

GRADUATE HANDBOOK

I. Introduction & Resources for Students

This document describes the graduate degree program of the School of Physics. It includes detailed information about our courses of study, degree requirements, financial support, administrative matters, facilities, etc.

There are many resources available in the School and across campus to support graduate students throughout their career at Georgia Tech. The Associate Chair for Graduate Studies ([Prof. David Ballantyne](#) in Howey W107 & Boggs 1-90L) is always available to help with ANY issue that may arise at any time.

A. Academic and Administrative Resources

- The School of Physics Academic Office (Howey W111) is the first point of contact to find answers to academic and administrative issues.
- For Ph.D. students, the members of the Thesis Exam Committee (see Section IIB.5) should also be regarded as important resources to help resolve academic, research, or other questions.
- The [Georgia Tech Communication Center](#) can assist students with CV writing, poster presentations, dissertation writing, as well as all other forms of scientific communication.
- The [Georgia Tech Office of Graduate Studies](#) can provide Institute-level guidance on completing and submitting the doctoral thesis, information on fellowships, and resources on professional development and career planning.
- For all students, the [Georgia Tech Office of Conflict Resolution & Ombuds](#) provides a confidential, neutral, and independent resource to help resolve issues which may transcend the resources of the School itself.
- Finally, the [Registrar's Office](#) and [Bursar's Office](#) can provide help and guidance related to registration and financial issues.

The Graduate Student Government Association (GSGA) has collected information on all of these resources, as well as other useful ones, in [this handy PDF](#). Students are encouraged to download and save this sheet for easy access.

B. Health and Wellness Resources

- Questions about [Student Health Insurance](#) should be directed to Jennifer White at STAMPS ((404) 894-0633).
- Graduate school can be a stressful time for students. The [Georgia Tech Counseling Center](#) and [STAMPS health services](#) offer a wide range of programs and services that can help

students who may need assistance. (See [this Physics Today article](#) by Andrea Welsh on her journey completing a Physics Ph.D. at Georgia Tech while dealing with mental health challenges.) The [Georgia Tech Health Initiatives](#) site includes information on many stress-management services available on campus (e.g., yoga, mindfulness), as well as diet and lifestyle resources.

- Sometimes you might just need to talk to another graduate student who knows what you are going through. The [Peer Coaching Program](#) provides students with another way to receive support with their academic, social, and other concerns. Students are matched with a fellow Tech student who has been extensively trained to navigate mental health conversations and who is knowledgeable about campus resources.
- Additional resources on campus that are there to assist graduate students include the [Women's Resource Center](#), the [LGBTQIA Resource Center](#) and the [Veteran's Resource Center](#).
- Put the Georgia Tech Police number in your phone (404-894-2500) to call for any safety concerns. Call 911 for emergencies.

All these links (and more!) are collect at one site: [GT United](#). **Please bookmark this site!** The bottom line: if you need help with anything, please ask! There are many resources available to ensure your Ph.D. experience is all you want it to be.

C. Policies on Equality, Harassment and Workplace Environment

The School of Physics strives at having a safe, respectful, and constructive workplace for all members of its community (faculty, researchers, students, and staff) where each individual is treated with respect and compassion. **The School does not tolerate harassment, discrimination, intimidation or any behavior, either spoken or unspoken, that creates a negative or hurtful environment for any student.** All graduate students must read and understand the Georgia Tech policies related to sexual harassment, sexual misconduct and nondiscrimination:

- Nondiscrimination & Harassment: <https://policylibrary.gatech.edu/equal-opportunity-nondiscrimination-and-anti-harassment-policy> and <http://titleix.gatech.edu/anti-harassment-policy>
- Student sexual misconduct: <http://policylibrary.gatech.edu/student-life/student-sexual-misconduct>

If any graduate student either witnesses or experiences any behavior from a faculty member, staff member, or another student (graduate or undergraduate) that causes them concern, please reach out to the Associate Chair for Graduate Studies, the Chair, or any other faculty member the student feels comfortable speaking to. Alternatively, students can report concerns or issues to Ms. [Shaun Ashley](#) (Howey N105) or Mr. [Gary Longstreet](#) (Howey W111). Students may also report issues to the Associate Vice Provost for Advocacy and Conflict Resolution in the [Office of the Provost](#). Graduate students who report harassment or other violations of the above policies are protected by Georgia Tech's [non-retaliation policy](#).

Lastly, please be aware that the School of Physics prohibits romantic or sexual relationships between faculty or staff members and any person under their supervision. Note that graduate TAs are considered staff members.

II. Degrees and Programs of Study

A. Master of Science (MS)

The MS degree requires 30 credit hours of graduate-level course work. These hours must include the graduate courses PHYS 6103, 6105, 6106, 6107 plus at least 6 hours of 8000-level Special Problem or Masters practicum research experience in Physics. The remaining credits are completed from Physics lecture courses at the 6000-level or higher. Use of a 4000-level physics course, or graduate courses from a school other than physics, is allowed with approval from the Associate Chair of Graduate Studies. A minimum grade point average of 2.7 is required and no more than 3 hours may be taken on a pass/fail basis. There is no language or Responsible Conduct of Research (RCR) requirement. This degree usually takes 3 semesters of full-time study to complete. The School does not provide financial support for MS students.

At the end of their final semester MS students give a 20-min presentation on their research project to a committee consisting of their research advisor plus two other School of Physics faculty members. The student will be assessed on the research skills acquired during the program and the quality of their presentation. The assessment forms are available from the Academic Office and can be downloaded here:

| MS Assessment Forms | |
|--------------------------------------|--|
| <i>Fillable PDFs</i> | <i>Non-Fillable PDFs</i> |

The assessment forms are to be completed by each member of the committee, including the research advisor. If using the Fillable PDFs, the forms must be flattened by printing to a PDF file and then emailed to the Associate Chair for Graduate Studies. The non-fillable forms are to be collected by a member of the committee (not the research advisor) and delivered to the Associate Chair for Graduate Studies. The assessments are not used to pass or fail a student, but are used to provide constructive feedback to the student and to evaluate the effectiveness of the MS program. [Note: Ph.D. students who are obtaining the MS degree 'on-the-way' (see Sect. V.B below) do not need to give this presentation.]

During the semester preceding the semester when the MS degree is expected (i.e., the Spring semester for graduation in the Summer), a student must submit an [Online Application for Graduation](#).

B. Doctor of Philosophy (Ph.D.)

The Ph.D. degree requires successful completion of (1) a program of study in core and advanced physics courses; (2) a course in the Responsible Conduct of Research (RCR); (3) a Comprehensive Exam (consisting of a Thesis Proposal and an oral Proposal Exam); (4) a Minor course of study; and (5) a written Ph.D. thesis and a public defense of that thesis. Georgia Tech requires that all doctoral students maintain a 3.0 grade point average.

With the permission of the School's Associate Chair for Graduate Studies, a Ph.D. thesis may be written under the supervision of a Georgia Tech faculty member outside the School of Physics.

With the permission of the research supervisor and the School's Associate Chair for Graduate Studies, Ph.D. students may seek a concurrent MS degree from another School. If so, the courses taken for the MS may be counted to satisfy the Doctoral Minor requirement.

During the semester preceding the semester when the Ph.D. degree is expected, students must submit an [Online Application for Graduation](#). See section V below.

[A Ph.D. student may also choose to obtain a MS in Physics 'along-the-way' after they have obtained the required number of credits (typically after the 1st summer in the program). See Sect. V.B below. As long as the MS requirements are satisfied, the MS can be awarded whether or not the Ph.D. is completed. The end-of-program presentation is not required for Ph.D. students to obtain the MS degree.]

1. Program of Study

1st Year Course Requirements: Core Courses

All first-year Ph.D. students are required to take the following four core physics courses:

| Core Physics Courses | | |
|----------------------|---------------------|---------------|
| PHYS 6103 | Electromagnetism I | Fall Semester |
| PHYS 6105 | Quantum Mechanics I | Fall Semester |

| | | |
|-----------|-------------------------|-----------------|
| PHYS 6106 | Quantum Mechanics II | Spring Semester |
| PHYS 6107 | Statistical Mechanics I | Spring Semester |
| | | |

Students are expected to earn course grades of A or B in all core courses. Students who earn more than two grades of C or any number of D or F grades in the core courses may not continue in the Ph.D. program without the explicit permission of the School's Graduate Committee; however, if they wish, these students will be allowed to complete a summer Special Problems project in order to attempt to earn the MS degree.

A student who receives exactly two grades of C in the core physics courses will be given the option of completing a written 3-hr exam on each subject in order to continue in the Ph.D. program. The exams will be taken after the completion of the Spring semester and before the end of Phase 2 registration for the Summer semester (approximately mid-May). The exams will be written, administered and graded by the Graduate Committee, in consultation with the instructors of the 2 courses in question. The Graduate Committee will use the results of the exams and the student's classwork in the courses to determine if the student passes the examinations. If a student fails one or both exams, or decides not to take the exams, they will be unable to continue in the Ph.D. program (although they can complete the summer Special Problem to earn the MS degree).

A student who earns one grade of C in the four core courses will be allowed to continue in the Ph.D. program.

1st Year Course Requirements: Elective Courses

In addition to the core courses, all first-year students will register for one 3-hour Physics elective course in the Fall and Spring semesters. These courses will be discussed during advising meetings held prior to the beginning of each semester between the Associate Chair for Graduate Studies and each student. By discussing their academic background and interests, the Associate Chair for Graduate Studies will make a recommendation to each student on their elective course for the semester. In almost all cases the elective courses will be graduate level lecture course (6000, 7000 or 8000 level), but 4000-level courses may be allowed, if appropriate. Students are expected to earn a C or better in both elective courses in order for the courses to count towards the Advanced Course Requirement (see below).

Classical Mechanics Requirement: The advising meeting will include a discussion on the student's background in Classical Mechanics, including their exposure to key topics (including, but not limited to, Lagrangian and Hamiltonian mechanics)

and the textbook the student used in their undergraduate courses. If the student's background in Classical Mechanics appears insufficient then the student will be required to complete PHYS 6101 before being Admitted to Ph.D. Candidacy. In this case, a student may wish to take PHYS 6101 as their Fall elective course.

1st Year Course Requirements: Special Problem Research

In the Spring semester all first-year Ph.D. students register in PHYS 8901 (Special Problem), a 3-hour course arranged with an individual faculty member, and taken on a pass/fail basis. Registration requires the permission of the professor. The Special Problem should be viewed as a serious opportunity to begin Ph.D. research with a faculty member. If, at mid-term, either the student or the professor concludes that a partnership toward an eventual Ph.D. is unlikely, the student should find another professor with whom to explore Ph.D. research for the second half of the semester. Students may not register for more than one Special Problem per semester.

First-year students register for PHYS 8901 again in the Summer semester. In most cases, students will be continuing with the same professor from the Spring Special Problem. However, if either the student or the professor wishes to make a change at the end of the Spring Special Problem, then the student will register for PHYS 8901 with a different professor for the Summer. As with the Spring semester, it is possible for students to switch to a different advisor mid-term, if necessary. The Summer Special Problem is a 9-hour course, taken for a letter-grade (to assist with attaining the MS degree 'on-the-way').

With the permission of the Associate Chair for Graduate Studies, it may be possible for first-year students to take PHYS 8901 as their Fall or Spring elective course. This may be appropriate if a student already has an established research relationship with a professor. In this situation, the student would still need to satisfy the Advanced Course Requirement (see below).

Unless explicit permission is granted by the Associate Chair for Graduate Studies, the first (Spring) Special Problem must be arranged with a regular physics faculty member (not an adjunct faculty member in another School). Adjunct faculty members may serve as Special Problem supervisors during subsequent semesters.

Students continue registering for Special Problem (PHYS 8901) until they are admitted to candidacy following the Proposal Exam. After passing the Proposal Exam (described below), students should register for Doctoral Thesis (9000) hours with their supervisor rather than Special Problems (8901) hours.

Advanced Course Requirement

Beyond the core courses, students are required to earn a C or better in two (2) advanced physics courses (6000, 7000 or 8000 level) at some point before they

graduate. In most cases, this requirement will be satisfied after the first year of course work. Students must seek the permission of the Associate Chair for Graduate Studies to register for more than one course outside the School of Physics each semester.

Nominal Schedule

Below is the nominal schedule for the first 3 years of the Ph.D. program.

| | 1st Year | 2nd Year | 3rd Year |
|---------------|---|---|--|
| Fall | Core Courses Elective Course CETL 8000 PH1: Physics TA Preparation PHYS 8002: Seminar & RCR Training | Thesis Research Minor Course or Advanced Physics Course (optional) | Thesis Research Minor Course or Advanced Physics Course (optional) Thesis Proposal and Proposal Exam due for ALL Ph.D. Students |
| Spring | Core Courses Elective Course Special Problem Research | Thesis Research Minor Course or Advanced Physics Course (optional) | Thesis Research Minor Course or Advanced Physics Course (optional) |
| Summer | Special Problem Research | Thesis Research | Thesis Research |

2. Responsible Conduct of Research (RCR) Training

All doctoral students at Georgia Tech are required to complete a two-step [RCR training](#) process.

- The first step is an [online training course](#) that must be completed within 90 days of a student starting the Ph.D. program.
- The second step is an in-person training course, PHYS 8002, that is completed during the first Fall semester. This 2-credit hour course is taken on a pass/fail basis, and all students must pass the course to receive the RCR credit. Any student who receives an unsatisfactory grade in PHYS 8002 must complete the [PHIL 6000](#) course during their first summer.

Students are not able to be admitted to candidacy without completing the RCR courses.

3. Minor Course of Study

Georgia Tech requires all Ph.D. students to complete 6 hours of graduate-level courses taken on a letter grade (LG) basis (more information can be found [here](#)). Students can satisfy this requirement by taking two 3-credit courses from a School other than Physics, e.g., Mathematics, Electrical & Computer Engineering, Computer Science, etc. The 2 courses do not have to be all from the same School, but they should at least be loosely connected to a single intellectual topic. Students may also satisfy this requirement inside the School of Physics as long as none of the two courses is a specialty course in the subject area of the thesis research. For example, condensed matter students cannot use the courses Condensed Matter I and Condensed Matter II to help satisfy the Institute Minor requirement. However, these two courses could be used by a condensed matter student to satisfy the School's Advanced Course Requirement (see Section II.B.1 above).

Ideally, courses for the Doctoral Minor should be at the 6000-level and above, but certain 4000-level courses may be taken for the Minor if they are needed as prerequisites for the graduate courses. Also, graduate courses taken at another institution can be used toward the Minor requirement.

Once students have completed their Minor courses, they should send the Associate Chair for Graduate Studies a list of the 2 courses, and a proposed title for their Minor course of study.

4. Thesis Proposal & Proposal Exam - Admission to Candidacy

To be admitted to candidacy Physics Ph.D. students must write a Thesis Proposal and pass an oral Proposal Exam as described in detail below. The goal of these assessments is to ensure that the student has the necessary research skills and background knowledge in their area of physics to successfully pursue the proposed thesis research. The Proposal Exam will identify any deficiencies in the student's preparation and recommend actions to remedy these problem areas.

Thesis Proposal

- Each Ph.D. student must prepare a written Thesis Proposal that follows this structure:

| Section | | Recommended Page Limit |
|----------------|---|-------------------------------|
| 1. | Introduction | 1 |
| 2. | Literature Review | 5 |
| 3. | Proposed Work (include description of any current progress, if available) | 5 |
| 4. | Conclusion | 1 |

- The proposal must be single-spaced with each page containing a single column of text. In addition,
 - Margins, in all directions, must be at least an inch.
 - Page numbers must be included.
 - Only the following fonts are allowed:
 - Arial (not Arial Narrow), Courier New, or Palatino Linotype at a font size of 10 points or larger;
 - Times New Roman at a font size of 11 points or larger; or
 - Computer Modern family of fonts at a font size of 11 points or larger.
 - A font size of less than 10 points may be used for mathematical formulas or equations, figures, tables or diagram captions and when using a Symbol font to insert Greek letters or special characters. Other fonts not specified above, such as Cambria Math, may be used for mathematical formulas, equations, or when inserting Greek letters or special characters.
- The proposal should be no longer than 15 pages, not including references. Figures and tables are included in the recommended page limits.
- The proposal must include a title and the student's name. An abstract is not necessary.
- The completed Thesis Proposal must be sent to all members of the Thesis Proposal Committee no less than 1 week before the scheduled exam. Members of the Thesis Proposal Committee have the right to reject poorly-prepared Proposals, or to ask for delays in the exam date if they are not given enough time to carefully read the Proposal.
- Examples of Thesis Proposals: [Julia Speicher \(2021\)](#), [Sami Hakani \(2022\)](#)

Thesis Proposal Committee (TPC)

- Each Ph.D. student, in consultation with their advisor, will recruit 3 Georgia Tech faculty members to serve as their Thesis Proposal Committee (TPC). The student's advisor is **not** part of the TPC.
- In most cases, TPC members will be drawn from the School of Physics academic faculty; however, Georgia Tech faculty members from outside the School of Physics, including GTRI researchers, are also permitted.
- Approval from the Associate Chair of Graduate Studies is needed if a student wishes to recruit a TPC member from outside of Georgia Tech.
- Once all 3 TPC members agree to serve on the committee, the student will communicate their names to the Academic Office. The TPC must be finalized by the end of the Spring semester of a student's 2nd year in the Ph.D. program. However, if a student has changed research areas during their 2nd year, then this deadline can be delayed. Such students should discuss their case with the Associate Chair for Graduate Studies who will decide on whether a delay is warranted. The goal is for the TPC to be identified with plenty of time to schedule the Proposal Exam.

Timing

- The Thesis Proposal and Proposal Exam must be completed in the **first semester of a student's 3rd year** in the Ph.D. program (this would normally be the 3rd Fall semester).
- Students who have had a break in their studies, or have switched research areas during their first 2 years in the program, are eligible for a delay in the exam timing. Such students should discuss their case with the Associate Chair for Graduate Studies who will decide on whether a delay is warranted.
- The Academic Office in the School of Physics will coordinate with the TPCs to schedule the Proposal Exams and select the Chair of each TPC. The Chair of the TPC will be responsible for the correct administration of the Proposal Exam and its aftermath. The Academic Office will inform students of the time and location of their Proposal Exam, as well as the Chair of their TPC, at least 3 months prior to the exam.
- Students must communicate the title of their Thesis Proposal to the Academic Office 1 week before their Proposal Exam. The Academic Office will then advertise the Proposal Exam to the School of Physics community. The advertisement will include the day, time, location, proposal title, and the names of the student's research advisor and TPC.

Forms

- Before the Proposal Exam, the student should familiarize themselves with the DocuSign process for the [Admission to Candidacy](#) form.
- The student must also arrange for the following Assessment Forms to be sent to each member of the TPC

| Ph.D. Assessment Forms | |
|------------------------|--------------------------|
| <i>Fillable PDFs</i> | <i>Non-Fillable PDFs</i> |

If using the Fillable PDFs, the forms must be flattened by printing to a PDF file and then emailed to the Associate Chair for Graduate Studies.

Proposal Exam

- The Proposal Exam will proceed as follows with a recommended duration of 2 hours.
- 1. The Exam begins with a public presentation of the thesis proposal by the student. This presentation should last 30 minutes, if presented without interruption. The quality of the presentation should be at the level of a contributed APS talk (i.e., well organized slides and clearly delivered).
- 2. The structure of the presentation should mirror that of the written proposal, with roughly equal time spent on the literature review and the proposed research.
- 3. Following the presentation and any questions from the general audience, the exam room is vacated except for the student, the research advisor and the TPC. At this point, the TPC will examine the student. The questioning should examine the student's knowledge of their research area, as well as on the details of the proposed thesis research. The research advisor should participate rarely during the Exam, and ideally should only intervene to clarify any miscommunication between the student and the TPC.
- 4. After the oral examination, the student will leave the room and the TPC will reach its decision after considering the quality of the written proposal and the student's responses to the exam questions. The research advisor can provide input to the TPC. The possible outcomes of the exam are:
 - **Pass** – the student is Admitted to Candidacy.
 1. This is the outcome when the TPC identifies no areas needing improvement in the student's background or skills.
 2. The Chair of the TPC collects the assessment forms to deliver them to the Associate Chair for Graduate Studies. All members of the TPC and the advisor will electronically sign the Admission to Candidacy form as soon as it is convenient.
 3. The Chair of the TPC completes the Exam Results form ([fillable/non-fillable](#)) and sends it to the Associate Chair for Graduate Studies.
 - **Pass With Action Items** – the student is Admitted to Candidacy with recommended actions to help reach their potential.
 1. This is appropriate when the TPC identifies areas of improvement in the student's background or skills. However, the student remains on-track to graduate on time.
 2. The TPC must clearly inform the student of their recommended actions to address the areas needing improvement (e.g., specific courses, lab techniques, or articles/books).
 3. The Chair of the TPC completes the Exam Results form ([fillable/non-fillable](#)) and sends it to the Associate Chair for Graduate Studies. The summary section must

explicitly state the action items communicated to the student, and this information should be emailed to the student if not communicated during the Exam.

4. The Chair of the TPC collects the assessment forms from the TPC to deliver them to the Associate Chair for Graduate Studies. It is the responsibility of the Chair to ensure the scores on the assessment forms reflect the outcome of the exam, allowing for variations in the opinions of individual committee members.
 5. The advisor and all members of the TPC will electronically sign the Admission to Candidacy form as soon as it is convenient.
- **Provisional Fail** (failed 1st attempt)
 1. This is the outcome if the TPC identifies serious deficiencies in the student's background and skills that places successful completion of a Ph.D. in doubt.
 2. The reasons will vary from student to student, and may be connected to the written Thesis Proposal or the answers to the oral questioning. In any case, the TPC must communicate clearly to the student at the meeting the reason for the failure, and what steps the student should take to pass the exam in the future.
 3. The Chair of the TPC completes the Exam Results form ([fillable/non-fillable](#)) and sends it to the Associate Chair for Graduate Studies. The summary section must explicitly state the reasons for the Provisional Fail, and the recommended steps the student must take in order to be successful in a future exam. This information should be emailed to the student.
 4. The Chair of the TPC will also collect the assessment forms and deliver them to the Associate Chair for Graduate Studies. It is the responsibility of the Chair to ensure the scores on the assessment forms reflect the outcome of the exam, allowing for variations in the opinions of individual committee members.
 5. To continue in the Ph.D. program, the student must re-attempt and pass the Proposal Exam. This re-attempt must occur no later than the end of the student's second full term (Fall, Spring, or Summer) in residence following the failed attempt. As before, the Academic Office will schedule the retake with the TPC and inform the student of the day and time at least 3 months before the 2nd exam.
 - **Fail** (failed 2nd attempt)
 1. As above, but the student will not be permitted to continue in the Ph.D. program. The School will assist in ensuring the student receives a MS in Physics, if not yet awarded.
5. The student returns to the exam room and the TPC informs the student of the outcome of the Exam.
 6. The Proposal Exam ends with a short meeting between the TPC and the student without the research advisor present.

Checklist for Students

Here is a checklist for Ph.D. students indicating their key responsibilities in organizing the Exam:

Task

- ☐ In consultation with the advisor, determine the TPC and send names to Academic Office
- ☐ Write Thesis Proposal and prepare a 30-min presentation
- ☐ Send Proposal to the TPC at least 1 week before Proposal Exam
- ☐ Send title of Proposal to Academic Office at least 1 week before Proposal Exam
- ☐ Send Assessment Forms to the TPC (before Exam)
- ☐ Complete the Docusign Admission to Candidacy Form (following a successful Exam)

Notes

- It is understood that the normal course of research may lead students to work on problems that deviate from the Proposed Work written in their Thesis Proposal. There is no need for students to re-write their proposal or re-exam in such cases, and the new research projects will be discussed as part of the Annual Reviews (see below). However, a student who changes their major research area after completing a Thesis Proposal in the first area may be asked to complete a second Thesis Proposal in their new area.
- A student who receives a **Provisional Fail** in the Proposal Exam may consider switching research areas or advisors at that time. Before exploring any changes, the student must discuss this possibility with the Associate Chair of Graduate Studies to determine if this is the best course of action. If a student does switch research advisors after a Provisional Fail, then they must write a new Thesis Proposal and pass a Proposal Exam no later than the end of the student's third full term (Fall, Spring, or Summer) in residence following the failed attempt. If the student does not pass this new exam, no further exams will be permitted and the student will be unable to continue in the Ph.D. program.
- Students and advisors may view the Assessment Forms completed by the TPC at any time by inquiring at the Academic Office. The feedback the student receives during the Proposal Exam should be reflected on the Assessment Forms.

5. Post Thesis Proposal Annual Review

Students will meet with their TPC and their advisor for a short check-in discussion at least **once a year** until graduation, beginning in the year after completing their Thesis Proposal and Proposal Exam. The Academic Office will schedule these

meetings for the Spring semesters. However, students can request the Academic Office schedule committee meetings at any time.

These annual review discussions should be low-key meetings between the student and the TPC, and should nominally consist of

- No written document.
- A 15 minute presentation describing the student's progress over their last year and their proposed timeline for the following year, including experiments, paper/thesis writing, and job searches
- The discussion should focus on identifying any research-related problems or roadblocks, including possible solutions, and confirming the presented timeline. It will also be appropriate for the TPC and the student to talk about job searches and career development during these meetings.
- Time should be set aside during these meetings for a short discussion between the TPC and the student without the advisor present.

Deviations from this format are allowed if they are agreed upon by the student and TPC prior to two weeks before the scheduled meeting. If the TPC, or the student, determines it is necessary, more frequent meetings are also allowed.

After the meeting, the Chair of the TPC will send a short, 1-paragraph email to the Associate Chair for Graduate Studies (cc'd to the student) summarizing the outcome of the meeting. The dates of the meetings will be recorded in the student's record and the email archived.

Nominal Schedule

| | Fall | Spring | Summer |
|----------------------------|---|---------------------------------|--|
| 2nd Year | | Student and advisor select TPC. | Proposal Exam scheduled. |
| 3rd Year | Thesis Proposal completed and sent to TPC (at least 1 week before Proposal Exam). Proposal Exam (1 st attempt). | | Latest time for retake of Proposal Exam. |
| 4th Year | Annual Review scheduled. | Annual Review | |

| | | | |
|----------------------------|--------------------------|---------------|--|
| 5th Year | Annual Review scheduled. | Annual Review | |
| 6th Year | Annual Review scheduled. | Annual Review | |

6. 7th-Year Review

If a student reaches the 7th year in the Ph.D. program without a major break in their studies or a late change in research advisor, and graduation is not imminent, then the TPC is charged to take an active oversight role to ensure the student can successfully complete their thesis in a timely fashion. In these cases, the TPC may request for more frequent meetings (e.g., on a bi-monthly basis) between the TPC and the student and research advisor, or ask for a written timeline from the student and advisor outlining the steps required to complete the thesis. However, the specific nature of the additional oversight will be determined by each TPC depending on the precise circumstances of the student.

7. Ph.D. Thesis

This requirement is met when a student has (i) written a dissertation which summarizes their original research and (ii) presented a public, oral defense of the student's dissertation to the Thesis Exam Committee (TEC).

A student's TEC must contain at least 5 people and would normally consist of the student's research advisor, the TPC, and one other individual. At least one of the 5 TEC members must not be affiliated with the School of Physics.

Georgia Tech has provided an excellent manual on the policies and procedures for producing and submitting your thesis as well as the rules for the TEC (please download and read the manual [here](#)). Students should also be aware of the submission [deadlines](#) that must be met in order to meet their desired graduation date.

The Thesis Defense is used to assess students' final performance in research, writing and oral presentation skills. It is the culmination of a student's time at Georgia Tech, and a chance to show the TEC everything the student has accomplished. The dissertation should therefore be a high-quality publication-worthy document at the time of the defense. It should also be given to the TEC with enough time for each TEC member to read it completely and carefully (a minimum of **2 weeks** before the defense date). TEC members have the right to reject poorly-prepared dissertations, or to ask for delays in the defense date if they are not given enough time to carefully read the thesis.

Finishing Ph.D. students must also supply each member of the TEC with these three assessment forms which are available from the Academic Office or here:

| Ph.D. Assessment Forms | |
|------------------------|--------------------------|
| <i>Fillable PDFs</i> | <i>Non-Fillable PDFs</i> |

If using the Fillable PDFs, the forms must be flattened by printing to a PDF file and then emailed to the Associate Chair for Graduate Studies. The non-fillable forms are to be collected by a member of the committee (not the research advisor) and delivered to the Associate Chair for Graduate Studies. These assessments are used to provide constructive feedback to the Ph.D. student and to help evaluate the effectiveness of the Ph.D. program.

After the defense, the Ph.D. student must initiate the DocuSign process for the Thesis Approval Form (available [here](#) under the Doctoral Students header). Note that when completing the DocuSign form, the thesis advisor's name is separate from the names of the committee members. The thesis is not approved until the completed form is accepted by the Office of Graduate Studies.

III. Stipend, Duties, Registration & Fees

A. Stipend Support

The School provides financial support to Ph.D. students in the form of Graduate Teaching Assistantships (GTA) and Graduate Research Assistantships (GRA). A student's support in the first year is contingent on the academic performance described in Section II.B.1 above. Assuming no academic problems, every student is guaranteed five semesters of support as a GTA paid by the School. Typically, these are the first five semesters in residence, whereupon the student converts to a GRA paid by the research funds of the Ph.D. supervisor. However, some supervisors may prefer to begin GRA support earlier and make use of what remains of the five semesters of TA support later.

To guarantee a student's salary, every GTA and GRA must register for at least 12 credit hours. Of these, at least 9 hours must be taken on a letter grade or pass/fail basis. The remainder should be PHYS 8997 (GTA) or PHYS 8998 (GRA) taken on an audit basis.

B. Assistantship Duties

A GTA works for the School for 10-14 hours/week. a student may be asked to (a) supervise undergraduate laboratories, (b) proctor examinations, (c) grade

homework, or (d) tutor undergraduates. This is a serious job. If a student does not perform the tasks asked of him/her, the School will not hesitate to reduce or discontinue a student's financial support.

To help students prepare for their GTA duties, all first-year students register for CETL 8000 PH, "Physics GTA Preparation", a one-credit pass/fail course during the Fall semester (see Table above). This course prepares first-year Ph.D. students for their teaching responsibilities through the integration of pedagogy, physics, and professional development strategies. Class activities use research-based teaching practices to help students build a foundation for learner-centered teaching. Emphasis is given to development of transferable skills that students can use in their future careers inside and outside of the classroom.

A GRA works for an individual professor. A student's duties are to conduct research toward a student's Ph.D.

GRA salaries are paid from the research grants of individual professors. Therefore, once a student is committed to a professor for a student's Ph.D., a student must ask him/her before registering each semester to learn whether he or she will be a GRA or a GTA for the coming semester.

C. Registration

Not long after mid-term every semester, Phase I registration opens for the next semester. It last two weeks. Phase II registration opens just before each semester begins. It also lasts two weeks. **Plan to register during Phase I.** Note: even if a student registers during Phase I, he/she does not need to pay the registration fee until the beginning of Phase II. During Phase I in the Spring, students can register for both Summer and Fall classes. The registration web site is <https://oscar.gatech.edu>.

Once past the first year courses, the majority of students register in (i) a research course under their advisor [either PHYS 8901 or PHYS 9000 depending on if they have passed their Proposal Exam] for 9 hours on a P/F basis, (ii) an assistantship course [either PHYS 8997 or PHYS 8998] for 3 hours on an audit basis, and, potentially, (iii) a course to satisfy their Doctoral Minor or advanced physics course requirements (3 hours on a Letter Grade basis). Exceptions to this standard should be discussed with the Graduate Coordinator well ahead of the registration deadlines.

1. Final Semester Registration Options

Students that are completing their Ph.D. may find that the timing of their defense, graduation, and start of their subsequent employment leads to an ambiguity in how

they should register for their final semester at Georgia Tech. There are, in general, three options (see Pages 3-4 of the [Thesis Manual](#) for more details and rules).

- Register as normal (i.e., PHYS 9000 & PHYS 8997/8). This works fine if the final version of your thesis is submitted in time for graduation in your last semester (see the [deadlines](#)), and there are no funding limitations.
- The 1-credit hour option. Students in their graduating semester can register for only 1 hour of PHYS 9000. Such students are, of course, not full-time and will therefore not receive a tuition waiver or be eligible to be paid as a GTA or GRA. These students must therefore pay the 1-hr of tuition and fees (~\$800/in-state and ~\$1400/out-of-state). Students can be hired as a Graduate Assistant (GA) by their advisor and paid hourly. **[NOTE: Students who are US citizens are ineligible for [student health insurance](#) if they are registered for less than 4 credit hours. Such students should contact STAMPS Health Services and consider their options before registering for 1-credit hour.]** Students can use the 1-credit hour option only once while at Georgia Tech.
- Enrollment Waiver. This is for students who missed the final submission deadline for their target graduating semester, but have successfully defended, submitted their thesis, and are ready to start their job. They therefore have to stay 'on the books' at Georgia Tech to graduate the following semester, even though they may not ever be on campus during the semester. The Enrollment Waiver allows a student to stay 'on the books' and not register for any hours or pay any money. To use the Enrollment Waiver, complete the form using DocuSign (find it at the bottom of the [Forms Page](#)) before the Enrollment Waiver [deadline](#). Note that all thesis-related forms must be completed and submitted for the Enrollment Waiver to be approved.

If none of these seem to fit, students should discuss their case with the Registrar's Office.

D. Fees

GTA and GRA students must pay a fee to register for either the Fall or Spring semesters. Depending on a student's residency status (Georgia resident or non-resident) MS and Ph.D. students without any financial support pay a fee that depends on the number of hours registered. The complete fee schedule is posted at <http://www.bursar.gatech.edu>. Students can pay on-line or in person at the Office of the Bursar. **Pay student fees on time to avoid late charges!**

E. Travel Reimbursements

As part of their training, graduate students may need to travel to destinations around the world. This travel is often supported through the grants of the student's advisor, or through one of the various student travel awards offered on campus (see IV.E below). Frequently, the student is reimbursed for travel expenses after completion of the trip. To ensure a smooth reimbursement process, students should

- talk to the staff in the School of Physics Finance Office (Howey N109) about reimbursement policies and procedures **before** making any travel arrangements

- read and be aware of Georgia Tech's [travel policies](#), including common issues that arise (e.g., sharing hotel rooms, missing receipts).

If a student has any questions about what may or may not be reimbursable (e.g., stays in Air B&Bs are not reimbursable), they should speak to the Finance Office before they travel.

IV. Facilities

A. E-Mail & Telephones

The School and the Institute communicates with students through an e-mail account that is assigned to each student. **It is essential that a student activate this account and check it every day.** Students can do this at <http://mail.gatech.edu> or with your favorite email client.

We do not provide phones in student offices. Students may use the phones in the main office for emergency outgoing calls. However, the front office does not pass on telephone messages to students. Students actively engaged in research may have access to phones in the research space of their advisors. If so, outgoing calls must be restricted to professional matters. A phone for local calls is located adjacent to the mail room.

B. Mailboxes

Students have personal mailboxes in room W101. Check it every day. The mailing address is:

School of Physics
Georgia Institute of Technology
Atlanta, GA 30332-0430

C. Office Space

Students will be assigned a desk somewhere in the School. Typically, students share an office with several other students. Later, they may move to a desk given to them by a thesis advisor.

D. Room Access

A student's Buzz Card opens the exterior doors of the Howey Physics Building. A student's key or Buzz Card opens a student's office, the mailroom, and the Interaction Zone. If you need access to additional rooms or buildings, please ask your advisor to request access through the appropriate building manager. If you are

locked out of your office during business hours please see the Howey building manager, Alan Pruitt (Howey S103B). If you are locked out of your office or Howey outside of business hours, you will need to call a colleague for help or, in the case of an emergency, the Campus Police.

All room keys are State property and must be returned after graduation!

E. Travel Funds

I. Graduate Student Travel Awards

The Graduate Committee of the School of Physics invites graduate students to submit proposals to assist with upcoming professional travel to conferences and workshops. The awards are funded by the Amelio Endowment and the Weatherly Fund. Support will typically be up to \$500 for a domestic trip and up to \$1000 for an international trip. Larger amounts are possible (to support, e.g., attendance at summer schools), but would require additional justification and would depend on the availability of funds. The award will be dispersed as a reimbursement to the student after his or her return to campus and turning in receipts to the Financial Office (see reimbursement information in III.E). Only Ph.D. students in good standing are eligible for the Awards. That is, all students with overdue Thesis Proposals or Annual Reviews will not be considered for Travel Awards.

To be eligible for the award, the student must

- have an accepted abstract for either a talk or a poster at the conference or workshop (this can be omitted if there are no student presentations at the event -- this must be confirmed by the student's advisor)
- submit a 1-page justification for the travel, endorsed via email by their advisor. The student's name and their advisor's name should be listed in the proposal.
- submit a travel budget including the estimated costs of transportation, hotel, registration, per diem, etc.
- submit information on other sources of funding that have been obtained or are being sought

The proposal should be sent as a single PDF file by email to the Associate Chair for Graduate Studies. The student's name must appear in the filename.

Depending on the availability of funds, submitted proposals will be discussed by the Graduate Committee on a quarterly basis and successful proposers will be notified shortly thereafter. The deadlines will be a subset of Feb 1, May 1, Aug 1, and Nov 1. If a competition is being held, a call for proposals will be sent out a month before the deadline. *Within 10 days of returning from the trip, the student must provide to the Graduate Committee a 1 paragraph conference summary detailing the professional development gained on the trip.*

A graduate student can only win a Travel Award once each calendar year.

Rare exceptions to the above guidelines must be approved by the full Graduate Committee.

II. SGA Funds

The Graduate Student Senate also has a fund to support professional travel. Apply directly to them through the student center ([click here](#)).

III. College of Science Doctoral Student Travel Supplement

The College of Science also provides some funds to supplement Ph.D. students to travel to present work at conferences. Download the [application form](#) and follow the instructions. Note that students need to already have obtained funds from the School and/or the SGA prior to applying to the College.

F. Security

Our campus is in an urban environment. Take special care if walking in the adjacent neighborhoods after dark. Security on the campus and in our building is very good. We need students help to keep it that way. All persons who have reason to be in this building at night or on weekends have a key. Therefore, there is never any reason to let a person in. Never prop open a door to allow people to enter. Always lock office doors. Anyone who steals the private property of another person (or of the School itself) will be dismissed from the program. If a student ever finds unauthorized persons in the building, open doors, or unusual activities, report them to the campus Police (Ext 2500) immediately.

V. Forms

There is a certain amount of paperwork necessary to report a student's status and progress to the Graduate Office. Please check with the Academic Office (W111) or the Associate Chair for Graduate Studies at each stage to ensure that the necessary documents have been forwarded to the Institute Graduate Office. Many of the forms needed during the graduate program can be found [here](#). Students should also monitor their progress toward their degree through regular checking of [Degreeworks](#).

A. MS Degree

Refer to Section II.A above and the Institute's [Online Application for Graduation](#) (OAG).

B. MS Degree 'on the way' for Ph.D. Students

Ph.D. students can obtain the Physics MS degree any time after their first summer. To do this

- Complete the [Graduate Level Change](#) form using DocuSign. Fill out the top part of the form, select 'Add A Master's Degree Level' and send the form to the Associate Chair for Graduate Studies for signature. Submit this form to the registrar **before** Phase I registration of the semester preceding the semester in which a student expects the degree. This allows time to correct any unfulfilled requirements identified by the Graduate Office or Registrar.
- During the semester preceding the semester when the MS degree is expected, a student must submit an [Online Application for Graduation](#).

Note that Ph.D. students are not required to give the 'end-of-program' presentation to obtain the MS degree. Finally, please be aware that students with a MS degree are ineligible to apply for a [NSF GRF](#). Therefore, students who are planning on submitting a GRF proposal in their 2nd year should wait to obtain their Georgia Tech MS degree until after the GRF deadline.

C. Ph.D. Degree

Refer to Section II.B above. As described [here](#), the Office of Graduate Studies has migrated to using DocuSign for nearly all the forms required by Ph.D. students. This online system removes the need for students to run around campus trying to get professors to sign forms, and makes it easier to bring in remote participants to the Proposal Exam and Thesis Defense. *It is the student's responsibility to initiate the DocuSign process for both the "Request for Admission to Ph.D. Candidacy" and the "Thesis Approval" form.* Both these forms are found [here](#), under the 'Doctoral Students' header.

After a student completes the Doctoral Minor requirements, they must discuss the courses with the Associate Chair for Graduate Studies as a form must be sent to the Office of Graduate Studies.

Refer to the Institute's [Online Application for Graduation \(OAG\)](#) and submit a petition to graduate to the registrar **before** Phase I registration of the semester preceding the semester in which a student expects the degree. This allows time to correct any unfulfilled requirements identified by the Graduate Office.

A useful list of deadlines for submitting the thesis to the Graduate Office is found [here](#). A list of documents required by the Graduate Office when submitting a Ph.D. thesis can be found [here](#) or in the [Thesis Manual](#).

Links for Current Grad Students

[Health and Wellness Resources](#)

[Mentoring Resources for Students and Faculty](#)

[Individual Development Plans](#)

[Physics Courses](#)

[Thesis Template](#)

[Scholarships & Awards](#)

[Conference travel grants](#)

[Career Development & Job Opportunities](#)

[Graduate Studies at Georgia Tech](#)

[Graduate Association of Physicists](#)