

Graduate Student Handbook  
2017 – 2018



PhD and MS in Biology  
School of Biological Sciences  
Georgia Institute of Technology

About the School: A Message From the Chair  
Professor Todd Strelman, Chair

There could not be a more exciting time to be a biologist. We have come through three incredibly productive decades of research that have expanded the frontiers of knowledge in many areas. We have made amazing progress in understanding the workings of individual cells, organisms, populations, and communities. For example, we now understand many of the molecular details of how information is encoded and expressed by genes throughout plant and animal development. On the cellular level, we have begun to document the mechanisms that underlie various neurological and physiological processes associated with a variety of human diseases. At population level, many of the mysteries about how species interact and adapt to their environments are beginning to unravel.

The next twenty years promise to be just as exciting and productive in biology. Most scientists agree that future advances in biology will result from integration rather than specialization. For example, future ecologists will integrate knowledge of cellular and molecular processes to better understand how organisms sense their environments and how they use these sensations to induce behavioral and physiological responses in individuals, populations, and communities. Boundaries that currently define traditional areas of biological research are becoming blurred, and biologists now regularly integrate knowledge and methodologies from fields that are currently considered outside of biology. The significant role of mathematics and computer science in biological research will continue to grow. Increasingly, cells, organisms, and populations will be viewed and studied as composites of dynamically interacting units. These approaches will be focused on solving some of our most challenging problems like climate change, the loss of biodiversity, biofuels, bioremediation, and drug discovery.

While past research has taught us much about how cells and populations are structured and function, future biology will be focused on understanding how these systems interact. The mathematical and computer sciences will be essential tools in the “systems approach” to biology. Likewise, the integration and incorporation of engineering into biological research will be a hallmark of future discoveries. Many algorithms originally developed by systems engineers to help understand the dynamics of complex electrical networks are already being employed to unravel the complexities of biochemical pathways in cells.

The School of Biological Sciences at Georgia Tech is ideally positioned to exploit these scientific trends and to make discoveries that will significantly advance the field. We are also well prepared to train students to think critically, solve problems, and to become the next generation of professional biologists. Long-standing strengths in engineering and the mathematical and computer sciences at Georgia Tech provide an ideal environment in which to prepare young biologists to become world leaders in integrative biological research. The School of Biological Sciences is composed of a diversity of researchers, many of whom have pioneered integrative approaches to the study of biological systems. They also are skilled in mentoring young scientists in many kinds of projects, ranging from the assembly of ecological communities, to membrane trafficking in cells, to the molecular genetics of bacterial pathogenesis. As you can see, the School of Biological Sciences is making exciting advances everyday and well on its way to becoming a recognized leader in biology. I invite you to join us on this exciting journey of discovery.

Professor Todd Strelman  
Chair  
School of Biological Sciences

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## Introduction

### Departmental Resources

The purpose of this handbook is to outline the School of Biological Sciences' procedures for graduate students to receive a degree. The general rules and regulations governing all graduate students at Georgia Tech are found in the Georgia Tech General Catalog, <http://www.catalog.gatech.edu/>, or online at the Graduate Studies and Research web page, <http://www.gradadmiss.gatech.edu/thesis.php>.

This handbook is updated annually in the summer. However, any major changes made prior to that time will be posted to our website with notification to all graduate students by email. Copies of all forms referred to in this handbook are available in the Appendix and on our website: <http://www.biosci.gatech.edu/>.

If you have any questions that aren't answered in the handbook, feel free to contact any of the following people:

Ms. Chung Kim. Academic Program Coordinator II	Engineered Biosystems Building (EBB) 2009 404-385-4240, chung.kim@biosci.gatech.edu
Dr. Ingeborg Schmidt-Krey Chair, Graduate Committee	Cherry Emerson Building A118 404-385-0259, Ingeborg.Schmidt-Krey@biosci.gatech.edu
Dr. Francesca Storici Associate Chair for Graduate Affairs	Engineered Biosystems Building (EBB) 5017 404-385-3339, Francesca.Storici@biosci.gatech.edu

### Other sources of information

- ❖ Georgia Institute of Technology general website <http://www.gatech.edu/students/graduate/>
- ❖ *Georgia Institute of Technology General Catalog* <http://www.catalog.gatech.edu/>
- ❖ Office of the Dean of Students: <http://www.deanofstudents.gatech.edu/>
- ❖ Georgia Tech Office for Graduate Studies and Research: <http://www.gradadmiss.gatech.edu/>
- ❖ *Manual for Graduate Theses* (a format guide published by the Georgia Tech Graduate Studies and Research Office): <http://www.gradadmiss.gatech.edu/thesis.php>
- ❖ OSCAR: On-line Student Computer Assisted Registration website, has catalog information and listings of all classes offered for current and following semesters: <https://oscar.gatech.edu/>
- ❖ School of Biological Sciences website: <http://www.biosci.gatech.edu/>

## **The Graduate Program**

The primary aim of our graduate program is to foster your development as a scientist by providing you with a strong technical background, a sound grasp of current scientific problems, and the analytical skills you'll need to begin to attack such problems. We also hope to motivate you to continue learning, which will permit you to define and solve new kinds of problems during your professional career. Upon graduating, you will move on to positions in industry, government, and academia. Your reflections on our graduate program will be most welcome and your suggestions will assist us in further developing the program to remain at the cutting edge of science.

## **School of Biological Sciences Graduate Committee**

The School of Biological Sciences Graduate Committee consists of five faculty members representing major research areas in the department. In 2017-2018, the committee includes Ingeborg Schmidt-Krey (Chair), Sam Brown, Lin Jiang, Richard Nichols, Shuyi Nie, and Fred Vannberg. The Chair and Associate Chair of the School of Biological Sciences also take part in Graduate Committee affairs *ex officio*. The Graduate Committee has specific responsibility for establishing and administering graduate degree requirements, approving programs of study, as well as thesis and PhD committees, and providing oversight for administering the PhD qualifying exam.

The Graduate Coordinator works in the School of Biological Sciences Graduate Office and work directly with the Graduate Committee to facilitate and implement new policies, coordinate graduate recruiting efforts and admission of students into the program, develop on-campus programs and serve as a resource and liaison for graduate students in the department.

Francesca Storici is Associate Chair of the School for Graduate Affairs. She is involved in the administrative oversight of the graduate program and works together with the committee on graduate student issues.

## **Institute Graduate Committee**

The Institute Graduate Committee is responsible for all institute-wide academic policies and degree requirements at the graduate level. They also make all decisions regarding institute-level graduate student petitions. These petitions include late withdrawals, changes in graduate studies, grade disputes, and readmission into the program.

## **Courses Offered**

Catalog descriptions of all courses offered may be found online at: <http://www.biosci.gatech.edu/graduate/courses>. In general, courses numbered 4xxx are intended for advanced undergraduate and graduate students, while courses numbered 6xxx-9xxx are intended for graduate students, but are available for undergraduate students with strong records.

## **General Policies and Requirements**

The School of Biological Sciences has grown significantly over the last few years and our graduate program has changed and evolved with the School as a whole. Some of the requirements in this handbook may change during your studies, but you will always have the option of graduating under the requirements in effect when you entered the program.

## Thesis Advisor

As a graduate student in the School of Biological Sciences, **you** are responsible for your overall program of study and your progress toward the degree. You will be advised throughout your graduate career by your thesis advisor and thesis committee, as well as by any other faculty you wish to consult.

Upon admission, you will be assigned an advisor who will work with you in selecting courses and planning your initial curriculum. This advisor may or may not become your primary thesis advisor. You may use your first year to explore research opportunities in the department, but you *must* select a primary advisor no later than the end of one year in residence. Submit the *Thesis Committee Membership Form* to the Biology graduate coordinator Chung Kim. Your primary advisor must agree to act in that capacity and will be responsible for providing lab space to support your research. You may change advisors at any time and for any reason, but you *must* have a primary advisor at all times after the end of your first year in the program in order to remain in good standing.

## Thesis Advisor and Committee

Your thesis advisor acts as chair of your thesis advisory committee and has primary responsibility for advising you in your research. Normally, a thesis advisor must be a member of the tenure-track faculty of the School of Biological Sciences. Under special circumstances and with the approval of the Graduate Committee, courtesy, adjunct or research faculty in Biological Sciences or faculty in another school at Georgia Tech may act as co-advisor for a Biology graduate student in collaboration with a thesis advisor from the School of Biological Sciences. In such cases, a written statement must be filed specifying who will be responsible for advising and supporting the student. The statement should also detail plans in the event the co-advisor is no longer available.

You should consult with your advisor about the membership of your thesis committee beginning in your first year of studies. The thesis committee must have at least three members including two members of the faculty of the School of Biological Sciences and at least one member from outside the School of Biological Sciences. The composition of your committee may change as your studies progress, and it is very common to add members to your committee as you carry out your research. Thesis advisory committees must be approved by the Graduate Committee.

The thesis committee's role is to advise you on all aspects of your graduate studies and will have primary responsibility for evaluating your work and your thesis. Your first committee meeting must occur before the end of your 12<sup>th</sup> month in the program and annually thereafter. Your preliminary program of study must be discussed and approved at your first meeting with your thesis committee. For School of Biological Sciences degree programs, the thesis committee must be approved by the School's Graduate Committee.

## Departmental Seminar

Regular departmental seminars are an important part of your graduate education and should become part of your weekly routine. Students are required to take two, one-hour biology seminar courses, one hour in the fall and one hour in the spring semesters. During the first full-time year in residence, you are required to register for Biology Seminar, designated BIOL 8002 in the fall and BIOL 8003 in the spring semesters. Students receive pass/fail credit by attending at least 10 seminars per semester and meeting any additional requirements your advisor may have relating to the seminars. For example, your advisor may require you to write reports on a subset of the seminars. Discuss the

seminar courses with your advisor at the beginning of the semester you register. Generally, any biology-related school or center seminar on campus given by a speaker external to Georgia Tech qualifies. Attendance at seminars is a very important component to a research career; therefore you are *strongly encouraged* to attend seminars as part of your professional life beyond the first year of your PhD.

### **Tools of Science (Biology 8106)**

Tools of Science is a mandatory course, which includes the NIH- and NSF-required RCR training. Students are advised to take it in the first year of study. This jointly-taught course introduces students to topics related to succeeding in graduate school and beyond and provides a forum for discussing a variety of concerns and issues that affect all successful scientists and engineers.

### **Grades and Credit Hours**

As a graduate student, you must maintain a minimum grade point average to remain in good academic standing. The minimum satisfactory GPA is 2.70 for MS students and 3.00 for PhD students. A graduate student must register for at least 12 credit hours to maintain full time status, and may register for a maximum of 21 semester hours in fall or spring semester and a maximum of 16 semester hours during the normal summer term.

### **Transfer of Credit from another University**

Please consult the Institute's guidelines on transfer of credit from another university to MS and PhD degree programs at Georgia Tech. Currently a student matriculating for a MS degree with thesis may, with appropriate approval, receive up to six pass/fail credit hours for graduate-level courses taken at an accredited institution in the United States or Canada and not used for credit toward another degree. A student in a non-thesis MS degree program, may, with appropriate approval, receive up to nine pass/fail credit hours for graduate-level courses taken elsewhere. PhD students may also transfer graduate level course credit from another university (see PhD program regulations below).

A student requesting transfer credit must complete the following procedure preferably during the first year in the program:

- a. Confer with your faculty advisor or the Graduate Coordinator to ascertain whether the courses to be transferred appear to be a logical part of your graduate program.
- b. If your thesis advisory committee (for thesis students) or Graduate Coordinator (for non thesis students) considers the courses appropriate, provide a copy of the relevant transcript along with documentation describing each course to the Graduate Coordinator and the Chair of the Graduate Committee. The required documentation should include catalog descriptions, syllabi, and textbooks used. The Graduate Committee will make a decision on the acceptability of the courses. If the Committee approves, a transfer credit form will be prepared, signed by the Chair or Associate Chair and sent to the Registrar.
- c. If special circumstances suggest transfer of more credit hours than allowed by Institute and/or School guidelines, you may submit a petition justifying the request and a letter of support from your thesis advisory committee to the School Graduate Committee. If the School Committee approves the petition, it will be forwarded it to the Institute Graduate Committee for its consideration.

### **Requirements of MD/PhD Students**



Students enrolled in the MD/PhD program should strictly adhere to the guidelines outlined for PhD students in the Graduate Handbook. With approval from the Graduate Committee, courses taken at Medical School can be considered for credit towards the PhD degree, including the minor requirement.

## Doctor of Philosophy (PhD) Degree Programs

The doctoral degree requires a thorough knowledge in a selected area of specialization, a general knowledge of biology, and the ability and dedication to carry out novel research in uncharted areas. It is not necessary to obtain an MS degree before pursuing a PhD degree. Students typically take about five years to complete their doctoral program.

The School of Biological Sciences offers a PhD degree in Biology and in Applied Physiology (please see the separate Applied Physiology PhD handbook) and participates in the interdepartmental PhD programs in Bioinformatics, Quantitative Biosciences, and Ocean Science and Engineering.

Important objectives for the PhD in our Biology Program are: (1) Students will be able to carry out independent research and effectively convey the research to the scientific community and lay public. (2) Students in our Biology Program will be able to analyze the data they generate in their research work and to critically review their results. (3) Students will be able to write (a) scientific proposals and (b) scientific journal articles.

### PhD in Biology

#### Course Requirements

The PhD degree requires a minimum of 40 credit hours. This must include: 18 credit hours of thesis research, and 18 credit hours of coursework (which includes nine credit hours in an approved minor).

Coursework	Credit Hours
Thesis Research (BIOL 9000)	18
Biology Seminar (BIOL 8002 and BIOL 8003)	2
Tools of Science (BIOL 8106)	2
Coursework approved by thesis committee. This coursework must meet the following three criteria: <sup>1-6</sup>	18
At least 9 of the 18 hrs must be graduate courses (6000 level or higher) with a letter grade	
At least 9 of the 18 hrs must be Biology courses (BIOL 4XXX – 8XXX), with a letter grade	
9 of the 18 hrs must fulfill the requirement for an approved minor <sup>3</sup>	
Total Required	40

#### Important Notes:

1. Each individual course may be used to meet more than one of the three criteria; i.e. BIOL 6XXX can be used to fulfill 3 of the 9 hours of the graduate course requirement, 3 of the 9 hours of the Biology course requirement and 3 of the 9 hours for an approved minor. However a 3 hr course only counts as 3 hrs toward the 18 hour total coursework requirement.

2. A maximum of three credit hours of Special Problems - Research (BIOL 890X) and six credit hours of additional seminar courses may be counted toward the 18 hour total requirement.
3. The minor is an Institute requirement and should be in a field of study outside your own area of specialization. In recent years, students have chosen minor fields within the department (e.g., microbiology, cell biology) as well as in other departments (e.g., biochemistry) or interdisciplinary fields (e.g., chemical ecology or biogeochemistry)
4. A student may request transfer of up to nine credit hours of graduate level courses taken at another university toward the above curriculum requirements. The courses must be relevant to a student's doctoral studies and must be approved by the student's thesis advisory committee and the School's Graduate Committee. A student may petition the School's Graduate Committee to transfer additional credit hours as outlined on page 12 if special circumstances exist.
5. Teaching and Research Assistantships (BIOL 8997 and 8998) are not real courses and are for bookkeeping only. **Do not** put these on your Program of Study Form.
6. Any deviation from the Planned Program of Study requires approval of the thesis advisor and Graduate Committee.

## **Good Standing**

To remain in good standing within the program, you must maintain a GPA of 3.0 while making progress towards the degree. The major milestones used in evaluating progress are summarized below. The Graduate Committee reviews the status of each student at least once a year in consultation with the student's advisor and committee. Students who fail to maintain good standing are not eligible for departmental TA or RA support and may be dismissed from the program.

## **Special Problems (BIOL 890X)**

Incoming students are encouraged to participate in lab rotations in several faculty labs through the mechanism of special problems courses. However, lab rotations are not required of incoming students. In the Molecular and Cell Biology (MCB) area, most students participate in several lab rotations prior to selecting a thesis advisor with mutual consent. In Ecology, Evolution, and Behavior (EEB) area, it is common for students and faculty to mutually agree on advisor-student pairing prior to students accepting admission. There are advantages to both approaches.

Students who are accepted for admission will be asked to specify in their acceptance of the offer if they plan to:

- A) Register for Special Problems during their first year and carry out at least two half-semester laboratory rotations prior to any decision on thesis advisor or,
- B) Initiate lab research with a specific professor who agrees to be his/her initial advisor.

Prior to the first week of class in the fall semester, the Graduate Coordinator will ask faculty if they are willing to have graduate students participate in a lab rotation course. Interested faculty will have the opportunity to give a 10- to 15-minute research talk to students doing lab rotations. Before the end of registration, students will register for the appropriate special problem course based on semester and advisor. If doing a lab rotation in a professor's lab for the first time, please register for BIOL 8901-xxx where xxx are the first three letters of the last name, in most cases, of the professor. If this is the second semester with the same professor, please register for BIOL 8902-xxx.

## Teaching Requirement

All PhD students are required to participate as a graduate teaching assistant in a minimum of one course as part of their graduate training. A teaching assistant often has six hours of contact time weekly (one six hour lab or two three hour labs). Office hours, preparation time, and grading generally take about six to eight hours each week, for a total commitment of roughly 12-14 hours effort per week. The school and institute provide training opportunities to TAs to learn and hone their teaching skills.

## Registration

Full-time enrollment is required of all students receiving assistantships or fellowships and for international students on visas. **Full-time students must be enrolled for at least 12 credit hours on a letter grade or pass-fail basis.** Please consult with your faculty advisor and the graduate coordinator for assistance with required courses. For general registration questions, please contact the Graduate office. All graduate research assistants should register for the GRA course BIOL 8998 for audit and all graduate teaching assistants should register for the GTA course BIOL 8997 for audit. Most students register for 16-18 credit hours in which some of these are the required audit hours mentioned above.

## Advisor and Thesis Advisory Committee

Your thesis advisor acts as chair of your thesis advisory committee and has primary responsibility for advising you in your research. Normally, a thesis advisor must be a member of the tenure-track faculty of the School of Biological Sciences. Under special circumstances and with the approval of the Graduate Committee and the School Chair, adjunct or research faculty in Biological Sciences or faculty in another school at Georgia Tech may act as co-advisor for a student in Biology in collaboration with a thesis advisor from the School of Biological Sciences. In such cases, a written statement must be filed specifying who will be responsible for advising and supporting the student.

You should consult with your advisor about the membership of your thesis committee beginning in your first year of studies. The thesis committee must have five members, including three members of the academic faculty of the School of Biological Sciences and at least one member from outside the School of Biological Sciences. The composition of your committee may change as your studies progress, and it is not unusual to change members to your committee as you carry out your research. To establish or modify your thesis committee, submit a Thesis Committee Membership Form for approval by the Graduate Committee.

The thesis committee's role is to advise you on all aspects of your graduate studies. Your first committee meeting should occur at the end of your 12<sup>th</sup> month in the program and you must meet with your committee annually thereafter. Your preliminary program of study must be discussed and approved at your first meeting with your advisory committee.

## Qualifying Exam

A PhD student gains admission to candidacy for the degree by passing a two-part qualifying examination. To be eligible for the qualifying exam, you must have:

1. Completed at least three graduate courses in biology with a letter grade.
2. Maintained a GPA of at least 3.0 in all regular courses listed on your program of study, excluding Special Problems.

The qualifying exams must be administered by at least four of your committee members. The format of the exams will be determined by the thesis advisor and the thesis committee members.

1. The comprehensive written exam must be taken preferably during spring of your second year in the program. Please communicate the reason for any delays to the Biology graduate coordinator in order to obtain approval by the graduate committee. One option of this exam requires that you prepare an original research proposal following NIH or NSF guidelines. The proposal can be based on your thesis research or on topics agreed upon by the committee members. Well before the exam, you should consult with your advisor and committee in developing your research proposal. Another option is for the exam to be comprised of a set of questions designed by your thesis committee members, which you will be tested on. You should initiate discussion of the two options with your thesis committee before the start of the semester in which you register for the course. The final decision of which form your written exam will take is made by your thesis committee.
2. The comprehensive oral exam must be taken following successful completion of the written exam, either in the spring or, at the latest, in the early summer semester of the second year. The oral exam will include a presentation from the student on the research project you are working on and on planned future studies. The presentation will be followed by discussion and questions by the committee members. In addition you will likely be probed on your general knowledge in the discipline.

### *Exam Grading*

Your committee members will jointly administer and grade your exam. You will receive feedback on the outcome of the exam within two weeks of the comprehensive written exam date. The decision on whether you passed the oral exam will be made on the same date as your oral defense. Your committee may also decide that you failed the exam, or they may identify weaknesses that should be addressed either by further study and reexamination, or through some other mechanism for demonstrating your command of the materials in question, such as writing a paper. Whatever the immediate result of your exam, your advisory committee must report a final result (pass/fail) to the Biology graduate office and report a grade by the end of the semester in which the exam is taken.

To help you understand critical evaluation criteria for the qualifying exam, we are including the following rubric:

*Grading rubric for the qualifying exam:*

Outstanding (90-100%)

Very organized and well written; the writing is clear, concise, critical, persuasive, and compelling; is focused, coherent, and organized around a major theme or question; is original and significant; expresses new and independent ideas; addresses a very important issue or answers a long-standing question; shows a deep understanding of the literature and the gaps in the field; has well-planned and well-performed experiments; uses or develops new tools, methods, approaches, or new types of analyses; the experiments are brief and very well described; has a large quantity of high quality data; the data are extremely clear; has a very significant new discovery; the conclusion ties the whole thing together; has an impact on theory; opens up a new area for research; will move the field in a new direction.

Very good (80-90%)

Solid, yeoman-like work; has an argument; is well written, well organized, and broad in scope; is original and significant but less so; the quality of the science is good; demonstrates understanding of all aspects of the subject; has a novel, timely question or may look at an old question with a new approach or a new analytical method; makes a prediction; uses appropriate techniques and analyses; has all the right controls; the data are very well done; provides solid answers; may confirm an already known answer; will not necessarily have a huge impact on the field.

Acceptable (70-80%)

Workman-like; student has done a significant amount of solid work reasonably well; well written, well organized but is a chore to read; is not very original and not very exciting; has a few innovative things but little in the way of publishable data; the science is acceptable but is not particularly good science; the concepts are derivative; set up a problem and answers the question, but the question is not exciting; the literature review is adequate; shows acquaintance with the key papers but does not really discuss what is important about them; is technically adequate; uses good scientific methods; the experiments are reasonably well done; has all the right controls; produces some novel data; adds data to an existing hypothesis; the results are useful but not exciting; may confirm what is already known; is not a particularly meaningful contribution; is not going to have a great impact on the field.

Unacceptable (<70%)

The quality of the science is not good; shows a lack of depth of understanding of the project; does not make an original contribution; the writing is bad, has no storyline or argument, has spelling and grammatical errors; does not have a good question; the experiments are poorly done and poorly analyzed; the quality of the data collection and statistical analyses is poor; may have engaged in unethical behavior; the data are false or fudged; the data are not interpreted well; makes too much of the results; draws invalid conclusions from the data; does not (cannot) explain what has been done or what it all means.

*What if...*

... you fail an exam?

Upon failing an exam, you will be expected to retake the exam in the same semester. If you find yourself in this situation, you should consult with your advisor and the Graduate Committee as soon as possible after receiving your exam grade. You should also discuss your exam with the graders to get feedback on your performance, particularly if you plan to retake the exam. If you fail either the written or oral exam a *second* time, you will no longer be in good standing as a PhD student and will be required to leave the program.

### **Annual Thesis Advisory Committee Meetings**

You are responsible for meeting with your thesis advisory committee at least once each year (including your first year in the program) to present an overview of your academic and/or research progress and to consult with the committee on the work remaining to be done. You must file a Thesis Committee Meeting Form signed by the members of your committee following this meeting.

### **How do I know when I can go forward with writing my thesis and scheduling my defense?**

Once you and your advisor agree on a timeframe for the defense, you will outline your plans during the annual thesis committee meeting, or schedule a committee meeting several months ahead of the intended defense date. Your PhD committee may make recommendations regarding your data, publications, timeline, and future plans.

### **Format and Content of the Thesis**

Your thesis should conform to Institute guidelines in format and style. Please see the online style manual (<http://www.gradadmiss.gatech.edu/thesis.php>) for detailed instructions on preparing your thesis. In addition to the university guidelines, the School of Biological Sciences requires that some portion of the PhD candidate's research must have been submitted for publication in a refereed scientific journal before the thesis defense. The thesis advisory committee may further require that a portion of the dissertation be accepted for publication with you as first author prior to the defense. Documentation that this requirement has been fulfilled must be presented with the graduation petition.

### **PhD Thesis Presentation and Defense**

PhD students must make a public presentation and defense of their thesis. The thesis defense consists of a public seminar followed by an oral examination by the student's thesis advisory committee. The final defense must be administered by a committee of five faculty members, composed of your advisor, three members of the academic faculty of the School of Biological Sciences, and at least one member from outside the School of Biological Sciences.

A final draft of the thesis and copies of submitted/published manuscripts must be given to each member of the thesis advisory committee and made available for review by School of Biological Sciences faculty at least two weeks prior to the defense. The thesis defense must be scheduled and announced through the Biological Sciences main office at least two weeks in advance.

Following the thesis defense and upon completion of any final changes to the thesis, the members of your thesis advisory committee must sign a Certificate of Thesis Approval Form, which must also be signed by the Graduate Coordinator before final submission.

The deadlines for thesis submission for graduation each term are available from the graduate school at <http://www.gradadmiss.gatech.edu/thesis/thesisdeadlines.php>. Failure to meet all deadlines may cause a delay in graduation date.

## PhD thesis evaluation criteria

To help you understand critical criteria for the evaluation of your dissertation, we are including the following rubric:

### *Rubric for Dissertation Evaluation*

The dissertation evaluation serves not only to evaluate student ability to carry out independent research, but also to evaluate student ability in data analysis and critical review of results. The dissertation is evaluated by the dissertation committee of faculty, according to a rubric with four categories:

#### *Outstanding (90-100%)*

Very organized and well written; the writing is clear, concise, critical, persuasive, and compelling; is focused, coherent, and organized around a major theme or question; is original and significant; expresses new and independent ideas; addresses a very important issue or answers a long-standing question; shows a deep understanding of the literature and the gaps in the field; has well-planned and well-performed experiments; uses or develops new tools, methods, approaches, or new types of analyses; the experiments are brief and very well described; has a large quantity of high quality data; the data are extremely clear; has a very significant new discovery; the conclusion ties the whole thing together; has an impact on theory; opens up a new area for research; will move the field in a new direction.

#### *Very good (80-90%)*

Solid, yeoman-like work; has an argument; is well written, well organized, and broad in scope; is original and significant but less so; the quality of the science is good; demonstrates understanding of all aspects of the subject; has a novel, timely question or may look at an old question with a new approach or a new analytical method; makes a prediction; uses appropriate techniques and analyses; has all the right controls; the data are very well done; provides solid answers; may confirm an already known answer; will not necessarily have a huge impact on the field.

#### *Acceptable (70-80%)*

Workman-like; student has done a significant amount of solid work reasonably well; well written, well organized but is a chore to read; is not very original and not very exciting; has a few innovative things but little in the way of publishable data; the science is acceptable but is not particularly good science; the concepts are derivative; set up a problem and answers the question, but the question is not exciting; the literature review is adequate; shows acquaintance with the key papers but does not really discuss what is important about them; is technically adequate; uses good scientific methods; the experiments are reasonably well done; has all the right controls; produces some novel data; adds data to an existing hypothesis; the results are useful but not exciting; may confirm what is already known; is not a particularly meaningful contribution; is not going to have a great impact on the field.

#### *Unacceptable (<70%)*

The quality of the science is not good; shows a lack of depth of understanding of the project; does not make an original contribution; the writing is bad, has no storyline or argument, has spelling and grammatical errors; does not have a good question; the experiments are poorly done and poorly analyzed; the quality of the data collection and statistical analyses is poor; may have engaged in unethical behavior; the data are false or fudged; the data are not interpreted well; makes too much of



the results; draws invalid conclusions from the data; does not (cannot) explain what has been done or what it all means.

## **Required Forms and Petitions for Biology PhD Students**

### *Thesis Advisory Committee Membership Form*

This form defines and requests graduate committee approval of the membership of your thesis committee. This form must be submitted to the Biology graduate office by the end of your second semester in the program.

### *Preliminary Program of Study Form*

You should prepare a Preliminary Program of Study Form as early as possible in consultation with your thesis advisor and with the approval of your thesis committee. A copy of the approved form must be submitted to the Biology graduate office to be placed in your file by the end of your 12<sup>th</sup> month in the program.

### *Thesis Advisory Committee Meeting Report*

A copy of this form must be filed with the Biology graduate office every year to document progress and report the outcome of the annual thesis advisory committee meeting. The student section should be completed PRIOR to the meeting. Your committee members will complete the remainder during the meeting. Submit the signed and completed form to the Biology graduate office.

### *Request for Approval of a Doctoral Minor Form*

After completing the nine course credits necessary for the doctoral minor, file the Request for Approval of a Doctoral Minor Form. This form must be signed by your advisor and the Graduate Coordinator before submittal to the Dean of Graduate Studies. The Graduate Coordinator's signature may be obtained in the Biology graduate office.

### *Request for Admission to Candidacy Form*

This form is completed in two steps:

1. The first step seeks approval of the thesis topic. Complete the top portion of the form and have your advisor, thesis committee members, and the School Chair sign the form. Submit this form to the Biology graduate office, where it will be kept in your academic file.
2. After you have successfully passed the qualifying exams, the Graduate Coordinator completes Part II of the form, and then it is submitted to the Graduate Studies office by the Biology graduate office.

### *Approved Program of Study Form*

Prepare a copy of the Program of Study Form to submit to the Registrar's office with the Petition for Degree.

### *Degree Petition*

Your degree petition must be submitted during the semester **before** your term of graduation. Deadlines are posted at <http://www.registrar.gatech.edu/students/calendar.php>. Complete and submit a Petition for Degree to the Registrar's office in Room 103 of the Administration Building (Tech Tower). Please read the instructions on the Petition for Degree and follow them carefully. You must obtain signatures from your advisor and the School Chair before submitting the petition.

The Approved Program of Study Form must be attached to the degree petition. If you do not graduate the first time you petition, you must **reactivate** your degree petition by submitting another Petition for Degree. Reactivated degree petitions **must** be submitted by the end of Phase II registration for the term during which you wish to graduate.

*Certificate of Thesis Approval for Doctoral Students*

This form is completed and signed after your thesis defense and the completion of any necessary modifications or additions to your thesis. The Graduate Coordinator is the last to sign the form, after which the Biology graduate office can submit the document to Graduate Studies on your behalf.

## Biology PhD Program Timetable

FORM or ACTION	TIMING or DEADLINE <sup>1</sup>
Take introductory courses	First year
Rotate through labs of interest	First year
Select a faculty advisor from among the faculty of the School of Biological Sciences	As early as possible and no later than the end of your 12 <sup>th</sup> month in the program
In consultation with your advisor, form your thesis advisory committee including at least three biology faculty. Submit the <b>Thesis Committee Membership Form</b> to the Biology graduate office	As early as possible and no later than the end of your 12 <sup>th</sup> month in the program
Meet with your thesis committee and fill out a <b>Preliminary Program of Study Form</b> . Submit the completed form to the Biology graduate office	As early as possible and no later than the end of your 12 <sup>th</sup> month in the program
Submit your <b>Approval of Doctoral Minor Form</b> to the Biology graduate office and to Graduate Studies	As soon as you complete the nine credits required for the minor
Request approval of your thesis topic by filling out the upper portion of the <b>Request for Admission to PhD Candidacy Form</b> , then submit it to the Biology graduate office	After completing your preliminary program of study
Take the <b>written</b> part of the <b>qualifying exam</b> , which ideally takes place in the beginning of spring semester	Normally taken in January, and no later than in March of your 2 <sup>nd</sup> year in the program
Take the <b>oral</b> part of the <b>qualifying exam</b>	Within three months of passing the written qualifying exam, or end of your 2 <sup>nd</sup> year, whichever is later
Have the <b>Request for Admission to PhD Candidacy Form</b> signed by the Graduate Coordinator, then it is submitted to Graduate Studies by the Biology graduate office	After passing the oral exam

<sup>1</sup> Unless otherwise noted, the deadlines are for submission of forms to the Biology graduate office.

FORM or ACTION	TIMING or DEADLINE <sup>1</sup>
Carry out your <b>research</b> and <b>publish</b> at least one refereed paper. The large majority of our PhD students publish at least one first-author paper.	As early and quickly as possible
<b>Meet with your thesis committee at least annually.</b> Submit a <b>Thesis Committee Meeting Report Form</b> signed by the members of your committee to the Biology graduate office.	Once a year.
If necessary, you can modify your thesis committee membership by submitting a revised <b>Thesis Committee Membership Form</b> to the Biology graduate office.	As necessary, but no later than one semester prior to thesis defense
<b>Write your thesis.</b> See the "Manual for Graduate Theses," available from the Graduate Studies office ( <a href="http://www.gradadmiss.gatech.edu/thesis.php">http://www.gradadmiss.gatech.edu/thesis.php</a> ).	As early and quickly as possible
<b>Teach</b> at least one course (2 credit hours or more of GTA time) as a teaching assistant.	No later than the end of your 4 <sup>th</sup> year in the program
Submit a <b>Petition for Degree</b> and <b>Approved Program of Study Forms</b> to the Biology graduate office.	Submit these forms by the deadline announced by the registrar's office, which will always be the semester before graduation
Schedule your thesis presentation and defense.	Two weeks prior to the presentation, notify the administrative assistant in the school's main office of the desired date and time to arrange for a room and announcement
Distribute the final draft of your thesis and any submitted or published papers: one copy to each committee member and one copy to the graduate coordinator.	As early as possible but no later than two weeks prior to thesis defense
Submit the <b>Certificate of Thesis Approval Form</b> and a copy of your completed thesis to the Institute Graduate Studies and Research Office.	After your defense and by the Registrar's deadline

## Master of Science (MS) Degree Programs

The School of Biological Sciences offers three programs of study leading to the master's degree:

- Master of Science in Biology with thesis
- Master of Science in Biology without thesis
- Professional Master of Science in Bioinformatics

For the MS in Biology programs, you should plan your activities to complete the program in two years of full-time study. The Professional Master of Science in Bioinformatics program is a rigorous interdisciplinary three-semester program of study, with summers spent in internships within the field.

Students admitted to the Masters degree program in the School of Biological Sciences are enrolled in a non-thesis program of study. If a student wishes to obtain a Masters degree with Thesis, he or she may petition the Graduate Committee for approval along with support from their thesis advisor.

### Master of Science in Biology with Thesis

The MS degree reflects advanced training and a detailed knowledge of a specific area within biology. The MS in Biology (with thesis) is intended for students wishing to obtain a strong background in modern biology and independent research experience in preparation for a wide range of career options. Some students complete an MS degree as a stepping stone toward a PhD, though this is not a necessary prerequisite to most PhD programs.

### Course requirements for MS Biology thesis students enrolled before summer 2018

Students are required to complete 30 credit hours of coursework, including 12 credit hours in biology, and six credit hours of master's thesis research. A maximum of six credit hours of formal class work from another MS degree program relevant to the student's program may be transferred. These credits do not count toward the GPA requirement since they are credited as only pass/fail. A summary of the requirements is as follows:

Coursework	Credit Hours
Biology graduate courses (BIOL 6000-9000) with a letter grade	12
MS thesis (BIOL 7000)	6
Special Problems – Research (BIOL 890X)*	3
Biology Seminar (BIOL 8002 and BIOL 8003)	2
Tools of Science (BIOL 8106)	2
Other biology courses (4000 or higher) with a letter grade	5
Total Required	30

\*A maximum of three credit hours of Special Problems – Research (BIOL 890X) and six credit hours of seminar courses may be counted toward the MS course requirements.

## Course requirements for MS Biology thesis students *enrolled summer 2018*

Students are required to complete 36 credit hours of coursework, including 12 credit hours in biology, and nine credit hours of master's thesis research. A maximum of nine credit hours of formal class work from another MS degree program relevant to the student's program may be transferred. These credits do not count toward the GPA requirement since they are credited as transfer courses. A summary of the requirements is as follows:

Coursework	Credit Hours
Biology graduate courses (BIOL 6000-9000) with a letter grade	12
MS thesis (BIOL 7000)	9
Special Problems – Research (BIOL 890X)	7
Biology Seminar (BIOL 8002 and BIOL 8003)	2
Other biology courses (4000 or higher) with a letter grade	6
<b>Total Required</b>	<b>36</b>

### Good Standing

To remain in good standing within the program, you must maintain a GPA of 2.7 while making progress toward the degree. The major milestones used in evaluating progress are summarized below. The graduate committee reviews the status of each student at least once a year in consultation with the student's advisor and committee. Students who fail to maintain good standing may be dismissed from the program.

### Registration

Full-time enrollment is required of all students receiving assistantships or fellowships and for international students on visas. **Full-time students must be enrolled for at least 12 credit hours on a letter grade or pass-fail basis.** Please consult with your faculty advisor and the Graduate Coordinator for assistance with required courses. For general registration questions, please contact the Graduate Office. All graduate research assistants should register for the GRA course BIOL 8998 for audit and all graduate teaching assistants should register for the GTA course BIOL 8997 for audit. Most students register for 16-18 credit hours in which some of these are the required audit hours mentioned above.

### Thesis Advisor and Committee

Your thesis advisor acts as chair of your thesis advisory committee and has primary responsibility for advising you in your research. Normally, a thesis advisor must be a member of the tenure-track faculty of the School of Biological Sciences. Under special circumstances and with the approval of the Graduate Committee, courtesy, adjunct or research faculty in Biological Sciences or faculty in another

school at Georgia Tech may act as co-advisor for a Biology graduate student in collaboration with a thesis advisor from the School of Biological Sciences. In such cases, a written statement must be filed specifying who will be responsible for advising and supporting the student. The statement should also detail plans in the event the co-advisor is no longer available.

You should consult with your advisor about the membership of your thesis committee beginning in your first year of studies. The thesis committee must have at least three members including two members of the faculty of the School of Biological Sciences and at least one member from outside the School of Biological Sciences. The composition of your committee may change as your studies progress, and it is very common to add members to your committee as you carry out your research. Thesis advisory committees must be approved by the Graduate Committee.

The thesis committee's role is to advise you on all aspects of your graduate studies. Your first committee meeting must occur before the end of your 12<sup>th</sup> month in the program and annually thereafter. Your preliminary program of study must be discussed and approved at your first meeting with your thesis committee.

### **Annual Thesis Committee Meetings**

You are responsible for meeting with your thesis committee at least once each year (including your first year in the program) to present an overview of your research progress and to consult with the committee on the work remaining to be done. After this meeting, you must file a Committee Meeting Form signed by the members of your committee and giving a summary of your progress to date and work planned for the future.

### **MS Thesis Topic and Format**

Once you have defined your research project and made some progress in your research, the Institute's **Request for Approval of Master's Thesis Topic Form** must be completed and approved by your thesis committee and the School Chair. This form must be submitted at least one semester before the thesis is defended.

You must submit a well-written thesis describing your research accomplishments. Your thesis should conform to university guidelines in format and style. Please see the online style manual (<http://www.gradadmiss.gatech.edu/thesis.php>) for detailed instructions on preparing your thesis. Your thesis committee may require that some portion of your thesis be submitted and/or accepted for publication prior to your defense.

### **MS Thesis Presentation and Defense**

MS students must make a public presentation and defense of their thesis. The thesis defense consists of a public seminar followed by an oral examination by the student's thesis committee.

A final draft of the thesis must be given to each member of the thesis advisory committee and made available for review by School of Biological Sciences faculty at least two weeks prior to the defense. The thesis defense must be scheduled and announced through the Biological Sciences main office at least two weeks in advance.

Following the thesis defense and upon completion of any final changes to the thesis, the members of the thesis committee must sign a Certificate of Thesis Approval Form, which must also be signed by the Graduate Coordinator before final submission.

The deadlines for thesis submission for graduation each term are available from the graduate school at <http://www.gradadmiss.gatech.edu/thesis.php>. Failure to meet all deadlines may cause a delay in graduation date.

## **MS thesis evaluation criteria**

To help you understand critical criteria for the evaluation of your dissertation, we are including the rubric\* below. The dissertation evaluation serves not only to evaluate student ability to carry out independent research, but also to evaluate student ability in data analysis and critical review of results. The dissertation is evaluated by the dissertation committee of faculty, according to a rubric with four categories:

### *Outstanding (90-100%)*

Very organized and well written; the writing is clear, concise, critical, persuasive, and compelling; is focused, coherent, and organized around a major theme or question; is original and significant; expresses new and independent ideas; addresses a very important issue or answers a long-standing question; shows a deep understanding of the literature and the gaps in the field; has well-planned and well-performed experiments; uses or develops new tools, methods, approaches, or new types of analyses; the experiments are brief and very well described; has a large quantity of high quality data; the data are extremely clear; has a very significant new discovery; the conclusion ties the whole thing together; has an impact on theory; opens up a new area for research; will move the field in a new direction.

### *Very good (80-90%)*

Solid, yeoman-like work; has an argument; is well written, well organized, and broad in scope; is original and significant but less so; the quality of the science is good; demonstrates understanding of all aspects of the subject; has a novel, timely question or may look at an old question with a new approach or a new analytical method; makes a prediction; uses appropriate techniques and analyses; has all the right controls; the data are very well done; provides solid answers; may confirm an already known answer; will not necessarily have a huge impact on the field.

### *Acceptable (70-80%)*

Workman-like; student has done a significant amount of solid work reasonably well; well written, well organized but is a chore to read; is not very original and not very exciting; has a few innovative things but little in the way of publishable data; the science is acceptable but is not particularly good science; the concepts are derivative; set up a problem and answers the question, but the question is not exciting; the literature review is adequate; shows acquaintance with the key papers but does not really discuss what is important about them; is technically adequate; uses good scientific methods; the experiments are reasonably well done; has all the right controls; produces some novel data; adds data to an existing hypothesis; the results are useful but not exciting; may confirm what is already known; is not a particularly meaningful contribution; is not going to have a great impact on the field.

### *Unacceptable (<70%)*

The quality of the science is not good; shows a lack of depth of understanding of the project; does not make an original contribution; the writing is bad, has no storyline or argument, has spelling and grammatical errors; does not have a good question; the experiments are poorly done and poorly analyzed; the quality of the data collection and statistical analyses is poor; may have engaged in



unethical behavior; the data are false or fudged; the data are not interpreted well; makes too much of the results; draws invalid conclusions from the data; does not (cannot) explain what has been done or what it all means.

\*Please note that while the rubric is similar to the rubric for the PhD, the type of degree and the different timeframes are taken into account during the evaluation.

## **Transfer to the PhD Program**

A student may request a transfer from the MS program to the PhD program via written petition and with approval of the Graduate Committee and Chair. Students admitted to the MS program cannot petition for a change to PhD until they complete at least nine credit hours of 6000-8000 level graduate courses at Georgia Tech. The Graduate Committee must approve the transfer to the PhD program. The Masters student applies to the PhD program and will be evaluated among the pool of applicants.

## **Required Forms and Petitions for MS Students**

### *MS Thesis Committee Membership Form*

This form defines and requests departmental approval of the membership of your thesis committee. Complete and submit this form to the Biology graduate office by the end of your 12<sup>th</sup> month in the program.

### *MS Program of Study Form*

You should prepare a MS Program of Study Form as early as possible in consultation with your thesis advisor and with the approval of your thesis committee. A copy of the approved form must be submitted to the Biology graduate office to be placed in your file by the end of your 12<sup>th</sup> month in the program.

### *MS Thesis Committee Meeting Report*

A copy of this form must be filed with the Biology graduate office every year to document progress and report the outcome of the annual thesis committee meeting. Your section (“Student Section”) should be completed PRIOR to the meeting. Your committee members will complete the remainder during the meeting. Submit the signed and completed form to the Biology graduate office.

### *Request for Approval of Master’s Thesis Topic Form*

The Request for Approval of Master’s Thesis Topic Form must be completed and approved by the thesis committee at least one semester before you defend your thesis. Once the form is signed by the Chair of the School, you should submit it to the Graduate Studies office with one copy submitted to the Biology graduate office at the same time.

### *Approved Program of Study Form*

Prepare a clean and final copy of the Program of Study Form to submit to the Degree Certification office with the degree petition.

### *Degree Petition*

Your degree petition must be submitted during the semester **before** your term of graduation. Deadlines are posted at <https://www.oscar.gatech.edu/>. Complete and submit a Petition for Degree to the Registrar’s office in Room 104 of the Administration Building (Tech Tower). Please read the

instructions on the Petition for Degree and follow them carefully. You must obtain major school approval signatures on the petition before submitting the petition.

The Approved Program of Study Form must be attached to the degree petition. If you do not graduate the first time you petition, you must **reactivate** your degree petition by submitting another Petition for Degree. Reactivated degree petitions **must** be submitted by the end of Phase II registration for the term during which you wish to graduate.

### *Certificate of Thesis Approval for MS Students*

This form is completed and signed after your thesis defense and completion of any necessary modifications or additions to your thesis. The Graduate Coordinator is the last to sign the form, after which you should submit it to the Graduate Studies office. A copy must be made for the Biology graduate office before submission of the form.

## Timetable for MS Degree with thesis

FORM or ACTION	DEADLINE <sup>2</sup>
Select a faculty advisor from among the faculty of the School of Biological Sciences	By the end of the 2 <sup>nd</sup> semester
Choose a thesis committee with at least three Biological Sciences faculty. Submit a <b>Thesis Committee Membership Form</b> to the Biology graduate office	By the end of the 12 <sup>th</sup> month in the program
Fill out and submit a <b>Program of Study Form</b> in consultation with your committee and submit to the Biology graduate office	By the end of the 12 <sup>th</sup> month in the program
Fill out and submit a <b>Request for Approval of Master's Thesis Topic Form</b>	As early as possible, but no later than one semester prior to thesis defense
Carry out your <b>research</b>	As early and quickly as possible
Meet with your thesis committee at least annually. File a <b>Thesis Committee Meeting Report</b> signed by the members of your committee to the Biology graduate office	Once a year
<b>Write your thesis.</b> For details, see: <a href="http://www.grad.gatech.edu/thesis/thesis_man.html">http://www.grad.gatech.edu/thesis/thesis_man.html</a>	As early and quickly as possible
Submit the <b>Petition for Degree</b> and <b>Approved Program of Study</b> forms to the Registrar	Submit these forms by the Registrar's deadline (~3 weeks prior to the end of the semester preceding the semester of graduation)
Schedule your thesis presentation and defense	Two weeks prior to the presentation, notify the administrative assistant in the Biological Sciences main office of the desired date and time to arrange for a room and announcement
Distribute the final draft of your thesis: one copy to each committee member and one copy to the Biology graduate office	As early as possible but no later than two weeks prior to thesis defense
Submit the <b>Certificate of Thesis Approval Form</b> and a copy of your completed thesis to the Graduate Studies office.	After your defense and by the Registrar's deadline

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<sup>2</sup> Unless otherwise noted, the deadlines are for submission of forms to the Biology graduate office.

## Master of Science in Biology without Thesis

The non-thesis MS degree reflects advanced study in a specific area within biology. This degree program is best suited for students who wish to pursue careers, e.g. in consulting firms or regulatory agencies, that do not require experience in laboratory research.

### Course Requirements for MS Biology nonthesis students enrolled before summer 2018

Students are required to complete 35 credit hours of coursework, including 21 credit hours in biology. A maximum of nine credit hours of formal coursework from another MS degree program relevant to the student's program may be transferred. These credits do not count toward the GPA requirement since they are credited as only pass/fail.

Coursework	Credit Hours
Biology graduate courses (BIOL 6000-9000) with a letter grade	15
Other graduate courses (6000-9000) with a letter grade. These may be taken in biology or other departments	9
Other biology courses (4000 or higher) with a letter grade	6
Special Problems – Research (BIOL 890X)*	3
Biology Seminar (BIOL 8002 and BIOL 8003)*	2
<b>Total Required</b>	<b>35</b>

\*A maximum of four credit hours of Special Problems – Research (BIOL 890X) and three credit hours of seminar courses may be counted toward the MS course requirements.

### Course Requirements for MS Biology nonthesis students enrolled summer 2018

Students are required to complete 36 credit hours of coursework, including 21 credit hours in biology. A maximum of nine credit hours of formal coursework from another MS degree program relevant to the student's program may be transferred. These credits do not count toward the GPA requirement since they are credited as transfer courses.

Coursework	Credit Hours
Biology graduate courses (BIOL 6000-9000) with a letter grade	15
Other graduate courses (6000-9000) with a letter grade. These may be taken in biology or other departments	9
Other biology courses (4000 or higher) with a letter grade	6
Special Problems – Research (BIOL 890X)*	4
Biology Seminar (BIOL 8002 and BIOL 8003)*	2
<b>Total Required</b>	<b>36</b>

\*A maximum of four credit hours of Special Problems – Research (BIOL 890X) and three credit hours of seminar courses may be counted toward the MS course requirements.

## **GPA Requirements**

To remain in good standing within the program, you must maintain a GPA of 2.7 while making progress toward the degree. The major milestones used in evaluating progress are summarized below. The Graduate Committee reviews the status of each student at least once a year in consultation with the student's advisor and committee. Students who fail to maintain good standing may be dismissed from the program.

### **Evaluation of Student Content Knowledge Competence**

In the course of their internship within the MS-Biology Program for non-thesis students, all the MS students are required to take a Special Problems research class (BIOL 809X). The class is taken under the supervision of one professor. The student will write a research paper or report on the research they conduct during the course of the semester. The supervising professor evaluates whether a student demonstrated content knowledge according to a rubric with four categories (outstanding, very good, acceptable, unacceptable):

#### *Outstanding (90-100%)*

Very organized and well written; the writing is clear, concise, critical, persuasive, and compelling; is focused, coherent, and organized around a major theme or question; is original and significant; expresses new and independent ideas; addresses a very important issue or answers a long-standing question; shows a deep understanding of the literature and the gaps in the field; has well-planned and well-performed experiments; uses or develops new tools, methods, approaches, or new types of analyses; the experiments are brief and very well described; has a large quantity of high quality data; the data are extremely clear; has a very significant new discovery; the conclusion ties the whole thing together; has an impact on theory; opens up a new area for research; will move the field in a new direction.

#### *Very good (80-90%)*

Solid, yeoman-like work; has an argument; is well written, well organized, and broad in scope; is original and significant but less so; the quality of the science is good; demonstrates understanding of all aspects of the subject; has a novel, timely question or may look at an old question with a new approach or a new analytical method; makes a prediction; uses appropriate techniques and analyses; has all the right controls; the data are very well done; provides solid answers; may confirm an already known answer; will not necessarily have a huge impact on the field.

#### *Acceptable (70-80%)*

Workman-like; student has done a significant amount of solid work reasonably well; well written, well organized but is a chore to read; is not very original and not very exciting; has a few innovative things but little in the way of publishable data; the science is acceptable but is not particularly good science; the concepts are derivative; set up a problem and answers the question, but the question is not exciting; the literature review is adequate; shows acquaintance with the key papers but does not really discuss what is important about them; is technically adequate; uses good scientific methods; the

experiments are reasonably well done; has all the right controls; produces some novel data; adds data to an existing hypothesis; the results are useful but not exciting; may confirm what is already known; is not a particularly meaningful contribution; is not going to have a great impact on the field.

#### Unacceptable (<70%)

The quality of the science is not good; shows a lack of depth of understanding of the project; does not make an original contribution; the writing is bad, has no storyline or argument, has spelling and grammatical errors; does not have a good question; the experiments are poorly done and poorly analyzed; the quality of the data collection and statistical analyses is poor; may have engaged in unethical behavior; the data are false or fudged; the data are not interpreted well; makes too much of the results; draws invalid conclusions from the data; does not (cannot) explain what has been done or what it all means.

### **Advisor**

The Biology Graduate Coordinator provides general advice and guidance for non-thesis MS students. In most instances, a member from the Graduate Committee is assigned to be the MS non-thesis student's general advisor.

### **Required Forms and Petitions for MS (non-thesis) Students**

#### *MS Program of Study Form*

You should prepare a MS Program of Study Form as early as possible in consultation with your faculty advisor. A copy of the approved form must be submitted to the Biology graduate office to be placed in your file by the end of your second semester in the program.

#### *Degree Petition*

Your degree petition must be submitted during the semester before your term of graduation. Deadlines are posted at <https://www.oscar.gatech.edu/>. Complete and submit a Petition for Degree to the Registrar's office in Room 104 of the Administration Building (Tech Tower). Please read the instructions on the Petition for Degree and follow them carefully. You must obtain major school approval signatures on the petition before submitting the petition.

The Approved Program of Study Form must be attached to the degree petition. If you do not graduate the first time you petition, you must **reactivate** your degree petition by submitting another Petition for Degree Form. Reactivated degree petitions **must** be submitted by the end of Phase II registration for the term during which you wish to graduate.

Any current PhD student requesting an MS in Biology without thesis degree must get approval from their thesis advisor one semester prior to submitting their Petition for Degree to the Registrar's office.

## Timetable for Master's Degree without Thesis

FORM or ACTION	DEADLINE <sup>3</sup>
Select a faculty advisor from among the faculty of the School of Biological Sciences	Ideally, during the 1 <sup>st</sup> semester, and no later than the end of the 2 <sup>nd</sup> semester in the program
Fill out a <b>Program of Study Form</b> in consultation with your advisor and submit the completed form to the Biology graduate office	By the end of the 2 <sup>nd</sup> semester in the program
Submit the <b>Petition for Degree</b> and <b>Approved Program of Study</b> forms to the Registrar	Submit these forms by the Registrar's deadline (~3 weeks prior to the end of the semester preceding the semester of graduation)

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<sup>3</sup> Unless otherwise noted, the deadlines are for submission of forms to the Biology graduate office.

## **General Information and Policies**

### **Athletic Facilities**

The Georgia Tech Campus Recreation Center underwent a major renovation in two phases to produce a \$45 million recreation complex. The center boasts an enclosed aquatic center, new weight and cardio rooms, three aerobics/martial arts rooms, six multi-use basketball courts with a four-lane jogging track suspended above, and a game room. The complex is about the size of a basketball coliseum and includes a pool with a water slide, hot tub, and sun deck. Recreation opportunities include the Sport Club program, which allows students to compete in a particular sport throughout the year; intramural sports, which range from traditional sports to more exotic sports including ultimate Frisbee and inner tube water polo; fitness and options classes; and Outdoor Recreation at Georgia Tech (ORGT), which includes opportunities for backpacking, caving, mountain biking, whitewater kayaking, canoeing, and rock climbing. Membership is automatically included in the mandatory student fees.

### **Biological Sciences Graduate Student Association (BSGSA)**

The Biological Sciences Graduate Student Association (BSGSA) is an integral part of the Georgia Tech School of Biological Sciences. The purpose of BSGSA is to enhance communication between faculty and graduate students as well as promote camaraderie between students in different buildings and research areas within the department. All graduate students are members of BSGSA, and five students are elected each spring to serve as officers. Officer positions include President, Vice President, Secretary/Treasurer, Social Director, and Intramurals Director. The BSGSA holds monthly business meetings to inform students of upcoming events in the department. During business meetings, students may air concerns or problems encountered at Georgia Tech and seek guidance from other students. In some instances, officers relate problems encountered by students to faculty or administrators in order to work out suitable solutions. In addition to the business meetings, BSGSA organizes intramural teams and relates information regarding dates and times of practices and games. The BSGSA also participates in fun activities several times during the year.

In addition to meetings and activities, the BSGSA plays a key role in the interview process for prospective graduate students by providing a student perspective on the School of Biological Sciences. The BSGSA sometimes organizes a symposium for the department that features research from graduate students within the department. The BSGSA also invites a guest scientist to present a departmental seminar during the spring term and is responsible for coordinating events associated with the guest's visit. Other important BSGSA activities include social events for either graduate students or the entire department.

### **Bookstore**

The Barnes & Noble Georgia Tech Bookstore is located in Technology Square directly across the Downtown Connector from campus on 5<sup>th</sup> Street.

### **BuzzCard (Student I.D. Card)**

Your student photo I.D. card or "BuzzCard" is used to access a number of campus facilities (CRC, Student Health Services, etc.), can be used as a purchasing card, and also serves as your library card



(see [www.BuzzCard.gatech.edu](http://www.BuzzCard.gatech.edu) for a listing of all places on campus that accept BuzzCards and how to add money to your card account). BuzzCards are made at the BuzzCard office in the Campus Bookstore. There can be a long line during orientation. In order to obtain a BuzzCard, you will need a picture I.D. (i.e.: driver's license, passport).

## Computing Resources

Your GT account, sometimes referred to as your Computer ID, gives you access to an e-mail account and other services. **Your GT account is the official e-mail account used by the School of Biological Sciences for communications.** In addition to imap mail servers, all students have access to Georgia Tech's web-based email system (<http://mail.gatech.edu/>), which provides a web browser interface to your email account. This is often the best way to access your campus e-mail account while off campus.

The computer support specialist for the School of Biological Sciences is Troy Hilley, located in room 338 Cherry Emerson. Troy may be reached at 404-790-1270. Troy is available to help our department with both software and hardware issues. For the fastest response, please e-mail him a request at [helpdesk@biology.gatech.edu](mailto:helpdesk@biology.gatech.edu). This address is part of an OIT-based monitoring system to make sure your request is handled promptly and effectively.

### *Classroom Mobile Lecterns*

Most classrooms for the School of Biological Sciences are equipped with mobile lecterns. These lecterns provide a computer and VCR to aid with classroom instruction. You will need a valid faculty Georgia Tech ("prism") ID to log onto the computer. Student IDs will not work. You will receive a faculty ID when you receive your student ID information, so that you may access these lecterns.

The classroom lecterns are installed and maintained by OIT. If you have any questions or concerns regarding the mobile lecterns, then please contact the OIT helpdesk at 404-894-7173 or go to the 2<sup>nd</sup> floor of the Clough Commons Building and ask for assistance.

## Copiers, Fax Machines, Phones

The School of Biological Sciences has photocopiers available in Cherry Emerson (CE), the Ford Environmental Science and Technology building (ES&T), and the Engineered Biosystems Building (EBB). You can get an account number to use the photocopiers from Jasmine Martin in the main Biological Sciences office (EBB Biological Sciences Administrative Suite). Photocopiers are for educational and research purposes only. Violators will have their accounts revoked.

The School of Biological Sciences also has two fax machines available: one in 208 Cherry Emerson (404-894-0519) and one in 2154 ES&T (404-385-4440). All long distance faxes must be for educational or research purposes only. Personal local faxes are acceptable.

Graduate students generally do not have phones located in their offices. All faculty research labs are equipped with phones and can be used as a point of contact for students in that lab, at the faculty member's discretion. State law mandates that no personal long distance calls are allowed on School of Biological Sciences phones.

## Counseling Services

The Georgia Tech Counseling Center supports the academic mission of the Institute by providing counseling and psychotherapy to students as well as crisis intervention. The Counseling Center is

located in room 238 of the Smithgall Student Services Building (404-894-2575, [www.counseling.gatech.edu](http://www.counseling.gatech.edu)). Their services include:

- Individual/group counseling
- Marriage/couples counseling
- Help in choosing a major
- Computer-assisted career guidance program (SIGI PLUS)
- Interest and personality testing
- Assistance in obtaining career information
- Computer assisted study skills instruction program (CASSI-GT)
- Written and video taped information on majors
- Information about other colleges and universities, graduate and professional schools
- Applications for national tests ([GRE](#), [GMAT](#), [LSAT](#), [MCAT](#))
- Referral sources

## Dean of Students

The Office of the Dean of Students (<http://www.deanofstudents.gatech.edu>) provides access to a broad range of information, resources, and referrals in connection with student life and academic affairs on campus.

## E-Mail

E-mail accounts are available to all Georgia Tech students. During your first semester, an account will be created for you 24 hours after you have registered for classes. Your computer account, personal password and other information can be obtained accessing <https://passport-prod.gatech.edu/>. Throughout the year, visit the Office of Information Technology on the 2<sup>nd</sup> floor of the Clough Commons Building for any questions concerning your e-mail account. Please note that your professors will use your student address for correspondence.

## Emergencies

In an emergency situation, **DO NOT CALL 911. Call the Georgia Tech Police at 404-894-2500.** The GT Police will get the appropriate emergency vehicles to your location more quickly than the city police department.

## Employment Forms

If you are going to be employed on campus (i.e., as a GRA or GTA), you will be obtaining your necessary documents to work at your initial School of Biological Sciences orientation session. You will need to complete these documents and turn them in to Human Resources. If you are unable to attend the Biology graduate student orientation, please see Nena Gray, Financial Manager, and she is located in Engineered Biosystems Building School of Biological Sciences' administrative suite on the 2<sup>nd</sup> floor.

## Assistantships (GTAs, GRAs) and Fellowships

Three types of financial aid are currently available to qualified graduate students in Biology:

- Graduate Teaching Assistantships (GTAs) and Graduate Research Assistantships (GRAs), which include tuition waivers
- Outside fellowships (sponsored by NIH, NSF, EPA, etc.)

GRAs, GTAs, and most fellowships are awarded on the basis of academic performance as well as proven commitment during previous assignments, and not on the basis of need. However, if you have a demonstrated need, you may apply to the Georgia Tech Office of Student Financial Planning in the Student Success Center for employment under the federal work-study program or for student loans (<http://www.finaid.gatech.edu/>).

### *Graduate Teaching Assistantships and Graduate Research Assistantships*

Assistantships are forms of employment and, as such, involve a responsibility to perform to the satisfaction of the supervisor. A one-third time assistantship requires that an average of 14 hours/week be devoted to the assigned activities during the semester. Successful and timely completion of a PhD dissertation generally requires that you spend significantly more than 14 hours/week on thesis research.

Most PhD students in Biology are offered a teaching assistantship upon admission to the graduate program. This aid is promised for the first 12 months of the program. Before the end of the initial one-year TA commitment, students are expected to decide on a faculty member with whom they would like to work and seek a commitment from that faculty member for full GRA support for their entire time in the program. Any GTA support beyond the first year is provided only by recommendation from the Graduate Committee and approval by School administration (Chair/Associate Chair), and should by no means be assumed automatically. Each semester, a support form must be submitted to the Biology graduate office to inform the department of the particular type of support you request in the upcoming semester. This form has to be signed by the student's advisor. The Graduate Committee performs a review of all graduate students each semester and makes a recommendation to either continue or discontinue financial support for each student based on their academic performance and satisfactory progress toward the degree.

Students receiving a GTA or GRA assignment are expected to take courses related to their degree program and should not take courses towards a second degree in another area. Assistantships may be revoked if a student pursues coursework towards another degree.

MS thesis and non-thesis students are not offered teaching or research assistantships upon acceptance into the program. Thesis MS students may apply for GTA support in the same way as a PhD beyond their first year (see above). They are considered in a lower priority group, compared to PhD students, and are supported only if sufficient funds are available (this can not be guaranteed beforehand). Non-thesis students in the MS degree program are not supported by the School of Biological Sciences for a GTA. Exception is made only for MS students in the Bioinformatics (BINF) Program who have already paid full tuition previously and are recommended by the group of Bioinformatics and Computational Biology Faculty (confirmed by The Graduate Committee) for support from MS-BINF program funds. MS students in any category can be supported by GRA from a faculty member at the faculty member's discretion.

Salary rates for GTA's and GRA's are determined according to School of Biological Sciences policy and depend on student status (PhD, thesis MS, non-thesis MS, MS bioinformatics)

### *External Fellowships*

All graduate students are encouraged to apply for external fellowships from NIH, NSF, EPA, HHMI, NOAA and other agencies. These fellowships usually offer multiple years of support and may provide a supply allowance as well as a stipend. For more information, talk to your faculty advisor or see the Georgia Tech Graduate Studies and Research Office website:

[http://www.gradadmiss.gatech.edu/financial/financial\\_support.php](http://www.gradadmiss.gatech.edu/financial/financial_support.php) which maintains an excellent page on fellowship information. In addition, the University of Illinois maintains a website on graduate fellowships through the IRIS database. Georgia Tech is a subscriber and you can search IRIS (<http://www.library.uiuc.edu/iris>) from any computer at Georgia Tech.

Students on external fellowships are expected to maintain strong academic performance and progress in their programs of study. External fellowships often require an annual progress report to maintain funding.

### *Registration requirements for students receiving GRAs, GTAs and fellowships*

Full-time enrollment is required of all students receiving assistantships or fellowships and for international students on visas. **Full-time students must be enrolled for at least 12 credit hours on a letter grade or pass-fail basis.** The advisor and school chair may approve the substitution of one course (up to three hours) on an audit basis for fall and spring semesters, and two courses (up to six hours) on an audit basis for summer semesters only for special circumstances. Full-time students working exclusively on thesis research should be registered for 18 or more hours of 7000 or 9000 (master's or doctoral thesis) in fall and spring semesters, and for up to 16 hours during summer semesters. If you do not register properly, the Bursar's office will automatically bill you for your tuition and you will not receive a salary or stipend check until the registration problem is corrected. There is a very limited window of time to correct registration errors at the beginning of each semester.

### *Outside employment*

If you have an assistantship, outside employment is prohibited without special permission from the Graduate Committee.

### *Employed International Students*

If you hold an F-1 or J-1 visa and seek outside employment, you must contact the Office of International Education at 404-894-7475. The rules and policies governing the employment of students on visas may be found at <http://www.oie.gatech.edu/>.

### **Good Academic Standing**

As a graduate student, you must maintain a satisfactory grade point average to remain in good academic standing. The minimum satisfactory GPA is 2.70 for MS students and 3.00 for PhD students. If your overall GPA drops below the minimum allowed, you will be placed on academic probation. After two semesters of probation, the Institute may drop you from its rolls at any time. If your GPA for any one term is 2.00 or lower, you may be placed on academic probation or dropped from the rolls immediately following evaluation of your case by the Graduate Committee. In addition

to meeting these minimum grade requirements, you must make satisfactory progress toward the degree in order to remain in good standing.

## **Graduate Student Government at Georgia Tech**

The Graduate Student Government (<http://www.sga.gatech.edu/>) provides graduate students with a voice in Institute affairs and administers the Graduate Conference Fund, which provides small grants to help cover the costs of travel to scientific conferences.

## **Grievances and Appeals**

The General Catalog of the Georgia Institute of Technology describes a regular set of procedures for addressing grievances and appeals related to academic matters and grade disputes (Rules and Regulations, Section XXI). The following brief summary provides an overview of these procedures, which are described in full at <http://www.catalog.gatech.edu/rules/20a.php>.

1. In cases where instructors have acted unfairly or improperly in the assignment of grades, students have the opportunity to appeal. The first step is to attempt to resolve the grievance with the individual faculty member or department involved.
2. If a student cannot come to a satisfactory resolution with the professor, the next step is to request a formal hearing in writing. The letter should be addressed to the School Chair and should state the complaint and the remedy sought from the school or department. The Chair will then convene an *ad hoc* committee consisting of four members, including one faculty member chosen by the student. This committee will review the merits of the complaint and all the evidence and will render a decision within 30 days of the hearing.
3. A student who is not satisfied with the decision of the departmental *ad hoc* committee can make a final, written appeal to the Student Grievance and Appeal Committee. The appeal letter should include a statement of the basis for the grievance, the facts that support it, a summary of the steps that have already been taken, the reasons why any prior resolutions of the grievance are unfair or unsatisfactory, and a statement of the desired result. There are a number of possible outcomes of this final stage of the appeal process. The committee may deny the appeal or may decide to hold a formal hearing. In either case, the decision will be made within 30 days. If there is a hearing, the committee will make a decision within 30 days of receiving the testimony and any relevant documents.

## **Health Care and Insurance**

### *Student Health Services Center*

The Georgia Tech Student Health Services Center is located at 740 Ferst Drive NW. Their phone number is (404) 894-1420.

All incoming students, including graduate students, must complete and return a Medical Entrance Form prior to registration. Registration will be delayed if the form is not received by the deadline dates indicated on the form. All registered students are required to pay the student health fee of about \$1000 per year, and in return are eligible for all benefits provided by the Student Health Center on campus. The Health Center is staffed by licensed physicians, registered nurses, medical and x-ray technologists, health educators, and pharmacists. The Student Health Center physicians are experienced in all areas of primary care, emergency, internal, sports, and travel medicine. In addition

to their medical staff, a women's health nurse practitioner is also available for annual gynecological exams and birth control consultations.

### *Services Covered by the Student Health Fee*

- Blood pressure screening
- Cold self-care program
- Observation unit
- Psychiatric assessment
- Sports medicine clinic
- Unlimited MD(*doctors*)/RN(*nurses*) visits
- Wellness Center services
- Women's Clinic visits
- X-Ray and EKG services

A minimal fee may be charged for the following services:

- Allergy injections (patients provide allergy serum for injections)
- Birth control
- HIV testing/consultation
- Immunizations
- Laboratory tests
- Pap smears
- Pharmacy services
- Physical therapy
- Smoking cessation
- Travel clinic
- Specialty clinics

The Student Health Center will meet most student and spouse health care needs, but it does not cover the cost of emergency or specialized care, hospitalization, and outpatient diagnostic tests and surgery. The Student Health Center offers two voluntary accident and illness policies to help cover these unexpected and potentially expensive costs. More information can be found at <http://www.health.gatech.edu/>.

### **Honor Code / Student Conduct**

All Georgia Tech graduate students are expected to abide by the honor code as written at <http://www.honor.gatech.edu/>. The Georgia Tech Office of Student Integrity webpage has details on the processes for reporting an infraction, as well as what is to be expected if you commit an infraction.

### **Housing**

On-campus housing for graduate students is available in the Graduate Living Center or the Hemphill Avenue Apartments, and can be arranged through the Housing office.

See the Housing website for exact deadlines and to apply on-line (<http://www.housing.gatech.edu/>). The regular move-in date is typically the weekend before classes begin, but the Housing office allows students to move in approximately one week earlier (for an additional fee) to allow attendance at the various orientation programs before the start of classes.

For off-campus housing information, we suggest you talk to other graduate students in your department and check postings in areas frequented by students. Many students live in the residential neighborhood adjacent to Georgia Tech, called Home Park. There are also many apartment complexes located within a few miles of campus. University Apartment Locators is a service that provides comparisons of the cost of apartments and can help you locate an apartment.

## **Injuries and Accidents**

As a graduate student in the School of Biological Sciences, you may or may not also be an employee of Georgia Tech. If you are paid as an RA, TA, or student assistant, you are considered a Georgia Tech employee and are covered by workers' compensation insurance.

### *Employees*

If you suffer a job-related injury when performing work as an employee, notify your faculty advisor and our Safety Officer, Alison Onstine (404-229-3953), as soon as possible after the accident.

We are required to record every incident that happens, no matter how small it seems. If you are injured enough to lose days of work or need medical attention, you are covered by workers' compensation. Alison Onstine or the main Biological Sciences office will be able to direct you to which medical offices you can go to for assistance.

If the injury/accident is an emergency situation, **DO NOT CALL 911. Call the Georgia Tech Police at 404-894-2500.** The GT Police will get the appropriate emergency vehicles to your location more quickly than Atlanta Police.

### *Students*

If you suffer an injury while in a research lab or classroom building as a student, the Student Health Center on campus will provide medical treatment. If the injury occurred while doing research, notify your faculty advisor and our Safety Officer, Alison Onstine (404-229-3953), as soon as possible after the accident. If the injury/accident is an emergency situation, **DO NOT CALL 911. Call the Georgia Tech Police at 404-894-2500.** The GT Police will get the appropriate emergency vehicles to your location more quickly than Atlanta Police.

## **International Students**

The Office of International Education (OIE) is located in the Savant Building at 631 Cherry Street, Suite 211 (<http://www.oie.gatech.edu>). If you are a new international student, it is very important that you report to OIE with your passport, I-94, and I-20 or DS-2019 as soon as possible after your arrival on campus. OIE staff will tell you what you need to do during your first week at Georgia Tech.

All international students are required to attend the International Student Services Program (ISSP) Orientation. In addition, international students must be screened for tuberculosis during the GradExpo. As a special service to new international students, a representative from the Social Security

Administration will be present at the GradExpo, Campus Recreation Center on Ferst Drive during the week of orientation and registration to issue Social Security numbers.

The Georgia Tech Center for Teaching and Learning (CTL) offers several courses geared specifically toward international students:

- **CETL 8791:** Instructional Practices for International Teaching Assistants
- **CETL 8792:** Classroom English and Pedagogy for International Teaching Assistants
- **CETL 8793:** Classroom English for International Graduate Students
- **CETL 8794:** Academic English for International Graduate Students

More information on courses can be found at <http://wwwctl.gatech.edu/>.

## Lab Safety

The department of Environmental Health and Safety provides safety oversight and training for the Georgia Tech community. A copy of the Institute laboratory safety manual is available online at <http://www.safety.gatech.edu/>. Alison Onstine is the School of Biological Sciences Safety Officer and can answer most questions relating to research safety. Alison can be reached at (404) 229-3953 or [alison.onstine@biosci.gatech.edu](mailto:alison.onstine@biosci.gatech.edu).

## Library

The Library and Information Center (404-894-4529, <http://www.library.gatech.edu>) is located at 704 Cherry Street near the Tech Tower. Current Georgia Tech faculty, staff, and students can use their BuzzCards to check out materials. Most books and videos can be checked out. Items that do not circulate are: journals, magazines, reference books, microforms, newspapers, some reserve books, indexes and abstracts. Materials are checked out at the Circulation Desk, located on the 1st floor east. Each item can be renewed up to 3 times over the phone, in person, or online. After the 3rd renewal, items must be brought to the Circulation Desk for additional renewals. Overdue items must be brought to the Circulation Desk for renewals. Items that are recalled may not be renewed. Current Georgia Tech students, faculty and staff may use their BuzzCard to borrow books from the Woodruff Library at Emory University and all general libraries within the University System of Georgia, which includes Georgia State University main and law libraries. To borrow books from other university libraries, or UGA and Emory specialty libraries, please contact our Circulation Department first.

A valuable resource available to all affiliates of Georgia Tech is the GALILEO database system. GALILEO stands for **GeorgiA L**ibrary **L**earning **O**nline, an initiative of the Board of Regents of the University System of Georgia. A World Wide Web-based virtual library, GALILEO provides access to multiple information resources, including secured access to licensed products. Participating institutions may access over 100 databases indexing thousands of periodicals and scholarly journals. Over 2000 journal titles are provided in full-text. Other resources include encyclopedias, business directories, and government publications. To access GALILEO, you must have your GT account and password.

Many journals are available electronically as e-journals through the Library website (<http://www.library.gatech.edu/>). If you have difficulty finding a journal you need, help can be sought from both virtual librarians and the Information Services desk on the first floor of the library, or by phone at (404) 894-4530.



## **Parking and Transportation**

### *On-Campus Parking*

If you plan to have a car on campus when you arrive at Tech, you will need to apply for a parking permit. Parking on campus is very limited; be aware that applying for a permit does not ensure that you will receive one. However, if you will need a parking permit, you should apply for one as soon as possible. You may apply online for your parking permit. The application may be found at <http://www.parking.gatech.edu>. You may also call Parking at (404) 894-9645, or their office is located at 828 West Peachtree Street NW.

### *Stinger and Trolley Services*

The University runs the Stinger Bus System with several routes to various places on campus, and also provides transportation to and from the Midtown MARTA station (Metropolitan Atlanta Rapid Transit Authority) via the Tech Trolley. Consult the Stinger schedule and routes on the Parking and Transportation office's website at <http://www.parking.gatech.edu>.

The Stingerette Shuttle Service provides van transportation on campus during the evening and nighttime hours (after the buses have ceased operation for the day). During the day, the Stingerette shuttle provides transportation for handicapped persons on campus. The Tech Trolley service is a way to get to the local grocery store. For more detailed information regarding the Stingerette Shuttle Service, see the Stinger link posted above.

Also, there is an online service where you can monitor real-time movement of the Trolley and Stinger shuttles. NextBus provides this service, and their website is [www.nextbus.com](http://www.nextbus.com).

## **Purchasing and Receiving**

For purchases, please see your faculty advisor or the lab manager.

## **Radiation Safety**

The Office of Radiological Safety (ORS) in the Boggs Building (404-894-3605, [ors@ors.gatech.edu](mailto:ors@ors.gatech.edu)) provides assistance and guidance in the safe use of radioactive materials. Anyone wishing to use radioisotopes or radiation producing equipment in research must be trained and certified by ORS. A copy of the Institute Radiation Safety Manual is available online at: <http://www.ors.gatech.edu/rsm.htm>

Questions on use and disposal of radioactive materials should be addressed to the departmental/school Safety Officer, Alison Onstine. She may be reached at 404-229-3953, or [alison.onstine@biosci.gatech.edu](mailto:alison.onstine@biosci.gatech.edu).

## **Registration**

The OSCAR (<https://oscar.gatech.edu/>) provides detailed information on registration dates and how to register via the computerized Web Access System. The Web Access System, which is used for registration, can also be used to check:

### Registration status

Add or drop classes; select variable credits, grading modes, or levels; display your class schedule; obtain student invoice statement; web payment options.

### Student records

View your holds; display your grades and transcripts; review summary of charges and payments by term; web payment options.

### Financial aid

Apply for financial aid; review the status of your financial aid applications; check status of document requirements; review loans.

### Campus services

Sign up for direct deposit, meal plans.

After registering for courses, be sure to determine your mandatory fees and pay these by the deadline (deadlines are given on the Bursar's calendar at <http://www.bursar.gatech.edu/>) at the Bursar's office on the first floor of Lyman Hall. **Note: It can take up to 24 hours after registering as a full time student for other services to become available (payroll deduction, tuition waiver, etc) so register early!**

## **Sexual Harassment**

It is the policy of the Institute that no member of its community, including administrators, faculty, staff, or students, should be subjected to sexual harassment by another. This policy and procedure is intended to create an atmosphere in which individuals who believe that they are the victims of harassment are assured that their complaints will be dealt with fairly and effectively. Toward this end, the Georgia Institute of Technology supports the principle that sexual harassment represents a failure in ethical behavior and that sexual exploitation of professional relationships will not be condoned.

Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when:

1. submission to such conduct is made, either explicitly or implicitly, a term or condition of an individual's employment or academic standing; or
2. submission to or rejection of such conduct is used as the basis for employment or academic decisions affecting the individual; or
3. such conduct has the effect of unreasonably interfering with an individual's work or academic performance or creates an intimidating, hostile working or academic environment.

Both men and women may be either the initiators or victims of sexual harassment.

Any member of the Institute community who believes that he or she has been the victim of sexual harassment as defined above should promptly report the matter to the appropriate Institute official designated to handle such complaints.

## **Travel**

As a graduate student, you may travel to scientific meetings, research sites or educational destinations related to your research with the approval of your faculty advisor. Graduate students are eligible for travel funds through the GT Graduate Student Senate and the College of Sciences. The faculty member may also supply funds from a research account for travel. If you plan to travel and have your faculty advisor's approval, please carefully inform yourself about the necessary steps and requirements as soon as possible and **at least 30 days prior to travel.**

## **Leave of Absence**

If you plan to request a leave of absence, please speak with your advisor and inform the graduate coordinator. You may request a “Leave of Absence” via the following link:

<http://registrar.gatech.edu/files/application-for-leave-of-absence.pdf>

## **Withdrawing from School**

Withdrawal from school will not be permitted after 60 percent of the term except in cases of hardship as determined by the Institute Graduate Committee, as appropriate. With the exception of part-time graduate students, students who withdraw from school and receive all grades of W will not ordinarily be permitted to re-enroll the next term. A student may withdraw from school via the Student Access System by the posted deadline in the official school calendar published in OSCAR. All holds on the student’s record must be cleared prior to withdrawal.

## **Buildings and Facilities**

### ***Buildings and Facilities***

The School of Biological Sciences is a rapidly expanding unit of the College of Sciences with more than forty faculty members. The School is headquartered in the new Engineered Biosystems Building, with additional faculty labs and facilities in the surrounding Parker H. Petit Institute for Bioengineering and Biosciences, Ford Environmental Science and Technology Building, Boggs Building, and the Cherry Emerson Building. Together, this complex forms the center of bioscience research at Georgia Tech and houses interdisciplinary research teams of biologists, chemists, earth scientists, bioengineers, and environmental engineers. Faculty labs for the Integrated Physiology programs are located just outside of main campus at 555 14th street.

In addition to classrooms and teaching laboratories, research laboratories are available within these buildings for molecular biology, microbiology, bioinformatics, and ecology research. Specialized facilities include Mass Spectrometry for proteomics and lipidomics, confocal microscopy; the Ovarian Cancer Institute; and the Bio-Omics facility.

Off campus, coastal facilities are available to conduct research and field studies at Georgia Tech's Priest Landing Marine Facility, the Skidaway Institute of Oceanography and UGA Marine Institute - Sapelo Island near Savannah, Georgia. These facilities provide unique opportunities to conduct research in the ecology of coastal marine ecosystems.

## Directory

### University Offices

<b>Office</b>	<b>Address</b>	<b>Phone</b>	<b>Website</b>
Bursar's office	1 <sup>st</sup> floor of Lyman Hall	404-894-4618	<a href="http://www.bursar.gatech.edu">www.bursar.gatech.edu</a>
Graduate Studies and Research office	Room 310, Savant Building	404-894-4843	<a href="http://www.gradadmiss.gatech.edu">www.gradadmiss.gatech.edu</a>
Office of Human Resources	500 Marietta St., NW	404-894-9294	<a href="http://www.ohr.gatech.edu">www.ohr.gatech.edu</a>
Office of Information Technology	2 <sup>nd</sup> Floor Clough Commons	404-894-7173	<a href="http://www.oit.gatech.edu">www.oit.gatech.edu</a>
Office of International Education	Room 211, Savant Building	404-894-7475	<a href="http://www.oie.gatech.edu">www.oie.gatech.edu</a>
Library	Library and Information Center	404-894-4530	<a href="http://www.library.gatech.edu">www.library.gatech.edu</a>
Police	Corner of Ferst Drive and Hemphill Ave.	404-894-2500	<a href="http://www.police.gatech.edu">www.police.gatech.edu</a>
Registrar	1 <sup>st</sup> floor of Administrative Bldg.	404-894-4150	<a href="http://www.registrar.gatech.edu">www.registrar.gatech.edu</a>