of the Graduate Advisory Committee to keep the chair of the Committee apprised of progress with the thesis research, as well as with the preparation of the written thesis.

***It is the student's responsibility to meet all School of Biological Sciences, College, and University deadlines, and to satisfy all requirements for the Master of Science in Biology degree. Follow Graduate School guidelines and deadlines for submission of Thesis, including submission of printed and electronic copies of completed Thesis to Library, as required. See current list of specific dates and deadlines in Guidelines For The Preparation And Submission Of Your Thesis Or Dissertation, available from the Graduate School website at: <https://www.latech.edu/study-with-us/graduate/thesis-dissertation/>.***

### **Suggested Time Line**

Quarter						
1	2	3	4		Quarter prior to graduation	Final Quarter
Select Advisor & Committee		BISC549: Proposal Prep	Defend proposal at the start of the quarter		Complete thesis	Enroll in at least 3 hours of BISC551
Complete Plan of Study			Update plan of study with proposal		Schedule defense for following quarter	Register for graduation
						Defend thesis
						Update and submit final plan of study



### PROGRAM OF STUDY: NON-THESIS PLAN

For the degree of Master of Science in Biology with the non-thesis plan, a minimum of **36 semester hours of graduate credit** is required, with the following regulations:

1. The curriculum for students pursuing the non-thesis plan includes the following required course work:

Course Number	Course Title	Credit Hours	Quarter Offered*
BISC 502	Research Methods in Biological Sciences	3	F
BISC 535	Current Topics in Biological Sciences	1	F, W, Sp, Su
BISC 535	Current Topics in Biological Sciences	1	F, W, Sp, Su
BISC 535	Current Topics in Biological Sciences	1	F, W, Sp, Su
BISC 568	Graduate Biostatistics	3	W
BISC 570	Graduate Bioethics	3	W
BISC 585	Comprehensive Examination in Biological Sciences	0	F, W, Sp, Su
BISC	BISC courses providing laboratory experiences - see approved course list	6	
BISC	BISC courses providing enhanced writing component - see approved course list	6	
BISC or other	approved graduate level elective courses	12	
		<b>36 hours</b>	

\* Anticipated offerings; subject to change

#### **Approved Laboratory Experience Courses for M.S. in Biology\* (Non-Thesis Plan)**

BISC 508 Graduate Bacterial Genetics (3)  
 BISC 517 Applied Biological Sciences Research (3)  
 BISC 526 Graduate Histology (3)  
 BISC 527 Graduate Herpetology (3)  
 BISC 530 Biological Sciences Special Problems (1-3)  
 BISC 591 Graduate PCR-Methods and Applications (3)  
 BISC 592 Graduate Protein Analysis (3)

#### **Approved Writing Component Courses for M.S. in Biology\* (Non-Thesis Plan)**

BISC 512 Advanced Immunology (3)  
 BISC 513 Ecological Topics (3)  
 BISC 514 Graduate Advanced Genetics (3)  
 BISC 520 Graduate Evolution (3)  
 BISC 522 Graduate Molecular Biology (3)  
 BISC 526 Graduate Histology (3)

BISC 530 Biological Sciences Special Problems (1-3)

BISC 562 Graduate Virology (3)

BISC 563 Graduate Cancer Biology (3)

BISC 564 Graduate Principles of Pathology (3)

BISC 566 Graduate Medical Anthropology (3)

*\* Additional courses in these categories may become available.*

\*A maximum of six semester hours of credit for Biological Sciences Special Problems (BISC 530) combined with Biological Sciences Internship (BISC 540 and BISC 541) can be used toward satisfying the requirements for earning the M.S. in Biology.

The Master of Science in Biology is an advanced degree and students earning this degree are expected to demonstrate mastery of the fundamentals of biology. The student's undergraduate and graduate course work should contribute to this objective. Members of the student's Graduate Advisory Committee will prepare an oral comprehensive examination, which may cover basic biology as well as material from courses on the student's Plan of Study. Non-thesis students are encouraged to consult in advance with the members of their Graduate Advisory Committee to discuss their comprehensive examinations so they are familiar with each faculty member's expectations.

Non-thesis students are required to pass a comprehensive oral examination conducted by the student's Graduate Advisory Committee. **Unanimous agreement by the Graduate Advisory Committee is required regarding the student's acceptable performance the comprehensive exam.** Consistent with University policy, a student who does not successfully pass the comprehensive examination is entitled to **only one repeat examination**. It is the student's responsibility, in conjunction with the chair of the Graduate Advisory Committee, to schedule the comprehensive examination. Students should plan for the examination well in advance to ensure all Graduate Advisory Committee members are available.

### **Comprehensive Exam Format**

- The student must be registered for BISC 585 to be able to take the exam in the quarter in which they wish to graduate.
- The student must contact each member of their Graduate Committee no later than the start of the quarter they wish to graduate to notify their committee that they will need to complete the exam that quarter.
- Once a timeline is established between the Committee and the student, on a selected date, at least 4 weeks before the end of the quarter, each member of the Committee will send the student a question. Each question will require the student to explain fundamentals of biology, demonstrate critical thinking and experimental design skills, and prepare a clear presentation of the response.
- The Committee will establish a date for the oral presentation of these questions at which point the Committee members will each evaluate the answer to their own questions.
- It is the decision of each Committee member to evaluate the student's performance and determine whether or not the student satisfies that member's expectations for them to earn the MS in Biology degree.

- Upon passing of the exam the student will revise their Plan of Study to indicate completion of this requirement and the Plan of Study will be signed by all members of the Committee for verification of this change.

### Suggested Time Line

Quarter			
1 <sup>st</sup> Quarter		Quarter prior to graduation	Final Quarter
Select Advisor & Committee		Schedule comprehensive exam for final quarter	Enroll in BISC585 and successfully complete comprehensive exam
Complete Plan of Study		Schedule defense for following quarter	Register for graduation
			Update and submit final plan of study

*It is the student's responsibility to be aware of and to meet all deadlines and to satisfy all degree guidelines.*

## Resources

### FINANCIAL RESOURCES

*Payment plans are available. Talk with the Comptroller and Financial Aid to complete the required paper work.*

**Comptroller:** The Office of the Comptroller provides fiscal and support services for the University's instructional, research, public service, and economic development activities for the benefit of the faculty, staff, and students. These services include providing financial services to the University, its customers, and community; protecting the University's financial resources; financial reporting for the University; managing our students' financial records and needs; and accounting for all financial transactions in accordance with applicable State and Federal laws as well as University regulations, policies, and procedures.  
<https://www.latech.edu/administration/finance/comptroller/>

**Office of the Comptroller, Louisiana Tech University**  
**1<sup>st</sup> Floor Keeny Hall**  
**Phone: 318-257-2235**

**Financial Aid:** The mission of the Office of Financial Aid is to assist students in attaining their educational goals by helping them navigate the financial aid process. Through education, counseling, and guidance, the Office of Financial Aid is committed to providing its students with the means to obtain financial assistance in an efficient and effective manner, as well as increase their financial knowledge and decision-making skills in order to help ensure their future financial success. <https://www.latech.edu/current-students/financial-aid/>

**Office of Financial Aid, Louisiana Tech University**  
**1<sup>st</sup> Floor Keeny Hall**  
**Email: [techaid@latech.edu](mailto:techaid@latech.edu)**  
**Phone: 318-257-2641**

**Tuition & Fees information:**  
<https://www.latech.edu/administration/finance/comptroller/tuition-fees/#content>

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### ACADEMIC RESOURCES

**Graduate School:** The Graduate School offers the administrative structure, leadership, and guidance necessary to support graduate education at Louisiana Tech University. The Graduate School is the initial and final stop in the graduate application and admission process. The Graduate School works with the Provost, the Graduate Council, the academic deans, the graduate program coordinators, and faculty to help provide students with a superior educational and research environment within which to pursue rigorous, challenging, and relevant graduate and professional degrees.  
<https://www.latech.edu/study-with-us/graduate/>

**Graduate School, Louisiana Tech University**  
**Wyly Tower 1208**  
**Telephone: 318-257-2924**  
**Fax: 318-257-4487**  
**Email: [gschool@latech.edu](mailto:gschool@latech.edu)**

**Registrar:** At Louisiana Tech University, the Office of the University Registrar is considered the official record keeper. Our office provides an array of services such as registration, student enrollment, transcripts, enrollment verifications, certification of military benefits, and commencement, along with many more. As we work in support of the University's mission, our primary goal is to provide the best possible service in meeting the needs of our students, faculty, staff, and administrators.

The deadlines for payment and how to pay tuition and fees can be found on the Registrar's page under 'Payment Deadlines and Purges.' A 'Purge' is a schedule event where students who are enrolled in classes but have not paid their tuition and fees are automatically dropped/removed from those courses. Those who have paid are unaffected. There are two Purge dates prior to the start of each quarter.

To register for classes, your advisor on BOSS will have to enter the code to release you. Typically your advisor will release you after you have discussed courses for the upcoming quarter. Registration deadlines can be found on the Louisiana Tech University Registrar page under 'Registration Priorities' <https://catalog.latech.edu/content.php?catoid=13&navoid=459>.  
<https://www.latech.edu/current-students/registrar-office/>

**Office of the Registrar, Louisiana Tech University**  
**Room 207 Keeny Hall**  
**Phone: (318) 257-2176**  
**Fax: (318) 257-4041**  
**E-mail: [registrar@latech.edu](mailto:registrar@latech.edu)**

**Student Conduct & Academic Integrity:** The Department of Student Conduct and Academic Integrity at Louisiana Tech University is responsible for ensuring a fair, just and impartial restorative justice process for students and organizations accused of violating the Code of Conduct or Honor Code, with a goal of educating and providing resources to achieve respect, civility and integrity for all members and stakeholders of the University community.

Guiding Principles:

- Uphold an environment which is favorable to academic success
- Maintain a safe and secure campus by protecting the rights of all members of the Louisiana Tech community
- Guide students to assume self and social responsibility
- Allow opportunities for individual growth and development
- Foster student decision-making and conflict resolution skills
- Augment the development of student ethical values

Louisiana Tech has an Academic Honor Code regarding academic integrity, plagiarism, and cheating. The honor code can be found in the [catalog](#).

**Testing & Disability Services:** The Department of Testing and Disability Services (TDS) serves as a resource for the university community and acts as a liaison between students and faculty as well as national and community agencies. Disability Services provides information, reasonable accommodations, and other assistance to students, faculty, and applicants of Louisiana Tech University. In an effort to promote independence and self-advocacy, services are available to students with qualifying documented learning, physical, and physiological disabilities. Testing Services follows national testing center requirements to provide test opportunities through contracted agencies for Louisiana Tech University and the local community. As a department within the Division of Student Affairs, Testing and Disability Services seeks a collaborative and cooperative relationship with the university community to enhance the education of Louisiana Tech students.

**Department of Testing & Disability Services, Louisiana Tech University**

**Location:** 318 Wylly Tower

**Mailing Address:** P.O. Box 3009, Ruston, LA 71272

**Phone:** Disability Services – 318.257.4221

**Fax –** 318.257.2969

**Campus Mail:** #54

**Disability Services email address:** [tds@latech.edu](mailto:tds@latech.edu)

**Hours:** 8 a.m. to 5 p.m., Monday through Friday | **Summer:** 7:30 a.m. to 5 p.m. Monday through Thursday, 7:30 a.m. to 12:30 p.m. Friday

**Computing Center:** The Computing Center is available to students who need help with any computer issues, including software, email, and Moodle assistance.

**Location:** Wylly Tower of Learning 155 (basement entrance through front stairwell)

**Phone Number:** 318-257-5300

**Fall, Winter and Spring Hours (except university holidays)**

**Monday - Friday 8:00 a.m. - 8:00 p.m.**

**Summer Hours (except university holidays)**

**Monday – Thursday 7:30 a.m. - 5:00 p.m. and Friday 7:30 a.m. - 12:30 p.m.**

## HEALTH & WELLNESS RESOURCES

**Counseling Services:** Counseling Services strives to identify student needs in regard to academic achievement, emotional/psychological and physical health, career involvement, and responsible decision-making. Through counseling, crisis intervention, educational programming, and counselor training, services are delivered that address needs in guiding the student toward the fulfillment of his/her fullest potential intellectually, socially, physically, and spiritually. These services are confidential and free to full-time Louisiana Tech students. <https://www.latech.edu/current-students/student-advancement-affairs/counseling-services/>

**Counseling Services**

**Keeny Hall 310**

**(318) 257-2488**

[counseling@latech.edu](mailto:counseling@latech.edu)

**Student Health Center:** Green Clinic TechCare is here to serve Louisiana Tech University by providing appropriate medical care to its students, faculty, staff and families as well as the University community. TechCare was developed as a partnership between Louisiana Tech and Green Clinic Health System in order to expand medical services provided to the Louisiana Tech community. Green Clinic TechCare serves as an advocate for health promotion, disease prevention and early intervention of illness for Louisiana Tech University students, faculty, staff and families. Green Clinic TechCare also allows, to the Louisiana Tech University community, a seamless access to the Green Clinic network of primary care as well as specialty and ancillary services with priority scheduling. <https://www.gctechcare.com/#>

**Green Clinic TechCare**  
**Lambright Sports and Wellness Center on Tech Drive**  
**(318) 257-4866**  
**Monday through Friday 7:30 a.m. to 4:30 p.m.**  
**Closed daily from 12:30 p.m. until 1 p.m.**  
**Walk-ins accepted until 3:45 p.m.**

**The Health Hut:** The Health Hut is a non-profit organization whose mission is to serve the medical needs for the uninsured adult population of Lincoln Parish through mobile medical care. A casual conversation with a board member of the Lincoln Health Foundation led to the creation of The Health Hut by Dr. Leonel Lacayo and his wife Lisa Lacayo in 2011. The Lacayo's took a great interest in serving those who could not afford medical care and had limited means of transportation. Today their legacy lives on as The Health Hut continues to provide easy access for complete primary care services to all areas of Lincoln Parish. The Health Hut also is a provider for Louisiana Medicaid. <https://www.thehealthhut.org/>

**The Health Hut**  
**310 Mississippi Ave**  
**(318) 513-1212**  
**Monday through Friday 8:00 a.m. to 4:30 p.m.**

**The Good Nutrition Mission Food Pantry:** The Good Nutrition Mission Food Pantry is sponsored by the Student Dietetic Association, provides, at no charge, non-perishable food items for Louisiana Tech students who are food insecure. The pantry is staffed by mostly undergraduate nutrition and dietetic majors, but welcomes all students who want to donate their time. Students who receive supplies from the pantry must show a current Louisiana Tech University campus ID and provide a valid telephone number and email address. Hours of operation for the food pantry, located in

**The Good Nutrition Mission Food Pantry**  
**Carson-Taylor Hall, Room 152**  
**Hours: Dependent upon volunteer availability; check door for quarter schedule**  
**Contact: Catherine Fontenot, PhD, RD, LDN, at [maryf@latech.edu](mailto:maryf@latech.edu) or [318.257.3237](tel:318.257.3237)**





**APPENDIX A:  
Projected Graduate Course Offerings**

The following list is a guide to when graduate courses offered by the School of Biological Sciences are generally offered. Courses listed are those we anticipate will be offered in upcoming quarters.

*This is only a guide, course offerings may vary from this list.*

SBS Course Offerings	Fall Quarter	Winter Quarter	Spring Quarter	Summer Quarter
<b>BISC 502</b> Research Methods (cross-listed with MSNT 502)	X			
<b>BISC 506</b> Graduate Endocrinology			X	
<b>BISC 508</b> Graduate Bacterial Genetics	X			
<b>BISC 509</b> Biological Sciences Seminar	X	X	X	
<b>BISC 511</b> Graduate Developmental Biology			X	
<b>BISC 512</b> Graduate Immunology		X		
<b>BISC 513</b> Ecological Topics		X		
<b>BISC 514</b> Graduate Advanced Genetics			X	
<b>BISC 517</b> Applied Biological Sciences Research	X	X	X	
<b>BISC 521</b> Principles of Cell and Molecular Biology	X			
<b>BISC 522</b> Graduate Molecular Biology	X	X		
<b>BISC 526</b> Graduate Histology		X		
<b>BISC 527</b> Graduate Herpetology			X	
<b>BISC 529</b> Graduate Stem Cell Biology				
<b>BISC 530</b> Biological Science Special Problems	X	X	X	X
<b>BISC 535</b> Current Topics in Biological Science	X	X	X	
<b>BISC 540</b> Biological Sciences Internship	X	X	X	X
<b>BISC 541</b> Biological Sciences Internship	X	X	X	X
<b>BISC 549</b> Biology Thesis Proposal Preparation	X	X	X	X
<b>BISC 551</b> Research and Thesis in Biology	X	X	X	X
<b>BISC 562</b> Graduate Virology		X		
<b>BISC 563</b> Graduate Cancer Biology		X	X	
<b>BISC 564</b> Graduate Principles of Pathology	X			
<b>BISC 566</b> Graduate Medical Anthropology			X	
<b>BISC 568</b> Graduate Biostatistics		X		
<b>BISC 570</b> Graduate Bioethics		X		
<b>BISC 580</b> Graduate Biology Colloquium	X	X	X	
<b>BISC 585</b> Comprehensive Exam	X	X	X	X
<b>BISC 591</b> Graduate PCR - Methods and Applications	X	X	X	X
<b>BISC 592</b> Graduate Protein Analysis		X		
<b>BISC 593</b> Graduate Animal Behavior	X			

**APPENDIX B:**

**Graduate Faculty in  
School of Biological Sciences and in School of Agriculture and Forestry**

<b>Faculty Name</b>	<b>Email address</b>	<b>Department</b>
Dr. Heidi Adams	<a href="mailto:hadams@latech.edu">hadams@latech.edu</a>	Ag& Forestry
Dr. Josh Adams	<a href="mailto:adamsj@latech.edu">adamsj@latech.edu</a>	Ag& Forestry
Dr. Bill Campbell	<a href="mailto:campbell@latech.edu">campbell@latech.edu</a>	Biological Sciences
Dr. Natalie Clay	<a href="mailto:nclay@latech.edu">nclay@latech.edu</a>	Biological Sciences
Dr. Michael Crosby	<a href="mailto:mcrosby@latech.edu">mcrosby@latech.edu</a>	Ag& Forestry
Dr. Julia Earl	<a href="mailto:jearl@latech.edu">jearl@latech.edu</a>	Biological Sciences
Dr. Laura Gentry	<a href="mailto:lgentry@latech.edu">lgentry@latech.edu</a>	Biological Sciences
Dr. Becky Giorno	<a href="mailto:rgiorno@latech.edu">rgiorno@latech.edu</a>	Biological Sciences
Dr. Jennifer Hill	<a href="mailto:jmhill@latech.edu">jmhill@latech.edu</a>	Biological Sciences
Dr. Patrick Hindmarsh	<a href="mailto:patrickh@latech.edu">patrickh@latech.edu</a>	Biological Sciences
Dr. Jason Holderieath	<a href="mailto:jjhold@latech.edu">jjhold@latech.edu</a>	Ag& Forestry
Dr. Gordon Holley	<a href="mailto:gholley@latech.edu">gholley@latech.edu</a>	Ag& Forestry
Dr. Kyle Kemege	<a href="mailto:kemege@latech.edu">kemege@latech.edu</a>	Biological Sciences
Dr. Paul Jackson	<a href="mailto:pjackson@latech.edu">pjackson@latech.edu</a>	Ag& Forestry
Dr. Terri Maness	<a href="mailto:tmaness@latech.edu">tmaness@latech.edu</a>	Biological Sciences
Dr. Eric McConnell	<a href="mailto:temc@latech.edu">temc@latech.edu</a>	Ag& Forestry
Dr. Rebecca McConnico	<a href="mailto:rmconn@latech.edu">rmconn@latech.edu</a>	Ag& Forestry
Dr. David Mills	<a href="mailto:dkmills@latech.edu">dkmills@latech.edu</a>	Biological Sciences
Dr. Mark Murphey	<a href="mailto:murphey@latech.edu">murphey@latech.edu</a>	Ag& Forestry
Dr. Gergana Nestorova	<a href="mailto:gnerstor@latech.edu">gnerstor@latech.edu</a>	Biological Sciences
Dr. Jamie Newman	<a href="mailto:jjnewman@latech.edu">jjnewman@latech.edu</a>	Biological Sciences
Dr. Bill Patterson	<a href="mailto:wpatter@latech.edu">wpatter@latech.edu</a>	Ag& Forestry
Dr. Don Shepard	<a href="mailto:dshepard@latech.edu">dshepard@latech.edu</a>	Biological Sciences
Dr. Jeff Shultz	<a href="mailto:jshultz@latech.edu">jshultz@latech.edu</a>	Biological Sciences
Dr. Laura Sims	<a href="mailto:simsla@latech.edu">simsla@latech.edu</a>	Ag& Forestry
Dr. Joel Stake	<a href="mailto:stake@latech.edu">stake@latech.edu</a>	Biological Sciences
Dr. Joshua Vandenbrink	<a href="mailto:jpvdb@latech.edu">jpvdb@latech.edu</a>	Biological Sciences
Dr. Curtis Vanderschaaf	<a href="mailto:vandersc@latech.edu">vandersc@latech.edu</a>	Ag& Forestry
Dr. Yuri Voziyanov	<a href="mailto:voizyan@latech.edu">voizyan@latech.edu</a>	Biological Sciences