

Georgia Tech Propagation Group: Graduate Student Expectations and Guidelines

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This document presents a summary of Propagation Group graduate student expectations and guidelines. All research associates, whether funded on GRA or not, are expected to uphold these expectations. Note: some of these requirements are *not* ECE guidelines and will be different for other laboratories and professors.

Thesis Masters Degree

All graduate students of the Propagation Group are expected to complete a thesis masters. Even PhD students should complete a thesis masters for the following reasons:

- There are still a few companies that balk at hiring non-thesis MS students
- A written MS thesis, on average, should be less work than the 3-fewer classes required by the non-thesis option
- Another opportunity for the students to develop, present, and defend their work
- It is something to “hang your hat on”, particularly if a student needs to leave the PhD program unexpectedly (illness, finances, family issues, etc.)
- Increased intellectual output assists in maximizing student publications
- The PhD dissertation, while much more rigorously reviewed and broader in scope, will be a much easier task once an MS thesis is completed
- Subsequent intellectual outputs will have higher quality
- Theses drive research programs, generating interest outside of Georgia Tech with well-crafted technical reports. You might be surprised by who winds up reading online copies of MS theses.

International Experience

It is expected that all domestic PhD students of the Propagation Group spend at least 1 term overseas in a high-profile host institution. There are many reasons for a researcher to spend time outside the US in a professional environment. International research abroad programs increase the recognition of the excellent research that is conducted overseas, provide an international venue for promoting a student’s and institution’s own

research, and prepares graduates for the increasingly global nature of engineering research and development. The experience can also be tremendous fun when conducted in an interesting country with good hosts. Some graduate students even find they have their most creative and productive research outputs while overseas.

It is highly beneficial to experience engineering and research in a foreign culture and setting. US engineers, in particular, will be working alongside peoples from all over the world – even if they never leave North America during their careers!

Students are free to choose and construct their own international experiences. However, there is more flexibility and funding opportunity if the students choose to visit one of the International Propagation Partner (IPP) institutions. The student must plan for the international term with at least 6 months of advance notice.

Graduate Pay Scale Policy

Pending availability of funds, it is the policy of the Propagation Group to move students through the graduate pay scales as quickly as possible. This means promoting from 1/3rd to ½ time GRA as quickly as possible. Likewise, this means paying at PhD-levels as soon as a student passes the PhD preliminary examination.

Graduate Students Engaged in External Employment

An increasing problem with academic research nowadays is managing the growing relationships between academic laboratories and corporate R&D groups. There are several key problems that repeatedly arise:

- **Intellectual Property Issues:** Anything that a Georgia Tech researcher (student or otherwise) invents, builds, designs, or otherwise dreams up in the vicinity of Atlanta is owned by the Institute. While academic institutions are generally benevolent with regards to releasing intellectual property to their inventors, private companies are placed under much more scrutiny. Outside employers should take precautions about protecting their intellectual investments and preserving the right to use what their employees work on at Georgia Tech. In fact, a shrewd company can leverage the intellectual property mechanisms of an academic institution, which will file invention disclosures, provisional patents, and full-patent applications and license to cooperative companies at a later date – avoiding the time and cost of “shooting-in-the-dark” that often is the corporate patent process.
- **Instructional vs. Advising Budget:** On a sponsored research contract, faculty advisors charge per student, per year for their advising services – in addition to materials, stipends, travel, and tuition. Since it takes a lot of time to plan and advise a graduate student effectively, this money is used to buy-down the administrative and academic load on a professor. Note that this does not increase the professor’s salary – it merely shifts the workload from instruction to advising. A professor that does not receive release time (bought by contract money) on his advising services is essentially performing uncompensated charity work.

- **Overhead Costs:** There are numerous incidental costs associated with maintaining a student laboratory. Administrative support, space fees, utilities, computers, travel fees, material and supplies, equipment, and a thousand other small things add up to a significant cost for student membership in a laboratory. Tracking who pays and who uses becomes difficult when collaborations grow.
- **Ethical Issues:** Educating high-tech engineers is expensive – and more immediately rewarding than most other types of education. Arguably, technology companies should help bear the costs of educating the high-tech work force, since they are the principle beneficiaries.

Although these issues can be tricky, collaborative engineering research between industry and academic laboratories is extremely valuable. It should be highly encouraged, particularly if the company is willing to pay the professional student significantly more than graduate stipend.

Below are several different types of external employment.

Full-Time Employment Outside of Georgia Tech: This pertains to a student who is a full-time employee of a company or institution outside of Georgia Tech. In this context, employment with GTRI is considered “outside Georgia Tech”.

- Inform your advisor about your employer before official laboratory association.
- Have your advisor and your employer put an operating agreement in place for managing intellectual property, mutual non-disclosure of information, stating expectations for advisor duties, protecting and separating both the student’s professional and academic responsibilities, and any project-specific issues.
- As a courtesy, the company should pay into the PIPEs program (at a reduced rate, since the company is funding the employee outside Georgia Tech) to cover advising and incidental expenses that a laboratory incurs on a student’s behalf.

Secondary Employment Outside of Georgia Tech: This situation describes a student that is being paid regular, part-time hours in addition to a Graduate Research Agreement. If the student has a part-time job outside of Georgia Tech and is not under GRA, then the situation bears closer resemblance to the previous “full-time employment situation”. This is also slightly different from a student conducting a short-term consulting project (described below). If you have a part-time job concurrent with a GRA appointment, please take the following actions:

- Alert your advisor that you are working part-time on a project, clearly outlining your responsibilities and time commitments and verifying that the project will not conflict with GRA work.
- If the project is conducted with an organization in which your advisor is a principle member, your advisor should assign another co-advisor to your graduate committee (or step down entirely). This will help avoid potential conflicts-of-interest when separating work for a company and work towards a graduate degree.

- If the employer is a technology company, the company should pay into the PIPEs program (at a reduced rate, since the company is funding the employee outside) to cover advising and incidental expenses that a laboratory incurs on a student's behalf.

Generally, a part-time position in addition to a GRA is *discouraged* by both the Georgia Tech Propagation Group and the School of ECE. Graduate stipends are a finite resource; if you have one, that means someone else doesn't. The purpose of a GRA is to provide basic living expenses with (on average) modest part-time requirements, thus freeing a scholar to take classes and conduct basic research. There are many deserving graduate students that do not receive GRA funding at Georgia Tech. If you are not interested in using your non-GRA time for scholastic pursuits, there is surely someone else around who is interested. Perhaps more to the point: if you really need the extra money, why on earth are you still in school?

Advisor-led Consulting Projects: A consulting project differs from hourly part-time work in two ways: 1) the work is project-based, rather than hour-based and 2) the duration of the project is short (less than 1 semester). A student may conduct a short-term consulting project with their advisor outside of Georgia Tech, but must be careful to do the following:

- Sit down with your advisor and clearly outline your responsibilities and time commitments and verify that the project will not conflict with GRA work.
- Have your advisor file a conflict-of-interest form with the School of ECE.
- Appoint a co-advisor to your graduate committee if the project is expected to last more than 1 month.

Visiting Industry Personnel: This type of laboratory member is a visiting researcher or industry engineer that is not enrolled as a Georgia Tech student. This type of member must make sure:

- Their organization has an operating agreement in place that addresses intellectual property and mutual non-disclosure issues.
- As a courtesy, the company should pay into the PIPEs program (at a reduced rate) to cover incidental expenses that a laboratory incurs on a visitor's behalf.

Publication Requirements

Scholarly publishing is fundamentally a creative enterprise. As such, there is little meaning in putting quotas on the intellectual output of graduate students. Furthermore, the group would prefer the publication of 1 quality/seminal journal article to the publication of many mediocre articles.

Despite the case-by-case nature of publishing, there are some useful rules-of-thumb for graduate student publication; take them with a grain of salt. A well-done MS thesis should generate at least 1 peer-reviewed journal article. A PhD student should have at least one journal paper in submission (preferably accepted) by the time of the proposal presentation; previous publications that do not relate to the proposed research topic do

not count. A PhD student should have 3 distinct peer-reviewed journal articles either published or submitted by the time of defense. A PhD preparing for a career in academia should have *at least* 5 journal papers in print or in submission before applying for university positions (otherwise a post-doc is highly recommended).

Summer Support Policy

Maximum GRA support for the summer term is available and even encouraged, funds permitting. However, it is the student's responsibility to alert the advisor for the need of summer support at least 3 months in advance.

Mid-Semester Departures

As a GRA, you *cannot* leave Georgia Tech mid-semester unless you are willing to forfeit your tuition remission (this may be an economically viable option if you need to take a sudden, lucrative job offer). Accommodations for students leaving early can be made if advance notice of the departure can be planned. For example, a graduate student who has finished the requisite coursework and is only writing a thesis can be hired hourly for a semester at comparable pay to a ½-time GRA. The student will register for 1 credit that semester with sharply reduced tuition costs paid out-of-pocket. Such a student could then terminate the support mid-semester and leave without penalty.

Reasonable Time for Degree Completion

As measured from the first semester in graduate school, a thesis MS should be completed within 2 academic years and a PhD dissertation should be defended by 5 academic years. Thus, students beginning graduate school in Fall 2007 should plan on supported MS activities through Spring 2009 and supported PhD activities through Spring 2012. Overshoots are subject to a hard "cut-off" of graduate stipend support and tuition waivers. Reasonable exceptions to these deadlines can be made case by case (particularly for students that performed many internships or coop terms, medical hardship cases, etc.)

Conference Submission and Attendance Policy

The Propagation Group financially supports student submission and attendance to *any* respected domestic or international research conference related to our field of study. If your paper is accepted, the group will gladly pay registration, travel, accommodation, and per diem expenses associated with conference attendance. One exception: if a graduate of the Propagation Group is employed by a high-tech company or laboratory and plans to present work that was originally submitted and/or conducted at Georgia Tech, the current employer is still expected to cover the conference attendance and presentation costs for their researcher. If the employer is unable to cover attendance costs, arrangements for a substitute presenter should be discussed with the Propagation Group.

For students, international venues for respected conferences are encouraged. However, it is expected that the student must attend one domestic (North American) conference before submitting international conference papers.

I have read and understood the Georgia Tech Propagation Group's Graduate Student Expectations and Guidelines, planning to follow them to the best of my ability. I understand that failure to comply may result in loss of financial support and/or membership in the group.

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