

AST Graduate Student Handbook

Introduction

Astrophysical Sciences and Technology offers programs of graduate study and research leading to the degrees of Master of Science and Doctor of Philosophy. Students have opportunities to undertake research in a wide range of topics selected from the fields of detector development, observational, computational and theoretical astrophysics.

The research work is funded by grants and contracts, mainly issued by governmental agencies such as NASA and NSF. A limited number of Graduate Teaching Assistant stipends are available for qualified students entering the PhD program.

This handbook is intended to provide a ready reference to the basic information you need to navigate successfully through the AST graduate program. Though it is still a work in progress, we hope you will find it useful. Suggestions for improvement and additional content are always welcome.

Contacts

| | <i>Office</i> | <i>Email</i> | <i>Tel.</i> |
|---|---------------|----------------|----------------|
| Dr. Andy Robinson <i>Program Director</i> | CAR. 1270 | axrsps@rit.edu | (585) 475-2726 |
| Dr. Jeyhan Kartaltepe <i>Graduate Program Coordinator</i> | CAR. 1268 | jsksps@rit.edu | (585) 475-7514 |
| Cheryl Merrell <i>Sr. Staff Assistant</i> | CAR. 1260 | camsp@rit.edu | (585) 475-5302 |

Who to Ask

| Topic | Example(s) | Person(s) |
|-----------------------------|--|---|
| General program matters | Non-standard course choices; milestones; requirements etc. | Faculty Mentor, Andy, Jeyhan |
| Research Project | I can't get this code to work properly : (| Faculty mentor/research advisor (or peer mentors) |
| Admin matters | Course registration, stipend payments; reimbursement etc | Cheryl |
| Career advice | Preparing applications; job search strategy etc | Advisor, Andy, Jeyhan |
| Student – advisor relations | Communication issues, personality conflicts, misunderstandings | Andy, Jeyhan, (peer mentors) |
| General support/advice | all kinds of things | Faculty mentor/peer mentors, Andy, Jeyhan |
| Coursework | Stuck on homework assignment! | Course instructor, classmates |
| Personal difficulties | Own health, safety; worries about other students etc. | Faculty Mentor, Andy, Jeyhan, peer mentors, RIT resources |
| TA assignments | Assignment request or queries | Becky (SoPA Admin) or Cheryl |
| Discrimination/harassment | If experienced or observed | Any Faculty/Staff member, Title IX coordinators or RIT confidential resources |
| Anything at all | | Andy, Jeyhan, Cheryl |

Student Directory

The list of current students with contact information and their topics of research can be found [here](#).

COVID-19

RIT is currently fully open and all capacity restrictions have been lifted. We currently anticipate that during the Fall Semester, the Institute will continue to operate on a near-normal basis, with in-person classes and meetings and full office occupancy.

However, the RIT COVID-19 Safety Plan remains in effect and it is expected that all members of the community adhere strictly to its provisions. The most important ones are:

- All students, faculty, and staff are required to be fully vaccinated against COVID-19.
- Use of face masks is generally optional on campus, but still required in certain situations, most notably when using RIT transportation or in health centers.

Much more information about RIT's COVID-19 plan "RIT Ready" can be found here: <https://www.rit.edu/ready/>

STATEMENT OF PURPOSE

The Astrophysical Sciences and Technology department at RIT believes in the creation of an inclusive space based on fundamental respect and empathy for each other regardless of gender, sexual orientation, race, ethnicity, and all the things that make us unique as individuals. Professional behavior is expected at all times. We are also committed to fostering a supportive environment that emphasizes mutual support over competition and does not participate in "weeding out." We will not tolerate discrimination, harassment, or disrespectful behavior of any kind.

RIT NON-DISCRIMINATION STATEMENT

RIT does not discriminate. RIT promotes and values diversity within its workforce and provides equal opportunity to all qualified individuals regardless of race, color, creed, age, marital status, sex, gender, religion, sexual orientation, gender identity, gender expression, national origin, veteran status, or disability.

The Title IX Coordinator has overall responsibility for the university's institutional compliance with Title IX. Any person with a concern about the university's handling of a particular matter related to sex or gender-based discrimination or harassment should contact:

Stacy DeRooy

Director of Title IX and Clery Compliance

Title IX Coordinator

171 Lomb Memorial Drive

Rochester, NY 14623

585-475-7158

Stacy.DeRooy@rit.edu

www.rit.edu/titleix

Any person may report sex discrimination, including sexual harassment, in person, by mail, by telephone, or by electronic mail, using the contact information listed for the Title IX Coordinator, or by any other means that results in the Title IX Coordinator receiving the person's verbal or written report. Reports may be made regardless whether the person reporting is the alleged victim of any conduct that could constitute sex or gender-based discrimination or harassment. Reports may be made at any time (including during non-business hours) by calling the telephone number noted above, by electronic mail, by mail to the office address listed for the Title IX Coordinator, or by filing a report on line with RIT's Title IX Office.

The U.S. Department of Education, Office for Civil Rights (OCR) is a federal agency responsible for ensuring compliance with Title IX. OCR

may be contacted at 400 Maryland Avenue, SW, Washington, DC 20202-1100, (800) 421-3481.

Organization

The Astrophysical Sciences and Technology Program resides within the School of Physics and Astronomy (SoPA), which in turn is an academic unit of the College of Science. AST is a multidisciplinary program and draws its faculty from several academic units, currently including the Chester F. Carlson Center for Imaging Science, the School of Mathematical Sciences, the National Institute for the Deaf, as well as SoPA.

For more info on program professors and what they're doing, see AST website [here](#).

Affiliation

The recommended affiliation for AST students on publications, posters, and other forms of presentation is: ***School of Physics and Astronomy, Rochester Institute of Technology.***

If you are also associated with one of the research labs or centers (LAMA, CCRG, CfD), this can be added as a second affiliation, e.g., ***School of Physics and Astronomy and Center for Computational Relativity and Gravitation, Rochester Institute of Technology.***

Incoming Students

In the first few weeks of your acceptance, you will receive a [Welcome Letter](#) from the AST Program Director. This letter will include a brief overview of the program, key contacts, dates, events, and a summary of what is reviewed here.

Events

AST has many different events throughout the year, including the [Research Jamboree](#). For more information about upcoming events, see the calendar [here](#) (UNDER CONSTRUCTION).

Timelines, Checklists and Flowcharts

- [PhD Candidacy to Defense Flowchart](#)
- [PhD Timeline](#)
- [Dissertation Checklist](#)
- [MS Thesis Checklist](#)
- [Grad Student Semester/Yearly Checklist](#)

AST Stipends and TA Assignments

If you are entering the PhD program, you will receive an RIT stipend during your first year, which in most cases will be in the form of a Graduate Teaching Assistantship (GTA). For more information on the stipend, click [here](#).

This means you are expected to work a minimum of 12 hours per week (including classroom time, preparation and grading) as a Teaching Assistant. Assignments will be made a week or so before the beginning of the Semester. Usually, you will be assisting a senior (Faculty) instructor in introductory undergraduate courses.

If you are entering the MS program and would like to be considered for a SoPA TA assignment, please let the program director know at least 2 weeks before the start of the semester.

Keep in mind that the process of allocating GTA/TA assignments sometimes spills over into the first week of classes, so don't be too concerned if you don't have your assignment by the end of Orientation Week.

Expectations for Graduate Research Assistants

The general expectation of RIT and the AST Program is that during normal "business hours" students in receipt of GRA appointments will be working on their research projects, studying, or pursuing other development opportunities, such as attending conferences or meetings. This includes the Summer terms, if you have a Summer Term GRA appointment.

You are entitled to take time off (e.g., for vacation) during break weeks between terms (e.g., Summer and Fall) and during official holidays observed by the University. Check the RIT academic calendar for these dates.

However, if you wish to take a vacation at other times during the term, or want to take additional time off, you must seek permission from your advisor who must assess the impact on the project and has discretion to grant or deny such requests. Keep in mind that GRA stipends are usually funded by external grants and your advisor is responsible to the funding agency for ensuring that the project is conducted efficiently. The relevant RIT guidance can be found here:

<https://www.rit.edu/careerservices/sites/rit.edu.careerservices/files/documents/employers/guides/GraduateAssistantFAQ17.pdf>

This also states that your stipend cannot be reduced for approved sick leave or vacation. On the other hand, it is your responsibility to discuss any travel or vacation plans with your advisor well in advance so that they can determine if such requests are manageable and reasonable within the scope of the project and your progress towards your thesis/dissertation.

Advisors are asked to be as flexible and sympathetic as possible in considering reasonable vacation requests.

As a general matter of courtesy, you should always inform your mentor or advisor if you are going to be traveling and/or otherwise out of communication at any time.

Program Requirements

General

Good standing: All graduate students must achieve a GPA of 3.0 or better (assessed at the end of each semester) to remain in good standing in the program.

Residency: Students must register for a minimum of 9 academic credits in each of 2 consecutive terms excluding summer and intersession to establish residency. A full-time academic load is defined as a minimum of nine academic credits per semester or an equivalent amount of research as certified by the AST Program Director.

PhD Credit requirements

You must earn a total of 60 semester credit hours. This includes a minimum of 24 course credits and 24 research credits. Students take a common set of core courses and select other courses based on personal interest and working with their Faculty advisors/Research mentors.

| <i>Course Credits</i> | | <i>Research Credits</i> | |
|-----------------------|---------|--------------------------|---------|
| AST Core: | 6 | Graduate Seminar: | 2 |
| Electives: | min. 18 | Thesis research project: | min. 24 |

Qualifying Work

Before embarking on your PhD dissertation project, you must complete the core courses and on the final exams receive a B or better grade. You must also complete the Graduate Seminar sequence and the masters-level research project.

For PhD students, RIT policy requires that you complete the qualifying procedure before starting Year 3. This means any time before the end of the summer of your second year.

Project

Those in the Masters program must complete and defend a Master's thesis. This must be submitted two weeks before the planned date of defense, as well as the title, abstract, and list of committee members.

Those in the PhD program must complete a masters-level research project summary, which they can choose to turn into a full Master's thesis. Both options include a defense, and the thesis must be submitted two weeks before the planned date of defense, as well as the title, abstract, and list of committee members.

Resources

- [Master's Defense Form](#) (records outcome of defense)
- [Master's Certificate of Approval](#) (must be signed by Committee to certify approval of submitted dissertation).
- [Master's Thesis Title Page](#)

PhD Dissertation

Your PhD dissertation must contain original work of publishable quality, which in the judgment of the Dissertation Committee, contributes significant new knowledge to the field.

Time Requirement

A minimum of three years of full-time study or their equivalent in part-time study is required.

Resources

- [PhD Outside Committee Member Appointment Request Form](#)
- [PhD Proposal Review](#) (records outcome of Proposal Review)
- [PhD Defense Form](#) (records outcome of defense)

- [PhD Certificate of Approval](#) (must be signed by Committee to certify approval of submitted dissertation).
- [PhD Dissertation Title Page](#)

MS Credit requirements

You must earn a total of 30 credit hours. This includes at least 18 course credits and 8 research credits, distributed as follows:

| <i>Course Credits</i> | | <i>Research Credits</i> | |
|-----------------------|---------|--------------------------|--------|
| AST Core: | 6 | Graduate Seminar: | 2 |
| Electives: | min. 12 | Thesis research project: | min. 6 |

Thesis

The Master's thesis will be more limited in scope and depth than a PhD dissertation but must still contain original work of publishable quality.

MS to PhD transfer

Depending on progress in your coursework and research project, you may be allowed to be considered for PhD candidacy, so long as you've met the credit requirements and successfully defended the Master's thesis (this is contingent on the availability of an advisor and research funding). For more details of program credit requirements see [here](#).

Courses

Scheduled Core and Elective Courses

Core and elective courses offered by AST can be found [here](#). You will also find brief course descriptions and a suggested list of courses offered by other RIT graduate programs that may be counted as electives for AST. You can [register online](#) for scheduled courses.

Independent Study

You can also take an independent study (reading) course with a faculty member in a topic of interest and benefit to you. You will need to recruit a member of the AST Graduate Faculty to supervise your studies. This need not be your mentor or research advisor. With your supervisor, you design your own course of study around a specific topic, and work towards a set of predefined outcomes, meeting agreed upon assessment criteria.

In order to register for Independent Study, you will need to complete the form "[Independent Study Contract](#)," have it signed by the supervising faculty member, the AST Program Director, and submit it to the AST Staff Assistant, who will register you for the course. The credits you earn for Independent Study are course credits, not research credits.

Research credit

With the agreement of your Faculty Mentor, or your research Advisor, you may also elect to take research thesis credits. The procedure for registering for research credit differs depending on whether you are doing a Master's level project or your PhD Dissertation. For the Master's or those pre-qualifier, you must fill out a research contract, found [here](#).

Establishing Full Time Status

Each semester, you will need to fill out a [Graduate Student Full Time equivalency form](#) if you've enrolled in less than 9 credits total. If the total of course plus research credits is less than 9, you may claim "Graduate Course Equivalent" credits if you are employed as a GTA or GRA at a level that you determine in conjunction with your mentor/advisor. Note that these credits only count towards establishing full-time status, they do NOT count towards the MS or PhD requirements.

To summarize, your registered course credits, registered research thesis credits, and your graduate course equivalent credits must total at least 9 for you to qualify as a full time student. When you have completed this form

you need to get it signed by the Program Director and then hand it in to the AST Staff Assistant.

Plan of Study

During your first weeks in the program you will develop a plan of study in conjunction with your Mentor, which will be updated annually, or more frequently as necessary. This has a threefold purpose:

- It is a planning aid for you to keep track of course and research credits.
- It will assist your advisor and the Program Director in monitoring your progress towards satisfying the program credit requirements.
- It sets out your plan for accumulating research credits after advancement to the PhD candidacy. The Academic Coordinator will consult this when registering you for research each quarter.

The Program Director will remind you when it's time to fill out or update your form. This is often in the Fall semester.

The Plan of Study Form

The forms below have multiple worksheets: two are the blank forms for the MS and PhD respectively and the others are filled out examples with annotations. Develop your plan in consultation with your advisor, then complete the form, have your advisor sign it, and submit it to the Program Director. This can be in printed or virtual form. This plan must be submitted to the Program Director once a year.

- [AST MS Study Plan](#)
- [AST PhD Study Plan](#)

Some things to keep in mind

- The Plan of Study will always be a work in progress. It can and should be altered as your studies develop. At minimum it is expected that you will review the plan with your advisor at least annually and revise it as necessary.

- When filling out the form, include all courses and research credits that you have already accumulated.
- If you are in Years 1 or 2, it is not necessary to define your entire program from day one to thesis defense. Consider the plan in two phases:
 - Entry to qualifying exam or Master's defense
 - Promotion to PhD candidacy to PhD defense

Research Jamboree

Every Fall Semester, AST holds an informal one-day research symposium at which all AST students, except those presenting their qualifying work or about to defend a thesis, are expected to give a presentation summarizing progress made during the preceding year.

If you have defended your Master's thesis during that Fall or the previous summer, you are not required to present.

PhD Proposal Review

Once you have passed your qualifier, you will start developing your PhD project. By Year 3 or Year 4 you should be ready to do your PhD proposal, and at that stage you'll begin recruiting your committee and present your proposal. According to RIT policy, you must present [at least 6 months](#) before you plan on defending your PhD thesis, but AST recommends the proposal presentation take place **12-18 months** before your planned defense. Some things to remember about the proposal are:

- You don't need all your results to defend your proposal
- Need to have made significant progress on your project (aim for $\frac{1}{3}$ - $\frac{2}{3}$ done)
- The proposal will have three main sections
 - Background
 - Work completed
 - Work to be done

You will be required to present your proposal to your Dissertation Committee for validation within 6 months of the Committee being

appointed. You will need to submit a written research proposal and give an oral presentation to the Committee, who will provide constructive feedback on the project plan. The proposal needs to contain enough information to convince the committee that:

- The work (when finished) will satisfy the requirements for the Ph.D. (broadly speaking, sufficient in scope, depth and originality for publication in a leading journal)
- That the remaining work is tractable within the proposed timescale.

Typically, proposals consist of

- An introduction explaining the current state of the field and the motivation for the work in that context
- A chapter outline
- A summary of work completed & results obtained to date
- An outline of any further work planned for completion of the dissertation
- A discussion of the expected contribution to the field
- A timeline for completion of the dissertation

For resources, see [PhD Dissertation](#).

6 Month Rule

It is RIT policy that the final examination of the dissertation may not take place until at least 6 months have elapsed from the date on which the PhD proposal was approved by the Dissertation Committee. The AST recommendation (as in the section above) is to finish the PhD proposal at least 12-18 months before the defense.

The purpose of this rule is to ensure that the PhD Dissertation Committee has proper oversight of the development of the dissertation so that any problems can be identified in good time for remedial action to be taken.

Time Limitations

All candidates for the Ph.D. must maintain continuous enrollment during the research phase of the program. Normally, full-time students complete the course of study for the doctorate in approximately four to five years. A total of seven years is allowed to complete the requirements after first attempting the qualifying defense.

For the M.S. degree, successful completion of all course work and the thesis is required within seven years of the time of initial registration for graduate study.

For more information, see the RIT page [here](#).

Final Examination of the Dissertation

When your dissertation is ready to be distributed to the Dissertation Committee, and the Committee agrees to administer the final examination, the doctoral candidate can schedule the final examination. The graduate student must distribute the copy of the dissertation to the committee and make the dissertation available to interested faculty, at least four weeks prior to the dissertation defense.

You must notify the Program Director of the date of your dissertation defense at least 6 weeks in advance, so that it can be properly advertised.

The final examination of the dissertation is open to the public and is primarily a defense of the dissertation research. The examination consists of an oral presentation by the student, followed by questions from the audience. The Dissertation Committee will normally privately question the candidate following the presentation. The Dissertation Committee will caucus immediately following the examination and thereafter notify the candidate and the AST graduate coordinator of the result of the examination.

The Committee will [certify](#) the outcome of the defense and provide the candidate with a written statement of any required changes to the dissertation.

COS Guidelines for Participation in Graduation

M.S. and B.S./M.S.

M.S. and B.S./M.S. students who are expected to complete all degree requirements by the end of the summer term may participate in graduation. M.S. and B.S./M.S. students may only participate in graduation and be listed in the commencement booklet one time.

Ph.D.

Ph.D. students who are expected to complete all degree requirements, including the dissertation defense, by the end of the summer term may participate in the spring term graduation ceremonies. Those not having completed the dissertation defense with at least a conditional pass on or before April 1 and not having completed all other degree requirements as of the end of the spring term must have their likely summer-term completion documented by April 1 in letters of request to the COS Dean from their dissertation advisor and school head. The Dean will then make all final decisions regarding participation in commencement ceremonies. Ph.D. students may only participate in graduation and be listed in the commencement booklet one time.

Research Ethics

All students are expected to familiarize themselves with responsible and ethical research practices. Training in such practices is increasingly required by major funding agencies. For example, NSF requires graduate students and postdocs to undergo online training. These issues will be covered in Graduate Seminar, but students are encouraged to explore

these resources compiled by RIT's Sponsored Research Services:
[Responsible and Ethical Conduct of Research.](#)

Travel Policies

Students undertaking travel that is related to their PhD or MS programs or otherwise Sponsored by RIT must familiarize themselves with and adhere to the [RIT Travel Policy](#).

Examples might include trips to conferences or meetings, research visits to collaborators at other institutions, observing trips, etc. Please note in particular:

1. No matter the trip, please make sure to fill out the [Itinerary for Student Travel and Emergency info](#) document and send it in to the Sr. Staff Assistant before you travel.
2. For any trips outside of “the Rochester regional area that involve overnight stays,” the student’s mentor/advisor should ensure that the student signs and returns the appropriate [Release Form](#) to the Sr. Staff Assistant.
3. In addition, if the student is traveling abroad, then the [RIT International Travel Policy](#) also applies. In the case of AST students, trips to destinations not subject to State Department warnings or alerts require advance approval from the AST Director. Permission to travel to countries that are subject to State Department warnings or alerts must be sought from the Provost.
4. RIT students have access to an emergency [Travel Assistance Service](#) for a nominal fee that will be paid by the AST program. Please inform the AST Director of your travel details well in advance, so that you can be enrolled before leaving.

Resources

- [Mental Health Resources](#)
- Fellowships

- [NSF GRFP](#)
- Career resources
 - [AAS Job Register](#)