

Graduate Student Handbook
2015 – 2016



School of Biology
Georgia Institute of Technology

About the School: A Message From the Chair

Terry Snell, 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 Biology 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 Biology 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 Biology 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.

A handwritten signature in black ink that reads "Terry W. Snell". The signature is written in a cursive, flowing style.

Professor Terry Snell
Interim Chair
School of Biology

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Introduction

Departmental Resources

The purpose of this handbook is to outline the School of Biology's 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 will be 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.biology.gatech.edu/>.

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

Kevin Roman Academic Program Coordinator	Engineered Biosystems Building (EBB) 2009 404-385-4240
Dr. Greg Gibson Chair, Graduate Committee	Engineered Biosystems Building (EBB) 2115A 404-385-2343, greg.gibson@biology.gatech.edu
Dr. Todd Strelman Associate Chair for Graduate Affairs	Engineered Biosystems Building (EBB) 3007 404-385-4435, todd.strelman@biology.gatech.edu

Other sources of information

- ❖ Georgia Institute of Technology general website <http://www.gatech.edu/students/graduate/>
- ❖ *Georgia Institute of Technology 2015-2016 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 Biology website: <http://www.biology.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 continued 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 academe. 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 Biology Graduate Committee

The School of Biology Graduate Committee consists of five faculty members representing major research areas in the department. In 2015-2016, the committee includes Greg Gibson (Chair), Lin Jiang, Yuhong Fan, and Ingeborg Schmidt-Krey. The Chair and Associate Chair of the School of Biology 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 and Academic Program Coordinator work in the School of Biology 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.

Todd Strelman is Associate Chair of the School for Graduate Affairs. He 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.biology.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 Biology 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 Biology, **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. 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 Committee

Your thesis advisor will work with you to plan a research project and form an appropriate thesis committee. The thesis committee acts to advise you in your research and will have primary responsibility for evaluating your work and your thesis. The membership of the committee varies among degree programs. For School of Biology degree programs, it 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. The student should email the list of seminars (title and date) attended to the Graduate Coordinator, Greg Gibson. 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.

Tools of Science (Biology 8106)

Tools of Science is a mandatory course, students are advised to take it in the first year of study. This jointly-taught course introduces students to some of the knowledge they'll need as scientists 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 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 forward 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 a MS degree before pursuing a PhD degree. Students typically take about five years to complete their doctoral program.

The School of Biology offers a PhD degree in biology and participates in the interdepartmental PhD program in bioinformatics.

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: ¹⁻⁶	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 ³	
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 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 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 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 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. During the first week of class, interested faculty will have the opportunity to give a 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 assistantship typically involves 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.

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 Biology. Under special circumstances and with the approval of the Graduate Committee and the School Chair adjunct or research faculty in Biology 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 Biology. 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 Biology and at least one member from outside the School of Biology. 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 12th 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 and summer of your second year and completed no later than the end of spring semester of the third year in the program. 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. The second 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 in the semester following successful completion of the written exam, and no later than the second semester of your third 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 questioning 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 (Cherry Emerson 209) and report a grade by the end of the semester in which the exam is taken.

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.

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 Biology 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 biology, and at least one member from outside the School of Biology.

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 Biology faculty at least two weeks prior to the defense. The thesis defense must be scheduled and announced through the biology 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.

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 12th 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 ¹
Take introductory courses	First year
Rotate through labs of interest	First year
Select a faculty advisor from among the faculty of the School of Biology	As early as possible and no later than the end of your 12 th month in the program
In consultation with your advisor, form your thesis advisory committee including at least three biology faculty. Submit the Thesis Committee Membership Form to the Biology graduate office	As early as possible and no later than the end of your 12 th month in the program
Meet with your thesis committee and fill out a Preliminary Program of Study Form . Submit the completed form to the Biology graduate office	As early as possible and no later than the end of your 12 th month in the program
Submit your Approval of Doctoral Minor Form 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 Request for Admission to PhD Candidacy Form , then submit it to the Biology graduate office	After completing your preliminary program of study
Take the written part of the qualifying exam , which is offered in the beginning of spring semester	Normally taken in January, and no later than in March of your 2 nd year in the program
Take the oral part of the qualifying exam	Within three months of passing the written qualifying exam, or end of your 2 nd year, whichever is later
Have the Request for Admission to PhD Candidacy Form signed by the Graduate Coordinator, then it is submitted to Graduate Studies by the Biology graduate office	After passing the oral exam

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

FORM or ACTION	TIMING or DEADLINE ¹
Carry out your research and publish at least one refereed paper	As early and quickly as possible
Meet with your thesis committee at least annually. Submit a Thesis Committee Meeting Report Form 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 Thesis Committee Membership Form to the Biology graduate office.	As necessary, but no later than one semester prior to thesis defense
Write your thesis. See the "Manual for Graduate Theses," available from the Graduate Studies office (http://www.gradadmiss.gatech.edu/thesis.php).	As early and quickly as possible
Teach at least one course (2 credit hours or more of GTA time) as a teaching assistant.	No later than the end of your 4 th year in the program
Submit a Petition for Degree and Approved Program of Study Forms to the Biology graduate office.	Submit these forms by the deadline announced by the Biology graduate 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 Biology 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 in room 208 Cherry Emerson.	As early as possible but no later than two weeks prior to thesis defense
Submit the Certificate of Thesis Approval Form and a copy of your completed thesis to the Institute Graduate Studies and Research Office.	After your defense and by the Registrar's deadline

PhD Program in Bioinformatics

The program in bioinformatics is a multidisciplinary degree program involving five academic units in the Colleges of Science and Engineering: biology, biomedical engineering, chemistry and biochemistry, computing, and mathematics. Students in this program must be admitted to the graduate program in one of the participating schools, which acts as a home unit for the student.

General Requirements

Students in the Bioinformatics PhD program must meet all requirements set forth in the following link: (http://www.biology.gatech.edu/graduate-programs/bioinformatics/new/bioinformatics_phd.php). In the case of biology, a number of specific requirements are listed below. In cases where the biology and bioinformatics program requirements differ and no specific resolution is given below, the biology requirements will take precedence in matters of timing (e.g., deadlines) and reporting (e.g., forms to be submitted), while the bioinformatics program guidelines will take precedence in academic matters (e.g., course requirements).

School of Biology Privileges

Bioinformatics students have the same privileges as students in the biology PhD program. These include, but are not limited to, the normal level of support (GRA or GTA) in the first year of study and the opportunity to take part in laboratory rotations in the first year of study.

Course Requirements

Bioinformatics students must enroll in BIOL 8002 and 8003 (Seminar) and BIOL 8106 (Tools of Science) within their first two years in residence. At least 12 credits of coursework in categories A and B of the bioinformatics program must be taken in the School of Biology.

Teaching Requirement

Bioinformatics PhD students are required to participate in teaching a minimum of one course as part of their graduate training. A teaching assistantship typically involves 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.

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

Students accepted into the bioinformatics program with the School of Biology as the home unit should choose a thesis advisor who is both a member of the bioinformatics program faculty and has a

primary faculty appointment in the School of Biology. Students choosing a thesis advisor outside of biology should request and complete a transfer to the school of the advisor within one semester. Such transfers require the permission of the graduate committee of the new home unit. The School of Biology does not provide financial support to students with advisors outside the School of Biology.

In keeping with the School of Biology requirements, students must file a Thesis Committee Membership Form by the end of their second semester in the program, and must hold their first thesis committee meeting by the end of their 12th month in the program. The School of Biology requires that at least one member of the thesis committee be from outside the bioinformatics program.

Qualifying Exam

The bioinformatics qualifying exam has separate written and oral components.

1. The written exam is a substantial and important exam, normally requiring two full days of effort. Your exam will be prepared, administered, and graded by the members of your thesis advisory committee. The detailed format of the exam will be determined by your committee, but most written exams extend over two full days.

The steps involved in this exam are:

- a. At least two months before the exam date, you should meet with your thesis advisory committee to define the areas to be examined. The exam should cover a broad spectrum of modern bioinformatics relevant to your scientific interests and plans. At this time, your advisory committee should provide you with a written summary of the areas to be examined and a list of appropriate materials for study.
 - b. 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 exam date. At this time, you may pass the exam outright. 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 thesis advisory committee must report a final result (pass/fail) to the biology graduate office (Cherry Emerson 211) within three months of the date of the original exam.
 - c. The timing of the written exam is flexible and you should begin discussing the exam at your first committee meeting. Students entering the program in advanced standing may take the written exam at any time before the deadline. Remember that your committee must notify both you of the exam date and content two months in advance.
2. The oral portion of the exam focuses on an original thesis research proposal which must be prepared following NSF (<http://www.nsf.gov/pubsys/ods/getpub.cfm?gpg>) guidelines. This exam is administered by the thesis advisory committee and will typically include an intensive discussion of the research proposed, accompanied by questions from the committee focused on relevant areas of bioinformatics.

A student who fails part of the comprehensive exam on the first attempt may retake the exam one time. Both parts of the qualifying exam must be passed by the end of the 36th month in the program.

Required Forms and Petitions for Bioinformatics PhD Students

Thesis Committee Membership Form

This form defines and requests approval of the membership of your thesis committee by the Bioinformatics Graduate 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 12th month in the program.

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. 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, and then the Biology graduate office submits it to Graduate Studies.

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 bioinformatics program 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 the Biology graduate office can submit it on your behalf to Graduate Studies.

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 <https://www.oscar.gatech.edu/>. 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 Petition for Degree. If you do not graduate the first time you petition, you must **reactivate** your degree petition by submitting another. 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 completion of any necessary modifications or additions to your thesis. The Graduate Coordinator is the last to sign the form, and then it is submitted to Graduate Studies on your behalf.

Bioinformatics PhD Program Timetable

FORM or ACTION	TIMING or DEADLINE²
Take introductory courses	First year
Rotate through labs of interest (optional)	First year
Select a faculty advisor from among the faculty of the School of Biology	End of the 2 nd semester in the program
In consultation with your advisor, form your thesis advisory committee including at least two bioinformatics faculty and one faculty member from outside the bioinformatics program. Submit the Thesis Committee Membership Form to the Biology graduate office	As early as possible and no later than the end of your 2 nd semester in the program
Meet with your thesis committee and fill out a Preliminary Program of Study Form . Submit the completed form to the Biology graduate office	As early as possible and no later than the end of your 12 th month in the program
Submit your Approval of Doctoral Minor Form 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 Request for Admission to PhD Candidacy Form , then submit it to the Biology graduate office	After completing your Preliminary Program of Study Form
Take the written part of the qualifying exam , which is offered in January and May	Normally taken in January, and no later than in May of your 2 nd year in the program
Take the oral part of the qualifying exam	Within 3 months of passing the written qualifying exam, or May of your 2 nd year in the program, whichever is later

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

FORM or ACTION	TIMING or DEADLINE ²
Have the Request for Admission to PhD Candidacy Form signed by the Graduate Coordinator, then submit the completed form to the Biology graduate office	After passing the oral exam
Carry out your research and publish at least one refereed paper	As early and quickly as possible
Meet with your thesis committee at least annually. Submit a Thesis Committee Meeting Report 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 Thesis Committee Membership Form to the Biology graduate office	As necessary, but no later than one semester prior to thesis defense
Write your thesis. See the "Manual for Graduate Theses," available from the Graduate Studies office (http://www.gradadmiss.gatech.edu/thesis.php)	As early and quickly as possible
Teach at least one course (2 credit hours or more of GTA time) as a teaching assistant	No later than the end of your 4 th year in the program
Submit a Petition for Degree and Approved Program of Study 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 Biology 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 in room 208 Cherry Emerson	As early as possible but no later than two weeks prior to thesis defense
Submit the Certificate of Thesis Approval Form and a copy of your completed thesis to the Graduate Studies office	After your defense and by the Registrar's deadline

Master of Science (MS) Degree Programs

The School of Biology 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 Biology 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. Some students complete an MS degree as a stepping stone toward a PhD, though this is not a necessary prerequisite to most PhD programs. Students with an interest in working as a laboratory technician or in a regulatory agency are likely to derive the most benefit from an MS degree.

Course requirements

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.

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 Biology. Under special circumstances and with the approval of the Graduate Committee, adjunct or research faculty in biology 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 Biology. In such cases, a written statement must be filed specifying who will be responsible for advising and supporting the student 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 Biology and at least one member from outside the School of Biology. 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 12th 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 Biology faculty at least two weeks prior to the defense. The thesis defense must be scheduled and announced through the biology 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.

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 12th 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 12th 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 ³
Select a faculty advisor from among the faculty of the School of Biology	By the end of the 2 nd semester
Choose a thesis committee with at least three biology faculty. Submit a Thesis Committee Membership Form to the Biology graduate office	By the end of the 12 th month in the program
Fill out and submit a Program of Study Form in consultation with your committee and submit to the Biology graduate office	By the end of the 12 th month in the program
Fill out and submit a Request for Approval of Master's Thesis Topic Form	As early as possible, but no later than one semester prior to thesis defense
Carry out your research	As early and quickly as possible
Meet with your thesis committee at least annually. File a Thesis Committee Meeting Report signed by the members of your committee to the Biology graduate office	Once a year
Write your thesis. For details, see: http://www.grad.gatech.edu/thesis/thesis_man.html	As early and quickly as possible
Submit the Petition for Degree and Approved Program of Study 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 Biology 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 in CE 208	As early as possible but no later than two weeks prior to thesis defense
Submit the Certificate of Thesis Approval Form and a copy of your completed thesis to the Graduate Studies office.	After your defense and by the Registrar's deadline

³ 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 in consulting firms or regulatory agencies that do not require experience in laboratory research.

Course Requirements

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
Total Required	35

*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.

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.

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	DEADLINE⁴
Select a faculty advisor from among the faculty of the School of Biology	Ideally, during the 1 st semester, and no later than the end of the 2 nd semester in the program
Fill out a Program of Study Form in consultation with your advisor and submit the completed form to the Biology graduate office	By the end of the 2 nd semester in the program
Submit the Petition for Degree and Approved Program of Study 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)

⁴ Unless otherwise noted, the deadlines are for submission of forms to the Biology graduate office.

Professional Master of Science in Bioinformatics

Outline:

This is an interdisciplinary degree program and as such includes courses from multiple Schools on campus. In the first two semesters each student is required to take course work which will provide intensive training in the areas of biology, biochemistry, computing, mathematics and statistics where the student's skills are not yet sufficient for the interdisciplinary studies of the third semester.

During the summer following the first year in the program, students will be working in internships with industry or government laboratories, or engaged in research with Georgia Tech faculty. During the third semester of the program, students can specialize in one of several areas of bioinformatics.

As an option a student may delay graduation for one semester and use this time for additional professional coursework, extended internship, or research with Georgia Tech faculty.

Course Requirements:

- Students are required to complete a total of 37 credit hours of coursework for the MS Bioinformatics degree. At least 21 credit hours of graduate courses of 6000 level or higher should be taken with letter grade.
- A maximum of 6 credit hours of BIOL 8901 Special Problems (research for academic credit with Biology faculty) and 3 credit hours of pass/fail coursework (in a non-core course) may be counted toward the 37 credit hours required for the degree.
- A maximum of 6 credit hours of formal class work from another MS or PhD 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.
- Transfer credit will not be given for courses taken as requirements toward an undergraduate degree.
- A minimum overall GPA of 2.7 is required to graduate with the MS Bioinformatics degree.

Core Courses:

All students are required to pass or demonstrate proficiency in these subjects:

CS 4710	<i>Introduction to Computing Concepts in Bioinformatics</i>
CS 4400	<i>Introduction to Database Systems</i>
MATH 3215	<i>Introduction to Probability and Statistics</i>
MATH 6705	<i>Modeling and Dynamics</i>
BIOL 4150/8803	<i>Genomics and Applied Bioinformatics</i>
BIOL7111	<i>Molecular Evolution</i>
BIOL 8803C	<i>Computational Genomics</i>
BIOL 7023	<i>Bioinformatics</i>

Students who have taken equivalent courses at other universities may substitute other courses only with the permission of the program director.

Curricula Options:

The MS Bioinformatics program retains flexibility to accommodate students who enter with different backgrounds and have different career goals. The following pages offer two sample curricula for students with either bioscience backgrounds (version A), or students with computational/engineering backgrounds (version B). Version A has more CS and Math courses, and version B has more bioscience courses.

In addition, we list suggested courses grouped by 3 different subfields within bioinformatics and computational biology. These are elective courses that can be used to complete the 37 hours required for the degree, after fulfilling the core course requirements listed above. This is not a complete list, as new courses are added each year in various departments. Finally, students with the goal of working in the biotech industry should consider courses in the Management of Technology certificate program. Students should consult with the program director or another faculty adviser to determine which elective courses fit their interests and capabilities.

Special Problem Research:

Students are strongly recommended to perform research with faculty for academic credit, as BIOL 8901 Special Problems. This research experience will provide valuable experience in applying theory to real research problems, and may lead to support as a graduate research assistant in subsequent terms. Such experience will also be very helpful in securing internships and co-ops, and finding a job after graduation or for applying to PhD programs.

Recommended Sequences of Courses for MS Bioinformatics Entering 2009

Version A for students with bioscience degrees

Courses	Credit Hours
First Semester (13 credit hours)	
Special Problems Research (BIOL 8901) or Elective	3
Genomics and Applied Bioinformatics (BIOL 4150/8803)*	3
Modeling and Dynamics (MATH 6705)*	3
Introduction to Computing Concepts in Bioinformatics (CS 4710)*	4
Second Semester (12 credit hours)	
Molecular Evolution (BIOL 7111)* or Research or Elective	3
Computational Genomics (BIOL 8803C)*	3
Introduction to Probability and Statistics (MATH 3215)* ¹	3
Introduction to Database Systems (CS 4400)*	3
Third Semester (12 credit hours)	
Bioinformatics (BIOL 7023)*	3
Research and/or Electives	9
Total Required	37

* Core courses – permission of the program coordinator required to make substitutions for these courses in the program of study

¹Math 3215 is a rigorous calculus-based introduction to fundamental probability and statistics, and cannot be substituted with an applied statistics or biostatistics course.

Version B for students with math, engineering or computing degrees who have already had the equivalent of MATH 3215*, MATH 6705*, CS 4400*, and or CS 4710*.

Courses	Credit Hours
First Semester (13 credit hours)	
Special Problems Research (BIOL 8901) or Electives	3
Genomics and Applied Bioinformatics (BIOL 4150/8803)*	3
Prokaryotic Molecular Genetics (BIOL 4608)	3
Introduction to Computing Concepts in Bioinformatics (CS 4710)* or Intro to Database Systems (CS 4400)* or advanced database course (CS 6400, 6411, 6430)	4 or 3
Second Semester (12 credit hours)	
Molecular Evolution (BIOL 7111)*	3
Computational Genomics (BIOL 8803C)*	3
Eukaryotic Molecular Genetics (BIOL 4668)	3
Research or Elective	3
Third Semester (12 credit hours)	
Bioinformatics (BIOL 7023)*	3
Advanced course in statistics (MATH 6262, 6267, or other)	3
Research and/or Electives	6 or 7
Total Required	37

* Core courses – permission of the program coordinator required to make substitutions for these courses in the program of study

¹Math 3215 is a rigorous calculus-based introduction to fundamental probability and statistics, and cannot be substituted with an applied statistics or biostatistics course.

Suggested Elective Courses for students interested in:

Genomics:

BIOL 4150/8803 Genomics and Applied Bioinformatics

BIOL 8802 Microbial Genomics

BIOL 4608/6608 Prokaryotic Molecular Genetics

BIOL 4668/7668 Eukaryotic Molecular Genetics

BIOL 4015/8803 Cancer Biology

CHEM 6572 Macromolecular Structures

BIOL 8901/8902 Special Problems (research for credit)

Structural biology:

BIOL 4478 Biophysics

BIOL 7110 Macromolecular Modeling (pre-req: Chem 6572)

BIOL 8802 Computational Systems Biology

CHEM 6572 Macromolecular Structures

CHEM 4765 Drug Design, Development and Delivery

CHEM 6501 Biochemistry I

CHEM 6573 Molecular Biochemistry

BIOL 8901/8902 Special Problems (research for credit)

Computational biology:

BIOL 4755 Mathematical Biology

BIOL 6422 Theoretical Ecology

BIOL 4401 Experimental Design and Statistical Methods

MATH 3012 Applied Combinatorics

MATH 6014 Graph Theory

MATH 6266 Linear Statistical Models

MATH 6262 Statistical Estimation

MATH 6267 Multivariate Statistical Analysis

BIOL 8901/8902 Special Problems (research for credit)

This is not a comprehensive list. New courses are offered from time to time that may be highly relevant to any of these areas. Students should consult with the program director or faculty research adviser regarding suitable electives.

Management of Technology Certificate Option

Students interested in pursuing careers in business and industry may also take courses towards a Management of Technology certificate. Details are available at the link below:

<http://www.scheller.gatech.edu/academics/certificates/management-of-technology-certificate.html>

Timetable for Professional MS Degree in Bioinformatics

• FORM or ACTION	DEADLINE
Prepare and submit professional resume to the Bioinformatics Program Coordinator	January 15 of the first year in the program
Register with Co-op Office*	Two weeks before registration ends for Co-op semester
Apply for summer internships (outside or inside Georgia Tech)	Varies with sponsor, deadlines begin as early as December for the summer of the following year
File approved MS Degree Petition to the Bioinformatics Program Coordinator	Registrar's Deadline. Typically within the semester preceding the semester of graduation, e.g., July 2, 2010 for December 2010 graduation.

*Students **MUST** be registered for the term they will work as Co-ops. Students should pre-enroll with the Co-op office in the spring semester if they wish to work as a Co-op or intern during the summer, and then register for summer semester Co-op once they have received an offer letter. Please inform prospective employers that you must have the letter of offer **BEFORE** the registration period ends – Friday of the first week of classes.

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.

Biology Graduate Student Association (BGSA)

The Biology Graduate Student Association (BGSA) is an integral part of the Georgia Tech School of Biology. The purpose of BGSA 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 BGSA, 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 BGSA 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, BGSA organizes intramural teams and relates information regarding dates and times of practices and games. The BGSA also participates in fun activities several times during the year.

In addition to meetings and activities, the BGSA plays a key role in the interview process for prospective graduate students by providing a student perspective on the School of Biology. Each fall semester, the BGSA organizes a symposium for the department that features research from graduate students within the department. The BGSA 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.

Bookstore

The Barnes & Noble Georgia Tech Bookstore is located in Technology Square directly across the Downtown Connector from campus on 5th 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 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 Biology 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 Biology 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. 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 Biology 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 2nd floor of the Clough Commons Building and ask for assistance.

Copiers, Fax Machines, Phones

The School of Biology 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 Biology office (EBB Biology Administrative Suite). Photocopiers are for educational and research purposes only. Violators will have their accounts revoked.

Biology 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 Biology 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). 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 2nd 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 Biology orientation session. You will need to complete these documents and turn them in to Human Resources. If you are unable to attend the biology orientation, please see Nena Gray, Financial Manager, and she is located in Engineered Biosystems Building biology administrative suite on the 2nd floor.

Financial Aid

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 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 graduate biology 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 Biology 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 Biology policy and depend on student status (PhD, thesis MS, non-thesis MS, MS bioinformatics). Rates can be changed from year to year in accordance with the School of Biology. For the 2010-2011 academic

year, the GTA and GRA stipend for a PhD student is \$1,837.50/month, or \$22,050 annually. The annual rate for MS thesis and MS bioinformatics students is \$16,500, with a monthly rate of \$1,375, and the rate for MS non-thesis students is \$900/month and \$10,800 annually.

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 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 Biology, 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, Marc Pline (404-403-4610), 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. Marc Pline or the main Biology 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, Marc Pline (404-403-4610), 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 Enhancement of Teaching and Learning (CETL) 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://www.cetl.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 Biology Safety Officer and can answer most questions relating to research safety. Marc can be reached at (404) 229-3953 or alison.onstine@biology.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 LIBrary LEarning Online**, 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.

All journals published before 1980 are in compact storage in the Library basement. These older journals have been placed in compact storage to conserve them and to provide much needed shelf space in the general library stacks. To access an item in storage, complete a “Storage Request” form and take it to the Circulation Desk. The form requires the journal name, call number, volume number, volume date, and page numbers of the article. Forms are available at the Circulation Desk and at the Information Services Desk, and can be downloaded and printed. Requests may also be faxed to (404) 894-0399 so that they can be at the Circulation Desk when you arrive. Storage items are strictly for in-house use. You may make photocopies.

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 them 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.

Purchasing and Receiving

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

Radiation Safety

The Office of Radiological Safety (ORS) at 770 State Street (voice: (404) 894-3605, fax: (404) 894-9325, e-mail: 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 biology Safety Officer, Marc Pline. He may be reached at (404) 403-4610, or marc.pline@biology.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, the following needs to be done in the order shown, **starting at least 30 days prior to travel:**

1. A Travel Authority Request form (TAR) must be completed, printed, signed by you and your faculty advisor and turned into the Finance office (Cherry Emerson, Room 203) BEFORE you leave on your trip.
2. If your faculty advisor has agreed to pay for the airline ticket, it can be direct-billed to Georgia Tech. See the Finance office for further instructions on this process.
3. If you want to seek funds from the Graduate Student Senate Conference, you will need to complete their application and the College of Sciences conference fund application which are available from Nena Gray in the Biology financial office. These must be received by the Student Senate and College of Sciences offices **at least 21 days prior to travel or you will not be eligible for funds.** Generally, a trip is covered by one-third from the Student Senate, one-third from the College of Sciences, and one-third from the faculty member. Notice of approval/disapproval of funds from these sources is usually received within a week.
4. Read all notes in the travel forms concerning meal allowances so that you are aware of what you are eligible to claim for expenses.
5. If your faculty advisor has agreed to pay for your registration, it can be charged to his/her P-card.
6. If you need a travel advance to cover expenses during your travel, forms are available from Nena Gray in the Biology financial office.
7. Once your trip is completed, complete the Travel Expense Form (TES) and attach all receipts for lodging, travel (airfare, train, taxi parking, etc.), and registration (if you did not pay for it on a P-card). Travel Expense Forms should be submitted to the Biology finance office. Reimbursements are made by direct deposit to your checking account if you are a GT employee.

NOTE: The Travel Authority Request form and the Travel Expense form are both obtained in the CoS Finance System: cosfinancial.gatech.edu. For further assistance, please see Nena Gray in the Finance office.

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

Cherry Emerson Building (310 Ferst Drive)

The Cherry Emerson building is located at 310 Ferst Drive and is the original home of the School of Biology. The building includes all administrative offices for the school, as well as the primary classrooms used for biology courses. Faculty in Cherry Emerson include molecular & cell biology, microbiology, ecology, structural biology and bioinformatics. Facilities in Cherry Emerson include three autoclaves, environmental chambers, darkroom, rooftop greenhouse, and two computer labs.

Ford Environmental Science and Technology (ES&T) Building (311 Ferst Drive)

The Ford Environmental Science and Technology (ES&T) Building was completed in autumn 2002 and is the largest academic building on campus. A number of Biology faculty working in ecology, behavior, and marine science are housed on the first and second floors of the south wing of ES&T. Biology facilities in ES&T include an autoclave, a darkroom, six environmental chambers, and two aquarium rooms. The ES&T building was designed as an interdisciplinary facility and also houses the School of Earth and Atmospheric Sciences as well as portions of the Schools of Chemistry and Biochemistry, Civil and Environmental Engineering, and Chemical Engineering.

Petit Institute for Bioengineering and Biosciences (IBB) Building (315 Ferst Drive)

The Petit Institute for Bioengineering and Biosciences is an interdisciplinary facility including 42 faculty whose home departments include Biology, Chemistry and Biochemistry, Chemical Engineering, Biomedical Engineering, Electrical and Computer Engineering, and Mechanical Engineering. The mission of the Institute is to integrate engineering, information technology and the sciences in the conduct of biomedical research and education. Facilities available to biology personnel include a new mass spectrometry facility, located in the basement of IBB, and access to confocal microscopy.

Engineered Biosystems Building (IBB) Building (950 Atlantic Drive)

Directory

University Offices

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