Mourigal Lab Handbook

April 21, 2024 (v1)

Research and Mentoring

In development and will include

- PhD Expectations
- Annual Reviews
- Communication Policy and Expectations
- Professional Development, Conference and Travel
- Data Management

Professional Training through Research

By conducting research in the laboratory, you will acquire transferable skills that are valuable in many different professional careers, ranging from industry and government to teaching and academia. To develop these transferable skills, I expect you to refine your professional training during daily work activities. The table below summarizes skills and expectations.

	Transferable Skills	How this is achieved and expectations
1.	Delivering excellent oral presentations	- Maintaining excellent weekly progress slides with long-term and short-term objectives, overview of scientific goals, and clear statement of roadblocks and progresses. - Producing professional quality figures - Giving one group meeting presentation per semester and one white board presentation per summer (Providing feedback on the progress of lab mates). - Giving presentations at local, national and international conferences
2.	Delivering excellent written documents	- Writing detailed and complete technical reports and notes in LaTeX/Overleaf documents with professional quality figures and details following the Hoffman guidelines - Writing draft of papers for publications - Writing posters for conferences and for the lab. -
3.	Synthetizing existing knowledge and developing new high-quality ideas	- Reading at least 2 papers a week in depth (mention it during weekly meeting with Martin). - Acquiring a general and knowledge of the general research field by using bibliography management software to collect and maintain a portfolio of publications. - Being deeply /completely knowledgeable of one research areas and avoid superficial knowledge - Discussing and proposing new ideas with other lab members. - Showing Initiative to start of propose new research directions in connection with your project.
4.	Communicating well and working with others	- Using in-person meetings to convey ideas and work in teams to attain objectives. - Communicating with peers in an inclusive and professional manner. - Using Slack and other tools to keep people in the loop of experimental progress and other advances, so that people are not left second guessing or uninformed.
5.	Acquiring a unique technical expertise in quantum condensed matter physics	- Having an excellent knowledge of quantum magnetism and neutron scattering, having read and studied in depth, at minimum: Blundell and Boothroyd. - Developing further expertise in chosen fields including materials synthesis, thermomagnetic simulations, advanced neutron and x-ray scattering, data analysis, computer simulations and theory, etc.
6.	Working with organization, consistency and ethics	- Maintaining a daily written logbook of experimental activities and analysis as well as discussion and notes from seminars and papers - Maintaining good data management practices - Maintaining good coding and computing practices, including Github version control - Acting as a good steward of financial resources and equipment - Taking the uttermost care in integrity of research activities and results

Time management and Pay

Science is generally hard, and progress requires dedication and commitment[1]. Progress also requires good mental health and a balanced life, happiness, having fun, and the possibility of changing scenery and taking true breaks on a regular basis. The lab thrives on collaborations between group members and researchers at GT and beyond, which requires a large cross-section of interaction through meetings and discussions.

Weekday Working Hours

Graduate students and postdocs

- It is generally expected that graduate students (after their first two semesters in the program) and postdocs will come to work in person on weekdays. A minimum (week-averaged) effort of 9 hours per weekday is expected. Working hours are flexible and I will not micromanage your working time. I expect good faith efforts and dedication to the lab's scientific enterprise. Additional effort outside of these hours can be beneficial if a novel or timely project requires it and motivation/availability/life-outside-the-lab permits.
- Changes of scenery are often useful for productivity and mental well-being. Graduate students and postdocs are allowed to work from home 2 non-consecutive days/month, no questions asked (if these do not unduly impact laboratory operations). Graduate students and postdocs are also allowed to occasionally work from the library or other parts of campus if they remain within a 15-minute reach of the lab.
- Participating in workshops, classes, trainings, seminars, journal clubs, colloquia, thesis proposals and defenses, collaboration meetings, one-on-one meetings with Martin, reasonable lunch and coffee breaks with colleagues, reading research papers, etc. counts as working time. However, completing assignments for classes does not count as working time.
- GRA and GTA positions are typically 50% effort positions from GT's point of view while GRAs are 100% effort for funding agencies' point of view. Given this ambiguity, GRAs on sponsored awards are expected to provide 45 hours/week effort. GTAs on state funds are expected to dedicate a minimum of 30 hours/weeks effort to research and around 15 hours/week dedicated to their teaching duties.
- In their first two semesters in the laboratory (and often at GT), graduate students are typically GTAs and expected to dedicate 12 hours/week to research, typically at least 2 half-days.
- Special circumstances such as sickness, injury, family matters or other unusual situations will be accommodated, just discuss with me.

Undergraduate students

- Undergraduate students in their first semester joining the laboratory are typically not paid but can take research for credit. In any event, undergraduate researchers need to register for class (https://undergradresearch.gatech.edu/register).
- After their first semester of work in the laboratory, undergraduate students are expected to dedicate a minimum of 10 to a maximum of 20 hours/week of effort to the laboratory, depending on their course/workload, with expectations discussed with me at least every semester. For the summer, a special arrangement of up to 40 hours/week needs can be discussed with me at least two months before the end of the Spring semester.

Stipends and fellowships

Graduate students

- GRA and GTA stipends are posted by the College of Science here: https://cos.gatech.edu/graduate-stipends
- In general, our goal is for graduate students after their first two semesters in the program to transition to GRAs, and to only occasionally be GTAs. Depending on funding availability and other circumstances, graduate students may be required to GTA before or after their thesis proposal.
- Graduate students are expected to register for Special Topic or classes as detailed in the Physics graduate student handbook: https://www.physics.gatech.edu/academics/graduate/handbook
- Graduate students are strongly encouraged to apply to fellowships, including the DOE SCGSR to work at ORNL or other national laboratories during the summer or other semesters. In some cases, industrial internships might be also be beneficial and students

Undergraduate students

[1] *"Constancy of thought and work is vital in scientific research. We overestimate work that can be done in short term and underestimate the long term"*

- Undergraduate students are paid hourly. Working hours and expectations are to be discussed with me on a case-by-case basis. The minimum pay rate in the lab is $14/hr.
- Undergraduate researchers are strongly encouraged to develop a proposal with Martin and apply to the GT PURA and Physics Letson fellowships to obtain research funding.

Experimental work outside of weekday hours

- Some experimental work in the laboratory or at a national facility outside of regular work hours is inevitable given the nature of our research. It is expected that all laboratory members involved in a particular project share the burden of piloting and maintaining active 24/7 experiments while minimizing possible impact on rest, mental health, and family.
- During the week, in-person laboratory operations outside of working hours is usually not expected, except for emergencies (for example: equipment failure). Weekend operations are occasionally expected, if these significantly improve equipment usage. Examples: a sample change on the PPMS at 3 am on a Tuesday can wait for the next morning but a simple sample change ready on Saturday at noon may benefit from being done before Monday 10am.
- For intense week-end work (for instance during scattering experiments), 1 extra day off can be used for each 2 week-end days worked in full.

Vacation Policy

Graduate students and postdocs

- 4 weeks (20 days)/year what includes the 5 days of Winter Break.
- + 8 official Institute holidays: New Year's Day, MLK Holiday, Memorial Day, Juneteenth, Independence Day, Labor Day, Thanksgiving Break (2 days).
- I do not wish to micromanage or exert control over your vacation plans. But discuss your "long" vacation plans with me for planning purposes. Once formalized, indicate your planned vacation periods on the group calendar "Mourigal Lab".
- Other personal circumstances (international travel, etc) may require longer vacation blocks. Discuss these situations with me. When plans are discussed and agreed upon, these are formalized by email approval.

Undergraduate students and tech temps

- The above does not apply to undergraduate students and tech temps who are paid hourly.

Laboratory Events

Schedule of classes and other duties permitting, graduate students and postdocs are expected to attend group meetings (Mondays at 10am), Physics Colloquia (Mondays at 3:30pm), Condensed Matter Seminars/Quantum Café (Wednesdays at 2pm) and other lab or project sponsored events (for instance Sunny meetings on Fridays). Undergraduate students are encouraged to attend these events, but academic classes should have the priority. All lab members are expected to participate and come prepared for their weekly meeting with me.

Additional Resources and Official Guidelines

Postdoctoral Fellows

- Institute: https://postdocs.gatech.edu/postdoc-resources/guidelines
- Resources: https://postdocs.gatech.edu/postdoc-resources

Graduate Students

- Institute: https://policylibrary.gatech.edu/academic-affairs/graduate-student-policies
- Resources: https://students.gatech.edu/student-resource-guide
- Physics: https://www.physics.gatech.edu/academics/graduate/handbook