

NMSU Astronomy Department Handbook Academic Year 2026-2027

(Updated 2026-08-18)

Table of Contents

1	Introduction	5
1.1	Our values	5
1.2	Our mission	5
1.3	Land acknowledgement	5
1.4	Purpose of this handbook	5
1.5	Relationship to NMSU policies	6
2	Expectations of Graduate Students	6
2.1	Professional conduct	6
2.2	Academic integrity	6
2.3	AI usage	7
2.4	Collaboration norms	8
2.5	Time commitment and workload expectations	8
2.6	Graduate student professional expectations	9
3	Overview of the Graduate Program	11
3.1	Program goals	11
3.2	Degree paths	11
3.3	Summary of requirements	11
3.4	Milestones and timeline	11
4	Coursework Requirements	15
4.1	Core course options	15
4.2	Course rotation	16
4.3	Elective and out-of-department courses	16
5	Research Expectations	17
5.1	Getting started	17
5.2	Advisor relationship	17
5.3	Research progress	17
5.4	Publication expectations	17
5.5	Conference participation	18
5.6	Research awards	18
6	Teaching Responsibilities	18
6.1	TA duties	18
6.2	Head lab and observatory TA positions	18

6.3	Teaching preparation	19
6.4	Grading expectations	19
6.5	Observatory duties	19
6.6	Consequences of not meeting TA responsibilities	19
6.7	Teaching award	19
7	Outreach Requirements	20
7.1	Minimum outreach participation	20
7.2	Observatory open houses	20
7.3	AGSO coordination	20
7.4	Outreach awards	20
8	Funding Overview	20
8.1	Assistantship types	21
8.2	Fellowships	21
8.3	Tuition support	21
8.4	Health insurance	21
8.5	Union membership	22
8.6	Summer support	22
9	Ethics and Reporting	22
9.1	Mandatory reporting rules	22
9.2	Title IX and OIE resources	22
	Appendices	23
A	Graduate Student Expectations Rubric	23
B	Advisor Expectations Rubric	26
C	Academic Requirements Roadmap	27
D	Detailed Exam Procedures	27
D.1	Qualifying Examination	29
D.2	Comprehensive Examination	30
D.2.1	Part 1: Written comprehensive cumulative “cume” exams	30
D.2.2	Part 2: Oral coursework examination	32
D.2.3	Part 3: Thesis proposal	32
D.3	Final dissertation examination and defense	33
D.4	Exam scheduling and forms	33
E	Formation of a Dissertation Committee	33
F	Master’s Degree Program	34
F.1	Course requirements	34
F.2	Procedure for obtaining an M.S. on the way to a Ph.D.	35
G	Funding Details	35
G.1	Financial planning	35
G.2	Graduate assistantships	36

G.2.1	Teaching assistantships	36
G.2.2	Research assistantships	37
G.2.3	Other funding opportunities	37
G.2.4	Webber Fellowships	37
G.2.5	Student success funds	37
G.3	Union contract details	38
G.4	Residency	38
H	Facilities and Observatories Guide	39
H.1	The Astronomy building	39
H.1.1	Department reading room and visitor office	40
H.1.2	NASA Planetary Data System (PDS) Planetary Atmospheres Node	40
H.1.3	Observatories office	40
H.1.4	Emergency action plan	40
H.2	Observatories	40
H.2.1	ARC 3.5-m telescope	41
H.2.2	SDSS telescope	41
H.2.3	Dunn Solar Telescope	42
H.2.4	Other APO telescopes	42
H.3	Campus observatories	42
H.3.1	Tombaugh Observatory	42
H.3.2	Tortugas Mt. Observatory	42
I	Computing Resources	42
I.1	Department computing	42
I.2	External access	43
I.3	Laptops and internet access	44
I.4	Email	44
I.5	Web pages	44
J	Department Events	44
J.1	Colloquia	44
J.2	Pizza Lunch	45
J.3	Astro-ph discussions	45
J.4	Inclusive Astronomy	45
J.5	Seminar class	45
J.6	Research group meetings	45
J.7	Tea time	46
J.8	AGSO	46
K	Department Guide	46
K.1	Department Personnel	46
K.2	Career awareness	47
K.3	Time management advice	48
K.4	Mentorship	48
K.5	Teaching philosophy and professional development	49
K.6	University policies	49
K.7	Purchases and travel	49

K.8 Where to get help	50
L Course Rotation Table	50
M Full Reporting Procedures	51
M.1 When should I report an issue?	51
M.2 To whom should I report an issue?	51
M.3 What should I do if someone reports an issue to me?	52
M.4 What will happen after I report an issue?	52
M.5 Behavior outside of NMSU	52
N Document repository	53

1 Introduction

1.1 Our values

The NMSU Department of Astronomy values a welcoming professional work environment, free from any and all discrimination and harassment, open to all who are interested in learning about the Universe. We value diverse perspectives and backgrounds, and we promote this environment in all undergraduate classes, graduate classes, and professional work settings. As a member organization of the American Astronomical Society, our department strictly adheres to their [Code of Ethics](#)¹ and we hold all our faculty, staff, graduate students, and undergraduate students to these high standards.

1.2 Our mission

The NMSU Department of Astronomy strives to develop and communicate the human endeavor to understand the Universe. We accomplish this through continuing development of knowledge in our research program, our graduate and undergraduate course offerings, and our outreach. Our graduate program provides students the opportunity to become deeply involved in astrophysics research, and educates students in skills that are useful for a variety of careers. Our undergraduate program educates students in critical thinking and core concepts in astronomy. The department provides astronomy outreach to the community in order to spread knowledge and understanding of our Universe.

1.3 Land acknowledgement

New Mexico State University honors Native American knowledges and worldviews based on intimate relationships to the natural world. The genesis of the Southwest Indigenous Peoples, including the Pueblo, Navajo, and Apache, established their guardianship of the lands now occupied by New Mexico State University. As the state's Land-Grant University, we acknowledge and respect the sovereign Indian Nations and Indigenous Peoples. We pledge to have a meaningful and respectful relationship with the sovereign Indian Nations, Indigenous communities, and Native American Peoples within the institution.

This land use acknowledgement was created in Faculty Senate Proposition 06-19/20: Memorial in support of NMSU's Land Acknowledgement Statement in October of 2019 and approved by the Faculty Senate in December of 2019. The Memorial was acknowledged by President Floros and Provost Parker in June of 2020. We encourage this be shared in classes and on syllabi as we begin to marry action with words to acknowledge and respect the Peoples of this land.

1.4 Purpose of this handbook

The primary intent of this guide is to introduce new graduate students to the procedures required by NMSU to achieve an advanced degree in Astronomy. All current students, faculty, and staff should read it carefully, refer to it often, and be generally familiar with all of the content. This document is edited with updates at the end of each academic year. Comments and suggestions should be sent directly to the Department Head at any time.

As it is clearly impossible for any written guide to anticipate all questions, and as the program itself

¹<https://aas.org/policies/ethics>

is an evolving entity, when you do have questions about the program or material in this handbook, students should consult immediately and directly with their advisor.

1.5 Relationship to NMSU policies

In cases where the Department Handbook may inadvertently disagree with the NMSU policy,² the NMSU policy always overrules this document. In cases where other information on our website may inadvertently disagree with this Department Handbook, this document overrules the website. In the case of any discrepancies between NMSU policy, this handbook, and the website, please report them and we will endeavor to fix them quickly.

2 Expectations of Graduate Students

2.1 Professional conduct

Both NMSU and the Department of Astronomy are committed to providing a harassment-free work environment. The NMSU policy on discrimination, harassment, and sexual misconduct can be found [here](#).³

We are compliant with Title IX of the Education Amendments of 1972, which prohibits sexual misconduct, sexual discrimination, sexual harassment, and retaliation. NMSU does not discriminate on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex (including pregnancy), sexual orientation, spousal affiliation, or protected veteran status in its programs and activities, as required by equal opportunity / affirmative action regulations and laws, and University policy and rules. We have a department-wide *Inclusive Astronomy* group that meets to discuss issues of inclusivity, and occasional colloquia or pizza lunches focused on issues of inclusivity in our research field, university, and department.

Any behavior that could be interpreted as having sexual connotations, either physical or verbal, must be avoided in all interactions between individuals at different levels of authority. Specifically, there should never be any such behavior between professors and students at any level, and there should never be any such behavior between graduate students in a TA role and the students in their classes.

Any issue discussed with any department personnel must be communicated to the Department Head unless the Department Head is the subject of the report, in which case it will be communicated to the Dean of the College of Arts and Sciences. If necessary, and consistent with University policy, the Department Head (or Dean) will determine a course of action, in consultation with the Office of Institutional Equity. Additional reporting procedures and Title IX resources are described in Section 9.

2.2 Academic integrity

We hold ourselves to the highest possible standards of ethics about the work we do and how we do it. At a high level, science depends on people being ethical about research: we must faithfully report what we do and what we find, taking care not to overemphasize evidence that supports a

²NMSU policies are described at <https://arp.nmsu.edu/>

³<https://equity.nmsu.edu/discrimination-and-equal-opportunity/notice-of-non-discrimination.html>

preferred interpretation while underemphasizing evidence that does not.

In classes, we always demand complete honesty. On tests, we expect that no one will ever consult any material that has not been explicitly provided as allowed, or attempt to copy work of other students. For homework, we encourage discussion of questions among students, while at the same time expect that each individual student puts in individual effort to develop an understanding independently, and reports their own solutions.

For some classes, solution sets may have been distributed to students in previous years for homeworks or for exams, and it is possible that some professors may use similar or identical questions. As a result, we expect that our students never make any attempt to get or distribute previous answers. Confusion as to whether some academic behavior is possibly permitted or not does not constitute an acceptable defense. When in doubt about such behavior, ask an appropriate person, whether that be a peer, a senior student, the professor of the class, your advisor, or the Department Head.

2.3 AI usage

Given the rapidly changing nature of generative AI technology, it is difficult to craft a policy statement covering appropriate use in all departmental contexts, e.g., in the classroom, in research, and in proposal-writing. While NMSU does not currently have a university-wide policy governing the proper use of AI, here in the Astronomy Department, we adhere at a minimum to the following basic guidelines:

- All AI usage must be disclosed and documented in departmental and professional contexts, e.g., in the classroom, publications, and proposals. The (human) author is ultimately responsible for the quality and accuracy of the resulting content. **Any work presented as one's own (and solely their own), but produced otherwise, is a violation of ethics, professionally and academically.** This is consistent with professional norms, e.g. as stated in the AGU journal authorship guidelines,⁴ the AAS manuscript preparation instructions,⁵ and the policy for the AAAS journal Science.⁶ Examples and general guidance on how to craft an AI disclosure statement are given at this site.⁷
- Guidelines for acceptable AI use in the classroom setting will be determined by the instructor of record and spelled out in the course syllabus, and guidelines for acceptable AI use in departmental exams will be determined by the exam writer and spelled out in the exam preamble. Students are responsible for informing themselves about and following the stated AI policy for each course and exam. Unauthorized use of AI in the classroom or exam setting is considered a reportable academic integrity violation, which can have serious consequences, particularly at the graduate level.
- Guidelines for acceptable AI use in a research group setting will be determined by the research advisor. Group members are responsible for informing themselves about and following the stated AI policy for their research group when conducting research, writing papers for publication, and crafting proposals. Unauthorized or undisclosed use of AI by a group member

⁴<https://www.agu.org/publications/authors/policies>

⁵<https://journals.aas.org/manuscript-preparation/>

⁶<https://manusights.com/blog/science-ai-policy>

⁷<https://casrai.org/guides/ai-disclosure-statement-examples>

can put other group members in a vulnerable position, because, e.g., all authors on a resulting publication or proposal may ultimately be held responsible for any AI-introduced errors in the content, or may suffer damage to their professional reputation from inappropriate or undisclosed use in other contexts.

2.4 Collaboration norms

The following norms guide how we communicate and collaborate as a department:

- Be respectful and civil – respect everyone at every rank/position. Understand that nobody is here to cause pain or damage to anyone, but we are here to do the best we can with what we have. We are all humans and make mistakes – we should help to understand mistakes and work together to fix them and learn from them (e.g., avoid “pointing fingers” and criticizing).
- Assume best intent at all times - we must assume good faith in those we engage.
- We will not personalize professional differences.
- Practice constructive criticism that is solution-focused (i.e., if you bring a problem, bring a solution).
- Disagreements may occur during internal discussions, but they should remain within the appropriate setting.
- We discuss the issue on the table; with facts/data; without presumption that anyone is attacking another person, personalities, or positions; openly and without fear of retaliation, sabotage, or other negative consequences (i.e., we stick to the issues and all work together to resolve the issues for the betterment of the institution).
- We discuss issues with directness and maybe even (tempered!) passion, and when the issue is put to bed, we respect and enjoy working with each other.

2.5 Time commitment and workload expectations

There are many different facets of participating in our graduate program. One overriding issue everyone should consider as critical is that of time management, i.e., how much time you spend overall on the program and how much time you choose to spend on individual aspects. While your advisor, along with all faculty and staff, are here to help and advise you, ultimately what you get out of the program, and your future prospects, are determined by your choices. Students often want to know how to prioritize the different aspects of the program. It is important to recognize that individual students need to decide for themselves how they choose to prioritize their time, and everyone else is here to help you with that choice.

Astronomy graduate school is a full-time commitment, so you should plan and expect to dedicate a productive 40 hours a week at least. Time management is an essential skill, and even more essential if you want to succeed without having to put in an excessive amount of time. Think carefully about how much time you need to allocate to your various activities. Your advisor is the best *initial* resource for assistance with time management. Some more guidance on this is given in Appendix [K](#).

2.6 Graduate student professional expectations

Graduate study in Astronomy requires a high level of professionalism, independence, and engagement with the department community. The following expectations outline the behaviors and habits that support steady progress toward the Ph.D. and contribute to a healthy, collaborative research environment. These expectations complement the policies in this section and following sections.

Professionalism and communication

Graduate students are expected to demonstrate professionalism in all academic and research activities. This includes:

- Meeting deadlines reliably and communicating proactively when challenges arise.
- Being punctual for classes, TA duties, research meetings, and departmental events.
- Maintaining respectful, constructive working relationships with faculty, staff, and peers.
- Asking questions, listening actively, and engaging in scientific discussion.
- Responding to emails and messages in a timely manner, especially regarding research or TA responsibilities.

Engagement in research

Graduate students should take increasing ownership of their research as they progress through the program. This includes:

- Demonstrating initiative beyond explicit instructions from an advisor.
- Clearly articulating personal contributions to research projects.
- Developing the ability to explain the scientific motivation, methods, and goals of their work.
- Using “I” or “we” appropriately when describing progress, reflecting genuine involvement.
- Seeking help when needed and applying feedback constructively.

Participation in department activities

Active participation in the department community supports both scientific development and professional growth. To the extent possible, students are expected to:

- Attend weekly colloquia, journal clubs, group meetings, and other departmental events.
- Participate in outreach activities as described in Section 7.
- Engage in community-building events when appropriate (e.g., social gatherings, AGSO activities).
- Communicate scheduling conflicts in advance when attendance is not possible.
- Assist with department priorities, e.g., graduate admissions, faculty hiring activities, etc.

Research skills and development

Graduate students should steadily develop the technical and conceptual skills needed for independent research. Expectations include:

- Understanding the fundamental concepts relevant to their research area.
- Learning and applying technical skills (e.g., coding, data analysis, instrumentation) with increasing independence.
- Reading and citing relevant literature to place their work in scientific context.
- Helping define achievable research objectives in collaboration with their advisor.
- Organizing tasks effectively and managing time to maintain consistent research progress.

Scientific communication

Clear communication is essential for scientific progress. Graduate students are expected to:

- Produce written work (papers, proposals, reports) that is clear, accurate, and appropriately scoped.
- Present research effectively in group meetings, colloquia, and conferences.
- Explain research questions, methods, and results at a level appropriate for the audience.

Professional growth and external engagement

Graduate students should cultivate a professional network and engage with the broader scientific community. This may include:

- Attending and presenting at scientific conferences.
- Building relationships with researchers outside the department.
- Applying for fellowships, grants, and other professional opportunities.
- Participating in professional societies such as the American Astronomical Society.

Well-being and work–life satisfaction

Graduate school is demanding, and maintaining well-being is essential for long-term success. Students are encouraged to:

- Develop sustainable work habits and self-care routines.
- Seek support from advisors, peers, or university resources.
- Maintain a healthy balance between academic responsibilities and personal life.

These expectations are intended to support student success and to clarify the behaviors that contribute to a productive, respectful, and collaborative research environment. Advisors will discuss these expectations with students regularly, and students should feel comfortable asking for guidance in meeting them. A detailed rubric reflecting these items can be found in [Appendix A](#). An accompanying rubric developed for faculty expectations is in [Appendix B](#).

3 Overview of the Graduate Program

3.1 Program goals

The graduate program in Astronomy at NMSU is designed to develop each student's ability to become an independent researcher, an effective communicator, and a contributing member of the scientific community. As you progress, you will balance coursework, teaching, research, outreach, and professional development. The program is structured to support your growth in all of these areas, while allowing flexibility for individual interests and career goals.

3.2 Degree paths

Most students who enter the program plan on completing their Ph.D. Students are also eligible to receive an M.S. degree in Astronomy while progressing toward their Ph.D. This can occur once the requirements for a coursework-only master's degree are met, typically after the first two years of graduate coursework (see Appendix F). We strongly encourage students to complete this midway milestone.

Students may instead elect to pursue a terminal master's degree. There are two tracks: a thesis M.S. and a coursework-only M.S., both described in Appendix F.

3.3 Summary of requirements

The major components of the Ph.D. program include:

- Completion of required graduate coursework during the first two to three years.
- Successful performance on the CUME exams and Qualifying exam.
- Formation of a thesis committee and completion of the Oral Coursework exam.
- Completion of a thesis proposal and advancement to Ph.D. candidacy upon passing the Comprehensive exam.
- Conducting original research leading to peer-reviewed publications.
- Completion and defense of the Ph.D. dissertation.
- Participation in teaching, outreach, and various departmental activities.

More detailed requirements and procedures are provided in Appendix D. A consolidated summary of formal milestones, including required actions, personnel involved, and paperwork, is provided in Table 2.

3.4 Milestones and timeline

As you move through the graduate program, consider the following as expected and typical timelines toward completion of a Ph.D. Later sections in this guide describe these milestones in more detail. Each student may take a somewhat unique path, in that some will complete their thesis proposal

sooner and so may graduate in less than 5 years, whereas some may complete their Ph.D. in their 6th year.

A summary of a typical progression through the program is given below in 1.

Table 1: Year-by-year progression of main activities in the program.

Year	Category	Activities
1	Classes	Regular department classes (typically 3) each semester. Other learning based on material in classes, with other students, and your interests; read supplementary material.
	Teaching	Learn and teach undergraduate labs. Recognize different teaching styles and develop your own.
	Research	Identify a topic you're interested in with your initial advisor; work on during year as time allows, with good progress in summer months.
	Exams	Take cume exams monthly, starting in the second semester.
	Outreach	Two events (or ~ 4 hours).
	Other	Establish NM residency. https://records.nmsu.edu/students/residency.html
2	Classes	Regular department classes each semester & research credit (ASTR 598).
	Teaching	Continue to develop teaching style and skills.
	Research	Ramp up time spent on research. Identify thesis topic and funding applications.
	Exams	Continue monthly cumes; complete your Qualifying Exam by the end of fall semester.
	Outreach	Two events (or ~ 4 hours).
	Other	Obtain master's degree on the way to Ph.D. (see below).
3	Classes	Courses ASTR 500, ASTR 599 for Master's thesis, ASTR 600 for pre-comprehensive exam research, ASTR 601, ASTR 700 for research after your thesis proposal.
	Teaching	As determined by your path through the program.
	Research	Finalize committee, prepare thesis proposal, confirm funding for 2 years.
	Exams	Complete Comprehensive Exam by end of sixth semester. This comprises: passing 5 cumes, passing the oral coursework exam by the end of the fifth semester, and passing the thesis proposal exam by the end of the sixth semester.
	Outreach	Two events (or ~ 4 hours).
	Prof. devel.	Consider your job possibilities and interests. Attendance at topical conferences. Consider AGSO and university student leadership positions.
4	Classes	9 x ASTR 700 credits each semester.
	Teaching	As determined by your path through the program.
	Research	Work on thesis. Publish papers. Write up your thesis as you proceed.
	Outreach	Two events (or ~ 4 hours).
	Prof. devel.	Discuss job interests and possibilities with external contacts; prepare for job application timescale and associated timescales for supporting materials. Present work at conferences. Consider AGSO and university student leadership positions.
5	Classes	9 x ASTR 700 credits each semester (or obtain a waiver for j9).

Year	Category	Activities
	Teaching	As determined by your path through the program.
	Research	Complete your research. Finish and submit your publications and your thesis.
	Exams	Dissertation defense.
	Outreach	Two events (or ~ 4 hours).
	Prof. devel.	Job applications (and potential interviews).

A summary table of milestones and required actions is provided in [Table 2](#).

Table 2: Summary of formal milestones.

Milestone	Personnel	Timeframe	Prerequisites	Student (to do prior/post)	Supervisor or Dean's Rep. (to do prior/post)	Notes
Comprehensive Part 1: CUMEs	Student	Take first cume in 2nd sem.; pass 5 out of 18 at- tempts (over 4 sems.)	One semester of coursework	-	Cume giver up- dates student progress spread- sheet	-
Qualifying exam	Student + 2 fac- ulty ad- visors	Goal: by end of 3rd sem.	Suggested: 2 cumes or end of 3rd sem.	Schedule meeting with both faculty advisors	submit Doctoral Qualifying Exam form; enter result in student progress spreadsheet	Pay raise G1 to G2
Comprehensive Part 2: Course- work oral exam	Student + full commit- tee	Goal: by end of 5th sem.	5 passed cumes; 4 sems. of courses (~ 36-38 credits); graduate faculty status for commit- tee members	Form full committee; ensure graduate faculty status of mem- bers; find a common meeting time	Enter data in student progress spreadsheet	no official paperwork
Comprehensive Part 3: Thesis proposal	Student + full commit- tee	Goal: by end of 6th sem.	Coursework oral exam; graduate faculty status for committee mem- bers	Find a common time; reserve a date on dept. schedule; Doc- toral Examination form; work with office staff to reserve a room; send proposal document to committee min. 10 days be- fore exam; send title and ab- stract to colloquium organizer	Enter result in student progress spreadsheet; en- sure Dean's Rep. submits paperwork	Pay raise G2 to G3; Apply for Master's (optional, but encour- aged)
Thesis defense	Student + full commit- tee	Goal: by end of 10th semester	Thesis proposal; dissertation doc- ument; graduate faculty status for committee mem- bers	Find a common time; reserve a date on dept. schedule; register for graduation; Doctoral exam- ination form; Dissertation Title form; work with office staff to reserve a room; send disserta- tion document to committee min. 10 days before exam; send title and abstract to colloquium organizer	Enter data in student progress spreadsheet; en- sure Dean's Rep. submits final pa- perwork; faculty confirmation of grades form	Well done Doctor!

4 Coursework Requirements

Classes are a very significant component of the program during the first two years. While the academic requirements for the program are outlined in detail in a subsequent section, here are a few key points:

- Astronomy, like other fields, is constantly advancing and, in many cases, becoming increasingly specialized. While our classes aim to provide you the most important concepts in astrophysics, as well as making you aware of the latest advances, it is impossible to cover everything. Classes provide an introduction and a framework for understanding new material. You will certainly need to continue to learn through your own initiative outside of classes. Never assume that knowing only what is taught in class is sufficient preparation for a career in research. Instead, always consider what more you want to know, and then go try to learn it, through asking questions, reading books, and reading research articles.
- Grades in graduate school are generally not as important as they are for undergraduates. If you want to continue in the field, people will scrutinize your research record **far** more than your grades. Of course, understanding the material is critical, and related to the grade you get, but the understanding and ability to apply it is much more important than the grade itself. In our graduate courses, we expect students want to learn, will be given the freedom and opportunity to learn, and will have one-on-one accessibility to our faculty. We expect most students to earn “A” grades, with occasional “B” grades. A “C” grade in a graduate course during your time at NMSU indicates more effort will be needed to develop the necessary skills for a career in astrophysics research. The Graduate School requires a cumulative GPA of 3.0 or greater for graduate students, otherwise a student is placed on academic probation, which implies limitations on TA assignments and course registration.

4.1 Core course options

The full astronomy course list, with a description of each course is available in the NMSU Catalog.⁸

The course numbers and titles for the regular graduate courses (501-597, 601-699) are as follows (all of the graduate classes are 3 credit classes except as noted):

⁸<https://catalogs.nmsu.edu/nmsu/graduate-school/astronomy-doctor-philosophy/>

ASTR 503	Astrophysics
ASTR 506	Dynamics and Hydrodynamics
ASTR 530	Radiative Processes
ASTR 535	Observational Techniques
ASTR 555	Galaxies I
ASTR 565	Stellar Interiors
ASTR 601	Thesis Proposal Preparation (1 credit)
ASTR 605	Interstellar Medium
ASTR 616	Galaxies II
ASTR 620	Planetary Surface and Atmospheric Processes
ASTR 621	Planetary System Formation
ASTR 630	Statistical and Numerical Methods in Astrophysics
ASTR 670	Heliophysics, Space Plasmas, and Space Weather
ASTR 671	Solar Astrophysics
ASTR 698	Special Topics (as offered)

The other ASTR courses that students take during the program are:

ASTR 500	Seminar (2 credits $\times 2$)
ASTR 598	Special Research Programs
ASTR 599	Master's Thesis (for terminal master's only, 6 required)
ASTR 600	Pre-dissertation Research (6 credits required)
ASTR 700	Dissertation Research (18 credits required)

By the end of the second year, students typically have completed the coursework-only M.S. requirements (see Appendix F).

4.2 Course rotation

The department maintains a two-year rotation of graduate courses to ensure that all core courses are offered regularly. A detailed example of a two-year rotation is provided in Appendix L. Students should consult this rotation when planning their first two years of coursework and when selecting electives.

4.3 Elective and out-of-department courses

Students may take additional graduate-level courses beyond the core requirements, depending on interest and research direction. Electives may include approved graduate-level courses in physics, mathematics, computer science, or engineering.

Electives should be chosen in consultation with your advisor to support your research goals and preparation for the thesis proposal. Out-of-department courses do not replace core astronomy requirements but may count toward the total credit requirement for the degree.

There are already several approved out-of-department courses listed in the official NMSU catalog.⁹ If a student chooses to take any other course not listed after discussions with their advisor, the department will need to submit a waiver to the Graduate School to have that course count toward the degree. We can then add the course to the list in the catalog so future waivers would not be necessary.

⁹<https://catalogs.nmsu.edu/nmsu/graduate-school/astronomy-doctor-philosophy/>

5 Research Expectations

5.1 Getting started

Most students enroll with the goal of pursuing a career in astrophysical research, and the graduate program is designed to support that development. Research begins with building familiarity with the literature. Students should regularly read papers from the major astronomy journals and the astronomy preprint archive, [astro-ph](https://arxiv.org/archive/astro-ph).¹⁰ Reading should be a consistent part of each week, and students are encouraged to keep track of papers they have read and topics they are exploring.

5.2 Advisor relationship

Students should plan to meet regularly with their initial advisor to discuss research progress, challenges, and next steps. Advisors help guide topic selection, provide feedback on developing ideas, and assist in planning for publications, proposals, and conference participation. **Open communication** with your advisor is essential for maintaining steady progress. Expectations for advisor–student interactions are described in Appendix B.

All students are also assigned a “secondary advisor” in addition to their primary advisor. The secondary advisor monitors the primary advising relationship, contributes supplementary programmatic and career guidance, and may eventually serve as a reference. Students should meet at least once annually with their secondary advisors.

Students will also form a dissertation committee from other faculty in the department and university as they progress. Details of this procedure are in Appendix E.

5.3 Research progress

Balancing research with coursework, teaching, and outreach can be challenging, especially in the first two years. Students should set aside dedicated time for research each week, even during busy periods. Early research often involves reading, exploratory calculations, or small projects that build toward a thesis topic. As students progress, research time should increase, particularly during the second year and beyond as coursework demands decrease. See Appendix K.

5.4 Publication expectations

The primary method of disseminating scientific results is through peer-reviewed publications. Students should work toward writing papers as their research develops, rather than waiting until results feel “finished.” Writing is an integral part of the research process and helps clarify ideas, identify gaps, and communicate results effectively. A strong publication record is a key factor in future job applications.

A typical target is three first-author publications by the time of graduation. This number varies significantly by research area, project scope, and individual circumstances, and students should discuss publication expectations with their advisor and committee.

¹⁰<https://arxiv.org/archive/astro-ph>

5.5 Conference participation

Students are encouraged to attend scientific meetings to learn about current research and present their own work. Large general meetings (such as the American Astronomical Society, the Division of Planetary Sciences, or the Solar Physics Division) provide broad exposure, while smaller topical meetings may be more directly relevant to a student's research area. Students should discuss conference opportunities with their advisor and plan attendance as part of their professional development. Funding for conference travel may come from research grants, departmental and college resources, or external fellowships; students should discuss options with their advisor.

5.6 Research awards

The department annually recognizes outstanding research accomplishments by graduate students through its Zia Award.¹¹ The Zia Award is part of a dedicated departmental endowment established to support excellence in graduate research. It is typically awarded at a level of approximately \$1000 and is intended to acknowledge significant progress, innovation, or achievement in a student's research program.

6 Teaching Responsibilities

6.1 TA duties

Teaching is a critical component of the graduate program and an essential part of professional development for many career paths in astrophysics. Teaching Assistantships (TAs) also provide financial support for many students. TAs play a vital role in our introductory General Education astronomy courses (those with a title ending in "G"), where the primary responsibilities include teaching and grading laboratory sections. It is important to review the labs in advance and to be prepared for each session. Weekly TA meetings and materials from previous TAs are available to support effective lab instruction.

TAs may also assist with grading in the main lecture section. In 300-level undergraduate courses (titles ending in "V"), TAs may help with class delivery and grading written assignments. Expectations vary by course and instructor, and TAs should communicate regularly with the faculty member supervising the course.

Another avenue for teaching is through NMSU Global. We have developed several versions of our undergraduate courses for NMSU Global. Graduate students are eligible to teach these fully online, asynchronous courses that typically are run in mini semesters (8 weeks, or 4 weeks in summer). A great aspect of this option is that students are the "instructor of record" for these courses, which looks very positive on a CV. If interested, please discuss with the Department Head. Teaching in NMSU Global depends on course availability and departmental needs.

6.2 Head lab and observatory TA positions

Some semesters include designated Head Lab TA or Head Observatory TA positions. These roles provide additional coordination and leadership within the department. Responsibilities may include organizing weekly TA meetings, maintaining lab materials, assisting with observatory scheduling,

¹¹<https://astro.nmsu.edu/fellowships/zia-award.html>

and serving as a point of contact for undergraduate students and faculty. Detailed descriptions of these two important positions are available upon request.

6.3 Teaching preparation

Effective teaching requires preparation, reflection, and continual improvement. TAs are expected to think carefully about their teaching approach and to seek guidance from faculty and experienced students. Instructor enthusiasm and engagement strongly influence student learning, and TAs are encouraged to cultivate an active, supportive classroom environment. The NMSU Teaching Academy¹² offers resources on evidence-based teaching practices. It provides free professional development workshops, and graduate students are encouraged to attend several each year.

6.4 Grading expectations

Timely grading is essential for supporting student learning. All graded work should be returned within one week. If a TA is having difficulty keeping up with grading responsibilities, they must discuss the situation with the supervising instructor immediately. In many cases, grading challenges can be addressed through improved workflow or guidance from faculty or other TAs. Delayed grading negatively affects undergraduate students and disrupts course progress. Grading policies and rubrics are set by the supervising instructor, and TAs should follow them consistently.

6.5 Observatory duties

TAs may be assigned duties at the Tombaugh Campus Observatory. Introductory astronomy students are in some cases required to attend the observatory about twice per semester. The observatory is typically open two nights per week, staffed by rotating TAs, and may also host remote observing sessions. Observatory operations may be affected by weather, and remote observing sessions may be scheduled when appropriate.

Before assisting with observatory sessions, TAs must be comfortable operating the telescopes and identifying major objects in the night sky. Observatory experience is also required for participation in the department's monthly public open houses. The department's observatory manager conducts mandatory training for new students at the beginning of each academic year, with returning students also encouraged to attend to get a refresher.

6.6 Consequences of not meeting TA responsibilities

Failure to meet TA responsibilities—including preparation, teaching, grading, or observatory duties—may result in not being rehired as a TA in future semesters. Because TA positions provide financial support for many students, loss of TA eligibility may have significant implications for continued funding in the program. TA performance is reviewed each semester as part of funding decisions.

6.7 Teaching award

The department annually recognizes exceptional teaching by graduate students through its Pegasus Award.¹³ This award honors graduate students who demonstrate outstanding effectiveness,

¹²<https://teaching.nmsu.edu/>

¹³<https://astro.nmsu.edu/fellowships/pegasus-award.html>

professionalism, and commitment in their instructional roles.

7 Outreach Requirements

7.1 Minimum outreach participation

Astronomy is supported by state and federal tax dollars, and the department maintains a strong commitment to public engagement. Every graduate student is required to participate in a minimum of **two outreach events each academic year**, or equivalently, about 4 hours of commitment. Outreach activities may include presentations to local schools, civic groups, astronomy clubs, or other community organizations. These events help strengthen the department's reputation and provide valuable experience in communicating science to the public. Outreach may be completed at any point during the academic year, depending on event availability.

7.2 Observatory open houses

Each student and faculty member will participate in at least one Observatory Open House (or equivalent event) per academic year. Open Houses are typically held on the Friday evening nearest the first-quarter moon during the academic year. These events are well attended and provide the community with opportunities to observe the night sky through the Tombaugh Observatory telescopes or sometimes remotely through the Tortugas Mountain Observatory. Scheduling and coordination of open houses are managed by the department's observatory manager.

Graduate students are generally responsible for operating the telescopes during these events. It is essential to be comfortable with telescope operation and basic sky knowledge before participating.

7.3 AGSO coordination

Many outreach requests from local groups are routed through the Astronomy Graduate Students Organization (AGSO). AGSO officers maintain a list of upcoming events and coordinate volunteers. Graduate students should respond promptly to AGSO outreach requests and ensure that event records remain up to date.

Participation in outreach may also count toward public service hours recognized by the NMSU Graduate Student Council (GSC). Students with sufficient service hours may apply to the GSC for travel funding assistance.

7.4 Outreach awards

The department recognizes outstanding outreach contributions through annual awards. These awards acknowledge students who demonstrate exceptional commitment to public engagement, communication, and service. Participation in outreach events is an important part of professional development and helps build skills valuable for careers in academia, education, and public science communication.

8 Funding Overview

Graduate students in the Astronomy program are supported through a combination of Teaching Assistantships (TAs), Research Assistantships (RAs), external fellowships, and other university fund-

ing mechanisms. Funding is awarded on a semester-by-semester basis and depends on satisfactory academic progress, satisfactory performance in assigned duties, and availability of departmental or grant resources. The following subsections summarize the major components of graduate student funding. Detailed policies and procedures are provided in [Appendix G](#).

8.1 Assistantship types

Teaching Assistantships (TAs) provide financial support in exchange for instructional duties, including teaching laboratory sections, grading, and assisting with course delivery. TA assignments are made by the Department Head and depend on departmental instructional needs. Continued TA funding requires satisfactory performance in all assigned duties. Prior teaching performance and experience may also be considered.

Research Assistantships (RAs) are funded through external grants held by faculty members. RA duties are directly related to the research supported by the grant. RA availability varies by advisor and research area. Students on RA support are expected to make strong progress toward their thesis research. RA duties must also align with the research supported by the grant.

Typically, TAs and RAs are lumped into graduate assistantships (GAs). GAs that have not passed the Qualifying Exam are at a level of G1. After passing the Comprehensive Exams, G2 GAs become level G3. The difference in salary between G1 and G2, and G2 and G3 is about \$250 over a semester.

8.2 Fellowships

Several internal and external fellowships are available to support graduate students. These may include university-wide awards, national fellowships, and department-specific opportunities. Examples include NSF GRFP, NASA FINESST, and NM Space Grant fellowships. Further details are provided in [Appendix G](#).

8.3 Tuition support

Students holding a TA or RA receive tuition remission fully covering tuition, except some mandatory fees ($\sim 350\$$ per semester). Under the current union agreement, graduate assistants receive 9 credits of tuition support per semester. Tuition scholarship policies are determined by the Graduate School and may change; students should consult current Graduate School guidelines each year as discussed in [Appendix G.3](#).

8.4 Health insurance

Everyone in the department strives to work with all relevant parties to provide for a good stable solution to finding health insurance support for our graduate students. NMSU assistantships do not include health coverage. Students should discuss their health insurance needs with their advisor at whatever level they feel comfortable doing so. The faculty typically include health insurance support in their external proposal budgets when allowed.

There are options to purchase healthcare on a state plan and often these costs are reimbursable depending on the specific grant or fellowship funds. Reimbursement rules vary by funding source and must comply with sponsor guidelines. Sometimes students find better insurance options, with lower deductibles, from a parent or spouse and in these cases the costs are not reimbursable.

8.5 Union membership

Graduate assistants (including international GAs) at NMSU are represented by a graduate student union. Membership provides access to collective bargaining agreements, grievance procedures, and other resources. Students are encouraged to familiarize themselves with union policies and rights. Additional details, including contract language and procedures, are provided in Appendix G.3.

8.6 Summer support

Summer funding may be available through RA support, fellowships, or special departmental allocations. TA positions are generally not offered during the summer; however, more recently, a limited number of NMSU Global TA positions have been available during the summer. Students should discuss summer funding possibilities with their advisor well in advance, typically during the spring semester.

9 Ethics and Reporting

9.1 Mandatory reporting rules

All faculty and staff are mandatory reporters under NMSU policy and must report any behavior that may constitute harassment or discrimination. Graduate students who supervise or instruct undergraduate students (e.g., TAs) also have reporting obligations in the context of their instructional roles. Students should consult OIE guidance if they are unsure whether a situation requires reporting.

If an issue is brought to your attention, you must notify the Department Head unless the Department Head is the subject of the report, in which case the report must be directed to the Dean of the College of Arts and Sciences. The Department Head is required to notify the Office of Institutional Equity (OIE) of any report involving harassment or discrimination.

Additional expectations regarding professional conduct are described in Section 2.6. Detailed procedures for reporting concerns, including guidance for students, staff, and faculty, are provided in Appendix M.

9.2 Title IX and OIE resources

NMSU's policies on discrimination, harassment, and sexual misconduct are available at:

- Notice of Non-Discrimination¹⁴
- OIE Incident Reporting Portal¹⁵

These resources describe reporting procedures, definitions of prohibited conduct, and the university's obligations under Title IX.

For additional guidance, students may contact the Office of Institutional Equity at equity@nmsu.edu.

¹⁴<https://equity.nmsu.edu/discrimination-and-equal-opportunity/notice-of-non-discrimination.html>

¹⁵<https://equity.nmsu.edu/home/incident-report.html>

Appendices

A Graduate Student Professional and Developmental Expectations Rubric

The rubric in Table 3 summarizes the expectations described in Section 2.6 and provides a unified framework for evaluating graduate student progress in professionalism, communication, research engagement, research skills, scientific communication, departmental participation, professional growth, and well-being. It is intended to guide regular advisor–student discussions and may be used during annual committee meetings.

Related expectations for faculty advisors are provided in Appendix B. Students may also find it helpful to consult the program milestones in Section 3.4, research expectations in Section 5, teaching responsibilities in Section 6, and outreach requirements in Section 7.

Table 3: Graduate student professional and developmental expectations rubric.

Indicator	Meets Expectations	Developing	Needs Support
Professionalism	Consistently meets deadlines; communicates proactively; punctual for classes, TA duties, and meetings; maintains respectful and constructive interactions; collaborates effectively; demonstrates reliability and accountability.	Occasionally misses deadlines but communicates; generally punctual; interactions are usually constructive; collaboration skills developing.	Frequently misses deadlines without communication; chronic lateness; interactions impede collaboration; difficulty maintaining professional conduct.
Communication	Responds promptly; listens actively; asks relevant questions; engages in scientific discussion; applies feedback constructively.	Responds inconsistently; asks questions when prompted; applies feedback with guidance.	Rarely responds; avoids discussion; does not apply feedback; communication lapses affect progress.
Scientific Communication: Writing	Produces clear, well-structured writing; provides appropriate context; uses effective figures/tables; cites relevant literature; demonstrates polished grammar and word choice.	Writing is generally clear but may lack precision, structure, or context; figures/tables require refinement; citations incomplete.	Writing is unclear or disorganized; difficulty conveying reasoning; figures/tables ineffective; citations missing or incorrect.

Table 3: Graduate student professional and developmental expectations rubric (continued).

Indicator	Meets Expectations	Developing	Needs Support
Scientific Communication: Oral Presentation	Presents research clearly and confidently; uses well-organized slides; provides appropriate context; cites others; conveys reasoning effectively.	Presentations are understandable but may lack structure, clarity, or polish; slides require refinement.	Presentations are unclear or incomplete; difficulty explaining methods, results, or motivation; slides ineffective.
Engagement in Research	Demonstrates initiative beyond advisor instructions; articulates personal contributions; explains motivation clearly; seeks help appropriately; shows ownership of work.	Shows initiative with guidance; can describe contributions with prompting; developing understanding of motivation.	Relies heavily on advisor direction; struggles to explain contributions or motivation; limited ownership of work.
Research Skills: Technical and Analytical	Understands core concepts; learns technical skills independently; defines project objectives; organizes tasks efficiently; obtains valid results; interprets data appropriately; draws supportable conclusions.	Understands concepts with support; learns technical skills with supervision; objectives defined mostly by advisor; progress fluctuates.	Struggles with core concepts; requires continual supervision; difficulty organizing tasks; results or interpretations unreliable.
Research Skills: Literature Review	Finds relevant scientific papers; reads regularly; interprets literature accurately; contextualizes work within broader research.	Finds papers with guidance; reads inconsistently; interpretation developing; context incomplete.	Rarely engages with literature; difficulty interpreting papers; limited awareness of broader research context.
Task Organization and Time Management	Organizes tasks effectively; manages time well; maintains steady progress; converts goals into actionable tasks.	Organizes tasks with guidance; progress may fluctuate; time management developing.	Difficulty converting goals into tasks; inconsistent progress; time management concerns.

Table 3: Graduate student professional and developmental expectations rubric (continued).

Indicator	Meets Expectations	Developing	Needs Support
Department Participation	Regularly attends colloquia, journal club, group meetings, and departmental events; asks questions at talks; participates in outreach; communicates conflicts in advance; contributes to department priorities.	Attends most events with communication; outreach participation meets expectations; contributions developing.	Rarely attends events; absences unexplained; outreach participation inconsistent; limited engagement.
Professional Growth	Engages with broader scientific community; attends or presents at conferences; builds external relationships; applies for fellowships or grants.	Participates in some external activities; developing network; applies for opportunities with prompting.	Limited engagement outside department; no external network; does not pursue professional opportunities.
Well-Being and Work-Life Satisfaction	Maintains sustainable work habits; seeks support when needed; demonstrates awareness of personal limits; balances academic and personal responsibilities.	Developing sustainable habits; occasionally seeks support; balance fluctuates.	Visible signs of overwork or withdrawal; does not seek support; imbalance affects academic progress.

B Advisor Expectations Rubric

The rubric in Table 4 outlines the expectations for faculty advisors and complements the Graduate Student Professional Expectations Rubric in Appendix A. Advisor expectations parallel the student expectations described in Section 2.6 and are intended to support productive, respectful, and collaborative advisor–student relationships.

Table 4: Advisor expectations rubric.

Indicator	Meets Expectations	Developing	Needs Attention
Communication and Availability	Meets with student regularly; responds to emails within a reasonable timeframe; provides clear guidance; maintains open, respectful communication.	Meetings occur but irregularly; response times vary; guidance is sometimes unclear or delayed.	Rarely meets; communication is inconsistent or absent; student lacks direction due to advisor unavailability.
Research Guidance	Provides constructive feedback; helps student define achievable goals; helps student identify appropriate literature; supports development of independent research skills; monitors progress.	Feedback is provided but may be delayed or incomplete; goals are defined but may lack clarity; progress monitoring inconsistent.	Feedback rarely provided; goals unclear or unrealistic; student progress not monitored.
Professional Conduct	Models respectful, inclusive behavior; maintains professional boundaries; fosters a positive research environment.	Generally professional but may occasionally overlook communication or inclusivity issues.	Displays unprofessional behavior; creates or tolerates an unhealthy research environment.
Mentorship and Support	Actively mentors student in research, writing, presentations, and career development; encourages conference participation and networking; supports student applications for fellowships and grants.	Provides mentorship in some areas but inconsistently; limited engagement in career development.	Provides little mentorship; student receives minimal guidance on research, writing, or career preparation.
Feedback Quality and Timeliness	Provides timely, specific, actionable feedback on drafts, analyses, and presentations; sets clear expectations for revisions.	Feedback is generally helpful but may be delayed or lack specificity.	Feedback is infrequent, vague, or absent; delays impede student progress.

Indicator	Meets Expectations	Developing	Needs Attention
Expectations and Structure	Sets clear expectations for research, meetings, timelines, and responsibilities; revisits expectations as student progresses.	Expectations exist but may be informal or inconsistently communicated.	Expectations unclear or absent; student unsure of responsibilities or goals.
Support for Funding and Opportunities	Actively assists student in securing RA/TA support, fellowships, and travel funds; informs student of opportunities.	Provides some support but inconsistently; may overlook opportunities.	Provides little or no support; student unaware of funding options or deadlines.
Academic and Administrative Guidance	Helps student navigate program milestones; ensures timely completion of forms; prepares student for exams and proposal.	Guidance provided but may be incomplete or last-minute.	Student must navigate milestones alone; advisor does not assist with required procedures.
Respect for Student Well-Being	Supports healthy work-life balance; encourages use of campus resources; respects personal boundaries; monitors for signs of burnout.	Generally supportive but may overlook signs of stress or imbalance.	Disregards student well-being; encourages unhealthy work habits; ignores signs of burnout.
Equity and Inclusion	Treats all students fairly; provides equal access to opportunities; fosters an inclusive research environment.	Generally equitable but may unintentionally overlook disparities.	Unequal treatment of students; exclusionary behavior; inequitable distribution of opportunities.

C Academic Requirements Roadmap

A typical roadmap for the Ph.D. program, including course and credit-hour minimum requirements, is summarized in the Table 5. Since there is some flexibility to this schedule, make sure to discuss your plans and progress with your advisor.

D Detailed Exam Procedures

This appendix describes the formal examinations required for the Ph.D. in Astronomy. These evaluations mark essential milestones in the five-year program and are closely tied to the coursework requirements in Section 4, the research expectations in Section 5, and the professional expectations in Section 2.6. Committee formation procedures relevant to these exams are described in Appendix E. A summary of milestones and required actions is provided in Table 2.

Table 5: Academic Ph.D. requirements and schedule.

Year, Semester	Course	Credits	Cumulative	Notes
Yr 1, Fall	3 regular ASTR	9	9	Must take ASTR 503 ¹
Yr 1, Spring	3 regular ASTR	9	18	Optional out-of-dept. course
Yr 2, Fall	2 regular ASTR	6	24	Or 3 regular courses, 9 credits ²
	ASTR 598	3	27	Required minimum 3 credits
Yr 2, Spring	3 regular ASTR	9	36	Required 36 credits for M.S.
Yr 3, Fall	ASTR 500	2	38	Required min. 6 credits of ASTR 600 Required even if thesis proposal completed
	ASTR 600	6	44	
	ASTR 601	1	45	
Yr 3, Spring	ASTR 500	2	47	Required 4 credits
	ASTR 600	7	54	Or ASTR 700 ³
Yr 4, Fall	ASTR 700	9	63	
Yr 4, Spring	ASTR 700	9	72	Required min. 18 credits of ASTR 700
Yr 5, Fall	ASTR 700	6	78	Note ⁴
Yr 5, Spring	ASTR 700	1	79	Note ⁴

(1) All students take ASTR 503 in the fall of their first year. See Section L.

(2) All students must take 3 credits of ASTR 598 in either fall or spring of their second year. Students can take 6 regular credits plus ASTR 598 in the fall and then 9 regular credits in spring, or vice versa.

(3) Once a student has completed the Comprehensive Exam, they should start taking ASTR 700 the following semester. See Section 3.4.

(4) The Graduate School allows for 6 credits in penultimate semester to remain full time, and 1 credit in final graduating semester.

Some steps require Graduate School paperwork.¹⁶ Students must be registered for at least one credit hour during any semester (or summer) in which the second and third exams described below are administered.

The three exams are listed here and discussed in more detail in the following subsections.

1. The first exam is the **Qualifying Examination**. This is an evaluation of the student's progress and generally involves a meeting with the initial primary and secondary advisors to discuss progress in the areas of cumes (see next point), classes, research, teaching, and outreach. Generally, if the student is making good progress then they are immediately advanced to Ph.D. candidacy, which means a slight increase in assistantship salary. Although two passed CUMES are normally expected, the timing of the Qualifying Exam (by the end of the third semester) may supersede this requirement.
2. The second exam is the **Comprehensive Examination**. This involves three portions: written cumulative exams (cumes), an oral classwork exam, and an oral and written thesis proposal.
 - (a) In place of a single written coursework comprehensive exam, the Astronomy department provides a series of monthly written "cume" exams. Students are required to pass five

¹⁶As of 2026, forms for the qualifying exam, comprehensive exam, and dissertation title submission are available at <https://gradschool.nmsu.edu/current-students/graduate-forms.html>.

of these exams within four semesters (18 attempts), starting in the spring semester of the first year and extending to the fall of year 3.

- (b) After passing 5 cumes and completing required classes, students should immediately take an oral coursework exam. It is always in the students' best interests to take this as soon as possible once standard courses are complete, while this material is still fresh in their head. The oral coursework part of the comprehensive exam should be completed as soon as possible after the fourth semester, and always by December of the third year.
 - (c) As the final part of the Comprehensive Examination, students present a written thesis proposal to their Committee, and an oral thesis proposal to the whole department, followed by a discussion with their Committee. The thesis proposal part of the comprehensive exam should be completed soon after the oral coursework exam, and always by the **end of the third year**. ASTR 601, taken in the fifth semester, provides an opportunity to draft and refine the written component.
3. Third, upon final completion of all dissertation work, the student undergoes a **Final Dissertation Examination**. This consists of the submission of a written thesis to the Committee, and a colloquium presentation of the thesis work to the department, followed by a meeting with the thesis Committee. The final examination should be completed within two years of completion of the comprehensive exam, with a **goal by May of the fifth academic year, and always by December of the sixth year**.

D.1 Qualifying Examination

The intent of the Qualifying Examination is to determine whether it is in the best interest of the student to proceed with graduate studies in astronomy beyond the third semester. The Department of Astronomy does not give an explicit or formalized qualifying exam. In place of such an exam, the department substitutes an evaluation of the student by members of the faculty. This evaluation of the student can normally be made following the completion of at least 18 credit hours of graduate-level course work. The Qualifying Exam must be successfully passed by all students wishing to pursue a Ph.D. in Astronomy. The student's primary and secondary advisors will assess the student's academic record, interest, ability, enthusiasm, research efforts, teaching efforts, and performance on the cumulative examinations (see below). Hence, this qualifying exam evaluation will be, in part, based upon the assessments of other members of the faculty. A minimum of two 'passed' cume exams is generally expected in order for a 'PASS' on the Qualifying Exam to be achieved (although meeting in the third semester supersedes this requirement).

The Qualifying Exam provides an opportunity for the student to receive feedback (as well as perform some self-assessment) on all aspects of our graduate program to that point, allowing for discussion of what aspects are working well as well as areas for additional progress, and for the latter, laying out some near- and mid-range goals and developing an actionable plan as a group to help you achieve those milestones.

As for preparation, students don't have to prepare anything formal. At a minimum, it would be worth taking another look at this section of the Department Handbook to remind yourself of the various milestones throughout the graduate program. Think about reflecting on these areas in a "self-assessment" way, i.e., being open to discussing your strengths, areas for improvement, accomplishments, and goals as related to those core elements of our graduate program. Many students find it helpful to draft a simple bullet-point summary to discuss during the exam.

The student's primary and secondary advisors will make a recommendation as to whether or not the student is qualified to proceed with additional Ph.D. studies. If passed, the student and the Graduate School must be notified (i.e., the student will be regarded as having "passed" their qualifying exam) by completion and submission of the appropriate paperwork through the astronomy front office. This will be handled by the student's supervisor. If the faculty judge it to be in the best interest of the student, they may recommend that Ph.D. graduate studies in Astronomy be discontinued. In cases in which the student's performance is judged to have been marginal, the faculty may require and administer further written or oral examination of the student.

Within one week of the Qualifying Examination, the student's primary and secondary advisors will always recommend that:

1. The Graduate School be notified that the Qualifying Examination has been passed; or
2. The decision as to the student's qualification be delayed or deferred one semester; or
3. The student be classified as having NOT passed the qualifying examination.

In all cases the student shall be informed of the recommendation, preferably at the end of the Examination itself, and always within one week of the examination. In the last two instances above, the student may ask that the entire faculty, as a whole, review the decision of the student's primary and secondary advisors. This request should be submitted to the Department Head within one week of the notification above.

Graduate School forms: At the conclusion, the advisor will complete the "Doctoral Qualifying Examination" form available at <https://gradschool.nmsu.edu/>, and submit the completed form to the Graduate School.

D.2 Comprehensive Examination

The Comprehensive Exam consists of three portions. The first, written, portion is given in the form of cumulative exams (see below). To satisfy the requirements for the written portion of the comprehensive exam, the student must pass five cumulative examinations. After this, the student shall move onto the second, oral, coursework examination. The third component is a written plus oral thesis proposal. All these components shall be completed by the end of the third year in the program.

D.2.1 Part 1: Written comprehensive cumulative "cume" exams

The faculty will administer nine written examinations (hereafter, CUMES) during each academic year: four in the fall semester and five in the spring semester, on a $\sim$ monthly basis. Typically, these are given on Friday mornings throughout the semester. Students will begin to take the CUMES starting in their *second* semester, i.e. beginning in January of their first year. Students must pass five CUMES by the end of their fifth semester, i.e., pass 5 out of 18. Once five CUMES have been passed, students no longer need to take any further CUMES. If the student does not pass five CUMES on this timescale, then the faculty, as a whole, will meet and decide between the following two options:

1. The student will be given a one semester extension to pass the remaining exam(s).

2. The student will be considered to have failed the comprehensive exam.

A student will not be permitted to attempt more than 18 CUMES, unless provided permission from the faculty as a whole. A student will not be permitted to take the remaining parts of the comprehensive exam until five CUMES have been passed.

Students entering the program with a master's degree may petition the faculty, as a whole, to start taking CUMES during their first semester, but they will still be required to pass 5 out of their first 18 exams.

Each CUME will be written by a single faculty member, with specific input from a second faculty member, and with the faculty as a whole given an opportunity to provide additional input. All faculty will be notified, at the beginning of the semester, as to which CUME they will write and administer. Generally, students will not be notified in advance of who is administering any exam. The content of the exam is at the discretion of the faculty, but typically the CUMES are related to a short paper from the astronomical literature that is distributed with the exam, to test the ability of students to put the content of the paper into context, i.e., to understand the background of the subject, to be able to follow calculations and discussion in the paper, and to be able to discuss and work problems on related topics. These exams are designed to test a student's knowledge of the literature, the student's academic and research background, and the student's ability to understand and deal with what may be unfamiliar material. At least some of the material on the exam will be related to core material discussed across the graduate curriculum. Material may also draw on topics discussed during colloquia or other department science discussions.

When the CUME is based on a research paper, that paper will be made available to students 60 minutes before the beginning of the exam, to provide time for the students to read it and have a chance to think about the subject before starting the exam. During this reading time (and during the exam time), no other resources can be consulted, including web resources, discussion with other students, formulae in calculators, etc.

The CUMES will be graded by the faculty member who developed the exam, with some degree of grade checking by the independent secondary faculty member, and with the faculty as a whole given an opportunity to provide additional input. Exams are graded on a numerical scale, and the faculty member may identify the critical grade needed to achieve a pass on the exam. As far as completion of the five exams is concerned, students may be provided the numerical score or may only be informed if they have passed or failed.

The cume results will be delivered to the students within 2 weeks of the exam date in most cases.

CUME Review: The faculty member administering the current CUME will hold a review of the exam typically 1 week after the exam was taken (the following Friday morning) under most circumstances. The results will likely not be known at this time, which is fine. It is strongly recommended that students attend the review, as it will build their skills in identifying how to properly approach CUME-type questions, and learn new material.

Excused CUMES: There are only 2 permitted reasons to miss a CUME: (1) a personal or family emergency or illness; (2) professional travel (conference, meeting, etc.). In either case, the student will notify the Department Head in advance, who will then make arrangements with the CUME author to administer the exam either ahead of time or after the scheduled exam. Students must not discuss the CUME exam with anyone who has not already taken it.

All other absences are considered unexcused and will result in a failed cume (not a missed cume).

Second and third components of the Comprehensive Examination

The remaining two components of the Comprehensive Examination will be taken as soon as possible once

- the student has completed at least 36 credits at the end of their second year (i.e., after completion of 11 standard courses and 1 X ASTR598); and
- the first component is complete (i.e., 5 cume exams have been passed).

It is the obligation of the student and advisor to set the dates and times of the second and third components satisfactory to all concerned (and the date of the colloquium must be coordinated with the colloquium coordinator, see below). These second and third components will usually occur in order, with the Oral Coursework Exam second (always by December of the third year in the program) and the Thesis Proposal third (always by May of the third year in the program).¹⁷

If the student wishes to take the second and third components in reverse order, they must obtain written permission from their advisor, Committee, and the Department Head before completing either component.

If the committee views both the Oral Coursework Examination and Thesis Proposal as satisfactory, then the student will continue with their Ph.D. If two or more committee members believe either component is inadequate, the decision may be postponed and the student may be asked to repeat that component at another meeting of their Dissertation committee. Alternatively, a student may be advised to not continue with the program.

D.2.2 Part 2: Oral coursework examination

The members of the Dissertation Committee will meet with the student to ascertain their knowledge of factual material, techniques, theory, and methods in Astronomy that were taken in the first two years of courses. The exam will be oral, and is expected to predominantly cover classes that the student has taken in the program, but can include any core Astronomy material. The level of difficulty, the nature of the subject material, and the duration are up to the individual members of the Committee.

D.2.3 Part 3: Thesis proposal

The student will prepare a written outline, anywhere from 10-20 single-spaced pages (discuss expected length with advisor), of proposed dissertation research and send this to the Dissertation Committee at least one week prior to a colloquium. The student will then present a colloquium to the entire Astronomy department on the topic of their thesis proposal. The colloquium will include a discussion of previous research in this field, planned observations or theoretical calculations, scientific goals, the impact of this research on the field, and a 2 year timeline for the completion of the Ph.D. thesis. The student will describe the proposed research in sufficient detail so that the committee members will be able to judge the appropriateness of the proposed research. Following the colloquium, the student will be questioned by the Dissertation Committee concerning detailed background knowledge of the dissertation subject, and observational or theoretical techniques.

¹⁷Summer colloquia are generally discouraged, as there tend to be fewer department members around.

All Ph.D. candidates are required to take 1 credit of ASTR 601, usually in their fifth semester. ASTR 601 provides broad exposure to scientific writing, covers expectations for the thesis proposal (if not yet completed), and help students structure and streamline completion of a first draft of their thesis proposals (or other writing in preparation).

D.3 Final dissertation examination and defense

In the Department of Astronomy we expect a Ph.D. candidate to complete their thesis research within 2 years of the completion of their Comprehensive Examination. Sometimes it benefits a student to take longer, for example, if they have an NSF graduate student fellowship that runs for another few months, or they have a final project they would like to publish. Sometimes a student has personal issues that delayed their progress at some stage. On the other hand, sometimes a student has a professional (an exciting new job) or personal issue that can push them to submit early. In all cases, it is the responsibility of the student and advisor to discuss the best timeline, to be completed no later than December of the sixth year. However, there may be funding implications with such a delay, which should also be included in the discussions. Any delays beyond that date shall only be permitted with consent of the Dissertation Committee and Department Head.

The candidate will schedule a final oral colloquium for the Department, with the examination by their committee following immediately after the colloquium. The date of the colloquium should be coordinated with the Colloquium Coordinator (see below). It is the obligation of the student and advisor to set the date and times of the Dissertation Examination as satisfactory to all concerned (and the date of the colloquium should be coordinated with the Colloquium Coordinator, see below). The student will provide copies of the dissertation to all members of their Dissertation Committee at least ten (10) days prior to the scheduled final examination. The student should also complete the Doctoral Dissertation Title Submission form to the Graduate School.

The colloquium should be approximately one hour long, presented to the entire department. It will be followed by a second hour or more of examination by the committee only. At the conclusion, the Dissertation Committee will then vote to pass, fail, or adjourn. The Dean's Representative will subsequently submit the paperwork to the Graduate School.

D.4 Exam scheduling and forms

E Formation of a Dissertation Committee

Once a student has passed five cumulative exams, it becomes the student's responsibility to form a Dissertation Committee and schedule the remaining components of the Comprehensive Examination (Appendix D). Once the Committee is formed, the designations of primary and secondary advisor are removed, and the Committee thereafter oversees the student's progress toward the degree. Advisor responsibilities relevant to committee service are described in Appendix B, and research expectations are outlined in Section 5.

The Chair of the Dissertation Committee will typically be the Chair for all the subsequent examinations (oral comprehensive, thesis proposal, and final examination), as well as acting as the principal advisor for the dissertation research. The Dissertation Committee shall consist of at least three members of the Astronomy faculty (including the Chair) plus one Graduate Faculty member from another NMSU department. Selection of those faculty members to the Dissertation Committee requires careful thought on the part of the student and advisor, and requires approval by the

advisor. An NMSU Graduate Faculty member from outside the department is required to be on the Dissertation Committee to serve as the official Dean’s representative. Often this is a faculty member outside the department with whom the student might have taken a class; if you don’t know anyone outside the department, your advisor shall assist with finding someone.

External members may be added to the Committee but do not replace the required NMSU Graduate Faculty members. External members must be approved by the Committee Chair and must obtain Graduate Faculty status through the Graduate School before serving.

All members of the Dissertation Committee must be members of the Graduate Faculty. It is the responsibility of each faculty member to retain their membership on the Graduate Faculty. It is the responsibility of the advisor, working through the Department Head, to obtain Graduate Faculty membership for external-to-NMSU members. This is a longer process, which can take some time to complete. Details on how to apply to become a member of, and renew membership of, the NMSU Graduate Faculty are available at <https://gradschool.nmsu.edu/> (see under ‘Faculty and Staff’ – Obtaining Faculty Status), or by contacting the astronomy front office. Details on names and contact information for all current members of the Graduate Faculty, including the end date of their current term can be found under ‘Faculty and Staff’ – Graduate Faculty Directory at that same page.

F Master’s Degree Program

This section details the process for students who wish to pursue a terminal master’s degree. Students who will receive an M.S. on the way to the Ph.D. should refer to Section 3.2. Some students may elect to pursue a terminal M.S. upon the advice of their advisor or committee. The requirements for the terminal M.S. degree in Astronomy include both departmental policies and Graduate School regulations.

The department requires a minimum of 36 credits of which six are generally for master’s thesis research. Under some exceptional circumstances, the thesis requirement may be waived, in which case the credit requirements must be satisfied in formal course work for a coursework-only M.S. Such a waiver requires agreement by both the student’s committee and the Department Head. In all cases, the student seeking a terminal M.S. degree must pass a final oral examination covering course material (for a terminal coursework M.S.) and any relevant research work (for a terminal thesis M.S.).

F.1 Course requirements

The minimum course requirements for a thesis M.S. will include:

ASTR graduate classes (501-597, 602-699) [Sec. 4] (Any two courses/6 credits may be out of dept. graduate classes)	27 credits (9 courses)
ASTR 598 (Special Research Programs)	3 credits
ASTR 599 (Master’s Thesis)	6 credits
M.S. thesis document and oral presentation	
Minimum Total Credits	36 credits

For a student who has been approved to pursue a coursework-only M.S. Astronomy degree, the minimum course requirements are:¹⁸

¹⁸These are also the requirements for an M.S. degree on the way to a Ph.D. described in Section 3.2

ASTR graduate classes (501-597, 602-699)	27 credits (9 courses)
Any two courses (6 credits) out of dept. graduate classes (or two more regular ASTR courses)	6 credits (2 courses)
ASTR 598 (Special Research Programs)	3 credits
Coursework oral exam	
Minimum Total Credits	36 credits

After making a decision to pursue any terminal M.S. degree, the student will form a master's committee. In selecting a master's committee, the student will first find an advising professor who will act as master's committee chairperson for the final oral examination, as well as being the principal advisor in the thesis research. The master's degree committee must consist of at least two members of the Astronomy department faculty plus one Graduate Dean's Representative (faculty member from another NMSU department). Selection of a faculty member as a member of the master's committee requires careful thought on the part of the student, and consent by that faculty member. All committee members must be members of the NMSU Graduate Faculty. The student is encouraged to possibly consider a committee greater in number than the minimum requirement described above.

Upon completion of the master's thesis requirements, the student will schedule a final oral examination with their committee. The exam will include a public presentation of the research conducted for the thesis. The public presentation is typically given as a departmental colloquium. It is the responsibility of the student to schedule this exam on a day and time that is satisfactory to all members of the committee. The student will provide copies of the thesis to all members of their committee at least two (2) weeks prior to the scheduled final examination. The final oral examination for the M.S. (committee only) will include questions related to the thesis research, and can also address basic principles addressed in the student's coursework. The master's committee will then vote to pass, fail, or adjourn. If the committee votes to adjourn, the exam must reconvene within three (3) weeks of final decision.

Similarly, for students completing the coursework-only master's degree, a final oral exam will be scheduled with their full committee. This exam will emphasize the material covered in the courses taken by the student.

F.2 Procedure for obtaining an M.S. on the way to a Ph.D.

Note: The procedure to obtain this M.S. degree is ... need to find the correct way to do this

G Funding Details

This appendix provides detailed information about financial support for graduate students, complementing the overview in Section 8. Funding interacts closely with research expectations (Section 5), exam timing (Appendix D), and advisor responsibilities (Appendix B). Students should discuss funding plans regularly with their advisor and consult this appendix throughout their time in the program.

G.1 Financial planning

The faculty as a whole aims to find financial support for all of our graduate students throughout their time in the Astronomy department. Funding (i.e., GA salary and tuition support) is guar-

anteed for five years for students making satisfactory academic progress. After the fifth year, any further support is contingent on availability of funds and is at the discretion of the advisor and/or department head.

Students and advisor should discuss financial support early in the program, and frequently throughout their time at NMSU. The advisor is your primary means of obtaining an RA, requesting a TA, getting health insurance reimbursements, and winning an external fellowship. RA availability depends on grant funding and may vary by advisor and research area. It is student's responsibility to plan, in collaboration with their research supervisor, how dissertation research will be funded. The best approach is to identify a faculty member with grant support performing research in an area of interest to you. Begin working on a project with this faculty member (via ASTR 598 or 600) and demonstrate your abilities in this research. Under the best circumstances, a dissertation proposal will emerge from this research and the faculty member will already have an RA in place, which they will offer to you. Thus, it is important to identify a project which is of common interest to you and a professor, and that project should be supported by a grant.

Students should always feel free to discuss research and funding with any member of the faculty, as the assignment of primary advisor for research is not set until the thesis proposal is written. At that time, it is expected that the student and advisor will have created a financial plan that will fund the senior years in thesis research. Critically, since TA support is not typically available during the summer, students and advisors must confirm their summer support with each other early in the spring semester.

G.2 Graduate assistantships

NMSU graduate assistantships can be awarded for either teaching (TA) or research (RA). The NMSU graduate assistantships formally cover 20 hours of work per week during the academic year. During the summer, when students are supported as RAs, there is more flexibility in the amount of pay that can be offered, up to 40 hours per week. The summer hiring level more often varies because of grant funding availability from an advisor. It is common for first and second year students to be supported as TAs, with more senior students supported as RAs, but exceptions to this often occur depending on a number of different circumstances, including student needs, advisor funding levels, admissions offers, etc. Funding assignments may change from semester to semester depending on departmental needs and grant availability. This can lead to different conditions for different people.

G.2.1 Teaching assistantships

Teaching Assistantships are provided to the department by the College and the Graduate School. The Department Head will assign TAs to each faculty and class sections, based on schedules, and when possible, faculty and student preferences. Because of different teaching styles and course requirements, there is no guarantee that the nature of all TAs will be equal for all students. Student and faculty shall discuss the expectations for each course at the start of the semester, complete a TA contract document (see Appendix N), and meet frequently throughout the semester to change these if needed, and to ensure these expectations are being adhered to. The TA contract outlines expectations for teaching, grading, communication, and professionalism. As noted above, there is a significant responsibility associated with being a TA, which can include teaching, grading components, and mentoring in classes. If you cannot meet these responsibilities, you may not be offered a TA position in subsequent semesters, which can have significant implications for financial support.

G.2.2 Research assistantships

Research Assistantships generally come from externally-funded research grants that have been awarded to individual faculty. These are written by faculty to funding agencies and so are awarded with specific expectations of work that must be accomplished with the funding. Often these project align well with a student's thesis proposal, and so there is a natural fit between the grant and the student. It is extremely important that students take their responsibilities as grant-funded RAs seriously. Not only are you being supported by public funds to accomplish research, but the ability of faculty to continue to be successful in obtaining future grants depends strongly on their ability to demonstrate success, as measured by concrete deliverables. Deliverables typically include publications, conference presentations, and documented progress on grant-funded tasks.

G.2.3 Other funding opportunities

There are multiple opportunities for students to apply for independent funding, as well as some funding fellowship opportunities that the faculty can apply for on a student's behalf. Students should identify and discuss these with their advisor, and are strongly encouraged to be aware of, and apply for, all independent funding opportunities when they are available. Some of these include NSF graduate research fellowships, NASA FINESST, and NM Space Grant Consortium opportunities. Obtaining independent funding frees you to work on the specific research you proposed to do, and frees up other TA and RA funds available for other students. In some cases, NMSU may first deduct the tuition associated with the period of the fellowship, and make the remainder available to the student. The faculty as a whole attempts to take advantage of all award opportunities it is aware of for eligible students. Some fellowships require FAFSA documentation even if the student does not intend to use federal financial aid. Thus, all students are encouraged to complete and submit a FAFSA document at the start of each calendar year.

G.2.4 Webber Fellowships

The William Webber Voyager Graduate Fellowships were established in 2015, enabled by a generous gift from William and Barbara Webber. The late Dr. Webber performed prolific research in residence at NMSU for several decades, after his previous retirement from the University of New Hampshire. Much of his work is related to cosmic rays and the heliosphere, and he had been deeply involved in the extended mission of the Voyager spacecraft. The Fellowships were established to support the excitement of discovery, for example, as experienced by Dr. Webber as part of his involvement with the NASA Voyager mission. The fund enables the department to issue significant cash awards to students in their first year to help the department to attract and retain top-quality students. Students usually use these funds to pay for relocation to NMSU and other expenses. The Department Head has discretion as to the number and amount of awards.

G.2.5 Student success funds

The college provides some funds to the Department Head to enable Student Success. These are dedicated to support students in financial hardship, and often are awarded as tuition payments, or health insurance reimbursements. Student Success funds may cover AAS membership fees when relevant to research or conference participation. Student requests for Student Success funds should be directed through their advisor, who will work with the Department Head to discuss what types of assistance can be provided on a case-by-case basis.

G.3 Union contract details

In Spring 2026, the negotiations resulted in the agreement that all NMSU GAs will receive 9 credits of tuition support each semester as a benefit. Students should consult the Graduate School website for updates. Part of the funding for this initiative will come from increased fringe benefit rates applied to current and existing grants for GA support. The agreement still does not include health insurance coverage.

Article 8 of the contract discusses tuition support:

A. Bargaining unit members enrolled full-time (at least 9 master's or doctoral credit hours for Fall and Spring semesters) in a master's or doctoral degree program of science, technology, engineering, or mathematics, who graduated from a New Mexico high school, and who have New Mexico residency will be guaranteed a base level tuition support scholarship of nine (9) or ten (10), as applicable to the number of master's or doctoral credits registered for, credit hours (including differential tuition for nursing and engineering) and Required Fees in accordance with Legislative Appropriation and New Mexico Higher Education Department's rules up to the amount approved by the State. Such scholarship will continue each Fall and Spring semester through Spring 2026, subject to continued specific Legislative Appropriation.

B. Bargaining unit employees in a research assistantship funded by a grant may receive full tuition support through grant funding as determined by the grant.

C. Effective Fall 2026 semester, the University will guarantee a tuition support scholarship, each Fall and Spring semester, of up to nine (9) credit hours per student to all bargaining unit members not covered by full tuition support pursuant to subsections A or B above and who hold an assistantship or combined assistantships of 0.50 FTE or higher, prorated for those with less than a 0.50 FTE or combined FTE held for a majority of the semester and/or less than nine (9) credit hours. This tuition support scholarship is available only in the Fall and Spring semesters and is subject to budgetary constraints.

For the most updated information, and to read the agreement in detail, visit the dedicated page hosted on the Graduate School website.¹⁹

G.4 Residency

As of 2026 and the new tuition waivers, it is unclear if establishing residency to obtain in-state tuition rates is necessary. There may be other needs or benefits to doing so that you wish to consider. Instructions for how to do so can be found at <https://records.nmsu.edu/students/residency.html>.

¹⁹<https://gradschool.nmsu.edu/ga-and-union/collective-bargaining-agreement.html>

H Facilities and Observatories Guide

This appendix provides an overview of the Astronomy Building, departmental facilities, campus observatories, and the major research observatories operated by NMSU. These facilities support coursework, teaching (Section 6), outreach activities (Section 7), and research development (Section 5). Students should become familiar with these spaces early in the program and consult this appendix as needed.

H.1 The Astronomy building

Your primary base of operation will be the Astronomy Building on the campus of NMSU. All students are assigned an office, and given keys to their office and the outside doors.

The mailing address, to receive regular mail is:

Yourname, Department of Astronomy, Box 30001, MSC 4500, New Mexico State University, Las Cruces NM 88003

The shipping address, to receive orders, books, etc. is:

Department of Astronomy, 1320 Frenger Mall, New Mexico State University, Las Cruces NM 88003

The astronomy department will be your home for the duration of your time in the program. The building is generally accessible to graduate students 24/7 with keys. Please treat it with care and respect. Each year we take care to reconsider our office spaces, clean up any clutter, and remodel as needed in order to keep our building looking good for years to come. Everyone has to take responsibility for building security. After 5:00 pm and on the weekends, the Astronomy Building must remain locked. In these off hours, please close and lock the library and computer room doors before leaving the building. Your care and attention to building security will help to prevent any loss of personal or department property. Get to know the astronomy support staff; Riah Preciado, our Administrative Assistant, Lydia Medrano, our Office Accountant, and Zach Edwards, our lab manager and IT support. They will be your front line support during your time at NMSU.

There are several other rooms in the Astronomy Building with which you should become acquainted. The Astronomy Conference Room is Room 119; it is the site of almost all graduate Astronomy classes, seminars, and examinations. It has a touchscreen projector, with inbuilt video, microphone, external audio, and a secondary external video. The copying machine is located in Room 116 (across the hall from the department office). Across from the mailboxes is the coffee and snacks room. The primary computer facilities for the department are located in Room 118.

There are several other buildings in close proximity to Astronomy with which you should also become familiar. The science library is in Branson Hall, just to the north of the Astronomy Building. You should acquaint yourself with the Astronomy book and periodical collections there on the third floor. The Frenger food court is just east of the building, and the main Zuhl library is just beyond that. The Corbett Student Union has some other food options and offers general student area with several services.

Our regular undergraduate classroom (including labs) is Biology Annex 102 (BX102). The Biology Annex is located immediately opposite the Astronomy building, to the south. Most of the lab equipment is located in the auxiliary room in the back of BX 102. If you are employed as a TA, you should get a key to BX102 from the astronomy front office. BX102 has a projector accessible from the computer or a laptop. You log into the computer system using your NMSU username and password. It also has an audio system to broadcast sound, and a video and microphones in the

ceiling. Familiarize yourself with usage of the equipment before your first day of planning to run a lab or make a presentation. A key to the projection cabinet is usually kept inside the auxiliary storage room in BX102, hanging on the light switch.

Also in the Biology Annex is an office we oversee, BX 113. As of 2026, we will be using this as storage and setup space for our outreach equipment and materials. Please try to keep these items as organized as possible so our many outreach events each semester can run smoothly. In BX 113 you will also find the portable planetarium(s) and associated equipment.

H.1.1 Department reading room and visitor office

The astronomy department maintains a small library in Room 207, which includes a copy of many previous dissertations of department graduates, many previous CUME exams, and both graduate and undergraduate textbooks. You can reserve it by using the whiteboard on its door. Star and galaxy atlases, the Palomar Sky Survey, and the ESO Southern Hemisphere Survey can also be found in the library. Books and various journals can be checked out of the department's reading room using the check-out sheet. This room gets used for smaller meetings, as a visitors office, and as a study space, so please respect the multiple uses of the space.

H.1.2 NASA Planetary Data System (PDS) Planetary Atmospheres Node

The astronomy department is home to NASA's Atmospheres Node of the Planetary Data System (PDS), which means we host data from NASA space missions involving planetary atmospheres and provide access to it to the general community. The PDS node has an office in the middle of the building upstairs, four permanent staff members and a number of student staff members.

H.1.3 Observatories office

A general office for use by visiting observatory staff is designated for room # 211B

H.1.4 Emergency action plan

Lastly, but critically, the Department actively maintains an emergency action plan that can be found on the website.²⁰

Emergency situations require the cooperation of all building residents. Certain responsibilities are defined to achieve smooth operations. Everyone must be familiar with these emergency operations. Pay particular attention to the evacuation plan near the beginning of the document. This plan is posted at the mailbox area and a bulletin board on each floor of the building and reviewed annually by department personnel. Please be familiar with it.

H.2 Observatories

NMSU operates the Apache Point Observatory and Sunspot Solar Observatory and Visitor's Center located in the Sacramento Mountains east of Las Cruces, about a two hour drive away. These sites are home to five telescopes:

- the [ARC 3.5m telescope](#)

²⁰<https://astro.nmsu.edu/internal-info/emergency-plan.html>

- the [Sloan Digital Sky Survey \(SDSS\)](#) 2.5m telescope
- the NMSU 1-m [SONG in New Mexico](#) telescope
- the [ARCSAT](#) 0.5m telescope
- the [Dunn Solar Telescope](#) (closed permanently as of January 2026)

These are great facilities for possible research projects; they provide resources that are not commonly available in graduate programs. Take some time to learn about their capabilities via information on the web and/or by talking with faculty and other students.

H.2.1 ARC 3.5-m telescope

The 3.5m is scheduled on a quarterly basis. NMSU owns 15.625% of the time, in proportion to its contribution to the operations costs, split between bright and dark time. The time is allocated internally in the department, but is scheduled by the ARC 3.5m management team. Since advance time is needed for both the allocation and the scheduling, NMSU proposals are generally due early-mid month of November (for Q1), February (for Q2), May (for Q3), and August (for Q4): you should receive emails soliciting proposals a few weeks before these deadlines. If you have any interest in the 3.5m telescope and certainly if you ever plan to propose for time, you should [subscribe](#) to the [apo35m-general](#) email list (it does not generate a lot of traffic!). This is how the telescope schedules are distributed, and, if you are successful in proposing for time, how you will find out when time has been scheduled.

Proposals are welcome from anyone associated with the department: faculty, staff, APO staff, post-docs, and graduate students. There is no guaranteed time for any of these constituencies. If there is oversubscription for the time in any given quarter, proposals are evaluated and time allocated by the Telescope Allocation Committee (TAC). The criteria for ranking proposals include, but are not limited to: quality of the research proposal; success of previously awarded (in particular, as judged by publication); importance of proposal towards completion of a dissertation; and importance of proposal towards funded research or funding proposals. The balance between these is determined by the TAC and may evolve with time. There is a [user wiki](#) for the telescope where users are encouraged to share information about the telescope and its instruments. This can be read by anyone; if you wish to post to it, you need to register for an account. Much of the use of the ARC 3.5m telescope is performed by remote observing, through an interface called [TUI](#). Observers must be certified before they are allowed to observe remotely; certification involves learning how to use the telescope and understanding how it works, with a minimum of 3 nights on site. We train and certify all of our graduate students through an observing run done in conjunction with the ASTR 535 class.

H.2.2 SDSS telescope

The [SDSS](#) project conducts several survey projects, and all department members have access to the survey products and to collaborations with the large SDSS community. The Department and University have invested a significant amount of funding to participate in these projects, and all members of the department are encouraged to take advantage of this participation. Students are encouraged to join SDSS working groups relevant to their research.

H.2.3 Dunn Solar Telescope

(Permanently closed as of January 2026. A large data archive²¹ of synoptic and PI observations of the Sun will be maintained indefinitely).

H.2.4 Other APO telescopes

The NMSU 1-m SONG telescope²² and the ARCSAT 0.5-m telescope²³ provide additional opportunities for research projects.

H.3 Campus observatories

H.3.1 Tombaugh Observatory

The Tombaugh on-campus observatory is located next to the large student parking lot and neighboring running track just off of Williams Street. The observatory is mainly used for our undergraduate labs and other public viewing events. Every student is trained and checked-out on the equipment at the beginning of their first semester. Some online instructions can be found online.²⁴ There is a separate key for the observatory domes. Inside the dome, you can find another key hanging up that can be used to open the gate.

H.3.2 Tortugas Mt. Observatory

There is a 24" telescope in a dome on the north peak of Tortugas Mt that is readily visible from town (See the large white 'A', east of campus). This observatory was used extensively for several decades since its construction in the 1960s, especially for planet monitoring purposes. It was brought back into service as a remote, robotic telescope in 2010, in collaboration with the American Association of Variable Star Observers, and is also used to host live streaming outreach events and support undergraduate research projects.

I Computing Resources

This appendix provides an overview of the computing environment in the Astronomy Department, including workstation access, department compute nodes, the Discovery HPC cluster, backup systems, VPN requirements, laptop registration, email, and department web pages.

I.1 Department computing

All students can have a basic computer workstation or personal laptop on their desk. The computers usually run the Linux operating system (specifically, Rocky Linux, a CentOS replacement). All computers are networked and there are central servers that host accounts and disks. As a result, if you have a department account, you can log onto any of the department computers; there are not individual accounts for individual machines.

Your desktop computer workstation provides basic computer services like editing of files, web access,

²¹<http://ssoc.nmsu.edu/>

²²<https://astronomy.nmsu.edu/song-wiki/>

²³<https://www.apo.nmsu.edu/Telescopes/ARCSAT/>

²⁴<http://astronomy.nmsu.edu/astro-wiki/doku.php?id=wiki:user:tombaugh>

email access, image display, plotting, and the capability to compile and run basic programs. Many basic programs are installed either on each individual system, or centrally on the server disks, and thus accessible to all machines. However, the desktop computers are probably not optimal for significant computing.

When you require significant computing resources for your research (e.g. more powerful/faster processing, more memory, etc.), there are several centrally located department computers that are available via remote login. Access to compute nodes is via SSH from any department machine. You can find the names of those on a department wiki page: <http://astronomy.nmsu.edu/astro-wiki/doku.php?id=computingresources>.

There is also a campus-wide high-performance computing facility, Discovery, that everyone can access. Access is granted after completing the Discovery HPC training module on Canvas. The webpage with all relevant information is here: <https://hpc.nmsu.edu/discovery/>. We recommend exploring this option, many students and faculty have been using this machine over the past few years.

If you find that your work is being limited in any way by a lack of computational power, discuss the issue with your advisor. If you have any issues or questions about computing/software/etc, you should send them in an email to astro-issues@nmsu.edu. This address is monitored by department IT staff and some faculty. This will ensure that they are documented, and will be viewed by more than one person. It is OK to shutdown or reboot your computer using the menus on the login screen, but please let us know if you are having recurring problems.

Computers and computer disks do occasionally fail, so it is important to consider backing up important data and files. Within the department, we have implemented several disk-to-disk backup systems:

- on a daily basis, *small* files are backed up to a disk on a central server. Copies of small files are stored for a week, so these backups also serve as a short-term record if you inadvertently mess up one of your files. Small files typically include text files, scripts, and configuration files.
- on a weekly basis, the *primary* disk on many of the workstations are backed up to a central server. Here, all files are backed up, but the backup from the previous week is not kept.
- **No backups** are done for *secondary* disks on workstations, nor of the large disk RAID arrays on several of the compute nodes.

It is important to recognize that disk-to-disk backups, especially within the department, are not foolproof. In an extreme example, if a fire or a hacker takes down the entire building, the backups will go along with the originals. As a result, it is always a good idea to keep an off-site backup of your critical files. It is inexpensive to buy a USB disk that you can bring in occasionally, sync your files to, and bring home.

I.2 External access

NMSU now restricts off-campus access to machines unless you are connected to a VPN client. VPN is required for SSH access from off-campus locations. You can obtain the software here: <https://vpn.nmsu.edu/>. Once connected, we restrict login access from outside of NMSU to a

single gateway machine, `astronomy.nmsu.edu`. You can connect to this machine from anywhere using the SSH login protocol. Once logged into `astronomy.nmsu.edu`, you can login to any of the individual nodes if you need to via: `ssh machinename`

I.3 Laptops and internet access

Most students also use their own personal laptops. To get these connected to the network, you will need to first register your machine in the NMSU system. This is easily accomplished by pointing your browser to <https://netreg.nmsu.edu/> (often, it will automatically be redirected there), and filling out the requested information (you'll need to know your `my.nmsu.edu` access information). You can connect to the network with an Ethernet cable if there is a spare port in your office or via a wireless connection. The entire building has access to the Aggie-Wifi wireless network.

I.4 Email

Your NMSU email address will be `username@nmsu.edu`, where your *username* is chosen by you when you first access the NMSU `my.nmsu.edu` system; we set astronomy usernames to match the NMSU username. Email sent to `username@nmsu.edu` can be accessed via the `my.nmsu.edu` webmail system. Recently, email forwarding to other accounts has been disallowed.

I.5 Web pages

The department hosts a set of web pages at <http://astro.nmsu.edu> with a uniform “look-and feel”. Under ‘People - Directory’ you will see that everyone has their own page. Contact `astro-issues@nmsu.edu` for instructions for how to establish and keep the contents of your department web pages. Given that web pages have become a de facto way for people (including potential employers) to learn about others, you should keep your web page up-to-date and professional.

J Department Events

The Astronomy Department hosts a variety of academic, professional, and social events throughout the year. Participation in these activities is an important part of professional development (Section 2.6), research engagement (Section 5), and community building. This appendix summarizes the major recurring events and opportunities for involvement.

J.1 Colloquia

Our most formal series is the departmental Colloquia. These seminars are often presented by visitors to the department, and thus offer insight into work being performed elsewhere in the astrophysics communities. These events are usually scheduled for Friday afternoons at 3:00 PM. Coffee, tea, and cookies are usually provided in advance of the talk. We generally schedule a round-table discussion between the speaker and graduate students immediately following the colloquium. Attendance by graduate students is expected as part of professional development, and this is a great opportunity to talk as a group with speakers about their interests and experiences in the field. When a visitor comes to town to present a colloquium, they are generally here for a full day or two, and we schedule slots for the visitor to meet with individuals. Students should sign up for these slots, especially for students that work in a research area related to that of the speaker; this is a great opportunity

to make some connections outside of the department. There are also opportunities to talk with speakers in a small, less formal, group setting, by signing up to go to lunch or dinner (which also gets you a meal paid for by the department).

J.2 Pizza Lunch

Our Pizza Lunch series is less formal. This series gives people an opportunity to present results in a relaxed setting. This can include presentations by departmental visitors, faculty talking about new ideas, students ‘practicing’ a talk which they will give at an upcoming conference, etc. One aspect of this series is the pizzas which are delivered prior to each meeting, thus the name Pizza Lunch. Pizza Lunch typically meets weekly during the academic semester.

We strongly encourage students to give Pizza Lunch presentation about every other year to update their committee and the department on the stage of their research, especially after they transition from classes to research. If you are taking research credits via ASTR 598, you will be required to make a presentation as part of the class.

J.3 Astro-ph discussions

Twice a week, everyone gets together to discuss recent papers posted on the arXiv server (astro-ph). We try to limit these sessions to 30 minutes each, and cover two papers per session with a short presentation and discussion: presenters are asked to try to restrict materials to just 2 figures per paper. Ideally, people skim the astro-ph postings, vote on those they find interesting, and volunteer to present on some.

J.4 Inclusive Astronomy

The Inclusive Astronomy group was created to talk about diversity and inclusion issues and initiatives, both within the department and in the broader field. All department members are welcome and encouraged to attend.

J.5 Seminar class

ASTR 500, referred to as ‘Seminar class’, is a 2-credit class (as of 2026) in which third-year students are enrolled in both fall and spring semesters. Different faculty have different philosophies of what style of seminar is most beneficial. The general idea of seminar is to get some exposure to subject material that may not be covered in classes, and to get experience with presenting material to a group of people. This class meets weekly, at which time one of the registered students may present a talk on material covered in an assigned paper. Generally, there will be a particular theme for the semester.

J.6 Research group meetings

Some of the research groups have regular meetings to discuss a variety of topics within their research area. Group meeting schedules vary by semester and by faculty availability. These are informal and anyone can sit in at any time. Students can be the prime drivers of research group meetings, so if you are interested in something that isn’t happening, go ahead and propose to your advisor that you would like to start one.

J.7 Tea time

We hold a tea time once per week, where different department members rotate bringing in some sort of treat for everybody to share, along with coffee and tea provided by the department. Please sign up when the announcement goes out. Tea time is an informal opportunity for people to get together and discuss anything and everything.

J.8 AGSO

The Astronomy Graduate Students Organization (AGSO) was created to interface the astronomy graduate students with the more general student organizations (ASNMSU, GSC) and the astronomy department. Leadership positions are elected annually. More information can be found at <https://astro.nmsu.edu>. See Organizations – Astronomy Graduate Students Organization.

K Department Guide

This appendix provides a list of faculty, general advice, practical guidance, and institutional knowledge that supports graduate student success. These topics complement the professional expectations in Section 2.6, the research expectations in Section 5, the teaching responsibilities in Section 6, and the funding details in Appendix G. Students should consult this guide regularly throughout their time in the program.

K.1 Department Personnel

We have a large, thriving department consisting of eleven tenured or tenure-track faculty, several active emeritus professors, about a dozen research associates and postdoctoral assistants, two professional office staff, nearly forty observatory staff, and several dozen graduate students in the Astronomy department. In total we have about 100 individuals all working to further our understanding of the Universe. In addition, there are many scientists from various other institutions who are affiliated with the department, and we typically have numerous visitors throughout the year. This provides the diverse atmosphere that we value, giving students lots of chances to talk with them on a regular basis.

The faculty are here to help you through your course work and to advise you on your research. The names and research areas of current faculty are listed below. If you have an interest in one of the research areas of these individuals, seek them out, begin discussions about their research field, and identify possible research areas.

Shah Bahauddin	Assistant Professor	Solar physics, machine learning
Joe Burchett	Associate Professor	Gas around galaxies, galaxy clusters
Nancy Chanover	Professor APO 3.5m Director PI of PDS Atmospheres Node	Planetary atmospheres, instrumentation
Chris Churchill	Professor Emeritus	Quasar absorption lines, intergalactic medium
Kristian Finlator	Associate Professor Associate DH	High-redshift galaxy evolution, reionization
Jon Holtzman	Professor Emeritus	Stellar populations, star formation, instrumentation
Jason Jackiewicz	Professor, Department Head	Helioseismology, solar physics, asteroseismology
Wladimir Lyra	Associate Professor	Planet formation, computational astrophysics hydrodynamic simulations
Stephanie Monty	Assistant Professor	Stellar populations, Milky-Way structure
Eric Nielsen	Associate Professor	Extrasolar planets, direct imaging
Moire Prescott	Associate Professor Graduate Director	High-redshift galaxy formation, Lyman-alpha structures
Andrew Saydjari	Assistant Professor	Interstellar medium, big data science
Juie Shetye	Assistant Professor	Solar physics, space weather

K.2 Career awareness

There will always be far more graduates with Ph.D.s than there are faculty positions. As such there are many more opportunities at research institutes (e.g. NASA centers, NSF centers, AURA), research companies (Southwest Research Institute, APL, NASA contractors, etc.), and international options. The skills that you obtain in graduate school are directly applicable in all science fields. Discuss with your advisor how to develop and document skills that may be useful when seeking employment, either within astronomy or outside the field. If you plan to continue in the field, note that it will be important for you to make connections with professionals outside of the department. The more that other people know about you, the greater the possibility of job offers will likely be. External contacts are an important source of recommendation letters for job positions, and they must know enough about you and your work in order to write strong letters. The American Astronomical Society compiles information related to career resources at <https://aas.org/careers/information-and-advice>.

K.3 Time management advice

Many people in the field of astrophysics, including everyone in this department, are constantly striving to find the right work-life satisfaction. Many faculty and researchers report working more than 40 hours per week. This is not a requirement for graduate students, but you should be aware that most of the people in the field say that they spend more than this. The key to being successful, especially if working in the framework of a 40 hour work week, is being extremely careful about making your work hours productive.

Graduate students must balance the following tasks:

- Coursework: homework, exams, group work;
- Teaching: Leading labs, resolving student concerns, and grading;
- Research: reading, first-author work, nth-author work, conferences, attending colloquia and other discussion groups, proposals (for grants, telescope time, or positions);
- Outreach: deciding what you can or cannot participate in;
- Leadership: positions in AGSO (or elsewhere) that require organizing others and dedicating time to service activities.

This is clearly a lot of balls to juggle. All of these tasks are important, but not all equally so at all points in your graduate school career. For example, grants and meetings at set times are usually more important than coursework, and grading to deadlines is usually more important than outreach. A key skill for graduate students to develop involves learning to balance these tasks without neglecting any of them. For example, it is far better (and more difficult) to cut research back to 15-30 minutes a day during exam season than to eliminate it entirely. You may find that an electronic app such as Toggl will be useful to you in tracking how you divide your time and when discussing progress with your supervisor.

Here is a sample weekly time allocation for students who have a TA in their first year:

- Teaching: < 14 hours
- Coursework (including attendance at lectures and homework): > 21 hours
- Research: 2.5 hours (this is a minimum baseline; more is encouraged when possible)
- Group meetings / Departmental events: 2.5 hours

Of course, you should expect some significant variations in individual weeks. But if you are spending zero hours per week on research or 25 hours per week on teaching, averaged over a month, speak to your advisor immediately to resolve this. Advisors can help rebalance workload or adjust expectations.

K.4 Mentorship

The faculty consider mentoring of graduate students one of their primary responsibilities. It is a highly challenging and highly rewarding aspect of the job. A detailed mentoring agreement has

been developed that will be completed each semester between each mentor and mentee. It is a Google form that can be found at this link: <https://forms.gle/ge7B4V4uAjzcCVWQA>.

The agreement is meant to help encourage discussion of goals and expectations between mentors and mentees and connect the detailed expectations given in Appendix A and Appendix B. Experience has suggested that sometimes different parties have different assumptions or expectations about various aspects of the program and the mentor-mentee relationship, and that it is better to try to explicitly discuss these before misunderstandings or issues arise.

K.5 Teaching philosophy and professional development

Teaching is an integral part of professional development in astronomy, and many graduates pursue careers where teaching plays a central role. Developing a thoughtful, reflective teaching practice during graduate school provides a strong foundation for future success.

Effective teaching is a skill developed through practice, reflection, and engagement with evidence-based instructional methods. Traditional didactic approaches (i.e., long lectures without interaction) are often less effective than interactive, student-centered strategies, and graduate students are encouraged to explore a variety of teaching techniques as they gain experience.

Graduate students should think carefully about their teaching style and discuss approaches with faculty and experienced peers. Many members of the department, as well as university-wide resources, have extensive background in best practices for teaching and learning. A key component of effective instruction is fostering enthusiasm and curiosity. When instructors are engaged and excited about the material, students are more likely to respond positively. While this cannot guarantee universal success, the inverse is almost always true: a lack of enthusiasm from the instructor strongly discourages student engagement.

The NMSU Teaching Academy²⁵ provides free professional development workshops on topics such as active learning, assessment, inclusive teaching, and course design. Graduate students are encouraged to attend several workshops each year to strengthen their teaching skills and prepare for future academic or education-focused careers.

K.6 University policies

All department members need to be aware of official NMSU policy on a variety of subjects. Information on current NMSU policy can be found at <https://arp.nmsu.edu/>. NMSU, like many other institutions, now requires all employees to participate in annual online compliance trainings. These include cybersecurity, Title IX, and workplace conduct modules. These should be completed in a timely manner.

K.7 Purchases and travel

Professional travel should incur as little financial burden on students as possible. Before you plan your work-related travel, you should always request specific permission from your advisor. Once approved, please work with the astronomy front office to purchase plane tickets and other eligible expenses with the department credit card. Some items, like hotel reservations, may not be eligible for this.

²⁵<https://teaching.nmsu.edu/>

The university also offers the option of a travel advance to help offset upfront costs. Please speak with the astronomy front office if you'd like to take advantage of this.

While on travel, you will generally need to use your personal credit card for expenses incurred. In most cases, you can request a per diem rate for reimbursement. However, try to retain receipts as much as possible in case issues arise. Again, it is recommended to discuss your plans with your advisor and the front office before your travel.

Outside of travel, you will usually be asked to charge expenses directly to the department credit card from which they can then be covered by charging an appropriate internal account, i.e. without requiring personal reimbursement to you. The astronomy front office staff are there to help you with credit card purchases.

Note that international travel requires pre-approval, see https://provost.nmsu.edu/international_travel/index.html. You must submit paperwork at least 20 days prior to travel. Since it is recommended not to purchase flights before getting approval, we suggest submitting the request as far in advance as possible.

K.8 Where to get help

We hope that this guide will provide answers to many of your questions about getting started in graduate school. Clearly, each student will develop individual concerns and questions. Communicate these first with your advisor who will either know the answer, or will point you to the right person. Here are a few individuals to contact for help in answering any questions:

Building issues/problems	Riah Preciado / Zach Edwards
Computer info and/or issues	astro-issues@nmsu.edu / Zach Edwards
Laboratory and Observatories	Zach Edwards
Hiring	Riah Preciado
Reimbursement	Riah Preciado
Grants and fellowships	Lydia Medrano
APO 3.5m	Nancy Chanover
Room reservations	astro-office@nmsu.edu
General issues	astro-office@nmsu.edu

L Course Rotation Table

The astronomy graduate courses are offered in a *roughly* two-year rotation. The example below illustrates a typical four-semester cycle (not all official courses are listed here); actual offerings may vary depending on faculty availability, student interest, and other circumstances.

Year, Semester	Courses Offered
Year A, Fall	ASTR 503, ASTR 535, ASTR 565, ASTR 605
Year A, Spring	ASTR 621, ASTR 630, ASTR 671
Year B, Fall	ASTR 503, ASTR 530, ASTR 555, ASTR 620
Year B, Spring	ASTR 506, ASTR 616, ASTR 670

Actual course offerings may change from year to year due to faculty leave, enrollment, and departmental needs. Because NMSU policy requires a minimum enrollment of five students for graduate

classes, some courses may not be offered unless students distribute themselves appropriately across available options.

All first-year students must take ASTR 503 in their first semester and select two additional courses from the remaining offerings. Second-year students, who will have already taken ASTR 503, should take the other three courses offered in the fall. Note that all students will take ASTR 598 for 3 credits during their second year, which may limit the number of additional courses they can take.

Graduate students must register for 9 credits each semester to maintain full-time status and to be eligible for TA or RA support.

M Full Reporting Procedures

This appendix provides detailed guidance on reporting concerns related to harassment, discrimination, insensitivity, or any behavior inconsistent with departmental or university policy. These procedures complement the overview in Section 9 and outline the responsibilities of students, staff, and faculty when addressing concerns.

M.1 When should I report an issue?

While we recognize that there are differing ideas about what constitutes harassment, in our department we adopt the most conservative definition and adopt an "always err on the side of caution" attitude and behavior. If you ever find yourself in an uncomfortable situation you are expected to report those, even if you do not think it has reached the level of your definition of harassment; it is always much better to report issues, and therefore permit discussions of appropriate standards at the right level. It is also possible that something you've noticed is already part of a bigger problem, and that problem can only be identified by reporting it. It is also probable that someone less empowered than you is being affected worse than you. So don't let things slide under a pretense of trying to not cause trouble. Speak up. If anyone ever feels subjected to, or witnesses, insensitivity, discrimination, and/or harassment, they must report it.

M.2 To whom should I report an issue?

Students should report concerns directly to their advisor, or any faculty member they feel comfortable talking to, or bring those issues directly to the Department Head. If they prefer to chat to a peer first, then please do so as it can be comforting to bring someone else along as an ally while reporting any issue. A faculty member will listen carefully and is empowered to try to solve the issue if they can. They may also advocate that you immediately go to the Department Head to discuss it. In any case, whether solved or unsolved by the faculty member, all issues shall always be reported by the faculty member to the Department Head within 1 week.

Staff members should report concerns to their supervisor, or bring them directly to the Department Head. The supervisor will listen carefully and is empowered to try to solve the issue if possible. They may advocate you immediately all go to the Department Head to discuss it. In any case, whether solved or unsolved by the supervisor, all issues shall always be reported by the supervisor to the Department Head within 1 week.

Faculty should report directly to the Department Head.

Any issue discussed with any department personnel must be communicated to the Department Head

unless the Department Head is the subject of the report, in which case it will be communicated to the Dean of the College of Arts and Sciences. If necessary, and within University policy, the Department Head (or Dean) will determine a course of action, in consultation with the Office of Institutional Equity.

M.3 What should I do if someone reports an issue to me?

If someone brings something to your attention, your first instinct must be to listen. Allowing a problem to be shared is a good start. Don't try to solve it yourself. Never guarantee anonymity: you may promise discretion, but you cannot promise anonymity. Instead clarify that you will do everything you can do, and that has to include talking to the right people to find the solution. Then, be the ally in helping that person report it. Go along with them as support. Finally, set up a follow-up chat to see if the issue was handled correctly. Anonymous reporting put severe constraints on the effectiveness of a solution. So take advantage of speaking to a person and talk to a peer first. Then ask that peer to go along with you to report it. However, if there are exceptional prevailing circumstances, NMSU has contracted with an external provider, EthicsPoint, to provide employees with an alternative anonymous way to confidentially report activities that are in violation of university policy, see: <https://concerns.nmsu.edu/>.

M.4 What will happen after I report an issue?

All reports will be handled professionally and courteously. Depending on the nature of the report, this may include intervention from the Department Head, the College of Arts and Sciences, the Associated Students of NMSU, Employee and Labor Relations, the Faculty Grievance Review Board, or any other entities as appropriate. Per NMSU policy, the Office of Institutional Equity will always be notified of any reports of harassment, so if such behavior is reported to you, you have a legal obligation to notify the Department Head, and the Department Head has a legal obligation to notify OIE. See <https://equity.nmsu.edu/home/incident-report.html> for information on OIE. After any action is determined, you may be contacted with a follow up notice. OIE will determine whether the report triggers a formal investigation under Title IX or other university policies.

M.5 Behavior outside of NMSU

We are aware of notable occurrences of unacceptable behavior at astronomy conferences and other professional settings, from faculty at other institutions. These are entirely unacceptable. In our department, the responsibility for acceptable behavior extends outside of NMSU, and into all professional settings. The American Astronomical Society has provided information about sexual harassment and reporting for AAS meetings, to which we strictly adhere. See: <http://aas.org/policies/anti-harassment-policy>.

N Document repository

Here are important tables and files mentioned in the main body collected into one place, suitable for printing all at once if needed.

TA / Professor Agreement: The goal of this form is to ensure that key expectations are explicitly discussed and agreed upon by professors and TAs for undergraduate classes. Each item should be reviewed together, boxes checked, and blank fields completed. By signing, both the Professor and the TA agree to the terms of this Agreement.

Each TA in a course should enter into this agreement with the course Professor. Discussion of these items should take place concurrently with all TAs assigned to the class.

Course number:

Title of Course:

Date of Agreement:

Professor (print):

TA (print):

- Professor will use Canvas (at a minimum to provide links to external web pages).
- TA will read and provide input on the syllabus.
- TA will read and provide input on Canvas pages.
- Canvas gradebook will be used by the professor; TA (☐ will / ☐ will not) have access to the Canvas gradebook.
- TA agrees to have **all assignments/tests graded within** _____ week(s) after submission; if not graded within _____ week(s), professor will inform the Department Head.
- TA (☐ will / ☐ will not) attend class section; class attendance will be _____.
- TA is willing to fill in for lectures up to _____ times during the semester.
- Professor agrees to let TA lecture _____ times during the semester.
- Professor and TA will meet at a scheduled time every _____ weeks to discuss course and student progress.
- TA (☐ will / ☐ will not) have homework grading responsibilities.
- Professor (☐ will / ☐ will not) have homework grading responsibilities.
- TA (☐ will / ☐ will not) have exam grading responsibilities.
- Professor (☐ will / ☐ will not) have exam grading responsibilities.
- TA will notify/discuss with professor if TA time commitment regularly exceeds _____ hours per week, so strategies can be discussed or workload reduced. If no satisfactory resolution is found, TA and professor will consult with the Department Head.

Lab Components

- Professor agrees to attend labs _____ times during the semester and provide feedback.

- Syllabus (☐ will / ☐ will not) include information about labs.
- TA (☐ will / ☐ will not) distribute a separate lab syllabus (if “will,” professor must review first).

Professor (signature): _____

TA (signature): _____

Table : Year-by-year progression of main activities in the program.

Year	Category	Activities
1	Classes	Regular department classes (typically 3) each semester. Other learning based on material in classes, with other students, and your interests; read supplementary material.
	Teaching	Learn and teach undergraduate labs. Recognize different teaching styles and develop your own.
	Research	Identify a topic you're interested in with your initial advisor; work on during year as time allows, with good progress in summer months.
	Exams	Take cume exams monthly, starting in the second semester.
	Outreach	Two events (or ~ 4 hours).
	Other	Establish NM residency. https://records.nmsu.edu/students/residency.html
2	Classes	Regular department classes each semester & research credit (ASTR 598).
	Teaching	Continue to develop teaching style and skills.
	Research	Ramp up time spent on research. Identify thesis topic and funding applications.
	Exams	Continue monthly cumes; complete your Qualifying Exam by the end of fall semester.
	Outreach	Two events (or ~ 4 hours).
	Other	Obtain master's degree on the way to Ph.D. (see below).
3	Classes	Courses ASTR 500, ASTR 599 for Master's thesis, ASTR 600 for pre-comprehensive exam research, ASTR 601, ASTR 700 for research after your thesis proposal.
	Teaching	As determined by your path through the program.
	Research	Finalize committee, prepare thesis proposal, confirm funding for 2 years.
	Exams	Complete Comprehensive Exam by end of sixth semester. This comprises: passing 5 cumes, passing the oral coursework exam by the end of the fifth semester, and passing the thesis proposal exam by the end of the sixth semester.
	Outreach	Two events (or ~ 4 hours).
	Prof. devel.	Consider your job possibilities and interests. Attendance at topical conferences. Consider AGSO and university student leadership positions.
4	Classes	9 x ASTR 700 credits each semester.
	Teaching	As determined by your path through the program.
	Research	Work on thesis. Publish papers. Write up your thesis as you proceed.
	Outreach	Two events (or ~ 4 hours).
	Prof. devel.	Discuss job interests and possibilities with external contacts; prepare for job application timescale and associated timescales for supporting materials. Present work at conferences. Consider AGSO and university student leadership positions.
5	Classes	9 x ASTR 700 credits each semester (or obtain a waiver for j9).
	Teaching	As determined by your path through the program.
	Research	Complete your research. Finish and submit your publications and your thesis.
	Exams	Dissertation defense.

Year	Category	Activities
	Outreach	Two events (or ~ 4 hours).
	Prof. devel.	Job applications (and potential interviews).

Table : Summary of formal milestones.

Milestone	Personnel	Timeframe	Prerequisites	Student (to do prior/post)	Supervisor or Dean's Rep. (to do prior/post)	Notes
Comprehensive Part 1: CUMEs	Student	Take first cume in 2nd sem.; pass 5 out of 18 at- tempts (over 4 sems.)	One semester of coursework	-	Cume giver up- dates student progress spread- sheet	-
Qualifying exam	Student + 2 fac- ulty ad- visers	Goal: by end of 3rd sem.	Suggested: 2 cumes or end of 3rd sem.	Schedule meeting with both faculty advisors	submit Doctoral Qualifying Exam form; enter result in student progress spreadsheet	Pay raise G1 to G2
Comprehensive Part 2: Course- work oral exam	Student + full commit- tee	Goal: by end of 5th sem.	5 passed cumes; 4 sems. of courses (~ 36-38 credits); graduate faculty status for commit- tee members	Form full committee; ensure graduate faculty status of mem- bers; find a common meeting time	Enter data in student progress spreadsheet	no official paperwork
Comprehensive Part 3: Thesis proposal	Student + full commit- tee	Goal: by end of 6th sem.	Coursework oral exam; graduate faculty status for committee mem- bers	Find a common time; reserve a date on dept. schedule; Doc- toral Examination form; work with office staff to reserve a room; send proposal document to committee min. 10 days be- fore exam; send title and ab- stract to colloquium organizer	Enter result in student progress spreadsheet; en- sure Dean's Rep. submits paperwork	Pay raise G2 to G3; Apply for Master's (optional, but encour- aged)
Thesis defense	Student + full commit- tee	Goal: by end of 10th semester	Thesis proposal; dissertation doc- ument; graduate faculty status for committee mem- bers	Find a common time; reserve a date on dept. schedule; register for graduation; Doctoral exam- ination form; Dissertation Title form; work with office staff to reserve a room; send disserta- tion document to committee min. 10 days before exam; send title and abstract to colloquium organizer	Enter data in student progress spreadsheet; en- sure Dean's Rep. submits final pa- perwork; faculty confirmation of grades form	Well done Doctor!

Table : Graduate student professional and developmental expectations rubric.

Indicator	Meets Expectations	Developing	Needs Support
Professionalism	Consistently meets deadlines; communicates proactively; punctual for classes, TA duties, and meetings; maintains respectful and constructive interactions; collaborates effectively; demonstrates reliability and accountability.	Occasionally misses deadlines but communicates; generally punctual; interactions are usually constructive; collaboration skills developing.	Frequently misses deadlines without communication; chronic lateness; interactions impede collaboration; difficulty maintaining professional conduct.
Communication	Responds promptly; listens actively; asks relevant questions; engages in scientific discussion; applies feedback constructively.	Responds inconsistently; asks questions when prompted; applies feedback with guidance.	Rarely responds; avoids discussion; does not apply feedback; communication lapses affect progress.
Scientific Communication: Writing	Produces clear, well-structured writing; provides appropriate context; uses effective figures/tables; cites relevant literature; demonstrates polished grammar and word choice.	Writing is generally clear but may lack precision, structure, or context; figures/tables require refinement; citations incomplete.	Writing is unclear or disorganized; difficulty conveying reasoning; figures/tables ineffective; citations missing or incorrect.
Scientific Communication: Oral Presentation	Presents research clearly and confidently; uses well-organized slides; provides appropriate context; cites others; conveys reasoning effectively.	Presentations are understandable but may lack structure, clarity, or polish; slides require refinement.	Presentations are unclear or incomplete; difficulty explaining methods, results, or motivation; slides ineffective.
Engagement in Research	Demonstrates initiative beyond advisor instructions; articulates personal contributions; explains motivation clearly; seeks help appropriately; shows ownership of work.	Shows initiative with guidance; can describe contributions with prompting; developing understanding of motivation.	Relies heavily on advisor direction; struggles to explain contributions or motivation; limited ownership of work.

Table : Graduate student professional and developmental expectations rubric (continued).

Indicator	Meets Expectations	Developing	Needs Support
Research Skills: Technical and Analytical	Understands core concepts; learns technical skills independently; defines project objectives; organizes tasks efficiently; obtains valid results; interprets data appropriately; draws supportable conclusions.	Understands concepts with support; learns technical skills with supervision; objectives defined mostly by advisor; progress fluctuates.	Struggles with core concepts; requires continual supervision; difficulty organizing tasks; results or interpretations unreliable.
Research Skills: Literature Review	Finds relevant scientific papers; reads regularly; interprets literature accurately; contextualizes work within broader research.	Finds papers with guidance; reads inconsistently; interpretation developing; context incomplete.	Rarely engages with literature; difficulty interpreting papers; limited awareness of broader research context.
Task Organization and Time Management	Organizes tasks effectively; manages time well; maintains steady progress; converts goals into actionable tasks.	Organizes tasks with guidance; progress may fluctuate; time management developing.	Difficulty converting goals into tasks; inconsistent progress; time management concerns.
Department Participation	Regularly attends colloquia, journal club, group meetings, and departmental events; asks questions at talks; participates in outreach; communicates conflicts in advance; contributes to department priorities.	Attends most events with communication; outreach participation meets expectations; contributions developing.	Rarely attends events; absences unexplained; outreach participation inconsistent; limited engagement.
Professional Growth	Engages with broader scientific community; attends or presents at conferences; builds external relationships; applies for fellowships or grants.	Participates in some external activities; developing network; applies for opportunities with prompting.	Limited engagement outside department; no external network; does not pursue professional opportunities.

Table : Graduate student professional and developmental expectations rubric (continued).

Indicator	Meets Expectations	Developing	Needs Support
Well-Being and Work-Life Satisfaction	Maintains sustainable work habits; seeks support when needed; demonstrates awareness of personal limits; balances academic and personal responsibilities.	Developing sustainable habits; occasionally seeks support; balance fluctuates.	Visible signs of overwork or withdrawal; does not seek support; imbalance affects academic progress.

Table : Advisor expectations rubric.

Indicator	Meets Expectations	Developing	Needs Attention
Communication and Availability	Meets with student regularly; responds to emails within a reasonable timeframe; provides clear guidance; maintains open, respectful communication.	Meetings occur but irregularly; response times vary; guidance is sometimes unclear or delayed.	Rarely meets; communication is inconsistent or absent; student lacks direction due to advisor unavailability.
Research Guidance	Provides constructive feedback; helps student define achievable goals; helps student identify appropriate literature; supports development of independent research skills; monitors progress.	Feedback is provided but may be delayed or incomplete; goals are defined but may lack clarity; progress monitoring inconsistent.	Feedback rarely provided; goals unclear or unrealistic; student progress not monitored.
Professional Conduct	Models respectful, inclusive behavior; maintains professional boundaries; fosters a positive research environment.	Generally professional but may occasionally overlook communication or inclusivity issues.	Displays unprofessional behavior; creates or tolerates an unhealthy research environment.
Mentorship and Support	Actively mentors student in research, writing, presentations, and career development; encourages conference participation and networking; supports student applications for fellowships and grants.	Provides mentorship in some areas but inconsistently; limited engagement in career development.	Provides little mentorship; student receives minimal guidance on research, writing, or career preparation.
Feedback Quality and Timeliness	Provides timely, specific, actionable feedback on drafts, analyses, and presentations; sets clear expectations for revisions.	Feedback is generally helpful but may be delayed or lack specificity.	Feedback is infrequent, vague, or absent; delays impede student progress.
Expectations and Structure	Sets clear expectations for research, meetings, timelines, and responsibilities; revisits expectations as student progresses.	Expectations exist but may be informal or inconsistently communicated.	Expectations unclear or absent; student unsure of responsibilities or goals.

Indicator	Meets Expectations	Developing	Needs Attention
Support for Funding and Opportunities	Actively assists student in securing RA/TA support, fellowships, and travel funds; informs student of opportunities.	Provides some support but inconsistently; may overlook opportunities.	Provides little or no support; student unaware of funding options or deadlines.
Academic and Administrative Guidance	Helps student navigate program milestones; ensures timely completion of forms; prepares student for exams and proposal.	Guidance provided but may be incomplete or last-minute.	Student must navigate milestones alone; advisor does not assist with required procedures.
Respect for Student Well-Being	Supports healthy work-life balance; encourages use of campus resources; respects personal boundaries; monitors for signs of burnout.	Generally supportive but may overlook signs of stress or imbalance.	Disregards student well-being; encourages unhealthy work habits; ignores signs of burnout.
Equity and Inclusion	Treats all students fairly; provides equal access to opportunities; fosters an inclusive research environment.	Generally equitable but may unintentionally overlook disparities.	Unequal treatment of students; exclusionary behavior; inequitable distribution of opportunities.